sky130_osu_sc_12T_hs_ff_1P76_-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_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.01044	0.01043	0.00810	1.58131	0.68977	1.35665
sky130_osu_sc_12T_hs__addf_l	0.01045	0.01043	0.00811	1.04678	0.69141	1.35641

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.06440	0.08385
sky130_osu_sc_12T_hs__addf_l	0.00000	0.28631	0.52832

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)	0.08640	1.17165	19.74400
	B->CO (RR)	0.08126	1.13532	19.20480
	CI->CO (RR)	0.08088	1.20458	20.46250
	CON->CO (FR)	0.01785	0.62503	11.12300
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.08614	1.06835	15.47860
	B->CO (RR)	0.08131	1.04863	15.38580
	CI->CO (RR)	0.08063	1.10278	16.24060
	CON->CO (FR)	0.02124	0.65313	10.45170

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)	0.14270	1.68360	28.06560
	B->CO (FF)	0.12512	1.59849	26.80290
	CI->CO (FF)	0.12395	1.66774	28.17810
	CON->CO (RF)	0.01285	0.38844	6.87781
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.14239	1.49357	21.50610
	B->CO (FF)	0.12469	1.42184	20.65730
	CI->CO (FF)	0.12357	1.47833	21.65710
	CON->CO (RF)	0.01425	0.40340	6.39992

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)	0.12810	0.85010	10.70920
	B->CON (FR)	0.10862	0.79583	10.29260
	CI->CON (FR)	0.10928	0.83604	10.90210
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.12171	0.84311	10.71930
	B->CON (FR)	0.10290	0.79113	10.30200
	CI->CON (FR)	0.10288	0.83090	10.91210

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)	0.05087	0.35928	4.34370
	B->CON (RF)	0.04728	0.37213	4.58283
	CI->CON (RF)	0.04539	0.39526	4.99826
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.04961	0.35803	4.35065
	B->CON (RF)	0.04611	0.37122	4.58949
	CI->CON (RF)	0.04413	0.39405	5.00532

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)	0.20973	1.54429	22.28680
	B->S (-R)	0.20466	1.50792	21.45640
	CI->S (-R)	0.18944	1.52592	22.41070
	CON->S (RR)	0.05308	0.48297	6.03185
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.20259	1.53895	22.27880
	B->S (-R)	0.19771	1.50311	21.44840
	CI->S (-R)	0.18224	1.52054	22.40130
	CON->S (RR)	0.05310	0.48290	6.03011

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)	0.14773	0.95018	12.56810
	B->S (-F)	0.14215	0.91344	12.37960
	CI->S (-F)	0.14189	0.98222	13.30530
	CON->S (FF)	0.06680	0.48806	5.89997
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.14479	0.94802	12.56420
	B->S (-F)	0.13949	0.91158	12.37600
	CI->S (-F)	0.13894	0.98002	13.30080
	CON->S (FF)	0.06681	0.48800	5.89907

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	0.00224	0.00281	0.01634
	B	0.00261	0.00309	0.01477
	CI	0.00318	0.00382	0.01727
sky130_osu_sc_12T_hs__addf_l	A	0.00204	0.00249	0.01299
	B	0.00240	0.00282	0.01233
	CI	0.00297	0.00350	0.01474

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00794	0.00933	0.04428
	B	0.00819	0.00930	0.03999
	CI	0.00677	0.00829	0.04428
sky130_osu_sc_12T_hs__addf_l	A	0.00774	0.00867	0.03095
	B	0.00800	0.00873	0.02817
	CI	0.00658	0.00764	0.03141

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00791	0.00860	0.02455
	B	0.00820	0.00879	0.02317
	CI	0.00676	0.00758	0.02524
sky130_osu_sc_12T_hs__addf_l	A	0.00773	0.00831	0.02368
	B	0.00801	0.00855	0.02240
	CI	0.00657	0.00733	0.02436

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00265	0.00274	0.00981
	B	0.00260	0.00284	0.01019
	CI	0.00316	0.00360	0.01227
sky130_osu_sc_12T_hs__addf_l	A	0.00245	0.00253	0.01002
	B	0.00239	0.00265	0.01040
	CI	0.00296	0.00341	0.01276

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00793	0.00921	0.03916
	B	0.00819	0.00917	0.03556
	CI	0.00676	0.00812	0.03932
sky130_osu_sc_12T_hs__addf_l	A	0.00773	0.00892	0.03756
	B	0.00800	0.00891	0.03416
	CI	0.00658	0.00784	0.03777

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01711	0.01712	0.03873
	B	0.01561	0.01593	0.04585
	CI	0.01300	0.01319	0.03384
sky130_osu_sc_12T_hs__addf_l	A	0.01712	0.01717	0.03873
	B	0.01560	0.01594	0.04585
	CI	0.01300	0.01319	0.03384

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00520	0.00549	1.49934	1.54203	1.56945
sky130_osu_sc_12T_hs__addh_l	0.00506	0.00541	1.05023	1.54506	1.07719

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.07618	0.08156
sky130_osu_sc_12T_hs__addh_l	0.00000	0.52115	0.52677

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)	0.06881	0.52319	6.41882
	B->CO (RR)	0.07142	0.52826	6.54498
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.05903	0.50485	5.67128
	B->CO (RR)	0.06113	0.50437	5.73449

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)	0.06188	0.51434	6.45181
	B->CO (FF)	0.06597	0.52654	6.46530
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.05613	0.48652	5.92800
	B->CO (FF)	0.05978	0.49754	5.97836

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)	0.09869	0.53746	6.36908
	B->CON (RR)	0.10117	0.54131	6.49766
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.08134	0.46524	5.71110
	B->CON (RR)	0.08326	0.46388	5.80074

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)	0.08472	0.53147	6.54330
	B->CON (FF)	0.08400	0.53916	6.54833
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.07066	0.47502	6.20340
	B->CON (FF)	0.07034	0.48163	6.23125

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)	0.11814	1.13386	16.92740
	B->S (FR)	0.11765	1.14386	16.99220
	CON->S (FR)	0.01989	0.63389	11.23530
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.10209	1.00388	13.49430
	B->S (FR)	0.10205	1.01166	13.53410
	CON->S (FR)	0.02203	0.66304	10.68540

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)	0.12343	1.04381	15.15120
	B->S (RF)	0.12594	1.04861	15.27650
	CON->S (RF)	0.01460	0.45673	8.13417
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.10230	0.80635	9.82979
	B->S (RF)	0.10426	0.80458	9.91778
	CON->S (RF)	0.01384	0.40965	6.56868

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	0.00424	0.00414	0.00990
	B	0.00000	0.00000	0.00000
	B	0.00392	0.00375	0.01111
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00366	0.00381	0.01644
	B	0.00000	0.00000	0.00000
	B	0.00334	0.00334	0.01864

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	0.00577	0.00580	0.01411
	B	0.00000	0.00000	0.00000
	B	0.00611	0.00637	0.01501
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00521	0.00566	0.02163
	B	0.00000	0.00000	0.00000
	B	0.00554	0.00614	0.02264

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	0.00424	0.00413	0.00993
	B	0.00000	0.00000	0.00000
	B	0.00392	0.00374	0.01111
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00366	0.00382	0.01629
	B	0.00000	0.00000	0.00000
	B	0.00333	0.00340	0.01859

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	0.00577	0.00580	0.01418
	B	0.00000	0.00000	0.00000
	B	0.00611	0.00638	0.01508
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00521	0.00565	0.02167
	B	0.00000	0.00000	0.00000
	B	0.00555	0.00614	0.02273

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	0.00578	0.00581	0.01415
	B	0.00000	0.00000	0.00000
	B	0.00611	0.00639	0.01504
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00522	0.00565	0.02193
	B	0.00000	0.00000	0.00000
	B	0.00555	0.00614	0.02278

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	0.00424	0.00414	0.00977
	B	0.00000	0.00000	0.00000
	B	0.00392	0.00376	0.01130
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00366	0.00381	0.01656
	B	0.00000	0.00000	0.00000
	B	0.00334	0.00334	0.01884

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)	1.70068	1.63656	0.51351
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.70443	1.64025	0.51447

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)	1.70045	1.63511	0.51036
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.70425	1.63872	0.51109

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00274	0.00285	1.50294
sky130_osu_sc_12T_hs__and2_2	0.00274	0.00285	2.95765
sky130_osu_sc_12T_hs__and2_4	0.00274	0.00286	5.74372
sky130_osu_sc_12T_hs__and2_6	0.00277	0.00285	8.43108
sky130_osu_sc_12T_hs__and2_8	0.00274	0.00286	10.98781
sky130_osu_sc_12T_hs__and2_l	0.00216	0.00223	1.05616

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.03452	0.05508
sky130_osu_sc_12T_hs__and2_2	0.00000	0.05507	0.05598
sky130_osu_sc_12T_hs__and2_4	0.00000	0.09615	0.10926
sky130_osu_sc_12T_hs__and2_6	0.00000	0.13724	0.16345
sky130_osu_sc_12T_hs__and2_8	0.00000	0.17832	0.21763
sky130_osu_sc_12T_hs__and2_l	0.00000	0.58968	0.94341

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)	0.04530	0.41803	5.71541
	B->Y (RR)	0.04841	0.41877	5.52630
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.05019	0.35598	5.68739
	B->Y (RR)	0.05326	0.35453	5.50237
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.06811	0.34883	5.86258
	B->Y (RR)	0.07120	0.34343	5.69342
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.08634	0.36504	5.94969
	B->Y (RR)	0.08932	0.35644	5.78856
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.10427	0.38947	6.06085
	B->Y (RR)	0.10733	0.37713	5.90007
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.04874	0.48447	6.05250
	B->Y (RR)	0.05194	0.48265	5.83893

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)**	0.04481	0.42432	5.67945
	B->Y (FF)	0.04613	0.43073	5.70613
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.05120	0.40454	5.73837
	B->Y (FF)	0.05199	0.40828	5.76409
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.07101	0.42542	5.93241
	B->Y (FF)	0.06989	0.42492	5.95986
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.09260	0.45523	6.05223
	B->Y (FF)	0.08951	0.45114	6.07166
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.11281	0.48213	6.11160
	B->Y (FF)	0.10813	0.47560	6.12683
sky130_osu_sc_12T_hs__and2_1	**A->Y (FF)**	0.04570	0.41971	5.20437
	B->Y (FF)	0.05002	0.43185	5.24755

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	0.00262	0.00348	0.05092
	B	0.00000	0.00000	0.00000
	B	0.00266	0.00290	0.03303
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00500	0.00601	0.05284
	B	0.00000	0.00000	0.00000
	B	0.00504	0.00539	0.03523
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01055	0.01138	0.05611
	B	0.00000	0.00000	0.00000
	B	0.01059	0.01107	0.03946
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01662	0.01729	0.06347
	B	0.00000	0.00000	0.00000
	B	0.01671	0.01703	0.04393
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02307	0.02325	0.06891
	B	0.00000	0.00000	0.00000
	B	0.02310	0.02299	0.04794
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00211	0.00348	0.06104
	B	0.00000	0.00000	0.00000
	B	0.00216	0.00284	0.04605

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	0.00705	0.00900	0.04799
	B	0.00000	0.00000	0.00000
	B	0.00803	0.00957	0.04702
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00905	0.01114	0.05024
	B	0.00000	0.00000	0.00000
	B	0.01006	0.01168	0.04941
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01450	0.01637	0.05555
	B	0.00000	0.00000	0.00000
	B	0.01536	0.01725	0.05473
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02073	0.02195	0.06120
	B	0.00000	0.00000	0.00000
	B	0.02141	0.02258	0.06010
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02800	0.02750	0.06647
	B	0.00000	0.00000	0.00000
	B	0.02838	0.02783	0.06503
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00552	0.00793	0.05878
	B	0.00000	0.00000	0.00000
	B	0.00627	0.00854	0.05742

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)	-0.00239	-0.00241	-0.00241
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00239	-0.00241	-0.00241
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00239	-0.00241	-0.00241
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00241	-0.00244	-0.00244
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00238	-0.00241	-0.00241
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00172	-0.00173	-0.00173

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)	0.00241	0.00243	0.00242
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00241	0.00243	0.00242
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00240	0.00243	0.00242
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00243	0.00246	0.00245
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00240	0.00243	0.00242
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00173	0.00175	0.00174

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)	-0.00226	-0.00225	-0.00226
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00225	-0.00228	-0.00226
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00225	-0.00226	-0.00226
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00225	-0.00226	-0.00226
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00225	-0.00227	-0.00226
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00161	-0.00163	-0.00162

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)	0.00232	0.00228	0.00227
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00232	0.00229	0.00227
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00232	0.00229	0.00227
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00232	0.00228	0.00227
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00232	0.00229	0.00227
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00167	0.00165	0.00163

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00250	0.00267	0.00267	0.64533

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.01327	0.02709

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)	0.06414	0.79623	10.54660
	A1->Y (FR)	0.04999	0.71948	9.82871
	B0->Y (FR)	0.04913	0.79182	10.86550

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)	0.02478	0.31905	4.02995
	A1->Y (RF)	0.02216	0.33587	4.33277
	B0->Y (RF)	0.01644	0.33711	4.54660

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	0.00590	0.00585	0.01134
	A1	0.00000	0.00000	0.00000
	A1	0.00488	0.00480	0.01022
	B0	0.00362	0.00423	0.01402

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	0.00118	0.00109	0.00524
	A1	0.00000	0.00000	0.00000
	A1	0.00122	0.00122	0.00659
	B0	-0.00048	-0.00033	0.00417

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)	-0.00169	-0.00192	-0.00192
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00194	-0.00195	-0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00194	-0.00195	-0.00194

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)	0.00190	0.00192	0.00192
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00194	0.00196	0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00200	0.00196	0.00195

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)	-0.00168	-0.00192	-0.00192
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00194	-0.00195	-0.00195
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00217	-0.00218	-0.00219

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)	0.00191	0.00193	0.00192
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00194	0.00196	0.00196
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00218	0.00221	0.00219

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)	-0.00092	-0.00092	-0.00092

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)	0.00100	0.00100	0.00094

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00250	0.00267	0.00280	0.00262	0.62657

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.01518	0.05418

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)	0.08230	0.81200	10.42740
	A1->Y (FR)	0.07313	0.79746	10.36520
	B0->Y (FR)	0.05152	0.78697	10.70940
	B1->Y (FR)	0.06106	0.79949	10.78980

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)	0.03157	0.32490	3.94787
	A1->Y (RF)	0.02895	0.34158	4.24582
	B0->Y (RF)	0.01747	0.32299	4.22584
	B1->Y (RF)	0.02119	0.30958	3.93068

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	0.00708	0.00700	0.01273
	A1	0.00605	0.00593	0.01157
	B0	0.00390	0.00435	0.01671
	B1	0.00497	0.00554	0.01705

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00238	0.00229	0.00664
	A1	0.00242	0.00239	0.00793
	B0	-0.00030	-0.00011	0.00536
	B1	-0.00024	-0.00018	0.00410

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)	-0.00173	-0.00193	-0.00191
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00194	-0.00195	-0.00194
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00194	-0.00194	-0.00194
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00194	-0.00195	-0.00194

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)	0.00190	0.00193	0.00191
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00194	0.00196	0.00195
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00200	0.00196	0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00200	0.00196	0.00195

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)	-0.00173	-0.00192	-0.00192
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00194	-0.00194	-0.00195
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00216	-0.00217	-0.00218
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00216	-0.00217	-0.00218

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)	0.00191	0.00193	0.00192
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00195	0.00196	0.00196
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00217	0.00220	0.00218
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00217	0.00220	0.00218

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)	-0.00092	-0.00092	-0.00092
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00091	-0.00092	-0.00092
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00227	-0.00229	-0.00229
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00227	-0.00229	-0.00229

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)	0.00103	0.00103	0.00094
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00091	0.00092	0.00092
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00228	0.00233	0.00230
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00228	0.00229	0.00230

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)	-0.00093	-0.00095	-0.00093
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00093	-0.00093	-0.00093
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00206	-0.00207	-0.00206
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00206	-0.00207	-0.00206

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)	0.00104	0.00105	0.00096
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00093	0.00093	0.00093
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00212	0.00208	0.00207
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00212	0.00209	0.00207

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00285	1.39244
sky130_osu_sc_12T_hs__buf_2	0.00285	2.85141
sky130_osu_sc_12T_hs__buf_4	0.00285	5.70959
sky130_osu_sc_12T_hs__buf_6	0.00082	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00286	11.17708
sky130_osu_sc_12T_hs__buf_l	0.00220	1.04388

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.02799	0.02799
sky130_osu_sc_12T_hs__buf_2	0.00000	0.04198	0.05508
sky130_osu_sc_12T_hs__buf_4	0.00000	0.06997	0.10926
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.12595	0.21763
sky130_osu_sc_12T_hs__buf_l	0.00000	0.47183	0.47183

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)**	0.03819	0.41376	5.45464
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.04002	0.33577	5.36524
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.05340	0.31929	5.60592
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.08013	0.34577	5.85027
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.04005	0.45849	5.67524

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)**	0.04166	0.40798	5.41577
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.04826	0.39568	5.64118
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.06778	0.42002	5.94589
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.10875	0.47807	6.21295
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.04402	0.41574	5.21719

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	0.00249	0.00326	0.03063
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00482	0.00564	0.03343
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01024	0.01126	0.03953
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02187	0.02284	0.04993
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00201	0.00322	0.05155

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	0.00675	0.00871	0.04505
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00874	0.01075	0.04725
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01408	0.01586	0.05225
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02753	0.02656	0.06216
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00539	0.00787	0.05956

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
	-0.00063	-0.00063	-0.00060

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
	0.00063	0.00063	0.00060

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00262	0.00260	0.00828	1.50027	1.48331
sky130_osu_sc_12T_hs__dffr_l	0.00262	0.00260	0.00827	1.04874	1.04741

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.32303	0.69979
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.76687	1.14363

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)	0.19092	0.93235	11.75470
	QN->Q (FR)	0.02129	0.70714	12.40490
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.19033	0.98265	10.91240
	QN->Q (FR)	0.02326	0.70775	11.33110

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)	0.19566	0.94954	12.25340
	QN->Q (RF)	0.01417	0.43663	7.66134
	RN->Q (FF)	0.14779	1.07453	15.29050
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.19846	1.04393	11.95520
	QN->Q (RF)	0.01523	0.44648	7.18147
	RN->Q (FF)	0.15073	1.16861	14.98570

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)	0.17851	0.55746	5.52019
	RN->QN (FR)	0.13047	0.68308	8.56084
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.17817	0.60695	5.46859
	RN->QN (FR)	0.13033	0.73138	8.49817

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)**	0.15982	0.39941	2.64386
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.15776	0.40985	2.41765

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)	-0.03303	-0.03979	0.04013
	setup	CK (R)	0.14789	0.17883	0.23083
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.03314	-0.04002	0.04031
	setup	CK (R)	0.14449	0.17851	0.23285

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)	-0.08581	-0.26543	-4.73245
	setup	CK (R)	0.10229	0.27395	4.76127
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.08533	-0.26474	-4.73404
	setup	CK (R)	0.10229	0.27395	4.76127

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)	-0.03303	-0.03979	0.04013
	setup	CK (R)	0.14789	0.17883	0.23083
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.03314	-0.04002	0.04031
	setup	CK (R)	0.14449	0.17851	0.23285

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)	-0.08581	-0.26543	-4.73245
	setup	CK (R)	0.10229	0.27395	4.76127
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.08533	-0.26474	-4.73404
	setup	CK (R)	0.10229	0.27395	4.76127

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)	0.12894	0.16342	0.55618
	removal	CK (R)	-0.02670	-0.03235	-0.02636
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.13202	0.16385	0.55458
	removal	CK (R)	-0.02670	-0.03235	-0.02636

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)	0.12894	0.16342	0.55618
	removal	CK (R)	-0.02670	-0.03235	-0.02636
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.13202	0.16385	0.55458
	removal	CK (R)	-0.02670	-0.03235	-0.02636

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 ()	0.09159	0.35889	13.33370
	min_pulse_width	RN ()	0.09432	0.35889	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.09159	0.35889	13.33370
	min_pulse_width	RN ()	0.09432	0.35889	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 ()	0.08341	0.35889	13.33370
	min_pulse_width	CK ()	0.10250	0.35889	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.07795	0.35889	13.33370
	min_pulse_width	CK ()	0.09977	0.35889	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 ()	0.19251	0.35889	13.33370
	min_pulse_width	CK ()	0.08341	0.35889	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.19251	0.35889	13.33370
	min_pulse_width	CK ()	0.08341	0.35889	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	0.00714	0.00573	0.00673
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00653	0.00589	0.02415

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	0.00798	0.00678	0.00905
	RN	-0.00089	-0.06581	-1.16181
	RN	0.01823	0.01769	0.02031
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00737	0.00676	0.02177
	RN	-0.00089	-0.05308	-0.81214
	RN	0.01761	0.01766	0.03288

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	0.00798	0.00680	0.00948
	RN	-0.00089	-0.06536	-1.14867
	RN	0.01823	0.01770	0.02058
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00737	0.00675	0.02182
	RN	-0.00089	-0.05304	-0.81111
	RN	0.01762	0.01766	0.03279

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	0.00711	0.00576	0.00661
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00648	0.00572	0.02382

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	-0.00161	-0.00193	-0.00194
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00904	0.00907	0.03723
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00356	0.00371	0.03155
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00161	-0.00193	-0.00194
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00905	0.00908	0.03724
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00356	0.00372	0.03155

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	0.00193	0.00195	0.00194
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01306	0.01323	0.04165
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00648	0.00669	0.03432
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00193	0.00195	0.00194
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01307	0.01323	0.04166
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00648	0.00669	0.03433

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)	0.00276	0.00374	0.05469
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00844	0.00927	0.06286
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)	0.00277	0.00374	0.05469
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00845	0.00928	0.06286

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)	0.00725	0.00874	0.05997
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01402	0.01550	0.06854
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)	0.00726	0.00874	0.05997
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01404	0.01551	0.06855

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)	-0.00051	0.00013	0.05213
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00467	0.00462	0.05880
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00053	0.00011	0.05205
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00051	0.00014	0.05213
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00468	0.00460	0.05881
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00053	0.00011	0.05205

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)	0.01080	0.01239	0.06475
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02191	0.02304	0.08780
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01626	0.01742	0.07204
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02125	0.02409	0.10959
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01141	0.01287	0.06488
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01080	0.01239	0.06475
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02192	0.02305	0.08780
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01627	0.01742	0.07204
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02125	0.02408	0.10960
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01141	0.01287	0.06488

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00258	0.00261	0.00613	0.00840	1.56929	1.56784
sky130_osu_sc_12T_hs__dffsr_l	0.00258	0.00261	0.00613	0.00840	1.04898	1.05086

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.09863	0.13515
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.54247	0.57899

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)	0.20741	0.96134	12.11490
	QN->Q (FR)	0.01981	0.67707	12.02770
	RN->Q (RR)	0.16751	0.93161	12.19660
	SN->Q (FR)	0.15890	1.09190	15.40970
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.20975	1.01210	11.00470
	QN->Q (FR)	0.02321	0.70838	11.33010
	RN->Q (RR)	0.17007	0.98441	11.10160
	SN->Q (FR)	0.16101	1.14175	14.29740

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)	0.21814	0.97690	12.54620
	QN->Q (RF)	0.01406	0.44309	7.86364
	RN->Q (FF)	0.15585	1.09073	15.59120
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.22231	1.07073	11.97380
	QN->Q (RF)	0.01513	0.44590	7.17334
	RN->Q (FF)	0.15993	1.18320	15.01250

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)	0.20092	0.57908	5.61449
	RN->QN (FR)	0.13870	0.69258	8.65639
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.20201	0.63461	5.52009
	RN->QN (FR)	0.13972	0.74706	8.55008

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)	0.17760	0.43297	2.93420
	RN->QN (RF)	0.13873	0.40456	3.03117
	SN->QN (FF)	0.12983	0.56313	6.23692
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.17759	0.43912	2.50672
	RN->QN (RF)	0.13845	0.41130	2.60213
	SN->QN (FF)	0.12950	0.56838	5.80838

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)	-0.03639	-0.04894	-0.00634
	setup	CK (R)	0.15996	0.18621	0.27473
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.03871	-0.05029	-0.00605
	setup	CK (R)	0.15962	0.18542	0.27567

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)	-0.09299	-0.27538	-4.74586
	setup	CK (R)	0.11466	0.28380	4.77268
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.09647	-0.27554	-4.74747
	setup	CK (R)	0.11466	0.28380	4.77439

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)	-0.03639	-0.04894	-0.00634
	setup	CK (R)	0.15996	0.18621	0.27473
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.03871	-0.05029	-0.00605
	setup	CK (R)	0.15962	0.18542	0.27567

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)	-0.09299	-0.27538	-4.74586
	setup	CK (R)	0.11466	0.28380	4.77268
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.09647	-0.27554	-4.74747
	setup	CK (R)	0.11466	0.28380	4.77439

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)	0.13231	0.15801	0.57536
	removal	CK (R)	-0.02269	-0.02764	-0.04063
	hold	SN (R)	-0.12444	-0.22465	-1.03744
	setup	SN (R)	0.14449	0.25330	1.84855
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.13188	0.15731	0.57208
	removal	CK (R)	-0.02269	-0.02764	-0.04063
	hold	SN (R)	-0.12155	-0.22205	-1.02170
	setup	SN (R)	0.14184	0.25181	1.82256

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)	0.13231	0.15801	0.57536
	removal	CK (R)	-0.02269	-0.02764	-0.04063
	hold	SN (R)	-0.12444	-0.22612	-1.03744
	hold	SN (R)	-0.12481	-0.22465	-1.04627
	setup	SN (R)	0.14022	0.25325	1.74026
	setup	SN (R)	0.14449	0.25330	1.84855
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.13188	0.15731	0.57208
	removal	CK (R)	-0.02269	-0.02764	-0.04063
	hold	SN (R)	-0.12306	-0.22276	-1.03790
	hold	SN (R)	-0.12155	-0.22205	-1.02170
	setup	SN (R)	0.14184	0.25024	1.70182
	setup	SN (R)	0.13668	0.25181	1.82256

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 ()	0.10796	0.35889	13.33370
	min_pulse_width	RN ()	0.11068	0.35889	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.10796	0.35889	13.33370
	min_pulse_width	RN ()	0.10796	0.35889	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)	0.02324	0.05085	1.54033
	removal	CK (R)	-0.01051	-0.03814	-0.19605
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.02324	0.05085	1.42504
	removal	CK (R)	-0.01051	-0.03814	-0.19605

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)	0.02324	0.05085	1.54033
	removal	CK (R)	-0.01051	-0.03814	-0.19605
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.02324	0.05085	1.42504
	removal	CK (R)	-0.01051	-0.03814	-0.19605

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 ()	0.12978	0.35889	13.33370
	min_pulse_width	SN ()	0.13250	0.35889	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.12978	0.35889	13.33370
	min_pulse_width	SN ()	0.12705	0.35889	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 ()	0.08886	0.35889	13.33370
	min_pulse_width	CK ()	0.11341	0.35889	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.08614	0.35889	13.33370
	min_pulse_width	CK ()	0.11341	0.35889	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 ()	0.20615	0.35889	13.33370
	min_pulse_width	CK ()	0.09705	0.35889	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.20615	0.35889	13.33370
	min_pulse_width	CK ()	0.09705	0.35889	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	0.00881	0.00731	0.00592
	RN	0.01596	0.01422	0.00427
	SN	-0.00089	-0.06761	-1.21526
	SN	0.01555	0.01332	-0.00066
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00824	0.00757	0.02533
	RN	0.01538	0.01447	0.02333
	SN	-0.00089	-0.05309	-0.81233
	SN	0.01498	0.01357	0.01890

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	0.00922	0.00845	0.01682
	RN	-0.00089	-0.06761	-1.21526
	RN	0.01898	0.01879	0.02755
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00861	0.00805	0.02370
	RN	-0.00089	-0.05309	-0.81233
	RN	0.01859	0.01861	0.03404

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	0.00922	0.00844	0.01685
	RN	-0.00089	-0.06757	-1.21414
	RN	0.01898	0.01879	0.02750
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00862	0.00804	0.02323
	RN	-0.00089	-0.05315	-0.81379
	RN	0.01837	0.01838	0.03386

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	0.00877	0.00729	0.00565
	RN	0.01592	0.01420	0.00410
	SN	-0.00089	-0.06757	-1.21408
	SN	0.01552	0.01330	-0.00030
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00820	0.00754	0.02475
	RN	0.01533	0.01446	0.02325
	SN	-0.00089	-0.05315	-0.81376
	SN	0.01494	0.01355	0.01884

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	-0.00190	-0.00196	-0.00195
	(!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)	0.01125	0.01129	0.03901
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00383	0.00396	0.03159
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00379	0.00394	0.03156
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00383	0.00398	0.03161
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00190	-0.00195	-0.00196
	(!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)	0.01126	0.01130	0.03901
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00383	0.00397	0.03160
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00379	0.00395	0.03157
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00383	0.00398	0.03162

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	0.00201	0.00196	0.00195
	(!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)	0.01504	0.01515	0.04295
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00705	0.00726	0.03470
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00709	0.00731	0.03471
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00702	0.00725	0.03468
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00201	0.00197	0.00196
	(!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)	0.01504	0.01515	0.04295
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00705	0.00726	0.03471
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00710	0.00731	0.03471
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00702	0.00725	0.03468

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)	0.00215	0.00301	0.05389
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00988	0.01048	0.06256
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)	0.00215	0.00301	0.05389
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00989	0.01049	0.06256

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)	0.00789	0.00944	0.06076
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01483	0.01629	0.06842
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)	0.00789	0.00944	0.06076
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01483	0.01629	0.06842

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)	-0.00509	-0.00508	-0.00512
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00506	-0.00554	-0.00555
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00488	-0.00514	-0.00513
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00235	0.00250	0.03179
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)	-0.00508	-0.00508	-0.00512
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00505	-0.00554	-0.00555
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00488	-0.00513	-0.00512
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00236	0.00251	0.03179

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)	0.00511	0.00519	0.00513
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00554	0.00559	0.00555
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00510	0.00515	0.00513
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01204	0.01186	0.03943
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)	0.00511	0.00519	0.00514
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00554	0.00559	0.00556
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00510	0.00516	0.00514
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01204	0.01187	0.03944

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)	-0.00058	0.00006	0.05202
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00545	0.00538	0.05968
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00538	0.00531	0.05946
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00040	0.00023	0.05215
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00248	0.00379	0.09794
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00057	0.00006	0.05203
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00546	0.00539	0.05958
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00538	0.00532	0.05947
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00040	0.00023	0.05215
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00249	0.00379	0.09794

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)	0.02442	0.02554	0.08990
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01101	0.01265	0.06492
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01645	0.01765	0.07173
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01648	0.01770	0.07166
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02331	0.02608	0.11112
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01141	0.01286	0.06485
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01462	0.01756	0.11161
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02443	0.02555	0.08991
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01102	0.01264	0.06493
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01645	0.01765	0.07174
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01649	0.01770	0.07166
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02332	0.02606	0.11113
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01142	0.01286	0.06486
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01463	0.01756	0.11162

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00260	0.00520	0.00828	1.49643	1.49123
sky130_osu_sc_12T_hs__dffs_l	0.00260	0.00520	0.00828	1.04384	1.04951

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.69413	1.94392
sky130_osu_sc_12T_hs__dffs_l	0.00000	1.13797	2.38776

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)	0.14429	0.87237	11.60700
	QN->Q (FR)	0.02126	0.70278	12.32780
	SN->Q (FR)	0.11888	1.02219	14.49690
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.14598	0.92632	10.76580
	QN->Q (FR)	0.02321	0.70500	11.26130
	SN->Q (FR)	0.12100	1.07389	13.64220

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)	0.20983	0.96332	12.20590
	QN->Q (RF)	0.01410	0.43413	7.61990
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.21142	1.05504	11.88570
	QN->Q (RF)	0.01518	0.44420	7.13808

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)	0.19260	0.57439	5.55039
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.19102	0.62135	5.48134

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)	0.11665	0.34401	2.57880
	SN->QN (FF)	0.09090	0.49276	5.46316
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.11641	0.35768	2.34467
	SN->QN (FF)	0.09085	0.50416	5.22114

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)	-0.02206	-0.03183	0.05125
	setup	CK (R)	0.10658	0.14263	0.20380
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.02060	-0.02937	0.05479
	setup	CK (R)	0.10320	0.14226	0.20416

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)	-0.08863	-0.26748	-4.75085
	setup	CK (R)	0.10911	0.27725	4.78002
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.08718	-0.26748	-4.75085
	setup	CK (R)	0.10911	0.27725	4.78002

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)	-0.02206	-0.03183	0.05125
	setup	CK (R)	0.10658	0.14263	0.20380
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.02060	-0.02937	0.05479
	setup	CK (R)	0.10320	0.14226	0.20416

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)	-0.08863	-0.26748	-4.75085
	setup	CK (R)	0.10911	0.27725	4.78002
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.08718	-0.26748	-4.75085
	setup	CK (R)	0.10911	0.27725	4.78002

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)	0.02665	0.05701	1.32929
	removal	CK (R)	-0.01448	-0.04450	-0.57078
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.02657	0.05679	1.20820
	removal	CK (R)	-0.01448	-0.04450	-0.57078

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)	0.02665	0.05701	1.32929
	removal	CK (R)	-0.01448	-0.04450	-0.57078
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.02657	0.05679	1.20820
	removal	CK (R)	-0.01448	-0.04450	-0.57078

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 ()	0.08341	0.35889	13.33370
	min_pulse_width	SN ()	0.08614	0.35889	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.08341	0.35889	13.33370
	min_pulse_width	SN ()	0.08341	0.35889	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 ()	0.05613	0.35889	13.33370
	min_pulse_width	CK ()	0.10523	0.35889	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.05341	0.35889	13.33370
	min_pulse_width	CK ()	0.10250	0.35889	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 ()	0.15160	0.35889	13.33370
	min_pulse_width	CK ()	0.09159	0.35889	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.15160	0.35889	13.33370
	min_pulse_width	CK ()	0.09159	0.35889	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	0.00711	0.00574	0.00755
	SN	-0.00089	-0.06571	-1.15884
	SN	0.01299	0.01268	0.02957
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00649	0.00594	0.02495
	SN	-0.00089	-0.05294	-0.80835
	SN	0.01237	0.01285	0.04713

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	0.00795	0.00681	0.00996
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00734	0.00678	0.02231

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	0.00794	0.00682	0.01023
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00734	0.00677	0.02217

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	0.00708	0.00577	0.00729
	SN	-0.00089	-0.06557	-1.15475
	SN	0.01296	0.01267	0.02927
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00645	0.00592	0.02428
	SN	-0.00089	-0.05311	-0.81272
	SN	0.01235	0.01283	0.04639

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	-0.00192	-0.00197	-0.00197
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00892	0.00905	0.03852
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00353	0.00368	0.03150
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00191	-0.00197	-0.00197
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00892	0.00905	0.03852
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00354	0.00369	0.03151

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	0.00205	0.00201	0.00200
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01298	0.01309	0.04160
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00650	0.00674	0.03445
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00206	0.00201	0.00200
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01298	0.01310	0.04160
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00650	0.00675	0.03445

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)	-0.00382	-0.00386	-0.00385
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00240	0.00300	0.05728
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)	-0.00381	-0.00385	-0.00384
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00241	0.00300	0.05729

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)	0.00388	0.00389	0.00386
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00855	0.01026	0.06549
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)	0.00388	0.00389	0.00386
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00854	0.01026	0.06549

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)	-0.00052	0.00014	0.05217
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00045	0.00019	0.05219
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00226	0.00366	0.09829
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00052	0.00014	0.05218
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00045	0.00020	0.05219
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00226	0.00367	0.09829

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)	0.02190	0.02303	0.08855
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01080	0.01241	0.06480
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02102	0.02374	0.10951
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01134	0.01282	0.06486
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01383	0.01708	0.11138
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02190	0.02303	0.08856
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01080	0.01242	0.06480
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02102	0.02374	0.10951
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01134	0.01282	0.06487
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01383	0.01710	0.11138

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00275	0.00806	1.32848
sky130_osu_sc_12T_hs__dff_l	0.00275	0.00804	0.96735

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.09014	0.11176
sky130_osu_sc_12T_hs__dff_l	0.00000	0.53398	0.55560

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)	0.12114	0.50759	5.31678
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.12215	0.55407	5.24068

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)	0.18151	0.39475	2.39288
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.18267	0.41597	2.29557

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)	-0.02011	-0.02860	0.03464
	setup	CK (R)	0.08292	0.12607	0.17466
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.02015	-0.02860	0.03439
	setup	CK (R)	0.08291	0.12595	0.17504

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)	-0.07840	-0.26324	-4.73255
	setup	CK (R)	0.09707	0.27400	4.75957
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.07742	-0.26325	-4.73260
	setup	CK (R)	0.09707	0.27400	4.75957

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 ()	0.04795	0.35889	13.33370
	min_pulse_width	CK ()	0.09432	0.35889	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.04795	0.35889	13.33370
	min_pulse_width	CK ()	0.09432	0.35889	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 ()	0.12705	0.35889	13.33370
	min_pulse_width	CK ()	0.07523	0.35889	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.12705	0.35889	13.33370
	min_pulse_width	CK ()	0.07523	0.35889	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	0.01482	0.01575	0.08914
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01353	0.01454	0.08776

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	0.01605	0.01618	0.07045
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01483	0.01502	0.06929

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	-0.00161	-0.00192	-0.00193
	!CK	0.00000	0.00000	0.00000
	!CK	0.00774	0.00794	0.03660
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00160	-0.00192	-0.00193
	!CK	0.00000	0.00000	0.00000
	!CK	0.00774	0.00789	0.03660

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	0.00191	0.00194	0.00193
	!CK	0.00000	0.00000	0.00000
	!CK	0.01331	0.01345	0.04184
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00192	0.00194	0.00193
	!CK	0.00000	0.00000	0.00000
	!CK	0.01331	0.01345	0.04185

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)	-0.00055	0.00011	0.05217
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00047	0.00019	0.05219
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00055	0.00011	0.05217
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00046	0.00019	0.05220

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)	0.01076	0.01253	0.06479
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02075	0.02196	0.08770
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02124	0.02432	0.11055
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01126	0.01275	0.06480
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01077	0.01253	0.06479
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02075	0.02196	0.08771
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02125	0.02433	0.11057
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01126	0.01275	0.06480

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00264	1.35160
sky130_osu_sc_12T_hs__inv_10	0.02341	13.39096
sky130_osu_sc_12T_hs__inv_2	0.00488	2.79203
sky130_osu_sc_12T_hs__inv_3	0.00721	4.08188
sky130_osu_sc_12T_hs__inv_4	0.00948	5.52027
sky130_osu_sc_12T_hs__inv_6	0.01419	8.20984
sky130_osu_sc_12T_hs__inv_8	0.01880	10.79808
sky130_osu_sc_12T_hs__inv_l	0.00216	0.91307

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.01399	0.02709
sky130_osu_sc_12T_hs__inv_10	0.00000	0.13994	0.27092
sky130_osu_sc_12T_hs__inv_2	0.00000	0.02799	0.05418
sky130_osu_sc_12T_hs__inv_3	0.00000	0.04198	0.08128
sky130_osu_sc_12T_hs__inv_4	0.00000	0.05598	0.10837
sky130_osu_sc_12T_hs__inv_6	0.00000	0.08396	0.16255
sky130_osu_sc_12T_hs__inv_8	0.00000	0.11195	0.21674
sky130_osu_sc_12T_hs__inv_l	0.00000	0.23591	0.47159

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)**	0.02035	0.63665	10.90840
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.02570	0.41435	10.83680
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.01507	0.53599	10.81120
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.01648	0.50026	10.84680
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.01648	0.47199	10.81390
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.01875	0.44244	10.81610
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.02193	0.42424	10.77770
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.02327	0.64667	10.04180

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)**	0.01274	0.36412	6.16284
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.01777	0.20642	6.43661
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01029	0.30621	6.33371
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01130	0.28054	6.43917
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01124	0.25857	6.45532
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.01355	0.23329	6.48338
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.01564	0.21644	6.45812
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.01421	0.38246	5.81711

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	0.00335	0.00413	0.01349
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02723	0.03781	0.12651
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00570	0.00751	0.02555
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00878	0.01122	0.03831
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01115	0.01472	0.05044
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01645	0.02378	0.07547
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02176	0.03088	0.10105
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00273	0.00349	0.02049

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	-0.00057	-0.00037	0.00370
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00960	-0.00570	0.03338
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00190	-0.00138	0.00661
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00247	-0.00133	0.01019
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00386	-0.00253	0.01310
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00593	-0.00365	0.01967
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00791	-0.00388	0.02651
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00043	-0.00031	0.00302

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.39099	0.39110	0.00546	0.39599

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.02879	0.03004

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)	-	0.00692	0.12567	1.27405
	A1->Y (RR)	-	0.00813	0.12682	1.26895
	S0->Y (RR)	(!A0 * A1)	0.02698	0.16993	0.56608
	S0->Y (FR)	(A0 * !A1)	0.02266	0.31017	3.62294

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)	-	0.00869	0.16051	1.68218
	A1->Y (FF)	-	0.00799	0.15849	1.67409
	S0->Y (FF)	(!A0 * A1)	0.04084	0.29429	3.01942
	S0->Y (RF)	(A0 * !A1)	0.01444	0.17127	1.30457

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	-	-0.00348	-0.00349	-0.00348
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00213	-0.00213	-0.00214
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00454	0.00658	0.05877
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00211	-0.00103	0.05091

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	-	0.00348	0.00349	0.00348
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00213	0.00213	0.00214
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00054	0.00178	0.05408
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00927	0.01110	0.06275

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)	-0.00080	-0.00080	-0.00080

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)	0.00080	0.00080	0.00080

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)	-0.00097	-0.00097	-0.00097

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)	0.00097	0.00097	0.00097

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)	-0.00081	0.00041	0.05247
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00078	0.00037	0.05252

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)	0.00710	0.00882	0.06079
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00670	0.00857	0.06073

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00263	0.00263	1.31686
sky130_osu_sc_12T_hs__nand2_l	0.00211	0.00214	0.91216

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.01398	0.05418
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.23593	0.94317

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)	0.02119	0.63070	10.78470
	B->Y (FR)	0.02416	0.60181	10.23140
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.02347	0.64862	10.04530
	B->Y (FR)	0.02878	0.65267	10.02710

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)	0.01700	0.43572	7.29574
	B->Y (RF)	0.01972	0.41760	6.90922
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.01903	0.46172	7.05509
	B->Y (RF)	0.02174	0.44707	6.65847

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	0.00356	0.00372	0.01272
	B	0.00000	0.00000	0.00000
	B	0.00465	0.00492	0.01445
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00277	0.00365	0.01828
	B	0.00000	0.00000	0.00000
	B	0.00360	0.00442	0.01944

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	-0.00035	-0.00026	0.00339
	B	0.00000	0.00000	0.00000
	B	-0.00035	-0.00032	0.00261
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00016	0.00274
	B	0.00000	0.00000	0.00000
	B	-0.00022	-0.00021	0.00209

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)	-0.00229	-0.00231	-0.00231
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00166	-0.00167	-0.00167

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)	0.00231	0.00233	0.00232
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00167	0.00169	0.00168

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)	-0.00210	-0.00211	-0.00211
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00153	-0.00154	-0.00154

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)	0.00216	0.00212	0.00211
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00157	0.00155	0.00154

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00259	0.00286	0.75797
sky130_osu_sc_12T_hs__nor2_l	0.00202	0.00224	0.53271

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.01041	0.02709
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.15426	0.47158

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)	0.04406	0.76014	10.83090
	B->Y (FR)	0.03455	0.74706	10.86480
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.04681	0.78534	10.14420
	B->Y (FR)	0.03921	0.76703	10.03880

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)	0.01635	0.29405	4.01658
	B->Y (RF)	0.01350	0.28756	4.00352
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.01717	0.31438	3.91161
	B->Y (RF)	0.01491	0.30911	3.90017

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	0.00470	0.00468	0.01028
	B	0.00000	0.00000	0.00000
	B	0.00367	0.00441	0.01567
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00353	0.00362	0.01169
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00358	0.02231

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	0.00050	0.00055	0.00603
	B	0.00000	0.00000	0.00000
	B	-0.00044	-0.00019	0.00508
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00036	0.00041	0.00498
	B	0.00000	0.00000	0.00000
	B	-0.00028	-0.00012	0.00425

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)	-0.00161	-0.00195	-0.00195
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00105	-0.00132	-0.00134

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)	0.00193	0.00195	0.00195
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00135	0.00136	0.00136

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)	-0.00092	-0.00093	-0.00093
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00066	-0.00068	-0.00066

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)	0.00097	0.00097	0.00094
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00069	0.00069	0.00067

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00264	0.00274	0.00236	0.73886

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.18235	0.49868

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)	0.05016	0.75835	10.74980
	A1->Y (FR)	0.06198	0.77331	10.71670
	B0->Y (FR)	0.02872	0.60114	8.88752

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)	0.02414	0.33910	4.55280
	A1->Y (RF)	0.02739	0.33893	4.49209
	B0->Y (RF)	0.01856	0.37266	5.22126

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	0.00531	0.00577	0.01562
	A1	0.00000	0.00000	0.00000
	A1	0.00636	0.00629	0.01143
	B0	0.00312	0.00442	0.02736

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	0.00024	0.00028	0.00403
	A1	0.00000	0.00000	0.00000
	A1	0.00120	0.00110	0.00499
	B0	0.00051	0.00067	0.00570

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)	-0.00092	-0.00095	-0.00093
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00194	-0.00199	-0.00199
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00201	-0.00202	-0.00202

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)	0.00097	0.00098	0.00095
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00197	0.00199	0.00199
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00204	0.00203	0.00202

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)	-0.00154	-0.00186	-0.00187
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00192	-0.00196	-0.00196
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00198	-0.00199	-0.00199

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)	0.00186	0.00189	0.00188
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00195	0.00198	0.00196
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00201	0.00200	0.00199

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)	-0.00174	-0.00176	-0.00178

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)	0.00178	0.00180	0.00179

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00248	0.00260	0.00276	0.00273	0.78566

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.01557	0.05418

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)	0.06429	0.76454	10.72710
	A1->Y (FR)	0.05549	0.75351	10.78840
	B0->Y (FR)	0.03552	0.73478	10.77650
	B1->Y (FR)	0.04673	0.74784	10.71950

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)	0.03700	0.36632	4.81044
	A1->Y (RF)	0.03067	0.35725	4.78371
	B0->Y (RF)	0.02547	0.39156	5.46893
	B1->Y (RF)	0.03225	0.40351	5.54296

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	0.00806	0.00801	0.01290
	A1	0.00701	0.00751	0.01731
	B0	0.00387	0.00450	0.01496
	B1	0.00503	0.00497	0.01008

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00078	0.00070	0.00458
	A1	-0.00009	-0.00006	0.00373
	B0	-0.00015	0.00004	0.00494
	B1	0.00078	0.00078	0.00565

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)	-0.00158	-0.00190	-0.00190
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00158	-0.00190	-0.00190
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00185	-0.00190	-0.00190
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00192	-0.00192	-0.00192

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)	0.00188	0.00190	0.00190
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00188	0.00190	0.00190
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00189	0.00191	0.00190
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00193	0.00193	0.00192

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)	-0.00090	-0.00090	-0.00090
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00090	-0.00090	-0.00090
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00185	-0.00189	-0.00189
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00191	-0.00193	-0.00191

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)	0.00094	0.00095	0.00091
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00094	0.00095	0.00091
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00187	0.00189	0.00189
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00192	0.00193	0.00192

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)	-0.00091	-0.00091	-0.00091
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00091	-0.00092	-0.00091
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00222	-0.00227	-0.00226
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00224	-0.00224	-0.00229

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)	0.00095	0.00096	0.00093
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00095	0.00096	0.00093
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00227	0.00229	0.00226
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00228	0.00232	0.00230

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)	-0.00156	-0.00188	-0.00188
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00156	-0.00188	-0.00188
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00226	-0.00232	-0.00231
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00228	-0.00229	-0.00233

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)	0.00187	0.00189	0.00188
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00187	0.00189	0.00188
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00232	0.00234	0.00231
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00234	0.00236	0.00234

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00294	0.00271	1.39310
sky130_osu_sc_12T_hs__or2_2	0.00295	0.00271	2.84305
sky130_osu_sc_12T_hs__or2_4	0.00295	0.00271	5.60225
sky130_osu_sc_12T_hs__or2_8	0.00295	0.00271	10.94147
sky130_osu_sc_12T_hs__or2_l	0.00228	0.00213	0.96391

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.01786	0.02888
sky130_osu_sc_12T_hs__or2_2	0.00000	0.02530	0.05598
sky130_osu_sc_12T_hs__or2_4	0.00000	0.04019	0.11016
sky130_osu_sc_12T_hs__or2_8	0.00000	0.06997	0.21853
sky130_osu_sc_12T_hs__or2_l	0.00000	0.27234	0.47207

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)	0.04359	0.43298	5.34605
	B->Y (RR)	0.03903	0.41729	5.34815
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.04598	0.35341	5.26573
	B->Y (RR)	0.04111	0.33924	5.24870
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.05955	0.33343	5.44622
	B->Y (RR)	0.05458	0.32142	5.41553
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.08629	0.35816	5.74144
	B->Y (RR)	0.08128	0.34855	5.69239
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.04616	0.48348	5.28242
	B->Y (RR)	0.04226	0.47096	5.36490

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)	0.07616	0.46361	5.68367
	B->Y (FF)	0.06214	0.45225	5.81507
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.08975	0.45925	5.91583
	B->Y (FF)	0.07605	0.45093	6.00814
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.12607	0.49691	6.20534
	B->Y (FF)	0.11241	0.49274	6.25618
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.20167	0.58502	6.51856
	B->Y (FF)	0.18809	0.57895	6.53652
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.08168	0.46998	5.24443
	B->Y (FF)	0.06909	0.45595	5.37464

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	0.00356	0.00380	0.02245
	B	0.00000	0.00000	0.00000
	B	0.00271	0.00354	0.02865
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00594	0.00648	0.02609
	B	0.00000	0.00000	0.00000
	B	0.00501	0.00618	0.03094
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01140	0.01210	0.03253
	B	0.00000	0.00000	0.00000
	B	0.01044	0.01199	0.03761
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02309	0.02387	0.04556
	B	0.00000	0.00000	0.00000
	B	0.02211	0.02371	0.04899
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00281	0.00313	0.02359
	B	0.00000	0.00000	0.00000
	B	0.00220	0.00324	0.03727

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	0.00816	0.00814	0.02843
	B	0.00000	0.00000	0.00000
	B	0.00684	0.00846	0.04712
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01030	0.01035	0.03057
	B	0.00000	0.00000	0.00000
	B	0.00896	0.01056	0.04844
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01664	0.01560	0.03552
	B	0.00000	0.00000	0.00000
	B	0.01530	0.01577	0.05169
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03472	0.02675	0.04540
	B	0.00000	0.00000	0.00000
	B	0.03383	0.02708	0.05943
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00627	0.00670	0.03060
	B	0.00000	0.00000	0.00000
	B	0.00536	0.00721	0.05294

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)	-0.00164	-0.00196	-0.00197
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00163	-0.00196	-0.00197
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00164	-0.00196	-0.00197
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00163	-0.00196	-0.00197
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00105	-0.00133	-0.00135

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)	0.00196	0.00198	0.00197
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00196	0.00198	0.00197
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00196	0.00198	0.00197
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00196	0.00198	0.00197
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00136	0.00137	0.00137

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)	-0.00093	-0.00095	-0.00093
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00093	-0.00095	-0.00093
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00092	-0.00095	-0.00093
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00092	-0.00095	-0.00093
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00064	-0.00066	-0.00065

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)	0.00097	0.00098	0.00094
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00097	0.00098	0.00094
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00097	0.00098	0.00094
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00097	0.00098	0.00094
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00068	0.00068	0.00066

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00283	0.00378	0.78164
sky130_osu_sc_12T_hs__tbufi_l	0.00225	0.00301	0.54137

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.01438	0.05418
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.23609	0.94317

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)	0.03177	0.72931	10.73540
	OE->Y (FR)	0.03305	0.27835	5.01964
	OE->Y (RR)	0.05178	0.51554	5.55746
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.03784	0.76924	10.11700
	OE->Y (FR)	0.03373	0.27833	5.01950
	OE->Y (RR)	0.05620	0.59467	5.78145

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)	0.01659	0.35241	5.01653
	OE->Y (FF)	0.03341	0.27835	5.01959
	OE->Y (RF)	0.01636	0.33313	4.67713
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.01878	0.37800	4.86191
	OE->Y (FF)	0.03448	0.27834	5.01959
	OE->Y (RF)	0.01840	0.35743	4.52775

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	0.00343	0.00410	0.01412
	OE	0.00000	0.00000	0.00000
	OE	0.00333	0.00451	0.04898
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00270	0.00344	0.01949
	OE	0.00000	0.00000	0.00000
	OE	0.00250	0.00421	0.05962

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	-0.00045	-0.00024	0.00444
	OE	0.00000	0.00000	0.00000
	OE	0.00206	0.00341	0.05624
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00027	-0.00014	0.00362
	OE	0.00000	0.00000	0.00000
	OE	0.00148	0.00339	0.06432

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)	-0.00166	-0.00167	-0.00167
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00150	-0.00151	-0.00150
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00122	-0.00122	-0.00122
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00110	-0.00110	-0.00110

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)	0.00166	0.00167	0.00167
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00153	0.00154	0.00151
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00122	0.00122	0.00122
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00111	0.00112	0.00111

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)	0.00121	0.00264	0.05674
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00108	0.00252	0.05659
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00088	0.00288	0.06519
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00075	0.00274	0.06506

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)	0.00417	0.00651	0.05990
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00423	0.00662	0.05997
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00329	0.00583	0.06807
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00328	0.00587	0.06811

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00283	0.00412	0.78163
sky130_osu_sc_12T_hs__tnbufi_l	0.00215	0.00321	0.53636

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.02311	0.02799
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.39321	0.47182

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)	0.03199	0.72917	10.73500
	OE->Y (RR)	0.01710	0.27851	5.01974
	OE->Y (FR)	0.03969	0.73969	10.65740
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.03712	0.76505	10.05450
	OE->Y (RR)	0.01891	0.27831	5.01959
	OE->Y (FR)	0.04323	0.78391	10.10260

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)	0.01623	0.35227	5.01640
	OE->Y (RF)	0.01700	0.27851	5.01976
	OE->Y (FF)	0.03507	0.37209	4.55875
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.01781	0.37588	4.82752
	OE->Y (RF)	0.01876	0.27832	5.01950
	OE->Y (FF)	0.03914	0.37677	4.18416

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	0.00357	0.00424	0.01426
	OE	0.00000	0.00000	0.00000
	OE	0.00859	0.01077	0.06432
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00277	0.00349	0.01968
	OE	0.00000	0.00000	0.00000
	OE	0.00674	0.00957	0.07142

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	-0.00064	-0.00042	0.00427
	OE	0.00000	0.00000	0.00000
	OE	0.00750	0.00974	0.05452
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00047	-0.00033	0.00348
	OE	0.00000	0.00000	0.00000
	OE	0.00588	0.00875	0.06494

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)	-0.00134	-0.00135	-0.00135
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00120	-0.00121	-0.00120
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00094	-0.00094	-0.00094
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00083	-0.00085	-0.00083

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)	0.00134	0.00135	0.00135
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00122	0.00122	0.00120
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00094	0.00094	0.00094
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00085	0.00086	0.00084

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)	-0.00212	-0.00069	0.05345
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00211	-0.00076	0.05346
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00143	0.00046	0.06271
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00150	0.00043	0.06273

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)	0.00647	0.00895	0.06307
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00640	0.00867	0.06301
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00516	0.00812	0.07047
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00510	0.00801	0.07043

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00569	0.00480	0.83301

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.04793	0.08217

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	0.06606	0.54922	5.89478
	A->Y (FR)	!B	0.04204	0.74604	10.99770
	B->Y (RR)	A	0.05362	0.53785	5.95430
	B->Y (FR)	!A	0.05306	0.75867	10.95670

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	0.05549	0.41933	4.95307
	A->Y (RF)	!B	0.02297	0.34857	4.93814
	B->Y (FF)	A	0.05059	0.41498	4.95816
	B->Y (RF)	!A	0.02682	0.35505	4.93634

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	0.00355	0.00450	0.05151
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00871	0.01143	0.07422
	B	A	0.00000	0.00000	0.00000
	B	A	0.00159	0.00310	0.05795
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00915	0.01098	0.06808

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	0.01044	0.01236	0.06483
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00245	0.00370	0.06021
	B	A	0.00000	0.00000	0.00000
	B	A	0.00951	0.01170	0.06585
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00321	0.00443	0.06049

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00570	0.00485	0.75662

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.04793	0.07646

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	0.07021	0.55184	5.75967
	A->Y (FR)	B	0.05633	0.77118	10.87550
	B->Y (RR)	!A	0.05756	0.54936	5.77894
	B->Y (FR)	A	0.06093	0.77493	10.85470

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	0.05594	0.41341	4.58365
	A->Y (RF)	B	0.02226	0.35834	4.89066
	B->Y (FF)	!A	0.05240	0.41033	4.72903
	B->Y (RF)	A	0.02651	0.34221	4.57957

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	0.01024	0.01196	0.06752
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00226	0.00264	0.05388
	B	A	0.00000	0.00000	0.00000
	B	A	0.01037	0.01213	0.06647
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00153	0.00284	0.05548

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	0.00196	0.00303	0.05844
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01109	0.01333	0.05645
	B	A	0.00000	0.00000	0.00000
	B	A	0.00199	0.00302	0.05630
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00962	0.01198	0.06399

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.45968
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	206882.00000	413763.00000
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
	-0.00135	0.04103	0.72693

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__ant	0.00000	0.00000	0.00000
	3.60155	3.45748	0.88428