sky130_osu_sc_18T_hs_ff_1P76_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_18T_HS__ADDFx
SKY130_OSU_SC_18T_HS__ADDHx
SKY130_OSU_SC_18T_HS__AND2x
SKY130_OSU_SC_18T_HS__AOI21
SKY130_OSU_SC_18T_HS__AOI22
SKY130_OSU_SC_18T_HS__BUFx
SKY130_OSU_SC_18T_HS__DFFRx
SKY130_OSU_SC_18T_HS__DFFSRx
SKY130_OSU_SC_18T_HS__DFFSx
SKY130_OSU_SC_18T_HS__DFFx
SKY130_OSU_SC_18T_HS__INVx
SKY130_OSU_SC_18T_HS__MUX2
SKY130_OSU_SC_18T_HS__NAND2x
SKY130_OSU_SC_18T_HS__NOR2x
SKY130_OSU_SC_18T_HS__OAI21
SKY130_OSU_SC_18T_HS__OAI22
SKY130_OSU_SC_18T_HS__OR2x
SKY130_OSU_SC_18T_HS__TBUFIx
SKY130_OSU_SC_18T_HS__TNBUFIx
SKY130_OSU_SC_18T_HS__XNOR2
SKY130_OSU_SC_18T_HS__XOR2
SKY130_OSU_SC_18T_HS_x

SKY130_OSU_SC_18T_HS__ADDFx

sky130_osu_sc_18T_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_18T_hs__addf_1	46.88640
sky130_osu_sc_18T_hs__addf_l	46.88640

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_18T_hs__addf_1	0.01901	0.01895	0.01453	3.59244	1.68163	3.43549
sky130_osu_sc_18T_hs__addf_l	0.01900	0.01893	0.01450	2.51922	1.68176	2.52465

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addf_1	0.00000	0.22790	0.32057
sky130_osu_sc_18T_hs__addf_l	0.00000	0.15027	0.24293

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CO (RR)	0.09271	1.33133	23.72620
	B->CO (RR)	0.08097	1.25777	22.44040
	CI->CO (RR)	0.08812	1.36109	24.23430
	CON->CO (FR)	0.01997	0.63549	10.90170
sky130_osu_sc_18T_hs__addf_l	A->CO (RR)	0.09323	1.24581	19.46630
	B->CO (RR)	0.08162	1.18419	18.59010
	CI->CO (RR)	0.08863	1.27639	20.01580
	CON->CO (FR)	0.02229	0.68641	10.90450

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CO (FF)	0.12482	1.69351	29.77400
	B->CO (FF)	0.10998	1.61068	28.30480
	CI->CO (FF)	0.10669	1.66273	29.58660
	CON->CO (RF)	0.01656	0.49627	8.69332
sky130_osu_sc_18T_hs__addf_l	A->CO (FF)	0.12090	1.50284	23.20520
	B->CO (FF)	0.10642	1.43528	22.19440
	CI->CO (FF)	0.10273	1.47344	23.05910
	CON->CO (RF)	0.01692	0.48858	7.81792

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CON (FR)	0.10209	0.81950	10.76560
	B->CON (FR)	0.08652	0.77152	10.29390
	CI->CON (FR)	0.08395	0.79291	10.67860
sky130_osu_sc_18T_hs__addf_l	A->CON (FR)	0.09750	0.81507	10.76120
	B->CON (FR)	0.08233	0.76740	10.28990
	CI->CON (FR)	0.07933	0.78856	10.67350

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CON (RF)	0.05743	0.47514	6.17817
	B->CON (RF)	0.04671	0.45430	6.03423
	CI->CON (RF)	0.05285	0.50969	6.76572
sky130_osu_sc_18T_hs__addf_l	A->CON (RF)	0.05548	0.47300	6.17630
	B->CON (RF)	0.04497	0.45227	6.03289
	CI->CON (RF)	0.05090	0.50756	6.76371

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->S (-R)	0.18381	1.49711	23.49310
	B->S (-R)	0.18449	1.46603	22.40470
	CI->S (-R)	0.16422	1.46430	23.31600
	CON->S (RR)	0.05559	0.45181	6.41762
sky130_osu_sc_18T_hs__addf_l	A->S (-R)	0.17708	1.41846	20.20620
	B->S (-R)	0.17822	1.39891	19.45050
	CI->S (-R)	0.15746	1.38649	20.05780
	CON->S (RR)	0.05545	0.49613	6.51582

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->S (-F)	0.14788	1.17822	17.94290
	B->S (-F)	0.14850	1.13164	17.16630
	CI->S (-F)	0.14278	1.20597	18.46300
	CON->S (FF)	0.06355	0.55324	7.39940
sky130_osu_sc_18T_hs__addf_l	A->S (-F)	0.13960	1.07493	14.73120
	B->S (-F)	0.14081	1.03878	14.23230
	CI->S (-F)	0.13451	1.10310	15.28220
	CON->S (FF)	0.06024	0.54892	6.89109

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00364	0.00519	0.04471
	B	0.00421	0.00548	0.03953
	CI	0.00573	0.00745	0.04738
sky130_osu_sc_18T_hs__addf_l	A	0.00283	0.00397	0.03199
	B	0.00341	0.00437	0.02788
	CI	0.00492	0.00619	0.03479

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01502	0.01705	0.08077
	B	0.01575	0.01720	0.07332
	CI	0.01262	0.01497	0.08095
sky130_osu_sc_18T_hs__addf_l	A	0.01421	0.01581	0.06129
	B	0.01494	0.01604	0.05571
	CI	0.01183	0.01376	0.06239

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01499	0.01604	0.04603
	B	0.01536	0.01633	0.04480
	CI	0.01380	0.01520	0.04543
sky130_osu_sc_18T_hs__addf_l	A	0.01420	0.01531	0.04599
	B	0.01459	0.01557	0.04464
	CI	0.01182	0.01331	0.04801

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00361	0.00455	0.02403
	B	0.00419	0.00490	0.02280
	CI	0.00570	0.00689	0.02868
sky130_osu_sc_18T_hs__addf_l	A	0.00281	0.00368	0.02279
	B	0.00340	0.00402	0.02162
	CI	0.00489	0.00598	0.02722

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01502	0.01697	0.07766
	B	-0.00563	-0.00508	0.03871
	CI	0.01262	0.01489	0.07818
sky130_osu_sc_18T_hs__addf_l	A	0.01421	0.01581	0.06130
	B	-0.00701	-0.00636	0.04464
	CI	0.01182	0.01376	0.06236

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.03368	0.03415	0.06769
	B	0.02974	0.03179	0.09936
	CI	0.02715	0.02754	0.06357
sky130_osu_sc_18T_hs__addf_l	A	0.03254	0.03287	0.06764
	B	0.02866	0.03075	0.10014
	CI	0.02608	0.02647	0.06379

SKY130_OSU_SC_18T_HS__ADDHx

sky130_osu_sc_18T_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	1	0
0	1	0	0	1
1	0	0	0	1
1	1	1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__addh_1	27.83880
sky130_osu_sc_18T_hs__addh_l	27.83880

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_18T_hs__addh_1	0.00925	0.01024	3.48867	1.81525	3.58327
sky130_osu_sc_18T_hs__addh_l	0.00925	0.01024	2.05143	1.80583	2.09715

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addh_1	0.00000	0.27412	0.32012
sky130_osu_sc_18T_hs__addh_l	0.00000	0.27228	0.31926

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CO (RR)	0.06243	0.44267	6.02828
	B->CO (RR)	0.06516	0.44588	6.18321
sky130_osu_sc_18T_hs__addh_l	A->CO (RR)	0.06355	0.51352	6.10159
	B->CO (RR)	0.06631	0.51733	6.18642

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CO (FF)	0.05509	0.52755	7.36876
	B->CO (FF)	0.05971	0.53836	7.34126
sky130_osu_sc_18T_hs__addh_l	A->CO (FF)	0.05289	0.52094	6.37837
	B->CO (FF)	0.05723	0.53160	6.35708

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CON (RR)	B	0.08702	0.35042	2.84941
	A->CON (FR)	!B	0.05429	0.73692	10.48400
	B->CON (RR)	A	0.08970	0.35314	3.01622
	B->CON (FR)	!A	0.06873	0.77256	10.74680
sky130_osu_sc_18T_hs__addh_l	A->CON (RR)	B	0.07865	0.33306	2.87410
	A->CON (FR)	!B	0.04852	0.73255	10.44440
	B->CON (RR)	A	0.08135	0.33651	2.96914
	B->CON (FR)	!A	0.06296	0.76556	10.70600

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CON (FF)	B	0.08326	0.53106	5.84476
	A->CON (RF)	!B	0.03400	0.48468	6.83075
	B->CON (FF)	A	0.08332	0.56270	6.20731
	B->CON (RF)	!A	0.03902	0.46012	6.33376
sky130_osu_sc_18T_hs__addh_l	A->CON (FF)	B	0.07611	0.50936	5.70432
	A->CON (RF)	!B	0.03163	0.48061	6.80374
	B->CON (FF)	A	0.07617	0.54074	6.05698
	B->CON (RF)	!A	0.03671	0.45632	6.30857

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->S (RR)	!B	0.06641	1.29741	23.46980
	A->S (FR)	B	0.11570	1.32008	22.04410
	B->S (RR)	!A	0.07115	1.22697	22.00470
	B->S (FR)	A	0.11666	1.39753	23.40510
	CON->S (FR)	-	0.02295	0.65991	11.29980
sky130_osu_sc_18T_hs__addh_l	A->S (RR)	!B	0.06680	1.18703	17.81950
	A->S (FR)	B	0.11139	1.19886	16.43030
	B->S (RR)	!A	0.07170	1.13331	16.85820
	B->S (FR)	A	0.11225	1.26094	17.27940
	CON->S (FR)	-	0.02599	0.73974	11.24690

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->S (FF)	!B	0.07552	1.50765	27.18210
	A->S (RF)	B	0.10733	0.93989	15.13010
	B->S (FF)	!A	0.08994	1.54488	27.54340
	B->S (RF)	A	0.11002	0.94166	15.28600
	CON->S (RF)	-	0.01535	0.47708	8.39002
sky130_osu_sc_18T_hs__addh_l	A->S (FF)	!B	0.06990	1.26176	18.95180
	A->S (RF)	B	0.09897	0.78344	9.94544
	B->S (FF)	!A	0.08433	1.29798	19.24010
	B->S (RF)	A	0.10168	0.78626	10.03610
	CON->S (RF)	-	0.01606	0.46806	7.15161

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00693	0.00719	0.02736
	B	0.00000	0.00000	0.00000
	B	0.00625	0.00629	0.03326
sky130_osu_sc_18T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00573	0.00605	0.03194
	B	0.00000	0.00000	0.00000
	B	0.00506	0.00512	0.03510

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.01077	0.01182	0.04752
	B	0.00000	0.00000	0.00000
	B	0.01123	0.01299	0.05017
sky130_osu_sc_18T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00958	0.01058	0.04457
	B	0.00000	0.00000	0.00000
	B	0.01004	0.01161	0.04547

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00692	0.00722	0.02831
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00950	0.00992	0.02114
	B	A	0.00000	0.00000	0.00000
	B	A	0.00624	0.00632	0.03433
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01063	0.01067	0.01569
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00572	0.00604	0.03210
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00868	0.00940	0.02005
	B	A	0.00000	0.00000	0.00000
	B	A	0.00505	0.00512	0.03474
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00981	0.00982	0.01471

Internal switching power(pJ) to CON falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.01077	0.01180	0.04558
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00139	0.00183	0.00877
	B	A	0.00000	0.00000	0.00000
	B	A	0.01123	0.01289	0.04744
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00251	0.00278	0.00970
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00958	0.01058	0.04432
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00039	0.00067	0.00583
	B	A	0.00000	0.00000	0.00000
	B	A	0.01004	0.01160	0.04505
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00152	0.00171	0.00666

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.01078	0.01184	0.04799
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00140	0.00199	0.01135
	B	A	0.00000	0.00000	0.00000
	B	A	0.01124	0.01303	0.05054
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00253	0.00289	0.01052
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00959	0.01058	0.04507
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00041	0.00074	0.00655
	B	A	0.00000	0.00000	0.00000
	B	A	0.01005	0.01162	0.04614
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00153	0.00169	0.00581

Internal switching power(pJ) to S falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00693	0.00717	0.02723
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00951	0.01014	0.01974
	B	A	0.00000	0.00000	0.00000
	B	A	0.00625	0.00627	0.03262
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01065	0.01082	0.01662
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00573	0.00604	0.03221
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00868	0.00930	0.01942
	B	A	0.00000	0.00000	0.00000
	B	A	0.00506	0.00512	0.03514
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00982	0.00987	0.01468

SKY130_OSU_SC_18T_HS__AND2x

sky130_osu_sc_18T_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_18T_hs__and2_1	12.45420
sky130_osu_sc_18T_hs__and2_2	15.38460
sky130_osu_sc_18T_hs__and2_4	21.24540
sky130_osu_sc_18T_hs__and2_6	27.10620
sky130_osu_sc_18T_hs__and2_8	32.96700
sky130_osu_sc_18T_hs__and2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__and2_1	0.00502	0.00514	3.55276
sky130_osu_sc_18T_hs__and2_2	0.00502	0.00514	6.70507
sky130_osu_sc_18T_hs__and2_4	0.00503	0.00515	12.65362
sky130_osu_sc_18T_hs__and2_6	0.00507	0.00516	18.44772
sky130_osu_sc_18T_hs__and2_8	0.00505	0.00518	23.79516
sky130_osu_sc_18T_hs__and2_l	0.00402	0.00414	2.52158

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__and2_1	0.00000	0.13334	0.21327
sky130_osu_sc_18T_hs__and2_2	0.00000	0.21326	0.21376
sky130_osu_sc_18T_hs__and2_4	0.00000	0.37309	0.42606
sky130_osu_sc_18T_hs__and2_6	0.00000	0.53293	0.63885
sky130_osu_sc_18T_hs__and2_8	0.00000	0.69276	0.85164
sky130_osu_sc_18T_hs__and2_l	0.00000	0.03603	0.05748

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__and2_1	A->Y (RR)	0.04773	0.39572	6.10044
	B->Y (RR)	0.05108	0.39820	5.85246
sky130_osu_sc_18T_hs__and2_2	A->Y (RR)	0.05493	0.35016	5.99779
	B->Y (RR)	0.05828	0.35156	5.74895
sky130_osu_sc_18T_hs__and2_4	A->Y (RR)	0.07548	0.36020	6.12674
	B->Y (RR)	0.07883	0.35858	5.90354
sky130_osu_sc_18T_hs__and2_6	A->Y (RR)	0.09532	0.38870	6.23987
	B->Y (RR)	0.09862	0.38324	6.03943
sky130_osu_sc_18T_hs__and2_8	A->Y (RR)	0.11570	0.42244	6.42964
	B->Y (RR)	0.11904	0.41490	6.23556
sky130_osu_sc_18T_hs__and2_l	A->Y (RR)	0.05087	0.44712	6.08775
	B->Y (RR)	0.05404	0.44506	5.86625

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__and2_1	**A->Y (FF)**	0.04356	0.47330	6.83672
	B->Y (FF)	0.04627	0.48238	6.82093
sky130_osu_sc_18T_hs__and2_2	**A->Y (FF)**	0.04851	0.43663	6.67446
	B->Y (FF)	0.05172	0.44567	6.68784
sky130_osu_sc_18T_hs__and2_4	**A->Y (FF)**	0.06472	0.44713	6.73232
	B->Y (FF)	0.06791	0.45484	6.76118
sky130_osu_sc_18T_hs__and2_6	**A->Y (FF)**	0.08383	0.47504	6.79973
	B->Y (FF)	0.08685	0.48095	6.83304
sky130_osu_sc_18T_hs__and2_8	**A->Y (FF)**	0.10103	0.49929	6.77045
	B->Y (FF)	0.10414	0.50545	6.81832
sky130_osu_sc_18T_hs__and2_l	**A->Y (FF)**	0.04589	0.49222	6.40709
	B->Y (FF)	0.04938	0.50370	6.46899

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00492	0.00744	0.10850
	B	0.00000	0.00000	0.00000
	B	0.00499	0.00568	0.06487
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01004	0.01217	0.11405
	B	0.00000	0.00000	0.00000
	B	0.01010	0.01088	0.06823
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.02127	0.02325	0.12234
	B	0.00000	0.00000	0.00000
	B	0.02137	0.02233	0.07315
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03377	0.03536	0.13005
	B	0.00000	0.00000	0.00000
	B	0.03401	0.03413	0.08755
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.04703	0.04760	0.13687
	B	0.00000	0.00000	0.00000
	B	0.04713	0.04620	0.09524
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00365	0.00646	0.09281
	B	0.00000	0.00000	0.00000
	B	0.00373	0.00513	0.06346

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.01294	0.01778	0.10154
	B	0.00000	0.00000	0.00000
	B	0.01462	0.01890	0.09569
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01679	0.02174	0.10549
	B	0.00000	0.00000	0.00000
	B	0.01848	0.02282	0.10042
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.02725	0.03209	0.11457
	B	0.00000	0.00000	0.00000
	B	0.02885	0.03296	0.10948
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03768	0.04192	0.12445
	B	0.00000	0.00000	0.00000
	B	0.03926	0.04293	0.11882
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.05087	0.05266	0.13448
	B	0.00000	0.00000	0.00000
	B	0.05232	0.05259	0.12682
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.01033	0.01461	0.08213
	B	0.00000	0.00000	0.00000
	B	0.01162	0.01583	0.08025

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00489	-0.00491	-0.00493
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00489	-0.00491	-0.00493
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00489	-0.00492	-0.00493
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00491	-0.00494	-0.00495
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00489	-0.00491	-0.00492
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00375	-0.00376	-0.00378

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00491	0.00500	0.00494
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00492	0.00500	0.00494
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00492	0.00501	0.00495
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00495	0.00503	0.00497
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00493	0.00501	0.00495
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00377	0.00385	0.00379

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00460	-0.00463	-0.00462
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00460	-0.00464	-0.00462
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00460	-0.00463	-0.00462
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00460	-0.00464	-0.00461
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00460	-0.00463	-0.00461
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00354	-0.00357	-0.00355

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00468	0.00467	0.00463
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00469	0.00467	0.00463
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00469	0.00468	0.00464
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00469	0.00468	0.00464
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00469	0.00468	0.00464
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00361	0.00357	0.00356

SKY130_OSU_SC_18T_HS__AOI21

sky130_osu_sc_18T_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_18T_hs__aoi21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_hs__aoi21_l	0.00477	0.00495	0.00481	1.68255

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi21_l	0.00000	0.04723	0.10639

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi21_l	A0->Y (FR)	0.05469	0.77473	10.76470
	A1->Y (FR)	0.04686	0.73450	10.30110
	B0->Y (FR)	0.03914	0.74974	10.68630

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi21_l	A0->Y (RF)	0.03084	0.42626	5.81662
	A1->Y (RF)	0.02743	0.43506	6.00937
	B0->Y (RF)	0.01961	0.42022	5.93595

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.01147	0.01143	0.01739
	A1	0.00000	0.00000	0.00000
	A1	0.00956	0.00952	0.01544
	B0	0.00679	0.00783	0.03198

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00246	0.00222	0.00575
	A1	0.00000	0.00000	0.00000
	A1	0.00251	0.00247	0.00814
	B0	-0.00120	-0.00086	0.00496

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00384	-0.00428	-0.00428
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00433	-0.00435	-0.00434
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00432	-0.00434	-0.00434

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00426	0.00429	0.00428
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00433	0.00439	0.00435
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00441	0.00439	0.00435

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00381	-0.00423	-0.00423
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00427	-0.00430	-0.00428
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00465	-0.00469	-0.00469

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00420	0.00424	0.00423
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00427	0.00431	0.00429
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00468	0.00470	0.00470

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00207	-0.00212	-0.00208

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00224	0.00224	0.00212

SKY130_OSU_SC_18T_HS__AOI22

sky130_osu_sc_18T_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_18T_hs__aoi22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_18T_hs__aoi22_l	0.00477	0.00495	0.00512	0.00490	1.59900

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__aoi22_l	0.00000	0.05096	0.21279

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi22_l	A0->Y (FR)	0.06936	0.79283	10.67180
	A1->Y (FR)	0.06180	0.76935	10.43920
	B0->Y (FR)	0.04104	0.73737	10.35880
	B1->Y (FR)	0.04869	0.76675	10.67110

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi22_l	A0->Y (RF)	0.03992	0.42939	5.61985
	A1->Y (RF)	0.03656	0.43830	5.80904
	B0->Y (RF)	0.02127	0.41809	5.79711
	B1->Y (RF)	0.02470	0.40952	5.61028

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.01399	0.01392	0.02020
	A1	0.01211	0.01201	0.01850
	B0	0.00741	0.00862	0.03053
	B1	0.00929	0.01033	0.03167

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.00507	0.00479	0.00850
	A1	0.00513	0.00504	0.01104
	B0	-0.00079	-0.00048	0.00557
	B1	-0.00068	-0.00066	0.00313

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00391	-0.00425	-0.00428
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00433	-0.00436	-0.00434
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00432	-0.00435	-0.00433
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00432	-0.00436	-0.00433

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00425	0.00433	0.00428
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00433	0.00439	0.00435
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00440	0.00439	0.00435
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00440	0.00439	0.00435

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00386	-0.00421	-0.00422
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00427	-0.00431	-0.00428
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00465	-0.00469	-0.00469
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00465	-0.00469	-0.00469

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00419	0.00424	0.00422
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00428	0.00433	0.00430
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00467	0.00476	0.00470
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00467	0.00476	0.00470

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00208	-0.00213	-0.00209
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00207	-0.00209	-0.00208
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00478	-0.00483	-0.00482
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00478	-0.00479	-0.00482

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00232	0.00232	0.00215
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00208	0.00209	0.00208
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00480	0.00483	0.00483
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00481	0.00484	0.00483

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00209	-0.00215	-0.00210
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00209	-0.00211	-0.00210
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00440	-0.00444	-0.00441
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00440	-0.00443	-0.00441

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00233	0.00234	0.00216
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00209	0.00211	0.00210
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00448	0.00445	0.00442
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00448	0.00445	0.00442

SKY130_OSU_SC_18T_HS__BUFx

sky130_osu_sc_18T_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_18T_hs__buf_1	9.52380
sky130_osu_sc_18T_hs__buf_2	12.45420
sky130_osu_sc_18T_hs__buf_4	18.31500
sky130_osu_sc_18T_hs__buf_6	24.17580
sky130_osu_sc_18T_hs__buf_8	30.03660
sky130_osu_sc_18T_hs__buf_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_hs__buf_1	0.00513	3.51044
sky130_osu_sc_18T_hs__buf_2	0.00513	6.76009
sky130_osu_sc_18T_hs__buf_4	0.00513	13.02090
sky130_osu_sc_18T_hs__buf_6	0.00095	1.80000
sky130_osu_sc_18T_hs__buf_8	0.00516	24.47282
sky130_osu_sc_18T_hs__buf_l	0.00416	2.53108

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__buf_1	0.00000	0.10688	0.10688
sky130_osu_sc_18T_hs__buf_2	0.00000	0.16032	0.21327
sky130_osu_sc_18T_hs__buf_4	0.00000	0.26720	0.42606
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_hs__buf_8	0.00000	0.48096	0.85164
sky130_osu_sc_18T_hs__buf_l	0.00000	0.02924	0.02924

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__buf_1	**A->Y (RR)**	0.03957	0.37270	5.76135
sky130_osu_sc_18T_hs__buf_2	**A->Y (RR)**	0.04431	0.32414	5.71933
sky130_osu_sc_18T_hs__buf_4	**A->Y (RR)**	0.05999	0.32716	5.92960
sky130_osu_sc_18T_hs__buf_8	**A->Y (RR)**	0.09000	0.37421	6.14053
sky130_osu_sc_18T_hs__buf_l	**A->Y (RR)**	0.04285	0.42411	5.81401

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__buf_1	**A->Y (FF)**	0.04139	0.46560	6.79154
sky130_osu_sc_18T_hs__buf_2	**A->Y (FF)**	0.04697	0.43458	6.77120
sky130_osu_sc_18T_hs__buf_4	**A->Y (FF)**	0.06325	0.44719	6.91466
sky130_osu_sc_18T_hs__buf_8	**A->Y (FF)**	0.09937	0.49920	6.95442
sky130_osu_sc_18T_hs__buf_l	**A->Y (FF)**	0.04427	0.48980	6.46963

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00454	0.00667	0.07593
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00963	0.01157	0.08191
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.02068	0.02308	0.09337
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.04461	0.04703	0.11535
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00348	0.00605	0.07271

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.01235	0.01768	0.09966
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01619	0.02140	0.10304
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.02654	0.03119	0.11191
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.05022	0.05115	0.12935
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00994	0.01446	0.08164

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00072	-0.00072	-0.00071

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
	0.00072	0.00072	0.00071

SKY130_OSU_SC_18T_HS__DFFRx

sky130_osu_sc_18T_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_18T_hs__dffr_1	63.73620
sky130_osu_sc_18T_hs__dffr_l	63.73620

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_18T_hs__dffr_1	0.00492	0.00486	0.01414	3.42207	3.36002
sky130_osu_sc_18T_hs__dffr_l	0.00492	0.00486	0.01411	2.52878	2.52393

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffr_1	0.00000	0.29775	0.48990
sky130_osu_sc_18T_hs__dffr_l	0.00000	0.22012	0.41226

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->Q (RR)	0.17489	0.99239	14.61880
	QN->Q (FR)	0.02402	0.73137	12.50810
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RR)	0.16952	1.03758	13.78030
	QN->Q (FR)	0.02498	0.75666	12.06560

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->Q (RF)	0.18344	0.98785	14.50950
	QN->Q (RF)	0.01958	0.60331	10.33690
	RN->Q (FF)	0.13735	1.10685	16.86910
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RF)	0.18421	1.05087	13.87600
	QN->Q (RF)	0.01904	0.57948	9.24801
	RN->Q (FF)	0.13832	1.16889	16.22960

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->QN (RR)	0.16292	0.51548	5.67836
	RN->QN (FR)	0.11684	0.63368	8.03344
sky130_osu_sc_18T_hs__dffr_l	CK->QN (RR)	0.16311	0.56632	5.87280
	RN->QN (FR)	0.11721	0.68386	8.22198

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	**CK->QN (RF)**	0.14552	0.44908	4.51147
sky130_osu_sc_18T_hs__dffr_l	**CK->QN (RF)**	0.13856	0.44862	4.08315

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.03358	-0.04933	-0.00633
	setup	CK (R)	0.13878	0.18729	0.21314
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.03732	-0.04933	-0.00654
	setup	CK (R)	0.13745	0.18660	0.21425

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.07400	-0.28438	-4.17056
	setup	CK (R)	0.09676	0.29976	4.24538
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.07632	-0.28438	-4.17271
	setup	CK (R)	0.09676	0.29976	4.24538

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.03358	-0.04933	-0.00633
	setup	CK (R)	0.13878	0.18729	0.21314
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.03732	-0.04933	-0.00654
	setup	CK (R)	0.13745	0.18660	0.21425

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.07400	-0.28438	-4.17056
	setup	CK (R)	0.09676	0.29976	4.24538
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.07632	-0.28438	-4.17271
	setup	CK (R)	0.09676	0.29976	4.24538

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	recovery	CK (R)	0.11652	0.15988	0.60476
	removal	CK (R)	-0.01846	-0.02277	-0.10061
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.11699	0.16137	0.60131
	removal	CK (R)	-0.01846	-0.02277	-0.10061

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	recovery	CK (R)	0.11652	0.15988	0.60476
	removal	CK (R)	-0.01846	-0.02277	-0.10061
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.11699	0.16137	0.60131
	removal	CK (R)	-0.01846	-0.02277	-0.10061

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	min_pulse_width	RN ()	0.08038	0.45044	13.33370
	min_pulse_width	RN ()	0.08377	0.45044	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	RN ()	0.08038	0.45044	13.33370
	min_pulse_width	RN ()	0.08038	0.45044	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_18T_hs__dffr_1	min_pulse_width	CK ()	0.07698	0.45044	13.33370
	min_pulse_width	CK ()	0.09396	0.45044	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.07019	0.45044	13.33370
	min_pulse_width	CK ()	0.09056	0.45044	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_18T_hs__dffr_1	min_pulse_width	CK ()	0.17883	0.45044	13.33370
	min_pulse_width	CK ()	0.07698	0.45044	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.18223	0.45044	13.33370
	min_pulse_width	CK ()	0.07698	0.45044	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01274	0.00839	-0.00575
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01146	0.00908	0.00949

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01446	0.01188	0.00575
	RN	-0.00165	-0.13829	-2.65002
	RN	0.03346	0.03228	0.03042
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01315	0.01182	0.03341
	RN	-0.00165	-0.11533	-1.95827
	RN	0.03215	0.03213	0.05662

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01445	0.01192	0.00653
	RN	-0.00165	-0.13678	-2.60173
	RN	0.03344	0.03226	0.03049
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01314	0.01180	0.03274
	RN	-0.00165	-0.11520	-1.95450
	RN	0.03214	0.03215	0.05628

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01268	0.00855	-0.00653
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01140	0.00902	0.00868

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00365	-0.00422	-0.00426
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01609	0.01606	0.06136
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00726	0.00739	0.05221
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00365	-0.00422	-0.00426
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01609	0.01606	0.06136
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00725	0.00739	0.05221

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00423	0.00426	0.00426
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02584	0.02632	0.07362
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01194	0.01247	0.05782
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00423	0.00426	0.00426
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02584	0.02632	0.07362
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01194	0.01245	0.05782

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00509	0.00765	0.11817
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01410	0.01642	0.13264
sky130_osu_sc_18T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00509	0.00765	0.11817
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01410	0.01642	0.13264

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01181	0.01654	0.12748
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02530	0.02971	0.14665
sky130_osu_sc_18T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01181	0.01653	0.12748
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02530	0.02971	0.14665

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00093	0.00124	0.11098
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00752	0.00859	0.12556
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00151	0.00086	0.10991
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00093	0.00124	0.11098
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00752	0.00859	0.12556
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00151	0.00085	0.10991

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01812	0.02301	0.13330
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03977	0.04333	0.18365
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03035	0.03457	0.15044
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03870	0.04717	0.22581
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02029	0.02490	0.13448
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01812	0.02301	0.13330
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03977	0.04328	0.18365
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03035	0.03456	0.15044
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03870	0.04717	0.22581
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02028	0.02490	0.13448

SKY130_OSU_SC_18T_HS__DFFSRx

sky130_osu_sc_18T_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_18T_hs__dffsr_1	69.59700
sky130_osu_sc_18T_hs__dffsr_l	69.59700

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_18T_hs__dffsr_1	0.00488	0.00486	0.01053	0.01452	3.61100	3.58693
sky130_osu_sc_18T_hs__dffsr_l	0.00488	0.00486	0.01051	0.01452	2.53683	2.53015

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__dffsr_1	0.00000	0.34804	0.48865
sky130_osu_sc_18T_hs__dffsr_l	0.00000	0.27040	0.41102

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->Q (RR)	0.18769	0.99361	14.62170
	QN->Q (FR)	0.02262	0.70896	12.25610
	RN->Q (RR)	0.15099	0.96589	14.68510
	SN->Q (FR)	0.14033	1.14268	17.31940
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RR)	0.18765	1.06337	13.86450
	QN->Q (FR)	0.02491	0.75414	12.04370
	RN->Q (RR)	0.15050	1.03471	13.92120
	SN->Q (FR)	0.14058	1.20881	16.55200

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->Q (RF)	0.20608	0.99620	14.52490
	QN->Q (RF)	0.01770	0.56176	9.74370
	RN->Q (FF)	0.13946	1.09561	16.85950
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RF)	0.20981	1.08040	13.93740
	QN->Q (RF)	0.01900	0.57913	9.25166
	RN->Q (FF)	0.14316	1.17916	16.27340

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->QN (RR)	0.18650	0.53866	5.81246
	RN->QN (FR)	0.12005	0.63799	8.14674
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RR)	0.18862	0.59461	5.91044
	RN->QN (FR)	0.12208	0.69313	8.23890

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->QN (RF)	0.15999	0.46523	4.60528
	RN->QN (RF)	0.12371	0.43763	4.66981
	SN->QN (FF)	0.11307	0.61353	7.30661
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RF)	0.15709	0.47415	4.15294
	RN->QN (RF)	0.12126	0.44737	4.21661
	SN->QN (FF)	0.11044	0.61950	6.84915

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.03963	-0.05869	-0.03927
	setup	CK (R)	0.14393	0.19204	0.26981
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.04087	-0.05671	-0.03656
	setup	CK (R)	0.14388	0.19200	0.27033

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.08574	-0.30132	-4.20323
	setup	CK (R)	0.10953	0.31114	4.28143
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.08293	-0.30129	-4.20324
	setup	CK (R)	0.11058	0.31114	4.28126

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.03963	-0.05869	-0.03927
	setup	CK (R)	0.14393	0.19204	0.26981
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.04087	-0.05671	-0.03656
	setup	CK (R)	0.14388	0.19200	0.27033

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.08574	-0.30132	-4.20323
	setup	CK (R)	0.10953	0.31114	4.28143
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.08293	-0.30129	-4.20324
	setup	CK (R)	0.11058	0.31114	4.28126

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.10902	0.15162	0.61999
	removal	CK (R)	-0.01269	-0.01897	-0.07520
	hold	SN (R)	-0.10661	-0.22767	-1.17268
	setup	SN (R)	0.12536	0.27924	2.56151
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.10876	0.15155	0.61917
	removal	CK (R)	-0.01269	-0.01897	-0.07520
	hold	SN (R)	-0.10231	-0.22387	-1.15634
	setup	SN (R)	0.12720	0.27137	2.48332

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.10902	0.15162	0.61999
	removal	CK (R)	-0.01269	-0.01897	-0.07520
	hold	SN (R)	-0.10661	-0.22767	-1.17668
	hold	SN (R)	-0.10722	-0.22767	-1.17268
	setup	SN (R)	0.12536	0.27734	2.38644
	setup	SN (R)	0.12239	0.27924	2.56151
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.10876	0.15155	0.61917
	removal	CK (R)	-0.01269	-0.01897	-0.07520
	hold	SN (R)	-0.10231	-0.22387	-1.15927
	hold	SN (R)	-0.10564	-0.22387	-1.15634
	setup	SN (R)	0.12720	0.26910	2.29809
	setup	SN (R)	0.11983	0.27137	2.48332

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	min_pulse_width	RN ()	0.09396	0.45044	13.33370
	min_pulse_width	RN ()	0.09396	0.45044	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	RN ()	0.09396	0.45044	13.33370
	min_pulse_width	RN ()	0.09056	0.45044	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.02890	0.06471	2.12878
	removal	CK (R)	-0.01180	-0.04553	-0.13057
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.02838	0.06447	2.03302
	removal	CK (R)	-0.01180	-0.04553	-0.13057

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.02890	0.06471	2.12878
	removal	CK (R)	-0.01180	-0.04553	-0.13057
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.02838	0.06447	2.03302
	removal	CK (R)	-0.01180	-0.04553	-0.13057

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	min_pulse_width	SN ()	0.11433	0.45044	13.33370
	min_pulse_width	SN ()	0.11093	0.45044	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	SN ()	0.11433	0.45044	13.33370
	min_pulse_width	SN ()	0.10754	0.45044	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_18T_hs__dffsr_1	min_pulse_width	CK ()	0.08377	0.45044	13.33370
	min_pulse_width	CK ()	0.10754	0.45044	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.08038	0.45044	13.33370
	min_pulse_width	CK ()	0.10414	0.45044	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_18T_hs__dffsr_1	min_pulse_width	CK ()	0.18562	0.45044	13.33370
	min_pulse_width	CK ()	0.09056	0.45044	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.18562	0.45044	13.33370
	min_pulse_width	CK ()	0.09056	0.45044	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01587	0.01354	0.00331
	RN	0.02915	0.02570	0.00329
	SN	-0.00165	-0.14282	-2.79636
	SN	0.02746	0.02305	-0.02320
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01471	0.01213	0.01179
	RN	0.02798	0.02438	0.01156
	SN	-0.00165	-0.11555	-1.96452
	SN	0.02629	0.02166	-0.01395

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01673	0.01471	0.01543
	RN	-0.00165	-0.14282	-2.79635
	RN	0.03380	0.03303	0.03840
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01557	0.01435	0.03673
	RN	-0.00165	-0.11555	-1.96451
	RN	0.03262	0.03264	0.05905

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01671	0.01472	0.01535
	RN	-0.00165	-0.14225	-2.77763
	RN	0.03380	0.03302	0.03837
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01556	0.01435	0.03667
	RN	-0.00165	-0.11537	-1.95931
	RN	0.03262	0.03265	0.05913

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01580	0.01355	0.00367
	RN	0.02908	0.02579	0.00389
	SN	-0.00165	-0.14225	-2.77753
	SN	0.02741	0.02301	-0.02171
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01464	0.01213	0.01075
	RN	0.02790	0.02432	0.01136
	SN	-0.00165	-0.11537	-1.95916
	SN	0.02624	0.02159	-0.01422

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00413	-0.00426	-0.00425
	(!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)	0.02018	0.02017	0.06468
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00793	0.00803	0.05248
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00789	0.00799	0.05250
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00796	0.00808	0.05254
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00413	-0.00426	-0.00425
	(!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)	0.02018	0.02018	0.06469
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00793	0.00803	0.05249
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00789	0.00799	0.05251
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00796	0.00808	0.05254

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00430	0.00427	0.00425
	(!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)	0.02940	0.02967	0.07498
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01258	0.01312	0.05810
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01269	0.01319	0.05810
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01252	0.01307	0.05803
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00430	0.00427	0.00425
	(!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)	0.02939	0.02966	0.07497
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01257	0.01311	0.05809
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01268	0.01318	0.05809
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01250	0.01306	0.05802

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.00398	0.00642	0.11694
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01645	0.01846	0.13562
sky130_osu_sc_18T_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)	0.00399	0.00643	0.11695
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01645	0.01846	0.13562

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.01264	0.01766	0.12876
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02656	0.03092	0.14734
sky130_osu_sc_18T_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)	0.01263	0.01764	0.12875
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02655	0.03091	0.14733

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	-0.00970	-0.00978	-0.00978
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00934	-0.01008	-0.01007
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00928	-0.00968	-0.00965
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00661	0.00710	0.05908
sky130_osu_sc_18T_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)	-0.00971	-0.00978	-0.00978
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00932	-0.01006	-0.01005
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00927	-0.00968	-0.00964
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00662	0.00711	0.05908

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.00976	0.00978	0.00981
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01003	0.01010	0.01009
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00962	0.00968	0.00967
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02046	0.02049	0.06943
sky130_osu_sc_18T_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)	0.00976	0.00978	0.00981
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01001	0.01007	0.01007
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00962	0.00968	0.00967
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02044	0.02041	0.06944

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00093	0.00123	0.11106
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00851	0.00954	0.12643
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00835	0.00940	0.12635
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00126	0.00102	0.11025
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00554	0.01002	0.20827
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00093	0.00123	0.11106
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00850	0.00953	0.12643
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00834	0.00939	0.12634
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00126	0.00102	0.11025
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00553	0.01002	0.20828

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_18T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04409	0.04769	0.18750
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01818	0.02307	0.13344
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03067	0.03479	0.15054
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03076	0.03462	0.15033
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04219	0.05012	0.22705
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02009	0.02468	0.13437
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02383	0.03221	0.23129
sky130_osu_sc_18T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04409	0.04769	0.18751
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01818	0.02307	0.13344
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03067	0.03479	0.15054
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03076	0.03461	0.15033
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04218	0.05010	0.22699
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02009	0.02468	0.13437
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02382	0.03220	0.23128

SKY130_OSU_SC_18T_HS__DFFSx

sky130_osu_sc_18T_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_18T_hs__dffs_1	57.87540
sky130_osu_sc_18T_hs__dffs_l	57.87540

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_18T_hs__dffs_1	0.00490	0.00867	0.01430	3.45079	3.40611
sky130_osu_sc_18T_hs__dffs_l	0.00490	0.00867	0.01430	2.55659	2.55076

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffs_1	0.00000	0.26402	0.38132
sky130_osu_sc_18T_hs__dffs_l	0.00000	0.18638	0.30368

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->Q (RR)	0.13886	0.95002	14.59620
	QN->Q (FR)	0.02385	0.72648	12.43840
	SN->Q (FR)	0.10996	1.11388	17.16540
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RR)	0.13664	1.00124	13.81960
	QN->Q (FR)	0.02482	0.75318	12.05260
	SN->Q (FR)	0.10819	1.15962	16.36560

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->Q (RF)	0.19592	1.00398	14.57840
	QN->Q (RF)	0.01942	0.60132	10.33240
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RF)	0.19587	1.06796	13.99910
	QN->Q (RF)	0.01891	0.57858	9.26679

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->QN (RR)	0.17516	0.53107	5.73322
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RR)	0.17461	0.58083	5.92174

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->QN (RF)	0.11188	0.40851	4.49773
	SN->QN (FF)	0.08308	0.57071	7.06145
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RF)	0.10796	0.41156	4.05539
	SN->QN (FF)	0.07930	0.56935	6.60602

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.02572	-0.04140	0.00677
	setup	CK (R)	0.09903	0.15307	0.19710
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.02450	-0.04142	0.01078
	setup	CK (R)	0.09962	0.15294	0.19861

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.07475	-0.28603	-4.18527
	setup	CK (R)	0.09816	0.29976	4.25855
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.07519	-0.28594	-4.18732
	setup	CK (R)	0.09816	0.29976	4.25851

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.02572	-0.04140	0.00677
	setup	CK (R)	0.09903	0.15307	0.19710
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.02450	-0.04142	0.01078
	setup	CK (R)	0.09962	0.15294	0.19861

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.07475	-0.28603	-4.18527
	setup	CK (R)	0.09816	0.29976	4.25855
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.07519	-0.28594	-4.18732
	setup	CK (R)	0.09816	0.29976	4.25851

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	recovery	CK (R)	0.02692	0.05179	1.29034
	removal	CK (R)	-0.00928	-0.03415	-0.31152
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.02671	0.05181	1.20467
	removal	CK (R)	-0.00928	-0.03415	-0.31152

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	recovery	CK (R)	0.02692	0.05179	1.29034
	removal	CK (R)	-0.00928	-0.03415	-0.31152
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.02671	0.05181	1.20467
	removal	CK (R)	-0.00928	-0.03415	-0.31152

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	min_pulse_width	SN ()	0.07698	0.45044	13.33370
	min_pulse_width	SN ()	0.07698	0.45044	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	SN ()	0.07698	0.45044	13.33370
	min_pulse_width	SN ()	0.07359	0.45044	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_18T_hs__dffs_1	min_pulse_width	CK ()	0.05661	0.45044	13.33370
	min_pulse_width	CK ()	0.09735	0.45044	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.05661	0.45044	13.33370
	min_pulse_width	CK ()	0.09396	0.45044	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_18T_hs__dffs_1	min_pulse_width	CK ()	0.14149	0.45044	13.33370
	min_pulse_width	CK ()	0.08038	0.45044	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.14149	0.45044	13.33370
	min_pulse_width	CK ()	0.08038	0.45044	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01275	0.00844	-0.00921
	SN	-0.00165	-0.13898	-2.67229
	SN	0.02323	0.01964	-0.02261
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01145	0.00906	0.01041
	SN	-0.00165	-0.11609	-1.97982
	SN	0.02194	0.02023	0.02248

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01436	0.01198	0.00921
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01307	0.01186	0.03560

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01435	0.01202	0.00955
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01307	0.01187	0.03548

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01269	0.00855	-0.00955
	SN	-0.00165	-0.13790	-2.63728
	SN	0.02319	0.01965	-0.02057
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01139	0.00905	0.00972
	SN	-0.00165	-0.11593	-1.97511
	SN	0.02190	0.02019	0.02270

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00419	-0.00428	-0.00430
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01546	0.01549	0.06312
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00708	0.00721	0.05211
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00419	-0.00428	-0.00430
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01546	0.01548	0.06312
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00707	0.00721	0.05211

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00435	0.00432	0.00430
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02501	0.02536	0.07270
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01207	0.01263	0.05817
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00435	0.00432	0.00430
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02501	0.02535	0.07270
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01207	0.01263	0.05817

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00750	-0.00754	-0.00755
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00503	0.00679	0.09295
sky130_osu_sc_18T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00750	-0.00754	-0.00755
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00503	0.00679	0.09295

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00758	0.00758	0.00757
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01464	0.01757	0.10475
sky130_osu_sc_18T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00758	0.00758	0.00757
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01464	0.01757	0.10475

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00095	0.00123	0.11118
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00140	0.00098	0.11026
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00463	0.00944	0.20884
sky130_osu_sc_18T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00095	0.00123	0.11118
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00140	0.00098	0.11026
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00463	0.00944	0.20884

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03927	0.04296	0.18427
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01813	0.02303	0.13353
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03773	0.04597	0.22477
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02015	0.02478	0.13457
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02321	0.03182	0.23183
sky130_osu_sc_18T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03927	0.04297	0.18426
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01812	0.02303	0.13353
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03772	0.04585	0.22477
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02015	0.02478	0.13457
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02321	0.03183	0.23183

SKY130_OSU_SC_18T_HS__DFFx

sky130_osu_sc_18T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dff_1	48.35160
sky130_osu_sc_18T_hs__dff_l	48.35160

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_18T_hs__dff_1	0.00506	0.01404	3.62960	3.59869
sky130_osu_sc_18T_hs__dff_l	0.00506	0.01404	2.48307	2.48986

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dff_1	0.00000	0.32484	0.42736
sky130_osu_sc_18T_hs__dff_l	0.00000	0.24721	0.34973

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->Q (RR)	0.12412	0.91679	14.50320
	QN->Q (FR)	0.02243	0.70625	12.21710
sky130_osu_sc_18T_hs__dff_l	CK->Q (RR)	0.12676	0.98478	13.50000
	QN->Q (FR)	0.02539	0.76188	12.09650

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->Q (RF)	0.17347	0.96006	14.51290
	QN->Q (RF)	0.01760	0.55988	9.73442
sky130_osu_sc_18T_hs__dff_l	CK->Q (RF)	0.17842	1.04209	13.70790
	QN->Q (RF)	0.01897	0.57176	9.10374

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->QN (RR)	0.15419	0.50166	5.76255
sky130_osu_sc_18T_hs__dff_l	CK->QN (RR)	0.15738	0.56237	5.86782

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->QN (RF)	0.09913	0.38978	4.45998
sky130_osu_sc_18T_hs__dff_l	CK->QN (RF)	0.09844	0.39894	3.91831

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	hold	CK (R)	-0.02262	-0.03994	0.00114
	setup	CK (R)	0.08206	0.14281	0.20728
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.02266	-0.03994	0.00114
	setup	CK (R)	0.08206	0.14228	0.20815

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	hold	CK (R)	-0.06867	-0.28103	-4.17222
	setup	CK (R)	0.08683	0.29596	4.24861
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.06845	-0.28133	-4.17197
	setup	CK (R)	0.08676	0.29596	4.24861

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	min_pulse_width	CK ()	0.05321	0.45044	13.33370
	min_pulse_width	CK ()	0.09056	0.45044	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.04982	0.45044	13.33370
	min_pulse_width	CK ()	0.08717	0.45044	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_18T_hs__dff_1	**min_pulse_width**	**CK ()**	0.12451	0.45044	13.33370
	min_pulse_width	**CK ()**	0.06680	0.45044	13.33370
sky130_osu_sc_18T_hs__dff_l	**min_pulse_width**	**CK ()**	0.12451	0.45044	13.33370
	min_pulse_width	**CK ()**	0.06680	0.45044	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01329	0.01092	0.00344
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01211	0.00984	0.01425

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01455	0.01266	0.01580
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01342	0.01209	0.03301

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01455	0.01268	0.01579
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01341	0.01208	0.03228

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01324	0.01115	0.00551
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01206	0.00973	0.01287

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00366	-0.00422	-0.00425
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01398	0.01433	0.06227
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00366	-0.00422	-0.00425
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01398	0.01434	0.06227

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00421	0.00426	0.00425
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02560	0.02604	0.07297
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00421	0.00425	0.00425
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02561	0.02604	0.07298

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00096	0.00123	0.11118
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00138	0.00100	0.11027
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00096	0.00123	0.11118
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00138	0.00100	0.11027

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01805	0.02298	0.13345
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03790	0.04173	0.18371
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03820	0.04650	0.22682
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02007	0.02469	0.13447
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01805	0.02298	0.13345
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03790	0.04173	0.18357
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03821	0.04651	0.22683
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02006	0.02469	0.13447

SKY130_OSU_SC_18T_HS__INVx

sky130_osu_sc_18T_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_18T_hs__inv_1	6.59340
sky130_osu_sc_18T_hs__inv_10	32.96700
sky130_osu_sc_18T_hs__inv_2	9.52380
sky130_osu_sc_18T_hs__inv_3	12.45420
sky130_osu_sc_18T_hs__inv_4	15.38460
sky130_osu_sc_18T_hs__inv_6	21.24540
sky130_osu_sc_18T_hs__inv_8	27.10620
sky130_osu_sc_18T_hs__inv_l	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_hs__inv_1	0.00490	3.41065
sky130_osu_sc_18T_hs__inv_10	0.04598	28.47192
sky130_osu_sc_18T_hs__inv_2	0.00939	6.53187
sky130_osu_sc_18T_hs__inv_3	0.01399	9.22536
sky130_osu_sc_18T_hs__inv_4	0.01850	12.32535
sky130_osu_sc_18T_hs__inv_6	0.02775	18.30836
sky130_osu_sc_18T_hs__inv_8	0.03687	23.75190
sky130_osu_sc_18T_hs__inv_l	0.00391	2.40079

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__inv_1	0.00000	0.05344	0.10639
sky130_osu_sc_18T_hs__inv_10	0.00000	0.53439	1.06394
sky130_osu_sc_18T_hs__inv_2	0.00000	0.10688	0.21279
sky130_osu_sc_18T_hs__inv_3	0.00000	0.16032	0.31918
sky130_osu_sc_18T_hs__inv_4	0.00000	0.21376	0.42557
sky130_osu_sc_18T_hs__inv_6	0.00000	0.32064	0.63836
sky130_osu_sc_18T_hs__inv_8	0.00000	0.42751	0.85115
sky130_osu_sc_18T_hs__inv_l	0.00000	0.01462	0.02824

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__inv_1	**A->Y (FR)**	0.02083	0.62882	10.67070
sky130_osu_sc_18T_hs__inv_10	**A->Y (FR)**	0.03716	0.44264	10.51790
sky130_osu_sc_18T_hs__inv_2	**A->Y (FR)**	0.01786	0.54877	10.53910
sky130_osu_sc_18T_hs__inv_3	**A->Y (FR)**	0.02040	0.51752	10.53880
sky130_osu_sc_18T_hs__inv_4	**A->Y (FR)**	0.02165	0.49153	10.47100
sky130_osu_sc_18T_hs__inv_6	**A->Y (FR)**	0.02553	0.46579	10.57970
sky130_osu_sc_18T_hs__inv_8	**A->Y (FR)**	0.03093	0.44940	10.53630
sky130_osu_sc_18T_hs__inv_l	**A->Y (FR)**	0.02319	0.68185	10.70000

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__inv_1	**A->Y (RF)**	0.01539	0.46718	8.07194
sky130_osu_sc_18T_hs__inv_10	**A->Y (RF)**	0.02809	0.26240	7.58675
sky130_osu_sc_18T_hs__inv_2	**A->Y (RF)**	0.01339	0.38477	7.90794
sky130_osu_sc_18T_hs__inv_3	**A->Y (RF)**	0.01502	0.35118	7.87448
sky130_osu_sc_18T_hs__inv_4	**A->Y (RF)**	0.01540	0.32271	7.83243
sky130_osu_sc_18T_hs__inv_6	**A->Y (RF)**	0.01988	0.29583	7.87158
sky130_osu_sc_18T_hs__inv_8	**A->Y (RF)**	0.02378	0.27700	7.78173
sky130_osu_sc_18T_hs__inv_l	**A->Y (RF)**	0.01635	0.47745	7.54824

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00631	0.00748	0.02438
sky130_osu_sc_18T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.05660	0.08066	0.24347
sky130_osu_sc_18T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.01134	0.01527	0.04778
sky130_osu_sc_18T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01736	0.02612	0.07155
sky130_osu_sc_18T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.02245	0.03288	0.09472
sky130_osu_sc_18T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.03324	0.04839	0.14134
sky130_osu_sc_18T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.04450	0.06965	0.19054
sky130_osu_sc_18T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00502	0.00647	0.02293

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00143	-0.00108	0.00319
sky130_osu_sc_18T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01754	-0.01427	0.02975
sky130_osu_sc_18T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00449	-0.00343	0.00513
sky130_osu_sc_18T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00591	-0.00434	0.00880
sky130_osu_sc_18T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00881	-0.00587	0.01086
sky130_osu_sc_18T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01343	-0.00976	0.01602
sky130_osu_sc_18T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01684	-0.01259	0.02263
sky130_osu_sc_18T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00109	-0.00052	0.00565

SKY130_OSU_SC_18T_HS__MUX2

sky130_osu_sc_18T_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_18T_hs__mux2_1	18.31500

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_18T_hs__mux2_1	0.85635	0.85730	0.00997	0.88024

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__mux2_1	0.00000	0.10809	0.11098

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__mux2_1	A0->Y (RR)	-	0.00892	0.17956	1.98260
	A1->Y (RR)	-	0.00971	0.17864	1.97272
	S0->Y (RR)	(!A0 * A1)	0.03136	0.17331	0.94920
	S0->Y (FR)	(A0 * !A1)	0.03257	0.33248	3.70759

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__mux2_1	A0->Y (FF)	-	0.00883	0.20392	2.36391
	A1->Y (FF)	-	0.00893	0.20279	2.35109
	S0->Y (FF)	(!A0 * A1)	0.04392	0.31329	3.08322
	S0->Y (RF)	(A0 * !A1)	0.01901	0.20924	1.95062

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00707	-0.00707	-0.00708
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00473	-0.00474	-0.00474
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00749	0.01335	0.12448
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00461	-0.00116	0.10934

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00707	0.00707	0.00708
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00473	0.00474	0.00474
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00134	0.00535	0.11663
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01750	0.02294	0.13298

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00177	-0.00176	-0.00176

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00177	0.00176	0.00176

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00211	-0.00210	-0.00210

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00211	0.00210	0.00210

Passive power(pJ) for S0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00166	0.00225	0.11269
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00163	0.00210	0.11299

Passive power(pJ) for S0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01302	0.01858	0.12861
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01197	0.01784	0.12834

SKY130_OSU_SC_18T_HS__NAND2x

sky130_osu_sc_18T_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_18T_hs__nand2_1	9.52380
sky130_osu_sc_18T_hs__nand2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__nand2_1	0.00492	0.00490	3.33616
sky130_osu_sc_18T_hs__nand2_l	0.00392	0.00392	2.34607

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nand2_1	0.00000	0.05343	0.21279
sky130_osu_sc_18T_hs__nand2_l	0.00000	0.01460	0.05648

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nand2_1	A->Y (FR)	0.02110	0.63079	10.65280
	B->Y (FR)	0.02491	0.62638	10.49430
sky130_osu_sc_18T_hs__nand2_l	A->Y (FR)	0.02341	0.68159	10.63110
	B->Y (FR)	0.02818	0.68156	10.56590

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nand2_1	A->Y (RF)	0.01994	0.55219	9.56432
	B->Y (RF)	0.02312	0.54551	9.41341
sky130_osu_sc_18T_hs__nand2_l	A->Y (RF)	0.02112	0.56645	8.90312
	B->Y (RF)	0.02374	0.54852	8.57633

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00675	0.00753	0.02320
	B	0.00000	0.00000	0.00000
	B	0.00868	0.00963	0.02539
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00533	0.00664	0.02160
	B	0.00000	0.00000	0.00000
	B	0.00682	0.00803	0.02305

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00098	-0.00059	0.00320
	B	0.00000	0.00000	0.00000
	B	-0.00093	-0.00085	0.00149
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00081	-0.00032	0.00520
	B	0.00000	0.00000	0.00000
	B	-0.00079	-0.00058	0.00370

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00481	-0.00482	-0.00484
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00365	-0.00366	-0.00368

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00483	0.00491	0.00485
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00366	0.00375	0.00369

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00444	-0.00447	-0.00445
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00339	-0.00341	-0.00339

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00452	0.00449	0.00447
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00345	0.00344	0.00340

SKY130_OSU_SC_18T_HS__NOR2x

sky130_osu_sc_18T_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_18T_hs__nor2_1	9.52380
sky130_osu_sc_18T_hs__nor2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__nor2_1	0.00492	0.00522	1.84349
sky130_osu_sc_18T_hs__nor2_l	0.00385	0.00418	1.33705

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nor2_1	0.00000	0.03461	0.10639
sky130_osu_sc_18T_hs__nor2_l	0.00000	0.00984	0.02824

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nor2_1	A->Y (FR)	0.04084	0.74460	10.79450
	B->Y (FR)	0.03050	0.71856	10.53030
sky130_osu_sc_18T_hs__nor2_l	A->Y (FR)	0.04418	0.78933	10.51740
	B->Y (FR)	0.03488	0.77967	10.53140

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nor2_1	A->Y (RF)	0.02048	0.37497	5.35277
	B->Y (RF)	0.01626	0.36651	5.33444
sky130_osu_sc_18T_hs__nor2_l	A->Y (RF)	0.02091	0.38442	5.02482
	B->Y (RF)	0.01727	0.37773	5.00896

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00922	0.00901	0.01568
	B	0.00000	0.00000	0.00000
	B	0.00687	0.00814	0.02886
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00702	0.00723	0.01731
	B	0.00000	0.00000	0.00000
	B	0.00539	0.00649	0.02698

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00097	0.00118	0.00710
	B	0.00000	0.00000	0.00000
	B	-0.00111	-0.00074	0.00522
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00063	0.00109	0.00971
	B	0.00000	0.00000	0.00000
	B	-0.00078	-0.00027	0.00822

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00369	-0.00426	-0.00427
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00275	-0.00315	-0.00316

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00424	0.00429	0.00427
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00314	0.00317	0.00316

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00207	-0.00213	-0.00209
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00154	-0.00158	-0.00155

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00217	0.00218	0.00212
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00161	0.00161	0.00157

SKY130_OSU_SC_18T_HS__OAI21

sky130_osu_sc_18T_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_18T_hs__oai21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_hs__oai21_l	0.00498	0.00505	0.00433	1.80378

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai21_l	0.00000	0.02805	0.13463

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai21_l	A0->Y (FR)	0.04076	0.72864	10.49120
	A1->Y (FR)	0.05459	0.76102	10.75960
	B0->Y (FR)	0.02844	0.62154	9.05743

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai21_l	A0->Y (RF)	0.02908	0.45614	6.47780
	A1->Y (RF)	0.03389	0.45426	6.33121
	B0->Y (RF)	0.02245	0.48906	7.08605

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00967	0.01077	0.02805
	A1	0.00000	0.00000	0.00000
	A1	0.01200	0.01195	0.01776
	B0	0.00584	0.00717	0.02567

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00031	0.00026	0.00356
	A1	0.00000	0.00000	0.00000
	A1	0.00240	0.00217	0.00545
	B0	0.00084	0.00127	0.00915

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00208	-0.00213	-0.00209
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00418	-0.00432	-0.00429
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00435	-0.00438	-0.00436

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00218	0.00221	0.00212
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00428	0.00432	0.00429
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00437	0.00441	0.00437

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00361	-0.00418	-0.00420
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00415	-0.00425	-0.00426
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00430	-0.00431	-0.00431

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00416	0.00421	0.00420
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00423	0.00425	0.00426
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00432	0.00434	0.00433

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00373	-0.00376	-0.00379

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00379	0.00378	0.00380

SKY130_OSU_SC_18T_HS__OAI22

sky130_osu_sc_18T_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_18T_hs__oai22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_hs__oai22_l	0.00483	0.00509	0.00522	0.00510	1.81913

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai22_l	0.00000	0.05189	0.21279

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai22_l	A0->Y (FR)	0.05810	0.76273	10.75350
	A1->Y (FR)	0.04783	0.73021	10.49520
	B0->Y (FR)	0.03388	0.72073	10.50190
	B1->Y (FR)	0.04526	0.75160	10.76590

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai22_l	A0->Y (RF)	0.04919	0.49056	6.64680
	A1->Y (RF)	0.03907	0.47327	6.55490
	B0->Y (RF)	0.03235	0.50386	7.14160
	B1->Y (RF)	0.04346	0.53487	7.45093

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.01558	0.01553	0.02089
	A1	0.01201	0.01252	0.03177
	B0	0.00741	0.00876	0.02717
	B1	0.00990	0.00986	0.01546

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.00159	0.00139	0.00473
	A1	-0.00041	-0.00043	0.00292
	B0	-0.00043	-0.00020	0.00521
	B1	0.00160	0.00170	0.00674

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00368	-0.00425	-0.00427
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00368	-0.00425	-0.00427
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00417	-0.00429	-0.00427
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00432	-0.00433	-0.00432

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00424	0.00429	0.00427
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00424	0.00429	0.00427
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00424	0.00429	0.00427
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00432	0.00436	0.00434

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00206	-0.00211	-0.00207
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00206	-0.00211	-0.00207
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00415	-0.00426	-0.00425
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00430	-0.00433	-0.00431

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00216	0.00216	0.00210
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00216	0.00216	0.00210
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00423	0.00426	0.00425
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00431	0.00433	0.00432

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00205	-0.00210	-0.00206
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00205	-0.00210	-0.00206
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00463	-0.00475	-0.00474
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00471	-0.00476	-0.00480

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00214	0.00216	0.00209
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00214	0.00216	0.00209
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00476	0.00479	0.00474
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00479	0.00482	0.00481

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00362	-0.00419	-0.00421
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00362	-0.00419	-0.00421
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00471	-0.00482	-0.00482
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00479	-0.00480	-0.00487

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00417	0.00422	0.00421
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00418	0.00421	0.00421
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00483	0.00488	0.00482
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00486	0.00495	0.00488

SKY130_OSU_SC_18T_HS__OR2x

sky130_osu_sc_18T_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_18T_hs__or2_1	12.45420
sky130_osu_sc_18T_hs__or2_2	15.38460
sky130_osu_sc_18T_hs__or2_4	21.24540
sky130_osu_sc_18T_hs__or2_8	32.96700
sky130_osu_sc_18T_hs__or2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__or2_1	0.00526	0.00505	3.50727
sky130_osu_sc_18T_hs__or2_2	0.00526	0.00505	6.67927
sky130_osu_sc_18T_hs__or2_4	0.00526	0.00505	12.77035
sky130_osu_sc_18T_hs__or2_8	0.00527	0.00508	23.66001
sky130_osu_sc_18T_hs__or2_l	0.00426	0.00401	2.48402

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__or2_1	0.00000	0.06158	0.10736
sky130_osu_sc_18T_hs__or2_2	0.00000	0.08854	0.21376
sky130_osu_sc_18T_hs__or2_4	0.00000	0.14246	0.42655
sky130_osu_sc_18T_hs__or2_8	0.00000	0.25031	0.85212
sky130_osu_sc_18T_hs__or2_l	0.00000	0.01765	0.03025

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__or2_1	A->Y (RR)	0.04620	0.39326	5.48319
	B->Y (RR)	0.04072	0.37412	5.62687
sky130_osu_sc_18T_hs__or2_2	A->Y (RR)	0.05144	0.34374	5.44481
	B->Y (RR)	0.04571	0.32594	5.54841
sky130_osu_sc_18T_hs__or2_4	A->Y (RR)	0.06745	0.34512	5.71114
	B->Y (RR)	0.06162	0.32955	5.77205
sky130_osu_sc_18T_hs__or2_8	A->Y (RR)	0.09744	0.38837	5.96942
	B->Y (RR)	0.09158	0.37635	5.98705
sky130_osu_sc_18T_hs__or2_l	A->Y (RR)	0.04936	0.44476	5.60047
	B->Y (RR)	0.04446	0.42801	5.65255

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__or2_1	A->Y (FF)	0.07105	0.53402	7.08249
	B->Y (FF)	0.05678	0.50442	7.17892
sky130_osu_sc_18T_hs__or2_2	A->Y (FF)	0.08286	0.50948	7.03313
	B->Y (FF)	0.06866	0.48182	7.07201
sky130_osu_sc_18T_hs__or2_4	A->Y (FF)	0.11365	0.53761	7.22540
	B->Y (FF)	0.09949	0.51340	7.19112
sky130_osu_sc_18T_hs__or2_8	A->Y (FF)	0.17896	0.61318	7.27238
	B->Y (FF)	0.16486	0.59341	7.16864
sky130_osu_sc_18T_hs__or2_l	A->Y (FF)	0.07516	0.54257	6.65368
	B->Y (FF)	0.06110	0.52877	6.84124

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00695	0.00747	0.04575
	B	0.00000	0.00000	0.00000
	B	0.00505	0.00728	0.07269
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01209	0.01291	0.05314
	B	0.00000	0.00000	0.00000
	B	0.01006	0.01236	0.07696
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02317	0.02457	0.06381
	B	0.00000	0.00000	0.00000
	B	0.02110	0.02425	0.08467
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.04720	0.04889	0.09531
	B	0.00000	0.00000	0.00000
	B	0.04518	0.04889	0.11216
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00522	0.00627	0.04624
	B	0.00000	0.00000	0.00000
	B	0.00397	0.00657	0.06666

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.01527	0.01581	0.05150
	B	0.00000	0.00000	0.00000
	B	0.01262	0.01707	0.10677
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01915	0.01993	0.05525
	B	0.00000	0.00000	0.00000
	B	0.01648	0.02088	0.10843
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.03066	0.02987	0.06357
	B	0.00000	0.00000	0.00000
	B	0.02793	0.03051	0.11321
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.06038	0.04984	0.08108
	B	0.00000	0.00000	0.00000
	B	0.05779	0.05128	0.12515
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.01202	0.01308	0.04995
	B	0.00000	0.00000	0.00000
	B	0.01005	0.01399	0.09068

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00371	-0.00428	-0.00429
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00371	-0.00428	-0.00429
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00371	-0.00428	-0.00429
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00371	-0.00428	-0.00429
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00276	-0.00317	-0.00317

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00426	0.00428	0.00429
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00426	0.00428	0.00429
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00426	0.00428	0.00429
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00426	0.00428	0.00429
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00315	0.00320	0.00317

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00208	-0.00214	-0.00209
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00208	-0.00214	-0.00209
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00208	-0.00214	-0.00209
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00208	-0.00214	-0.00210
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00158	-0.00161	-0.00158

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00220	0.00220	0.00213
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00220	0.00220	0.00213
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00220	0.00220	0.00213
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00220	0.00220	0.00213
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00165	0.00165	0.00160

SKY130_OSU_SC_18T_HS__TBUFIx

sky130_osu_sc_18T_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_18T_hs__tbufi_1	12.45420
sky130_osu_sc_18T_hs__tbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_hs__tbufi_1	0.00522	0.00666	1.83931
sky130_osu_sc_18T_hs__tbufi_l	0.00420	0.00537	1.32970

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tbufi_1	0.00000	0.05365	0.21279
sky130_osu_sc_18T_hs__tbufi_l	0.00000	0.01501	0.05648

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tbufi_1	A->Y (FR)	0.02944	0.71541	10.50390
	OE->Y (FR)	0.03528	0.33503	5.02017
	OE->Y (RR)	0.05405	0.48113	5.92695
sky130_osu_sc_18T_hs__tbufi_l	A->Y (FR)	0.03377	0.77341	10.50410
	OE->Y (FR)	0.03805	0.33485	5.02007
	OE->Y (RR)	0.05765	0.53992	5.81360

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tbufi_1	A->Y (RF)	0.01941	0.43803	6.39141
	OE->Y (FF)	0.03548	0.33501	5.02022
	OE->Y (RF)	0.01918	0.42643	6.20175
sky130_osu_sc_18T_hs__tbufi_l	A->Y (RF)	0.02081	0.45214	6.01613
	OE->Y (FF)	0.03825	0.33485	5.02004
	OE->Y (RF)	0.02069	0.43040	5.67849

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00645	0.00791	0.02624
	OE	0.00000	0.00000	0.00000
	OE	0.00662	0.00995	0.10332
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00509	0.00565	0.02434
	OE	0.00000	0.00000	0.00000
	OE	0.00494	0.00859	0.09144

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00112	-0.00081	0.00453
	OE	0.00000	0.00000	0.00000
	OE	0.00450	0.00833	0.11760
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00080	-0.00036	0.00713
	OE	0.00000	0.00000	0.00000
	OE	0.00323	0.00714	0.10072

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00349	-0.00352	-0.00350
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00311	-0.00311	-0.00313
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00272	-0.00274	-0.00273
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00245	-0.00248	-0.00246

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00349	0.00352	0.00350
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00318	0.00319	0.00316
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00272	0.00274	0.00273
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00249	0.00253	0.00248

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00264	0.00684	0.11949
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00239	0.00653	0.11927
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00187	0.00616	0.10299
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00169	0.00590	0.10277

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00758	0.01267	0.12523
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00757	0.01278	0.12526
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00614	0.01087	0.10751
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00619	0.01096	0.10758

SKY130_OSU_SC_18T_HS__TNBUFIx

sky130_osu_sc_18T_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_18T_hs__tnbufi_1	12.45420
sky130_osu_sc_18T_hs__tnbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_hs__tnbufi_1	0.00522	0.00807	1.83868
sky130_osu_sc_18T_hs__tnbufi_l	0.00419	0.00628	1.32920

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tnbufi_1	0.00000	0.08895	0.10688
sky130_osu_sc_18T_hs__tnbufi_l	0.00000	0.02409	0.02924

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tnbufi_1	A->Y (FR)	0.02957	0.71530	10.50160
	OE->Y (RR)	0.02024	0.33595	5.02115
	OE->Y (FR)	0.03934	0.74426	10.77020
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (FR)	0.03399	0.77323	10.50130
	OE->Y (RR)	0.02042	0.33630	5.02155
	OE->Y (FR)	0.04304	0.78774	10.46450

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tnbufi_1	A->Y (RF)	0.01916	0.43844	6.38984
	OE->Y (RF)	0.02002	0.33594	5.02107
	OE->Y (FF)	0.03636	0.41963	5.32849
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (RF)	0.02054	0.45226	6.01431
	OE->Y (RF)	0.02018	0.33625	5.02160
	OE->Y (FF)	0.03950	0.43898	5.03995

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00662	0.00808	0.02641
	OE	0.00000	0.00000	0.00000
	OE	0.01644	0.02264	0.13485
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00527	0.00582	0.02452
	OE	0.00000	0.00000	0.00000
	OE	0.01270	0.01801	0.11417

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00135	-0.00101	0.00431
	OE	0.00000	0.00000	0.00000
	OE	0.01464	0.02099	0.11533
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00103	-0.00057	0.00688
	OE	0.00000	0.00000	0.00000
	OE	0.01122	0.01655	0.09251

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00297	-0.00299	-0.00298
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00263	-0.00267	-0.00264
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00222	-0.00224	-0.00223
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00198	-0.00201	-0.00199

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00297	0.00299	0.00298
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00269	0.00269	0.00267
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00222	0.00224	0.00223
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00201	0.00204	0.00200

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00507	-0.00085	0.11229
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00504	-0.00083	0.11253
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00377	0.00051	0.09776
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00373	0.00052	0.09782

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01245	0.01950	0.13210
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01229	0.01919	0.13197
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00962	0.01536	0.11254
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00951	0.01541	0.11245

SKY130_OSU_SC_18T_HS__XNOR2

sky130_osu_sc_18T_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_18T_hs__xnor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__xnor2_l	0.01032	0.00936	1.95363

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xnor2_l	0.00000	0.17488	0.31967

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xnor2_l	A->Y (RR)	B	0.06830	0.52111	6.33961
	A->Y (FR)	!B	0.03746	0.73361	10.80630
	B->Y (RR)	A	0.05363	0.50543	6.38141
	B->Y (FR)	!A	0.05380	0.76792	11.10370

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xnor2_l	A->Y (FF)	B	0.06070	0.48413	5.94162
	A->Y (RF)	!B	0.02865	0.46086	6.71966
	B->Y (FF)	A	0.05499	0.47996	5.95846
	B->Y (RF)	!A	0.03491	0.46961	6.71113

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00641	0.00908	0.10101
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01576	0.02159	0.14560
	B	A	0.00000	0.00000	0.00000
	B	A	0.00208	0.00590	0.11785
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01748	0.02233	0.13219

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02037	0.02451	0.13217
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00461	0.00785	0.11592
	B	A	0.00000	0.00000	0.00000
	B	A	0.01847	0.02375	0.13540
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00618	0.00933	0.11670

SKY130_OSU_SC_18T_HS__XOR2

sky130_osu_sc_18T_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_18T_hs__xor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__xor2_l	0.01031	0.00941	1.87001

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xor2_l	0.00000	0.17488	0.27025

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xor2_l	A->Y (RR)	!B	0.06439	0.49750	6.09622
	A->Y (FR)	B	0.04836	0.75837	10.94120
	B->Y (RR)	!A	0.05618	0.49728	6.13106
	B->Y (FR)	A	0.05168	0.75759	10.90230

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xor2_l	A->Y (FF)	!B	0.05412	0.46442	5.45522
	A->Y (RF)	B	0.02620	0.45330	6.45672
	B->Y (FF)	!A	0.04972	0.45977	5.61409
	B->Y (RF)	A	0.03291	0.44643	6.27685

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01889	0.02437	0.14072
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00316	0.00522	0.11512
	B	A	0.00000	0.00000	0.00000
	B	A	0.01934	0.02433	0.13823
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00175	0.00538	0.11894

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00386	0.00720	0.12356
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02098	0.02680	0.12034
	B	A	0.00000	0.00000	0.00000
	B	A	0.00394	0.00713	0.11800
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01878	0.02459	0.13715

SKY130_OSU_SC_18T_HS_x

sky130_osu_sc_18T_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_18T_hs__ant	6.59340
sky130_osu_sc_18T_hs__tiehi	6.59340
sky130_osu_sc_18T_hs__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_hs__ant	1.06255
sky130_osu_sc_18T_hs__tiehi	0.00000
sky130_osu_sc_18T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__ant	0.00000	476687.00000	953373.00000
sky130_osu_sc_18T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_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_18T_hs__ant	0.00000	0.00000	0.00000
	-0.00150	0.11653	1.68330

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__ant	0.00000	0.00000	0.00000
	8.29446	7.89409	2.04352