sky130_osu_sc_18T_hs_ss_1P44_-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_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.01989	0.01990	0.01548	0.99445	0.42095	0.97445
sky130_osu_sc_18T_hs__addf_l	0.01988	0.01989	0.01547	0.59771	0.42398	0.59615

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addf_1	0.00000	0.00046	0.00051
sky130_osu_sc_18T_hs__addf_l	0.00000	0.00042	0.00050

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)	0.23041	1.93378	19.91000
	B->CO (RR)	0.21253	1.85524	19.21590
	CI->CO (RR)	0.22151	1.95933	20.39430
	CON->CO (FR)	0.06157	1.11420	12.91840
sky130_osu_sc_18T_hs__addf_l	A->CO (RR)	0.24456	1.86368	16.31130
	B->CO (RR)	0.22627	1.80006	16.08720
	CI->CO (RR)	0.23577	1.88968	16.83730
	CON->CO (FR)	0.08063	1.26418	12.97750

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)	0.53690	3.50888	34.70320
	B->CO (FF)	0.49164	3.37810	33.76660
	CI->CO (FF)	0.47914	3.39691	34.15430
	CON->CO (RF)	0.02937	0.59216	7.01889
sky130_osu_sc_18T_hs__addf_l	A->CO (FF)	0.53790	3.02228	25.17640
	B->CO (FF)	0.49175	2.91221	24.56680
	CI->CO (FF)	0.47995	2.90950	24.64430
	CON->CO (RF)	0.03387	0.62819	6.89094

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)	0.41103	1.73927	13.53020
	B->CON (FR)	0.37052	1.66217	13.24550
	CI->CON (FR)	0.35306	1.62680	13.01020
sky130_osu_sc_18T_hs__addf_l	A->CON (FR)	0.38925	1.72183	13.56170
	B->CON (FR)	0.35012	1.64525	13.27430
	CI->CON (FR)	0.33131	1.60919	13.04060

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)	0.10359	0.61608	5.46419
	B->CON (RF)	0.09421	0.61724	5.57825
	CI->CON (RF)	0.09474	0.64375	5.89018
sky130_osu_sc_18T_hs__addf_l	A->CON (RF)	0.09948	0.61291	5.47587
	B->CON (RF)	0.09052	0.61440	5.59010
	CI->CON (RF)	0.09061	0.63851	5.90298

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)	0.73379	3.65284	31.39770
	B->S (-R)	0.70235	3.58799	30.93360
	CI->S (-R)	0.67226	3.53300	30.82650
	CON->S (RR)	0.14526	1.04121	8.57573
sky130_osu_sc_18T_hs__addf_l	A->S (-R)	0.70728	3.27586	24.66960
	B->S (-R)	0.67776	3.22505	24.40020
	CI->S (-R)	0.64546	3.15594	24.10580
	CON->S (RR)	0.15859	1.17201	8.48236

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)	0.44504	1.73260	13.69960
	B->S (-F)	0.48767	1.70460	13.34130
	CI->S (-F)	0.43578	1.75271	14.18700
	CON->S (FF)	0.22291	0.92017	7.25536
sky130_osu_sc_18T_hs__addf_l	A->S (-F)	0.42247	1.54168	10.82790
	B->S (-F)	0.42357	1.47160	10.76340
	CI->S (-F)	0.41299	1.56018	11.34270
	CON->S (FF)	0.20790	0.92933	6.97708

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	0.00287	0.00278	0.00265
	B	0.00349	0.00354	0.00345
	CI	0.00378	0.00386	0.00378
sky130_osu_sc_18T_hs__addf_l	A	0.00221	0.00205	0.00195
	B	0.00284	0.00279	0.00266
	CI	0.00313	0.00313	0.00304

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01117	0.01116	0.01110
	B	0.01099	0.01111	0.01105
	CI	0.00959	0.00988	0.00979
sky130_osu_sc_18T_hs__addf_l	A	0.01052	0.01047	0.01041
	B	0.01033	0.01040	0.01033
	CI	0.00893	0.00916	0.00908

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01116	0.01115	0.01108
	B	0.01098	0.01107	0.01101
	CI	0.00959	0.00980	0.00963
sky130_osu_sc_18T_hs__addf_l	A	0.01052	0.01047	0.01039
	B	0.01033	0.01040	0.01033
	CI	0.00893	0.00912	0.00895

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00282	0.00274	0.00257
	B	0.00345	0.00345	0.00326
	CI	0.00377	0.00384	0.00371
sky130_osu_sc_18T_hs__addf_l	A	0.00217	0.00204	0.00179
	B	0.00280	0.00274	0.00250
	CI	0.00311	0.00312	0.00298

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01118	0.01116	0.01111
	B	0.01099	0.01111	0.01105
	CI	0.00960	0.00988	0.00983
sky130_osu_sc_18T_hs__addf_l	A	0.01053	0.01047	0.01044
	B	0.01034	0.01041	0.01036
	CI	0.00894	0.00917	0.00913

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.02343	0.02357	0.02352
	B	0.02115	0.02088	0.02067
	CI	0.01873	0.01881	0.01875
sky130_osu_sc_18T_hs__addf_l	A	0.02253	0.02251	0.02242
	B	0.02026	0.01975	0.01959
	CI	0.01786	0.01783	0.01771

SKY130_OSU_SC_18T_HS__ADDHx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00981	0.01066	0.98654	0.44792	0.99229
sky130_osu_sc_18T_hs__addh_l	0.00981	0.01066	0.59529	0.44721	0.60335

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addh_1	0.00000	0.00040	0.00047
sky130_osu_sc_18T_hs__addh_l	0.00000	0.00036	0.00044

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)	0.17015	1.04655	8.31384
	B->CO (RR)	0.17436	1.04237	8.43944
sky130_osu_sc_18T_hs__addh_l	A->CO (RR)	0.17544	1.16736	8.22910
	B->CO (RR)	0.17960	1.16622	8.37205

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)	0.18735	0.88235	7.31226
	B->CO (FF)	0.19980	0.89583	7.37160
sky130_osu_sc_18T_hs__addh_l	A->CO (FF)	0.18619	0.92987	7.34681
	B->CO (FF)	0.19817	0.94343	7.40536

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	0.24911	0.87649	4.60807
	A->CON (FR)	!B	0.24450	1.51654	13.04110
	B->CON (RR)	A	0.25353	0.87154	4.73617
	B->CON (FR)	!A	0.28836	1.61036	13.58060
sky130_osu_sc_18T_hs__addh_l	A->CON (RR)	B	0.22226	0.83849	4.48424
	A->CON (FR)	!B	0.21628	1.48012	12.98130
	B->CON (RR)	A	0.22672	0.83663	4.61770
	B->CON (FR)	!A	0.26015	1.58040	13.54530

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	0.24219	0.91501	6.64155
	A->CON (RF)	!B	0.06550	0.61149	5.89439
	B->CON (FF)	A	0.25147	0.94372	6.83704
	B->CON (RF)	!A	0.07229	0.60195	5.69961
sky130_osu_sc_18T_hs__addh_l	A->CON (FF)	B	0.21512	0.87859	6.45650
	A->CON (RF)	!B	0.06013	0.60516	5.88165
	B->CON (FF)	A	0.22429	0.90813	6.65659
	B->CON (RF)	!A	0.06713	0.59604	5.68788

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	0.17610	1.87158	19.96050
	A->S (FR)	B	0.35425	2.14448	20.04870
	B->S (RR)	!A	0.18097	1.81115	19.21890
	B->S (FR)	A	0.36678	2.22387	20.83380
	CON->S (FR)	-	0.06662	1.13525	13.11040
sky130_osu_sc_18T_hs__addh_l	A->S (RR)	!B	0.17857	1.80336	16.64180
	A->S (FR)	B	0.33539	2.06295	16.74650
	B->S (RR)	!A	0.18417	1.76014	16.18250
	B->S (FR)	A	0.34739	2.12533	17.25300
	CON->S (FR)	-	0.08032	1.28350	13.15750

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	0.34833	3.12982	32.69080
	A->S (RF)	B	0.32218	1.82970	15.72140
	B->S (FF)	!A	0.39229	3.22536	33.27320
	B->S (RF)	A	0.32660	1.82449	15.84730
	CON->S (RF)	-	0.02748	0.57929	6.88479
sky130_osu_sc_18T_hs__addh_l	A->S (FF)	!B	0.33502	2.72546	24.38780
	A->S (RF)	B	0.30379	1.63381	11.56350
	B->S (FF)	!A	0.37892	2.81529	24.94450
	B->S (RF)	A	0.30819	1.63083	11.69880
	CON->S (RF)	-	0.03362	0.65864	7.25772

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	0.00487	0.00466	0.00436
	B	0.00000	0.00000	0.00000
	B	0.00453	0.00432	0.00402
sky130_osu_sc_18T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00393	0.00365	0.00348
	B	0.00000	0.00000	0.00000
	B	0.00359	0.00331	0.00312

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	0.00783	0.00758	0.00708
	B	0.00000	0.00000	0.00000
	B	0.00814	0.00813	0.00765
sky130_osu_sc_18T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00689	0.00661	0.00633
	B	0.00000	0.00000	0.00000
	B	0.00720	0.00714	0.00690

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	0.00487	0.00464	0.00468
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00679	0.00673	0.00667
	B	A	0.00000	0.00000	0.00000
	B	A	0.00452	0.00430	0.00422
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00737	0.00730	0.00727
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00393	0.00365	0.00346
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00616	0.00597	0.00571
	B	A	0.00000	0.00000	0.00000
	B	A	0.00359	0.00330	0.00318
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00673	0.00664	0.00662

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	0.00782	0.00760	0.00734
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00110	0.00108	0.00090
	B	A	0.00000	0.00000	0.00000
	B	A	0.00813	0.00812	0.00786
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00182	0.00173	0.00156
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00689	0.00662	0.00630
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00031	0.00028	0.00014
	B	A	0.00000	0.00000	0.00000
	B	A	0.00720	0.00714	0.00683
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00103	0.00093	0.00074

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	0.00784	0.00760	0.00735
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00110	0.00113	0.00104
	B	A	0.00000	0.00000	0.00000
	B	A	0.00814	0.00814	0.00795
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00184	0.00176	0.00168
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00690	0.00662	0.00634
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00032	0.00030	-0.00013
	B	A	0.00000	0.00000	0.00000
	B	A	0.00721	0.00714	0.00690
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00105	0.00094	0.00053

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	0.00487	0.00465	0.00438
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00679	0.00680	0.00672
	B	A	0.00000	0.00000	0.00000
	B	A	0.00453	0.00431	0.00403
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00736	0.00735	0.00731
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00393	0.00365	0.00345
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00616	0.00612	0.00607
	B	A	0.00000	0.00000	0.00000
	B	A	0.00358	0.00330	0.00311
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00673	0.00665	0.00660

SKY130_OSU_SC_18T_HS__AND2x

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00528	0.00536	0.99363
sky130_osu_sc_18T_hs__and2_2	0.00528	0.00537	1.96374
sky130_osu_sc_18T_hs__and2_4	0.00528	0.00537	3.78783
sky130_osu_sc_18T_hs__and2_6	0.00531	0.00536	5.60731
sky130_osu_sc_18T_hs__and2_8	0.00528	0.00537	7.28453
sky130_osu_sc_18T_hs__and2_l	0.00405	0.00414	0.60461

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__and2_1	0.00000	0.00018	0.00025
sky130_osu_sc_18T_hs__and2_2	0.00000	0.00027	0.00030
sky130_osu_sc_18T_hs__and2_4	0.00000	0.00045	0.00049
sky130_osu_sc_18T_hs__and2_6	0.00000	0.00063	0.00070
sky130_osu_sc_18T_hs__and2_8	0.00000	0.00081	0.00091
sky130_osu_sc_18T_hs__and2_l	0.00000	0.00013	0.00017

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)	0.13057	0.96398	7.93138
	B->Y (RR)	0.13608	0.96978	8.10520
sky130_osu_sc_18T_hs__and2_2	A->Y (RR)	0.14654	0.87637	8.23014
	B->Y (RR)	0.15202	0.87526	8.36460
sky130_osu_sc_18T_hs__and2_4	A->Y (RR)	0.20199	0.88009	8.68844
	B->Y (RR)	0.20742	0.86882	8.76780
sky130_osu_sc_18T_hs__and2_6	A->Y (RR)	0.25557	0.92040	9.05750
	B->Y (RR)	0.26088	0.90323	9.10669
sky130_osu_sc_18T_hs__and2_8	A->Y (RR)	0.30949	0.97091	9.34398
	B->Y (RR)	0.31496	0.95165	9.37030
sky130_osu_sc_18T_hs__and2_l	A->Y (RR)	0.16245	1.16097	8.52018
	B->Y (RR)	0.16881	1.16378	8.68280

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)**	0.13765	0.80041	6.83237
	B->Y (FF)	0.14897	0.81795	6.93241
sky130_osu_sc_18T_hs__and2_2	**A->Y (FF)**	0.17022	0.80879	7.14489
	B->Y (FF)	0.18255	0.82409	7.22588
sky130_osu_sc_18T_hs__and2_4	**A->Y (FF)**	0.24887	0.88007	7.62542
	B->Y (FF)	0.26146	0.89424	7.68425
sky130_osu_sc_18T_hs__and2_6	**A->Y (FF)**	0.33019	0.96561	7.98536
	B->Y (FF)	0.34242	0.97925	8.03838
sky130_osu_sc_18T_hs__and2_8	**A->Y (FF)**	0.40732	1.04809	8.22535
	B->Y (FF)	0.42033	1.06266	8.27167
sky130_osu_sc_18T_hs__and2_l	**A->Y (FF)**	0.16916	0.86899	6.95495
	B->Y (FF)	0.18373	0.88959	7.06001

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	0.00394	0.00351	0.00339
	B	0.00000	0.00000	0.00000
	B	0.00399	0.00358	0.00343
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00773	0.00752	0.00739
	B	0.00000	0.00000	0.00000
	B	0.00778	0.00761	0.00795
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01589	0.01620	0.01617
	B	0.00000	0.00000	0.00000
	B	0.01593	0.01631	0.01623
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02393	0.02464	0.02537
	B	0.00000	0.00000	0.00000
	B	0.02399	0.02490	0.02548
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03195	0.03321	0.03443
	B	0.00000	0.00000	0.00000
	B	0.03203	0.03320	0.03453
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00289	0.00258	0.00245
	B	0.00000	0.00000	0.00000
	B	0.00296	0.00263	0.00250

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	0.00952	0.00930	0.00920
	B	0.00000	0.00000	0.00000
	B	0.01063	0.01043	0.01035
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01200	0.01223	0.01221
	B	0.00000	0.00000	0.00000
	B	0.01313	0.01336	0.01329
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01811	0.01930	0.01948
	B	0.00000	0.00000	0.00000
	B	0.01925	0.02040	0.02049
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02431	0.02649	0.02687
	B	0.00000	0.00000	0.00000
	B	0.02543	0.02743	0.02776
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03027	0.03333	0.03412
	B	0.00000	0.00000	0.00000
	B	0.03140	0.03420	0.03486
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00730	0.00709	0.00702
	B	0.00000	0.00000	0.00000
	B	0.00810	0.00790	0.00781

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)	-0.00350	-0.00351	-0.00354
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00350	-0.00351	-0.00354
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00350	-0.00350	-0.00354
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00351	-0.00356	-0.00355
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00349	-0.00353	-0.00354
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00257	-0.00258	-0.00260

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)	0.00353	0.00356	0.00354
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00353	0.00356	0.00354
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00353	0.00355	0.00354
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00354	0.00357	0.00356
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00353	0.00355	0.00354
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00259	0.00262	0.00260

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)	-0.00332	-0.00334	-0.00333
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00332	-0.00334	-0.00333
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00332	-0.00334	-0.00333
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00332	-0.00334	-0.00333
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00332	-0.00334	-0.00333
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00244	-0.00245	-0.00245

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)	0.00332	0.00334	0.00334
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00332	0.00334	0.00334
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00332	0.00334	0.00334
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00332	0.00334	0.00334
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00332	0.00334	0.00334
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00244	0.00247	0.00245

SKY130_OSU_SC_18T_HS__AOI21

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00493	0.00515	0.00501	0.43426

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi21_l	0.00000	0.00010	0.00012

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)	0.21381	1.56398	13.58640
	A1->Y (FR)	0.18245	1.49490	13.30310
	B0->Y (FR)	0.16356	1.46077	13.07310

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)	0.05255	0.55378	5.34659
	A1->Y (RF)	0.04724	0.57102	5.59365
	B0->Y (RF)	0.03898	0.58893	6.06916

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	0.00769	0.00759	0.00760
	A1	0.00000	0.00000	0.00000
	A1	0.00652	0.00638	0.00637
	B0	0.00636	0.00618	0.00612

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	0.00116	0.00096	0.00081
	A1	0.00000	0.00000	0.00000
	A1	0.00118	0.00094	0.00082
	B0	-0.00079	-0.00079	-0.00088

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)	-0.00298	-0.00309	-0.00306
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00313	-0.00314	-0.00314
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00313	-0.00316	-0.00314

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)	0.00304	0.00310	0.00306
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00313	0.00316	0.00315
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00313	0.00317	0.00315

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)	-0.00295	-0.00305	-0.00302
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00309	-0.00311	-0.00310
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00334	-0.00335	-0.00337

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)	0.00300	0.00307	0.00302
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00309	0.00311	0.00311
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00337	0.00340	0.00338

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)	-0.00187	-0.00189	-0.00188

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)	0.00204	0.00205	0.00192

SKY130_OSU_SC_18T_HS__AOI22

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00493	0.00516	0.00538	0.00513	0.42384

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi22_l	0.00000	0.00014	0.00021

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)	0.27427	1.63197	13.60080
	A1->Y (FR)	0.24389	1.58101	13.43840
	B0->Y (FR)	0.17418	1.45420	12.87280
	B1->Y (FR)	0.20474	1.50146	13.08490

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)	0.06557	0.56645	5.31309
	A1->Y (RF)	0.06027	0.58200	5.55711
	B0->Y (RF)	0.04149	0.55728	5.51831
	B1->Y (RF)	0.04661	0.53936	5.27812

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	0.00945	0.00933	0.00933
	A1	0.00831	0.00813	0.00806
	B0	0.00684	0.00655	0.00551
	B1	0.00795	0.00757	0.00767

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.00268	0.00250	0.00230
	A1	0.00271	0.00249	0.00230
	B0	-0.00047	-0.00048	-0.00058
	B1	-0.00045	-0.00045	-0.00056

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)	-0.00298	-0.00307	-0.00305
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00313	-0.00315	-0.00314
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00313	-0.00316	-0.00314
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00313	-0.00315	-0.00314

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)	0.00303	0.00310	0.00305
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00313	0.00316	0.00315
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00313	0.00317	0.00315
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00313	0.00317	0.00315

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)	-0.00295	-0.00305	-0.00302
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00309	-0.00311	-0.00310
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00333	-0.00335	-0.00337
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00333	-0.00335	-0.00337

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)	0.00300	0.00307	0.00302
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00309	0.00311	0.00311
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00335	0.00340	0.00338
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00335	0.00340	0.00338

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)	-0.00188	-0.00190	-0.00189
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00188	-0.00188	-0.00188
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00343	-0.00345	-0.00346
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00343	-0.00346	-0.00346

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)	0.00210	0.00211	0.00194
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00188	0.00188	0.00188
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00345	0.00352	0.00346
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00345	0.00351	0.00346

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)	-0.00189	-0.00190	-0.00190
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00188	-0.00189	-0.00189
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00318	-0.00319	-0.00319
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00318	-0.00319	-0.00319

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)	0.00211	0.00212	0.00195
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00188	0.00189	0.00189
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00318	0.00320	0.00319
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00318	0.00320	0.00319

SKY130_OSU_SC_18T_HS__BUFx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00538	0.98394
sky130_osu_sc_18T_hs__buf_2	0.00538	1.95930
sky130_osu_sc_18T_hs__buf_4	0.00538	3.84304
sky130_osu_sc_18T_hs__buf_6	0.00098	1.80000
sky130_osu_sc_18T_hs__buf_8	0.00538	7.36566
sky130_osu_sc_18T_hs__buf_l	0.00419	0.59687

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__buf_1	0.00000	0.00015	0.00015
sky130_osu_sc_18T_hs__buf_2	0.00000	0.00022	0.00025
sky130_osu_sc_18T_hs__buf_4	0.00000	0.00037	0.00046
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_hs__buf_8	0.00000	0.00067	0.00088
sky130_osu_sc_18T_hs__buf_l	0.00000	0.00011	0.00011

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)**	0.10229	0.91865	7.80827
sky130_osu_sc_18T_hs__buf_2	**A->Y (RR)**	0.10825	0.82154	8.10339
sky130_osu_sc_18T_hs__buf_4	**A->Y (RR)**	0.14491	0.80431	8.59581
sky130_osu_sc_18T_hs__buf_8	**A->Y (RR)**	0.21670	0.85432	9.09589
sky130_osu_sc_18T_hs__buf_l	**A->Y (RR)**	0.12862	1.10754	8.31029

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)**	0.13072	0.78983	6.75206
sky130_osu_sc_18T_hs__buf_2	**A->Y (FF)**	0.16449	0.80237	7.10712
sky130_osu_sc_18T_hs__buf_4	**A->Y (FF)**	0.24368	0.87445	7.62941
sky130_osu_sc_18T_hs__buf_8	**A->Y (FF)**	0.40273	1.04325	8.23864
sky130_osu_sc_18T_hs__buf_l	**A->Y (FF)**	0.16332	0.86191	6.87388

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	0.00366	0.00316	0.00307
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00747	0.00719	0.00707
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01569	0.01581	0.01571
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03181	0.03289	0.03381
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00278	0.00239	0.00224

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	0.00924	0.00901	0.00894
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01170	0.01188	0.01185
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01784	0.01891	0.01907
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03004	0.03288	0.03357
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00718	0.00693	0.00685

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
	-0.00049	-0.00050	-0.00049

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
	0.00049	0.00050	0.00049

SKY130_OSU_SC_18T_HS__DFFRx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00508	0.00512	0.01533	0.97495	0.96825
sky130_osu_sc_18T_hs__dffr_l	0.00508	0.00512	0.01533	0.60527	0.59929

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffr_1	0.00000	0.00071	0.00086
sky130_osu_sc_18T_hs__dffr_l	0.00000	0.00067	0.00082

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)	0.79036	2.13011	13.53660
	QN->Q (FR)	0.06920	1.19327	13.76820
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RR)	0.78870	2.27359	13.09400
	QN->Q (FR)	0.08560	1.32665	13.59860

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)	0.63115	2.11892	15.84720
	QN->Q (RF)	0.03409	0.67578	8.06050
	RN->Q (FF)	0.44028	2.15413	19.01210
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RF)	0.66974	2.41196	15.93490
	QN->Q (RF)	0.03729	0.69152	7.68398
	RN->Q (FF)	0.47995	2.44897	19.08880

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)	0.56460	1.40741	8.50943
	RN->QN (FR)	0.37283	1.44353	11.68080
sky130_osu_sc_18T_hs__dffr_l	CK->QN (RR)	0.58235	1.54923	8.55050
	RN->QN (FR)	0.39150	1.58577	11.71050

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)**	0.67293	1.20112	4.16945
sky130_osu_sc_18T_hs__dffr_l	**CK->QN (RF)**	0.65423	1.18196	3.89766

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)	-0.09346	-0.12694	-0.66081
	setup	CK (R)	0.62571	0.63136	1.68805
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.09848	-0.12793	-0.66191
	setup	CK (R)	0.62450	0.63161	1.69178

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)	-0.32364	-0.73065	-9.27090
	setup	CK (R)	0.36866	0.75570	9.36048
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.32142	-0.72988	-9.27266
	setup	CK (R)	0.36477	0.75335	9.36219

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)	-0.09346	-0.12694	-0.66081
	setup	CK (R)	0.62571	0.63136	1.68805
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.09848	-0.12793	-0.66191
	setup	CK (R)	0.62450	0.63161	1.69178

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)	-0.32364	-0.73065	-9.27090
	setup	CK (R)	0.36866	0.75570	9.36048
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.32142	-0.72988	-9.27266
	setup	CK (R)	0.36477	0.75335	9.36219

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)	0.56796	0.57310	1.45132
	removal	CK (R)	-0.11140	-0.13195	-0.13399
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.56897	0.57315	1.44733
	removal	CK (R)	-0.11140	-0.13195	-0.13399

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)	0.56796	0.57310	1.45132
	removal	CK (R)	-0.11140	-0.13195	-0.13399
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.56897	0.57315	1.44733
	removal	CK (R)	-0.11140	-0.13195	-0.13399

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 ()	0.27577	0.65895	13.33370
	min_pulse_width	RN ()	0.27577	0.65895	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	RN ()	0.27986	0.65677	13.33370
	min_pulse_width	RN ()	0.27738	0.65677	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 ()	0.35843	0.53467	13.33370
	min_pulse_width	CK ()	0.33440	0.53467	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.32438	0.53467	13.33370
	min_pulse_width	CK ()	0.32438	0.53467	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 ()	0.79070	0.88134	13.33370
	min_pulse_width	CK ()	0.29640	0.64368	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.78735	0.88134	13.33370
	min_pulse_width	CK ()	0.29397	0.64368	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	0.00896	0.00743	-0.00629
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00791	0.00680	0.00087

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	0.01022	0.00963	0.00629
	RN	-0.00128	-0.04622	-0.50541
	RN	0.02312	0.02266	0.01905
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00915	0.00866	0.00722
	RN	-0.00128	-0.03472	-0.31377
	RN	0.02203	0.02169	0.01995

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	0.01023	0.00964	0.00629
	RN	-0.00128	-0.04602	-0.50194
	RN	0.02312	0.02267	0.01895
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00915	0.00867	0.00724
	RN	-0.00128	-0.03451	-0.31067
	RN	0.02204	0.02169	0.01989

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	0.00892	0.00739	-0.00622
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00787	0.00676	0.00064

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	-0.00293	-0.00306	-0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01024	0.00981	0.00949
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00467	0.00429	0.00403
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00293	-0.00306	-0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01024	0.00981	0.00949
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00467	0.00429	0.00403

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	0.00302	0.00306	0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01766	0.01744	0.01717
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00800	0.00782	0.00776
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00302	0.00306	0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01766	0.01742	0.01717
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00800	0.00782	0.00776

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)	0.00379	0.00330	0.00309
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00975	0.00903	0.00867
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)	0.00379	0.00330	0.00308
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00975	0.00903	0.00867

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)	0.00822	0.00792	0.00784
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01773	0.01723	0.01687
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)	0.00822	0.00792	0.00784
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01773	0.01723	0.01687

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)	-0.00056	-0.00111	-0.00142
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00486	0.00377	0.00309
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00092	-0.00153	-0.00180
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00056	-0.00111	-0.00142
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00486	0.00377	0.00309
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00092	-0.00153	-0.00180

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)	0.01381	0.01344	0.01324
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02767	0.02691	0.02598
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02141	0.02091	0.02022
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02790	0.02708	0.02660
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01479	0.01443	0.01431
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01381	0.01344	0.01324
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02766	0.02691	0.02598
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02141	0.02091	0.02022
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02790	0.02708	0.02660
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01479	0.01443	0.01431

SKY130_OSU_SC_18T_HS__DFFSRx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00504	0.00513	0.01087	0.01556	1.00607	1.00185
sky130_osu_sc_18T_hs__dffsr_l	0.00504	0.00513	0.01085	0.01556	0.58991	0.59481

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__dffsr_1	0.00000	0.00077	0.00092
sky130_osu_sc_18T_hs__dffsr_l	0.00000	0.00073	0.00088

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)	0.69065	1.99819	13.44810
	QN->Q (FR)	0.06618	1.17396	13.66540
	RN->Q (RR)	0.55808	1.87191	13.43600
	SN->Q (FR)	0.55739	2.08223	17.51490
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RR)	0.71206	2.17102	12.81870
	QN->Q (FR)	0.08548	1.31336	13.39260
	RN->Q (RR)	0.58103	2.04513	12.80940
	SN->Q (FR)	0.57798	2.25622	16.86540

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)	0.67297	2.15156	15.91270
	QN->Q (RF)	0.03108	0.64047	7.70082
	RN->Q (FF)	0.46453	2.16452	19.14220
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RF)	0.72067	2.44375	15.62130
	QN->Q (RF)	0.03720	0.68646	7.60399
	RN->Q (FF)	0.51200	2.45546	18.83910

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)	0.60808	1.45432	8.62891
	RN->QN (FR)	0.40043	1.46708	11.86130
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RR)	0.63191	1.60031	8.54937
	RN->QN (FR)	0.42380	1.61261	11.77020

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)	0.58985	1.09657	4.11845
	RN->QN (RF)	0.45680	0.97350	4.11046
	SN->QN (FF)	0.45653	1.18348	8.18174
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RF)	0.58775	1.10678	3.90517
	RN->QN (RF)	0.45522	0.98408	3.89826
	SN->QN (FF)	0.45381	1.19466	7.94500

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)	-0.09338	-0.12978	-0.72909
	setup	CK (R)	0.52162	0.51993	1.58376
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.09547	-0.13042	-0.73126
	setup	CK (R)	0.52270	0.51820	1.57553

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)	-0.34941	-0.75453	-9.38397
	setup	CK (R)	0.40194	0.77536	9.44658
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.34959	-0.75406	-9.38367
	setup	CK (R)	0.39782	0.77536	9.44550

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)	-0.09338	-0.12978	-0.72909
	setup	CK (R)	0.52162	0.51993	1.58376
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.09547	-0.13042	-0.73126
	setup	CK (R)	0.52270	0.51820	1.57553

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)	-0.34941	-0.75453	-9.38397
	setup	CK (R)	0.40194	0.77536	9.44658
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.34959	-0.75406	-9.38367
	setup	CK (R)	0.39782	0.77536	9.44550

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)	0.43088	0.43289	1.31695
	removal	CK (R)	-0.04226	-0.05296	-0.07726
	hold	SN (R)	-0.44037	-0.70913	-6.23496
	setup	SN (R)	0.46724	0.75976	7.79618
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.42572	0.43023	1.29943
	removal	CK (R)	-0.04307	-0.05296	-0.07726
	hold	SN (R)	-0.41710	-0.68963	-6.16553
	setup	SN (R)	0.46774	0.75067	7.76261

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)	0.43088	0.43289	1.31695
	removal	CK (R)	-0.04226	-0.05296	-0.07726
	hold	SN (R)	-0.44408	-0.70913	-6.23496
	hold	SN (R)	-0.44037	-0.70999	-6.24337
	setup	SN (R)	0.46724	0.75360	7.77627
	setup	SN (R)	0.45546	0.75976	7.79618
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.42572	0.43023	1.29943
	removal	CK (R)	-0.04307	-0.05296	-0.07726
	hold	SN (R)	-0.44397	-0.70333	-6.20060
	hold	SN (R)	-0.41710	-0.68963	-6.16553
	setup	SN (R)	0.46774	0.74101	7.70004
	setup	SN (R)	0.43317	0.75067	7.76261

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 ()	0.31533	0.68075	13.33370
	min_pulse_width	RN ()	0.32563	0.68075	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	RN ()	0.32719	0.67857	13.33370
	min_pulse_width	RN ()	0.32462	0.67857	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)	0.05402	0.08263	1.56624
	removal	CK (R)	-0.01377	-0.05005	-0.49922
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.04924	0.08118	1.43865
	removal	CK (R)	-0.01377	-0.05005	-0.50110

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)	0.05402	0.08263	1.56624
	removal	CK (R)	-0.01377	-0.05005	-0.49922
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.04924	0.08118	1.43865
	removal	CK (R)	-0.01377	-0.05005	-0.50110

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 ()	0.46372	0.83556	13.33370
	min_pulse_width	SN ()	0.45970	0.83991	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	SN ()	0.46213	0.82683	13.33370
	min_pulse_width	SN ()	0.43401	0.83337	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 ()	0.29635	0.53467	13.33370
	min_pulse_width	CK ()	0.34241	0.53467	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.28032	0.53467	13.33370
	min_pulse_width	CK ()	0.33640	0.53467	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 ()	0.68926	0.77450	13.33370
	min_pulse_width	CK ()	0.33326	0.66985	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.68439	0.77233	13.33370
	min_pulse_width	CK ()	0.32969	0.66767	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	0.01091	0.00975	0.00050
	RN	0.02064	0.01967	0.01029
	SN	-0.00128	-0.04709	-0.52155
	SN	0.02244	0.02160	0.01229
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00996	0.00887	0.00315
	RN	0.01968	0.01878	0.01293
	SN	-0.00128	-0.03419	-0.30581
	SN	0.02148	0.02071	0.01493

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	0.01160	0.01111	0.00828
	RN	-0.00128	-0.04709	-0.52155
	RN	0.02397	0.02351	0.02040
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01062	0.01020	0.00882
	RN	-0.00128	-0.03419	-0.30581
	RN	0.02298	0.02258	0.02092

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	0.01161	0.01113	0.00830
	RN	-0.00128	-0.04698	-0.51936
	RN	0.02398	0.02352	0.02047
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01063	0.01022	0.00883
	RN	-0.00128	-0.03436	-0.30835
	RN	0.02299	0.02258	0.02096

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	0.01086	0.00970	0.00023
	RN	0.02060	0.01962	0.01006
	SN	-0.00128	-0.04698	-0.51934
	SN	0.02240	0.02156	0.01211
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00991	0.00881	0.00277
	RN	0.01963	0.01872	0.01267
	SN	-0.00128	-0.03436	-0.30833
	SN	0.02143	0.02066	0.01462

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	-0.00295	-0.00306	-0.00304
	(!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)	0.01312	0.01272	0.01242
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00527	0.00492	0.00465
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00525	0.00488	0.00462
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00531	0.00496	0.00468
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00295	-0.00306	-0.00304
	(!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)	0.01312	0.01272	0.01242
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00527	0.00492	0.00465
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00525	0.00488	0.00462
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00531	0.00496	0.00468

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	0.00302	0.00306	0.00304
	(!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)	0.01988	0.01968	0.01926
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00855	0.00839	0.00832
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00859	0.00843	0.00833
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00851	0.00835	0.00828
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00302	0.00306	0.00304
	(!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)	0.01988	0.01967	0.01925
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00854	0.00839	0.00831
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00858	0.00842	0.00832
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00850	0.00835	0.00827

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)	0.00373	0.00329	0.00294
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01193	0.01125	0.01074
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)	0.00375	0.00329	0.00294
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01194	0.01125	0.01075

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)	0.00896	0.00865	0.00857
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01883	0.01822	0.01782
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)	0.00895	0.00864	0.00856
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01882	0.01821	0.01781

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)	-0.00694	-0.00695	-0.00702
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00709	-0.00724	-0.00718
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00687	-0.00693	-0.00692
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00405	0.00365	0.00323
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)	-0.00694	-0.00696	-0.00702
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00708	-0.00722	-0.00717
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00686	-0.00693	-0.00692
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00406	0.00365	0.00323

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)	0.00698	0.00707	0.00703
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00714	0.00728	0.00718
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00689	0.00693	0.00693
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01388	0.01359	0.01356
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)	0.00698	0.00707	0.00703
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00713	0.00726	0.00717
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00688	0.00693	0.00692
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01388	0.01359	0.01359

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)	-0.00057	-0.00106	-0.00142
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00559	0.00458	0.00388
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00552	0.00453	0.00388
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00077	-0.00137	-0.00163
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00450	0.00341	0.00289
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00057	-0.00106	-0.00142
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00559	0.00458	0.00388
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00552	0.00453	0.00383
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00077	-0.00137	-0.00163
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00450	0.00341	0.00289

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)	0.03066	0.02993	0.02891
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01384	0.01348	0.01328
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02180	0.02135	0.02066
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02185	0.02143	0.02071
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03010	0.02924	0.02858
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01466	0.01430	0.01418
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01771	0.01695	0.01671
sky130_osu_sc_18T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03066	0.02993	0.02891
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01384	0.01348	0.01328
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02180	0.02135	0.02066
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02185	0.02143	0.02071
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03010	0.02923	0.02858
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01466	0.01430	0.01418
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01771	0.01694	0.01670

SKY130_OSU_SC_18T_HS__DFFSx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00506	0.00870	0.01535	0.98430	0.97391
sky130_osu_sc_18T_hs__dffs_l	0.00506	0.00870	0.01535	0.59873	0.60028

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffs_1	0.00000	0.00066	0.00074
sky130_osu_sc_18T_hs__dffs_l	0.00000	0.00062	0.00070

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)	0.47307	1.76986	13.27310
	QN->Q (FR)	0.06897	1.19064	13.77020
	SN->Q (FR)	0.40986	1.93265	17.18950
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RR)	0.48754	1.92620	12.64000
	QN->Q (FR)	0.08535	1.30963	13.47500
	SN->Q (FR)	0.42346	2.09445	16.52740

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)	0.68702	2.17773	15.98490
	QN->Q (RF)	0.03384	0.67139	8.06052
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RF)	0.72193	2.45303	15.80060
	QN->Q (RF)	0.03708	0.68770	7.63207

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)	0.61831	1.46488	8.57683
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RR)	0.63279	1.60104	8.59571

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)	0.37640	0.85513	3.84648
	SN->QN (FF)	0.31113	1.02019	7.76375
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RF)	0.37128	0.85925	3.59542
	SN->QN (FF)	0.30527	1.02909	7.48875

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)	-0.06014	-0.09732	-0.60737
	setup	CK (R)	0.33782	0.34576	1.51449
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.06075	-0.09615	-0.60552
	setup	CK (R)	0.33440	0.34571	1.51080

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)	-0.32362	-0.73498	-9.32430
	setup	CK (R)	0.40243	0.76426	9.40950
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.32605	-0.73579	-9.32293
	setup	CK (R)	0.40196	0.76426	9.40899

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)	-0.06014	-0.09732	-0.60737
	setup	CK (R)	0.33782	0.34576	1.51449
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.06075	-0.09615	-0.60552
	setup	CK (R)	0.33440	0.34571	1.51080

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)	-0.32362	-0.73498	-9.32430
	setup	CK (R)	0.40243	0.76426	9.40950
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.32605	-0.73579	-9.32293
	setup	CK (R)	0.40196	0.76426	9.40899

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)	0.07803	0.12721	1.61480
	removal	CK (R)	-0.02794	-0.08662	-1.10965
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.07803	0.12663	1.51735
	removal	CK (R)	-0.02794	-0.08662	-1.10965

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)	0.07803	0.12721	1.61480
	removal	CK (R)	-0.02794	-0.08662	-1.10965
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.07803	0.12663	1.51735
	removal	CK (R)	-0.02794	-0.08662	-1.10965

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 ()	0.29429	0.76360	13.33370
	min_pulse_width	SN ()	0.29927	0.76142	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	SN ()	0.29029	0.75270	13.33370
	min_pulse_width	SN ()	0.28327	0.75706	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 ()	0.16417	0.53467	13.33370
	min_pulse_width	CK ()	0.35042	0.53467	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.15415	0.53467	13.33370
	min_pulse_width	CK ()	0.33840	0.53467	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 ()	0.49890	0.65459	13.33370
	min_pulse_width	CK ()	0.33581	0.65459	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.49807	0.65677	13.33370
	min_pulse_width	CK ()	0.33581	0.65459	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	0.00898	0.00729	-0.00606
	SN	-0.00128	-0.04648	-0.51026
	SN	0.01944	0.01799	0.00439
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00792	0.00672	0.00101
	SN	-0.00128	-0.03449	-0.31038
	SN	0.01837	0.01743	0.01151

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	0.01019	0.00964	0.00641
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00911	0.00868	0.00730

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	0.01019	0.00964	0.00644
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00912	0.00869	0.00730

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	0.00893	0.00727	-0.00603
	SN	-0.00128	-0.04619	-0.50485
	SN	0.01940	0.01795	0.00455
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00787	0.00667	0.00072
	SN	-0.00128	-0.03455	-0.31117
	SN	0.01833	0.01739	0.01127

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	-0.00299	-0.00309	-0.00308
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01012	0.00969	0.00928
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00454	0.00418	0.00391
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00299	-0.00309	-0.00308
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01012	0.00969	0.00928
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00454	0.00418	0.00391

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	0.00306	0.00309	0.00308
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01740	0.01717	0.01694
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00816	0.00798	0.00792
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00306	0.00309	0.00308
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01740	0.01717	0.01694
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00816	0.00798	0.00792

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)	-0.00515	-0.00519	-0.00519
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00382	0.00348	0.00328
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)	-0.00515	-0.00519	-0.00519
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00382	0.00348	0.00328

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)	0.00516	0.00522	0.00520
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00994	0.00957	0.00947
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)	0.00516	0.00522	0.00520
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00994	0.00957	0.00947

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)	-0.00058	-0.00113	-0.00143
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00085	-0.00143	-0.00172
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00376	0.00266	0.00214
sky130_osu_sc_18T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00058	-0.00113	-0.00143
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00085	-0.00143	-0.00172
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00376	0.00266	0.00214

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)	0.02750	0.02676	0.02573
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01382	0.01344	0.01324
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02760	0.02666	0.02624
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01471	0.01433	0.01423
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01727	0.01649	0.01627
sky130_osu_sc_18T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02750	0.02676	0.02573
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01382	0.01344	0.01324
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02760	0.02666	0.02624
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01471	0.01433	0.01423
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01727	0.01649	0.01627

SKY130_OSU_SC_18T_HS__DFFx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00522	0.01527	0.99891	1.00431
sky130_osu_sc_18T_hs__dff_l	0.00522	0.01527	0.59648	0.59460

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dff_1	0.00000	0.00065	0.00069
sky130_osu_sc_18T_hs__dff_l	0.00000	0.00061	0.00065

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)	0.37811	1.63645	12.95110
	QN->Q (FR)	0.06574	1.17108	13.57270
sky130_osu_sc_18T_hs__dff_l	CK->Q (RR)	0.40614	1.84238	12.61340
	QN->Q (FR)	0.08663	1.32399	13.57480

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)	0.59566	2.06178	15.69110
	QN->Q (RF)	0.03095	0.63603	7.65876
sky130_osu_sc_18T_hs__dff_l	CK->Q (RF)	0.64716	2.38152	15.75970
	QN->Q (RF)	0.03715	0.68685	7.62203

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)	0.53250	1.37269	8.53949
sky130_osu_sc_18T_hs__dff_l	CK->QN (RR)	0.55920	1.52863	8.51318

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)	0.29217	0.75020	3.73573
sky130_osu_sc_18T_hs__dff_l	CK->QN (RF)	0.29539	0.77284	3.53443

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)	-0.06097	-0.09338	-0.63412
	setup	CK (R)	0.23669	0.25526	1.48959
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.05922	-0.09558	-0.63169
	setup	CK (R)	0.23714	0.25127	1.46750

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)	-0.30364	-0.73031	-9.28566
	setup	CK (R)	0.35847	0.76367	9.40770
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.30403	-0.72974	-9.28704
	setup	CK (R)	0.35847	0.76367	9.41054

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 ()	0.13412	0.53467	13.33370
	min_pulse_width	CK ()	0.31637	0.53467	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.13012	0.53467	13.33370
	min_pulse_width	CK ()	0.31036	0.53467	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 ()	0.40270	0.63496	13.33370
	min_pulse_width	CK ()	0.28301	0.65241	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.40134	0.63278	13.33370
	min_pulse_width	CK ()	0.28055	0.65241	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	0.00948	0.00812	-0.00083
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00851	0.00725	0.00157

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	0.01039	0.00992	0.00718
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00943	0.00900	0.00748

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	0.01040	0.00992	0.00716
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00944	0.00900	0.00750

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	0.00944	0.00807	-0.00113
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00846	0.00720	0.00135

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	-0.00293	-0.00305	-0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00960	0.00926	0.00891
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00293	-0.00305	-0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00961	0.00926	0.00891

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	0.00301	0.00305	0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01809	0.01781	0.01755
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00301	0.00305	0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01809	0.01782	0.01756

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)	-0.00058	-0.00113	-0.00143
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00084	-0.00145	-0.00170
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00058	-0.00113	-0.00143
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00084	-0.00145	-0.00170

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)	0.01377	0.01340	0.01316
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02703	0.02629	0.02540
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02814	0.02717	0.02670
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01464	0.01428	0.01416
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01377	0.01340	0.01316
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02704	0.02630	0.02540
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02814	0.02718	0.02670
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01464	0.01428	0.01416

SKY130_OSU_SC_18T_HS__INVx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00516	0.98591
sky130_osu_sc_18T_hs__inv_10	0.04859	8.96569
sky130_osu_sc_18T_hs__inv_2	0.00991	1.96049
sky130_osu_sc_18T_hs__inv_3	0.01477	2.83519
sky130_osu_sc_18T_hs__inv_4	0.01955	3.80916
sky130_osu_sc_18T_hs__inv_6	0.02932	5.68388
sky130_osu_sc_18T_hs__inv_8	0.03896	7.42291
sky130_osu_sc_18T_hs__inv_l	0.00394	0.59767

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__inv_1	0.00000	0.00007	0.00010
sky130_osu_sc_18T_hs__inv_10	0.00000	0.00075	0.00105
sky130_osu_sc_18T_hs__inv_2	0.00000	0.00015	0.00021
sky130_osu_sc_18T_hs__inv_3	0.00000	0.00022	0.00031
sky130_osu_sc_18T_hs__inv_4	0.00000	0.00030	0.00042
sky130_osu_sc_18T_hs__inv_6	0.00000	0.00045	0.00063
sky130_osu_sc_18T_hs__inv_8	0.00000	0.00060	0.00084
sky130_osu_sc_18T_hs__inv_l	0.00000	0.00005	0.00006

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)**	0.06319	1.11600	12.91450
sky130_osu_sc_18T_hs__inv_10	**A->Y (FR)**	0.08773	0.77784	12.84720
sky130_osu_sc_18T_hs__inv_2	**A->Y (FR)**	0.04913	0.96230	12.91490
sky130_osu_sc_18T_hs__inv_3	**A->Y (FR)**	0.05388	0.90319	12.91950
sky130_osu_sc_18T_hs__inv_4	**A->Y (FR)**	0.05491	0.85847	12.91690
sky130_osu_sc_18T_hs__inv_6	**A->Y (FR)**	0.06233	0.81550	12.98540
sky130_osu_sc_18T_hs__inv_8	**A->Y (FR)**	0.07398	0.79024	12.92330
sky130_osu_sc_18T_hs__inv_l	**A->Y (FR)**	0.08234	1.26922	13.02430

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)**	0.02770	0.57562	6.83286
sky130_osu_sc_18T_hs__inv_10	**A->Y (RF)**	0.04557	0.41780	6.76582
sky130_osu_sc_18T_hs__inv_2	**A->Y (RF)**	0.02366	0.51214	6.83130
sky130_osu_sc_18T_hs__inv_3	**A->Y (RF)**	0.02590	0.48697	6.86581
sky130_osu_sc_18T_hs__inv_4	**A->Y (RF)**	0.02621	0.46348	6.85830
sky130_osu_sc_18T_hs__inv_6	**A->Y (RF)**	0.03292	0.44270	6.89082
sky130_osu_sc_18T_hs__inv_8	**A->Y (RF)**	0.03919	0.42874	6.85639
sky130_osu_sc_18T_hs__inv_l	**A->Y (RF)**	0.03309	0.62712	6.88222

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	0.00478	0.00471	0.00470
sky130_osu_sc_18T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.04146	0.04180	0.04257
sky130_osu_sc_18T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00864	0.00858	0.00863
sky130_osu_sc_18T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01320	0.01300	0.01321
sky130_osu_sc_18T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01705	0.01691	0.01715
sky130_osu_sc_18T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02531	0.02530	0.02570
sky130_osu_sc_18T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.03344	0.03362	0.03413
sky130_osu_sc_18T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00368	0.00360	0.00359

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	-0.00090	-0.00096	-0.00097
sky130_osu_sc_18T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01648	-0.01568	-0.01448
sky130_osu_sc_18T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00298	-0.00302	-0.00297
sky130_osu_sc_18T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00394	-0.00397	-0.00386
sky130_osu_sc_18T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00617	-0.00608	-0.00587
sky130_osu_sc_18T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00939	-0.00929	-0.00875
sky130_osu_sc_18T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01283	-0.01243	-0.01164
sky130_osu_sc_18T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00065	-0.00069	-0.00072

SKY130_OSU_SC_18T_HS__MUX2

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.72504	0.73096	0.01050	0.92465

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__mux2_1	0.00000	0.00024	0.00031

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)	-	0.03044	0.65760	8.00667
	A1->Y (RR)	-	0.03437	0.65953	7.95390
	S0->Y (RR)	(!A0 * A1)	0.07695	0.75073	7.19670
	S0->Y (FR)	(A0 * !A1)	0.08506	0.91390	9.12246

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)	-	0.02500	0.54233	6.42203
	A1->Y (FF)	-	0.02290	0.53741	6.39555
	S0->Y (FF)	(!A0 * A1)	0.14003	0.77637	6.72436
	S0->Y (RF)	(A0 * !A1)	0.03221	0.56621	6.15661

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	-	-0.00512	-0.00513	-0.00512
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00357	-0.00357	-0.00357
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00593	0.00559	0.00559
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00324	-0.00376	-0.00397

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	-	0.00512	0.00513	0.00512
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00357	0.00358	0.00357
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00111	0.00060	0.00042
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01275	0.01239	0.01234

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)	-0.00139	-0.00139	-0.00139

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)	0.00139	0.00139	0.00139

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)	-0.00166	-0.00165	-0.00165

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)	0.00166	0.00165	0.00165

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)	-0.00108	-0.00160	-0.00179
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00106	-0.00159	-0.00177

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)	0.00957	0.00923	0.00919
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00911	0.00877	0.00874

SKY130_OSU_SC_18T_HS__NAND2x

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00518	0.00513	0.97595
sky130_osu_sc_18T_hs__nand2_l	0.00395	0.00392	0.59447

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nand2_1	0.00000	0.00009	0.00021
sky130_osu_sc_18T_hs__nand2_l	0.00000	0.00007	0.00013

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)	0.06613	1.12166	12.91660
	B->Y (FR)	0.07879	1.12562	12.83420
sky130_osu_sc_18T_hs__nand2_l	A->Y (FR)	0.08525	1.27528	13.03310
	B->Y (FR)	0.10079	1.28596	13.01160

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)	0.03994	0.68988	8.07608
	B->Y (RF)	0.04497	0.67561	7.74061
sky130_osu_sc_18T_hs__nand2_l	A->Y (RF)	0.04894	0.76676	8.12889
	B->Y (RF)	0.05406	0.75232	7.79717

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	0.00511	0.00502	0.00499
	B	0.00000	0.00000	0.00000
	B	0.00627	0.00616	0.00614
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00389	0.00380	0.00378
	B	0.00000	0.00000	0.00000
	B	0.00470	0.00460	0.00458

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	-0.00055	-0.00063	-0.00065
	B	0.00000	0.00000	0.00000
	B	-0.00053	-0.00059	-0.00062
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00044	-0.00050	-0.00053
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00047	-0.00050

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)	-0.00343	-0.00347	-0.00348
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00250	-0.00253	-0.00253

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)	0.00347	0.00350	0.00348
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00252	0.00254	0.00253

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)	-0.00321	-0.00321	-0.00322
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00233	-0.00234	-0.00234

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)	0.00321	0.00321	0.00323
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00233	0.00234	0.00235

SKY130_OSU_SC_18T_HS__NOR2x

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00513	0.00548	0.45205
sky130_osu_sc_18T_hs__nor2_l	0.00385	0.00422	0.26305

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nor2_1	0.00000	0.00009	0.00010
sky130_osu_sc_18T_hs__nor2_l	0.00000	0.00007	0.00009

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)	0.16082	1.48908	13.51840
	B->Y (FR)	0.13059	1.40740	12.93350
sky130_osu_sc_18T_hs__nor2_l	A->Y (FR)	0.21260	1.72903	13.48600
	B->Y (FR)	0.18490	1.65310	13.08140

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)	0.03256	0.48548	4.90270
	B->Y (RF)	0.02877	0.47504	4.88322
sky130_osu_sc_18T_hs__nor2_l	A->Y (RF)	0.03785	0.52766	4.98304
	B->Y (RF)	0.03432	0.51960	4.96579

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	0.00633	0.00624	0.00622
	B	0.00000	0.00000	0.00000
	B	0.00517	0.00501	0.00307
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00461	0.00452	0.00451
	B	0.00000	0.00000	0.00000
	B	0.00392	0.00378	0.00372

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	0.00039	0.00020	0.00008
	B	0.00000	0.00000	0.00000
	B	-0.00079	-0.00082	-0.00092
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00023	0.00009	-0.00000
	B	0.00000	0.00000	0.00000
	B	-0.00054	-0.00055	-0.00064

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)	-0.00295	-0.00307	-0.00305
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00209	-0.00217	-0.00216

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)	0.00304	0.00307	0.00305
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00215	0.00217	0.00216

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)	-0.00187	-0.00189	-0.00188
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00137	-0.00138	-0.00137

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)	0.00194	0.00196	0.00190
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00141	0.00142	0.00139

SKY130_OSU_SC_18T_HS__OAI21

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00521	0.00521	0.00442	0.45177

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai21_l	0.00000	0.00009	0.00017

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)	0.18239	1.46130	13.08200
	A1->Y (FR)	0.22020	1.55423	13.61490
	B0->Y (FR)	0.10606	1.16875	11.34470

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)	0.05498	0.57414	5.57100
	A1->Y (RF)	0.06007	0.57492	5.54255
	B0->Y (RF)	0.04435	0.59709	6.01002

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	0.00686	0.00650	0.00660
	A1	0.00000	0.00000	0.00000
	A1	0.00806	0.00792	0.00788
	B0	0.00550	0.00530	0.00529

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	0.00026	0.00023	0.00013
	A1	0.00000	0.00000	0.00000
	A1	0.00146	0.00128	0.00117
	B0	0.00210	0.00202	0.00193

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)	-0.00188	-0.00190	-0.00189
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00298	-0.00308	-0.00306
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00314	-0.00316	-0.00315

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)	0.00195	0.00196	0.00191
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00304	0.00308	0.00306
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00314	0.00316	0.00316

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)	-0.00290	-0.00302	-0.00300
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00296	-0.00307	-0.00305
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00311	-0.00313	-0.00312

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)	0.00298	0.00302	0.00300
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00303	0.00307	0.00305
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00311	0.00314	0.00313

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)	-0.00255	-0.00256	-0.00261

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)	0.00260	0.00266	0.00261

SKY130_OSU_SC_18T_HS__OAI22

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00499	0.00532	0.00548	0.00531	0.45435

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai22_l	0.00000	0.00015	0.00021

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)	0.24207	1.57751	13.65260
	A1->Y (FR)	0.21102	1.48684	13.12380
	B0->Y (FR)	0.14560	1.42553	13.06350
	B1->Y (FR)	0.17847	1.51095	13.59630

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)	0.08012	0.61265	5.65475
	A1->Y (RF)	0.06736	0.59373	5.61377
	B0->Y (RF)	0.05628	0.61565	6.05094
	B1->Y (RF)	0.07044	0.64115	6.20064

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	0.01014	0.01001	0.01000
	A1	0.00893	0.00872	0.00864
	B0	0.00676	0.00655	0.00647
	B1	0.00803	0.00787	0.00784

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.00214	0.00196	0.00182
	A1	0.00101	0.00097	0.00082
	B0	0.00101	0.00095	0.00082
	B1	0.00218	0.00197	0.00183

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)	-0.00294	-0.00307	-0.00305
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00294	-0.00307	-0.00305
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00297	-0.00307	-0.00305
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00312	-0.00313	-0.00313

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)	0.00302	0.00307	0.00305
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00303	0.00307	0.00305
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00303	0.00307	0.00305
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00312	0.00317	0.00314

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)	-0.00187	-0.00188	-0.00187
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00187	-0.00188	-0.00187
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00295	-0.00304	-0.00303
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00311	-0.00313	-0.00312

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)	0.00194	0.00195	0.00189
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00194	0.00195	0.00189
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00301	0.00304	0.00303
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00311	0.00316	0.00313

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)	-0.00186	-0.00188	-0.00187
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00186	-0.00188	-0.00187
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00327	-0.00336	-0.00336
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00336	-0.00339	-0.00345

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)	0.00193	0.00194	0.00189
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00193	0.00194	0.00189
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00334	0.00336	0.00336
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00344	0.00351	0.00346

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)	-0.00290	-0.00303	-0.00301
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00290	-0.00303	-0.00301
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00333	-0.00345	-0.00342
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00341	-0.00343	-0.00349

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)	0.00300	0.00303	0.00301
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00298	0.00303	0.00301
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00340	0.00345	0.00342
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00349	0.00352	0.00350

SKY130_OSU_SC_18T_HS__OR2x

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00545	0.00530	0.99871
sky130_osu_sc_18T_hs__or2_2	0.00544	0.00530	1.97904
sky130_osu_sc_18T_hs__or2_4	0.00545	0.00530	3.78835
sky130_osu_sc_18T_hs__or2_8	0.00545	0.00530	7.24752
sky130_osu_sc_18T_hs__or2_l	0.00423	0.00403	0.59519

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__or2_1	0.00000	0.00015	0.00020
sky130_osu_sc_18T_hs__or2_2	0.00000	0.00021	0.00030
sky130_osu_sc_18T_hs__or2_4	0.00000	0.00033	0.00051
sky130_osu_sc_18T_hs__or2_8	0.00000	0.00057	0.00093
sky130_osu_sc_18T_hs__or2_l	0.00000	0.00012	0.00015

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)	0.11047	0.95139	8.05615
	B->Y (RR)	0.10412	0.93061	7.92141
sky130_osu_sc_18T_hs__or2_2	A->Y (RR)	0.11721	0.84777	8.29529
	B->Y (RR)	0.11010	0.82879	8.19388
sky130_osu_sc_18T_hs__or2_4	A->Y (RR)	0.15436	0.82202	8.61681
	B->Y (RR)	0.14700	0.80755	8.54446
sky130_osu_sc_18T_hs__or2_8	A->Y (RR)	0.22584	0.86677	9.13267
	B->Y (RR)	0.21817	0.85668	9.07697
sky130_osu_sc_18T_hs__or2_l	A->Y (RR)	0.13793	1.13932	8.49876
	B->Y (RR)	0.13174	1.11998	8.38860

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)	0.28504	0.98748	7.68630
	B->Y (FF)	0.24329	0.90397	6.98371
sky130_osu_sc_18T_hs__or2_2	A->Y (FF)	0.36510	1.05077	8.03703
	B->Y (FF)	0.32339	0.96631	7.39820
sky130_osu_sc_18T_hs__or2_4	A->Y (FF)	0.54063	1.23668	8.56547
	B->Y (FF)	0.49914	1.14936	7.99983
sky130_osu_sc_18T_hs__or2_8	A->Y (FF)	0.89042	1.62492	9.28974
	B->Y (FF)	0.84901	1.53273	8.82042
sky130_osu_sc_18T_hs__or2_l	A->Y (FF)	0.36686	1.10077	7.74240
	B->Y (FF)	0.31960	1.01331	7.14635

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	0.00500	0.00455	0.00429
	B	0.00000	0.00000	0.00000
	B	0.00386	0.00347	0.00332
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00884	0.00859	0.00829
	B	0.00000	0.00000	0.00000
	B	0.00763	0.00754	0.00741
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01705	0.01725	0.01710
	B	0.00000	0.00000	0.00000
	B	0.01583	0.01637	0.01628
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03321	0.03426	0.03510
	B	0.00000	0.00000	0.00000
	B	0.03195	0.03343	0.03472
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00369	0.00340	0.00313
	B	0.00000	0.00000	0.00000
	B	0.00294	0.00268	0.00247

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	0.01069	0.01065	0.01059
	B	0.00000	0.00000	0.00000
	B	0.00929	0.00923	0.00921
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01313	0.01362	0.01356
	B	0.00000	0.00000	0.00000
	B	0.01172	0.01217	0.01213
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01915	0.02055	0.02078
	B	0.00000	0.00000	0.00000
	B	0.01776	0.01906	0.01928
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03110	0.03378	0.03519
	B	0.00000	0.00000	0.00000
	B	0.02976	0.03230	0.03361
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00810	0.00803	0.00796
	B	0.00000	0.00000	0.00000
	B	0.00712	0.00705	0.00700

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)	-0.00297	-0.00309	-0.00306
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00297	-0.00309	-0.00306
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00297	-0.00309	-0.00306
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00297	-0.00309	-0.00306
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00210	-0.00218	-0.00217

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)	0.00305	0.00309	0.00306
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00304	0.00309	0.00306
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00304	0.00309	0.00306
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00304	0.00309	0.00306
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00215	0.00218	0.00217

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)	-0.00188	-0.00190	-0.00189
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00188	-0.00190	-0.00189
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00188	-0.00190	-0.00189
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00188	-0.00190	-0.00189
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00139	-0.00140	-0.00139

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)	0.00196	0.00197	0.00191
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00196	0.00197	0.00191
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00196	0.00198	0.00191
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00196	0.00198	0.00191
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00144	0.00145	0.00141

SKY130_OSU_SC_18T_HS__TBUFIx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00548	0.00691	0.45125
sky130_osu_sc_18T_hs__tbufi_l	0.00423	0.00532	0.26271

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tbufi_1	0.00000	0.00011	0.00021
sky130_osu_sc_18T_hs__tbufi_l	0.00000	0.00009	0.00013

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)	0.12472	1.40013	12.90850
	OE->Y (FR)	0.10079	0.53383	4.28491
	OE->Y (RR)	0.17855	1.24605	8.24639
sky130_osu_sc_18T_hs__tbufi_l	A->Y (FR)	0.17804	1.64654	13.07480
	OE->Y (FR)	0.12282	0.56688	4.46969
	OE->Y (RR)	0.23053	1.52749	8.79695

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)	0.03817	0.56046	5.67033
	OE->Y (FF)	0.10165	0.53365	4.28488
	OE->Y (RF)	0.03763	0.53826	5.41127
sky130_osu_sc_18T_hs__tbufi_l	A->Y (RF)	0.04755	0.61324	5.72517
	OE->Y (FF)	0.12362	0.56809	4.46809
	OE->Y (RF)	0.04726	0.59091	5.46512

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	0.00487	0.00468	0.00259
	OE	0.00000	0.00000	0.00000
	OE	0.00454	0.00403	0.00385
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00370	0.00356	0.00347
	OE	0.00000	0.00000	0.00000
	OE	0.00325	0.00287	0.00273

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	-0.00080	-0.00083	-0.00091
	OE	0.00000	0.00000	0.00000
	OE	0.00352	0.00302	0.00284
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00054	-0.00055	-0.00064
	OE	0.00000	0.00000	0.00000
	OE	0.00247	0.00210	0.00195

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)	-0.00272	-0.00275	-0.00273
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00258	-0.00261	-0.00259
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00207	-0.00209	-0.00208
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00197	-0.00201	-0.00198

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)	0.00272	0.00275	0.00273
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00264	0.00267	0.00263
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00207	0.00209	0.00208
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00201	0.00203	0.00200

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)	0.00197	0.00147	0.00128
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00180	0.00129	0.00112
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00137	0.00098	0.00085
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00124	0.00086	0.00071

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)	0.00547	0.00510	0.00497
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00566	0.00524	0.00511
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00433	0.00399	0.00390
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00446	0.00414	0.00400

SKY130_OSU_SC_18T_HS__TNBUFIx

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.00548	0.00852	0.45122
sky130_osu_sc_18T_hs__tnbufi_l	0.00422	0.00635	0.31118

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tnbufi_1	0.00000	0.00013	0.00015
sky130_osu_sc_18T_hs__tnbufi_l	0.00000	0.00009	0.00011

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)	0.12599	1.40010	12.90760
	OE->Y (RR)	0.03307	0.32918	4.28493
	OE->Y (FR)	0.14837	1.47634	13.49110
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (FR)	0.17939	1.76718	14.41320
	OE->Y (RR)	0.03691	0.32945	4.28520
	OE->Y (FR)	0.19497	1.83450	14.82180

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)	0.03759	0.56032	5.66991
	OE->Y (RF)	0.03251	0.32917	4.28493
	OE->Y (FF)	0.10082	0.72374	5.72614
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (RF)	0.04662	0.63915	6.14668
	OE->Y (RF)	0.03658	0.32944	4.28522
	OE->Y (FF)	0.12772	0.81728	6.12909

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	0.00499	0.00481	0.00270
	OE	0.00000	0.00000	0.00000
	OE	0.01165	0.01141	0.01144
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00383	0.00369	0.00364
	OE	0.00000	0.00000	0.00000
	OE	0.00867	0.00843	0.00846

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	-0.00095	-0.00097	-0.00105
	OE	0.00000	0.00000	0.00000
	OE	0.01081	0.01055	0.01054
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00069	-0.00069	-0.00077
	OE	0.00000	0.00000	0.00000
	OE	0.00801	0.00779	0.00775

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)	-0.00238	-0.00241	-0.00239
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00225	-0.00228	-0.00227
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00174	-0.00176	-0.00175
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00166	-0.00168	-0.00166

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)	0.00238	0.00241	0.00239
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00231	0.00233	0.00230
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00174	0.00176	0.00175
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00169	0.00170	0.00168

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)	-0.00372	-0.00442	-0.00455
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00357	-0.00431	-0.00453
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00260	-0.00307	-0.00322
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00250	-0.00301	-0.00318

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)	0.00910	0.00887	0.00886
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00894	0.00868	0.00871
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00679	0.00657	0.00655
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00667	0.00643	0.00643

SKY130_OSU_SC_18T_HS__XNOR2

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.01082	0.00978	0.45326

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xnor2_l	0.00000	0.00029	0.00036

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	0.23003	1.31486	8.43899
	A->Y (FR)	!B	0.16941	1.44986	13.02620
	B->Y (RR)	A	0.18637	1.26762	8.33847
	B->Y (FR)	!A	0.20894	1.53344	13.55420

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	0.16476	0.82126	6.20785
	A->Y (RF)	!B	0.05658	0.56533	5.53043
	B->Y (FF)	A	0.15962	0.81568	6.20290
	B->Y (RF)	!A	0.06218	0.57355	5.54101

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	0.00411	0.00352	0.00329
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01168	0.01110	0.01095
	B	A	0.00000	0.00000	0.00000
	B	A	0.00188	0.00140	0.00116
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01243	0.01199	0.01196

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	0.01438	0.01377	0.01350
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00341	0.00287	0.00260
	B	A	0.00000	0.00000	0.00000
	B	A	0.01340	0.01319	0.01310
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00410	0.00344	0.00313

SKY130_OSU_SC_18T_HS__XOR2

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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_1	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__xor2_1	0.01077	0.00983	0.45002

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xor2_1	0.00000	0.00029	0.00033

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	0.23350	1.30032	8.34725
	A->Y (FR)	B	0.18668	1.50847	13.51770
	B->Y (RR)	!A	0.19178	1.26960	8.32412
	B->Y (FR)	A	0.20550	1.53185	13.52900

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	0.16008	0.80947	6.12937
	A->Y (RF)	B	0.04825	0.57734	5.68413
	B->Y (FF)	!A	0.15226	0.80215	6.12038
	B->Y (RF)	A	0.05670	0.56087	5.42909

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	0.01346	0.01301	0.01298
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00245	0.00147	0.00122
	B	A	0.00000	0.00000	0.00000
	B	A	0.01365	0.01328	0.01322
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00162	0.00111	0.00088

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	0.00273	0.00199	0.00165
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01512	0.01487	0.01476
	B	A	0.00000	0.00000	0.00000
	B	A	0.00274	0.00205	0.00173
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01367	0.01353	0.01345

SKY130_OSU_SC_18T_HS_x

sky130_osu_sc_18T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, 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	0.16741
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	86774.20000	173548.00000
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
	-0.00312	0.01113	0.17625

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
	1.51211	1.42070	0.24732