sky130_osu_sc_18T_hs_tt_1P20_25C.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_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.01878	0.01880	0.01453	1.06835	0.45004	1.04918
sky130_osu_sc_18T_hs__addf_l	0.01878	0.01879	0.01453	0.74489	0.45140	0.75231

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addf_1	0.00000	0.07477	0.09610
sky130_osu_sc_18T_hs__addf_l	0.00000	0.07159	0.09292

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)	0.26011	2.20342	23.17170
	B->CO (RR)	0.23855	2.11497	22.38480
	CI->CO (RR)	0.24854	2.21330	23.47370
	CON->CO (FR)	0.05605	1.06425	12.42020
sky130_osu_sc_18T_hs__addf_l	A->CO (RR)	0.26489	2.10208	19.65830
	B->CO (RR)	0.24395	2.02641	19.11760
	CI->CO (RR)	0.25331	2.11189	19.98550
	CON->CO (FR)	0.06673	1.16895	12.53620

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)	0.50997	3.55543	36.29940
	B->CO (FF)	0.46625	3.43458	35.37270
	CI->CO (FF)	0.45033	3.43620	35.64970
	CON->CO (RF)	0.03350	0.67865	8.05670
sky130_osu_sc_18T_hs__addf_l	A->CO (FF)	0.50134	3.17186	28.54440
	B->CO (FF)	0.45846	3.06839	27.87310
	CI->CO (FF)	0.44197	3.05293	27.90770
	CON->CO (RF)	0.03615	0.70249	7.85405

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)	0.37134	1.64933	13.00160
	B->CON (FR)	0.33208	1.57417	12.73250
	CI->CON (FR)	0.31202	1.53052	12.40070
sky130_osu_sc_18T_hs__addf_l	A->CON (FR)	0.35434	1.63387	13.00610
	B->CON (FR)	0.31616	1.55929	12.73660
	CI->CON (FR)	0.29498	1.51505	12.40520

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)	0.13013	0.74995	6.62496
	B->CON (RF)	0.12078	0.73697	6.68936
	CI->CON (RF)	0.11844	0.76195	6.97562
sky130_osu_sc_18T_hs__addf_l	A->CON (RF)	0.12530	0.74566	6.62810
	B->CON (RF)	0.11636	0.73218	6.69244
	CI->CON (RF)	0.11359	0.75770	6.97888

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)	0.70905	3.60301	31.23990
	B->S (-R)	0.69227	3.55523	30.87270
	CI->S (-R)	0.64494	3.47194	30.54970
	CON->S (RR)	0.15297	1.04013	8.57367
sky130_osu_sc_18T_hs__addf_l	A->S (-R)	0.68081	3.32595	26.39400
	B->S (-R)	0.66519	3.29040	26.16300
	CI->S (-R)	0.61681	3.19666	25.71890
	CON->S (RR)	0.15659	1.12884	8.64284

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)	0.47642	2.04875	16.55530
	B->S (-F)	0.50014	1.98173	16.03640
	CI->S (-F)	0.46389	2.05201	16.84620
	CON->S (FF)	0.21160	0.96725	7.16149
sky130_osu_sc_18T_hs__addf_l	A->S (-F)	0.45115	1.87480	13.99330
	B->S (-F)	0.47481	1.81441	13.63520
	CI->S (-F)	0.43826	1.87837	14.31330
	CON->S (FF)	0.20201	0.97179	6.93733

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	0.00222	0.00211	0.00211
	B	0.00266	0.00265	0.00268
	CI	0.00271	0.00275	0.00284
sky130_osu_sc_18T_hs__addf_l	A	0.00181	0.00166	0.00163
	B	0.00225	0.00219	0.00218
	CI	0.00229	0.00231	0.00235

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00751	0.00751	0.00772
	B	0.00741	0.00751	0.00770
	CI	0.00650	0.00670	0.00690
sky130_osu_sc_18T_hs__addf_l	A	0.00710	0.00707	0.00718
	B	0.00700	0.00707	0.00716
	CI	0.00608	0.00626	0.00637

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00750	0.00749	0.00704
	B	0.00740	0.00748	0.00746
	CI	0.00648	0.00667	0.00671
sky130_osu_sc_18T_hs__addf_l	A	0.00710	0.00707	0.00662
	B	0.00699	0.00706	0.00703
	CI	0.00608	0.00625	0.00628

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00217	0.00207	0.00199
	B	0.00261	0.00259	0.00248
	CI	0.00269	0.00274	0.00270
sky130_osu_sc_18T_hs__addf_l	A	0.00176	0.00162	0.00154
	B	0.00221	0.00215	0.00204
	CI	0.00228	0.00230	0.00226

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00751	0.00751	0.00771
	B	0.00741	0.00751	0.00769
	CI	0.00650	0.00670	0.00691
sky130_osu_sc_18T_hs__addf_l	A	0.00711	0.00708	0.00719
	B	0.00700	0.00708	0.00718
	CI	0.00609	0.00627	0.00640

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01546	0.01562	0.01548
	B	0.01401	0.01377	0.01406
	CI	0.01257	0.01261	0.01259
sky130_osu_sc_18T_hs__addf_l	A	0.01488	0.01494	0.01484
	B	0.01343	0.01312	0.01342
	CI	0.01200	0.01198	0.01192

SKY130_OSU_SC_18T_HS__ADDHx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00927	0.01010	1.06353	0.47671	1.06421
sky130_osu_sc_18T_hs__addh_l	0.00927	0.01010	0.67729	0.47020	0.67058

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addh_1	0.00000	0.08242	0.09391
sky130_osu_sc_18T_hs__addh_l	0.00000	0.05846	0.07527

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)	0.18656	1.06805	8.48908
	B->CO (RR)	0.19204	1.06864	8.65539
sky130_osu_sc_18T_hs__addh_l	A->CO (RR)	0.18704	1.17267	8.46877
	B->CO (RR)	0.19255	1.17659	8.66696

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)	0.17870	0.91106	7.10175
	B->CO (FF)	0.18910	0.92436	7.17659
sky130_osu_sc_18T_hs__addh_l	A->CO (FF)	0.17297	0.93628	6.88107
	B->CO (FF)	0.18311	0.95027	6.96050

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	0.25726	0.89950	4.81211
	A->CON (FR)	!B	0.21967	1.43256	12.43300
	B->CON (RR)	A	0.26266	0.89964	4.98218
	B->CON (FR)	!A	0.26298	1.53488	13.05070
sky130_osu_sc_18T_hs__addh_l	A->CON (RR)	B	0.23143	0.86077	4.63170
	A->CON (FR)	!B	0.19668	1.40128	12.31200
	B->CON (RR)	A	0.23689	0.86369	4.82230
	B->CON (FR)	!A	0.24011	1.50390	12.92840

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	0.24835	0.98269	6.42170
	A->CON (RF)	!B	0.08105	0.71891	6.99132
	B->CON (FF)	A	0.25436	1.01041	6.64556
	B->CON (RF)	!A	0.09255	0.71828	6.81918
sky130_osu_sc_18T_hs__addh_l	A->CON (FF)	B	0.22399	0.94481	6.19282
	A->CON (RF)	!B	0.07473	0.71131	6.94202
	B->CON (FF)	A	0.22989	0.97342	6.42483
	B->CON (RF)	!A	0.08639	0.70933	6.77105

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	0.19402	2.10800	22.95290
	A->S (FR)	B	0.36283	2.34375	22.02580
	B->S (RR)	!A	0.20486	2.05774	22.18850
	B->S (FR)	A	0.37049	2.42076	22.85190
	CON->S (FR)	-	0.06043	1.08363	12.57380
sky130_osu_sc_18T_hs__addh_l	A->S (RR)	!B	0.19229	1.96953	18.66370
	A->S (FR)	B	0.34343	2.18824	17.68070
	B->S (RR)	!A	0.20376	1.93447	18.18560
	B->S (FR)	A	0.35051	2.24900	18.24030
	CON->S (FR)	-	0.07119	1.20428	12.52680

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	0.33371	3.17946	34.15380
	A->S (RF)	B	0.33710	1.93718	17.15530
	B->S (FF)	!A	0.37719	3.28557	34.81220
	B->S (RF)	A	0.34253	1.93695	17.33700
	CON->S (RF)	-	0.03157	0.66564	7.91218
sky130_osu_sc_18T_hs__addh_l	A->S (FF)	!B	0.31390	2.72341	25.20100
	A->S (RF)	B	0.31296	1.70937	12.62020
	B->S (FF)	!A	0.35768	2.83069	25.83660
	B->S (RF)	A	0.31847	1.71242	12.81580
	CON->S (RF)	-	0.03558	0.70761	7.80395

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	0.00332	0.00318	0.00305
	B	0.00000	0.00000	0.00000
	B	0.00307	0.00295	0.00277
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00273	0.00255	0.00251
	B	0.00000	0.00000	0.00000
	B	0.00248	0.00231	0.00223

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	0.00526	0.00509	0.00492
	B	0.00000	0.00000	0.00000
	B	0.00543	0.00542	0.00526
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00467	0.00447	0.00444
	B	0.00000	0.00000	0.00000
	B	0.00483	0.00478	0.00477

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	0.00332	0.00317	0.00315
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00451	0.00449	0.00450
	B	A	0.00000	0.00000	0.00000
	B	A	0.00307	0.00295	0.00289
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00495	0.00492	0.00487
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00273	0.00254	0.00256
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00410	0.00407	0.00408
	B	A	0.00000	0.00000	0.00000
	B	A	0.00248	0.00231	0.00227
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00454	0.00449	0.00444

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	0.00526	0.00511	0.00506
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00086	0.00085	0.00077
	B	A	0.00000	0.00000	0.00000
	B	A	0.00542	0.00541	0.00533
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00139	0.00134	0.00113
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00466	0.00448	0.00444
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00037	0.00036	0.00024
	B	A	0.00000	0.00000	0.00000
	B	A	0.00483	0.00479	0.00482
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00090	0.00084	0.00070

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	0.00527	0.00511	0.00510
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00087	0.00089	0.00085
	B	A	0.00000	0.00000	0.00000
	B	A	0.00543	0.00543	0.00545
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00141	0.00136	0.00132
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00468	0.00449	0.00451
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00038	0.00038	0.00031
	B	A	0.00000	0.00000	0.00000
	B	A	0.00484	0.00479	0.00486
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00092	0.00085	0.00077

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	0.00332	0.00318	0.00308
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00451	0.00452	0.00452
	B	A	0.00000	0.00000	0.00000
	B	A	0.00307	0.00295	0.00281
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00495	0.00495	0.00494
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00273	0.00254	0.00251
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00410	0.00408	0.00409
	B	A	0.00000	0.00000	0.00000
	B	A	0.00248	0.00231	0.00220
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00454	0.00451	0.00449

SKY130_OSU_SC_18T_HS__AND2x

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00498	0.00509	1.06092
sky130_osu_sc_18T_hs__and2_2	0.00498	0.00509	2.11322
sky130_osu_sc_18T_hs__and2_4	0.00498	0.00509	4.08901
sky130_osu_sc_18T_hs__and2_6	0.00501	0.00509	6.07226
sky130_osu_sc_18T_hs__and2_8	0.00499	0.00510	7.76988
sky130_osu_sc_18T_hs__and2_l	0.00392	0.00403	0.75618

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__and2_1	0.00000	0.03907	0.06208
sky130_osu_sc_18T_hs__and2_2	0.00000	0.06207	0.06435
sky130_osu_sc_18T_hs__and2_4	0.00000	0.10806	0.12189
sky130_osu_sc_18T_hs__and2_6	0.00000	0.15405	0.18170
sky130_osu_sc_18T_hs__and2_8	0.00000	0.20005	0.24152
sky130_osu_sc_18T_hs__and2_l	0.00000	0.03489	0.05523

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)	0.14203	0.97668	8.00149
	B->Y (RR)	0.14939	0.98821	8.21333
sky130_osu_sc_18T_hs__and2_2	A->Y (RR)	0.16263	0.90798	8.39965
	B->Y (RR)	0.16992	0.91167	8.57247
sky130_osu_sc_18T_hs__and2_4	A->Y (RR)	0.22507	0.92786	8.91619
	B->Y (RR)	0.23237	0.92144	9.05782
sky130_osu_sc_18T_hs__and2_6	A->Y (RR)	0.28593	0.97970	9.33697
	B->Y (RR)	0.29310	0.96933	9.45324
sky130_osu_sc_18T_hs__and2_8	A->Y (RR)	0.34581	1.03683	9.58117
	B->Y (RR)	0.35311	1.02629	9.64106
sky130_osu_sc_18T_hs__and2_l	A->Y (RR)	0.15912	1.10594	8.38496
	B->Y (RR)	0.16678	1.11215	8.58547

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)**	0.13260	0.82342	6.48601
	B->Y (FF)	0.14192	0.84143	6.61146
sky130_osu_sc_18T_hs__and2_2	**A->Y (FF)**	0.16076	0.82290	6.90769
	B->Y (FF)	0.17093	0.83785	7.00253
sky130_osu_sc_18T_hs__and2_4	**A->Y (FF)**	0.23209	0.88023	7.48303
	B->Y (FF)	0.24232	0.89297	7.55045
sky130_osu_sc_18T_hs__and2_6	**A->Y (FF)**	0.30533	0.95449	7.90431
	B->Y (FF)	0.31570	0.96642	7.96097
sky130_osu_sc_18T_hs__and2_8	**A->Y (FF)**	0.37506	1.02564	8.12022
	B->Y (FF)	0.38575	1.03771	8.17523
sky130_osu_sc_18T_hs__and2_l	**A->Y (FF)**	0.14600	0.87188	6.45820
	B->Y (FF)	0.15734	0.89162	6.58687

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	0.00271	0.00240	0.00266
	B	0.00000	0.00000	0.00000
	B	0.00275	0.00245	0.00246
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00515	0.00501	0.00520
	B	0.00000	0.00000	0.00000
	B	0.00518	0.00511	0.00509
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01040	0.01065	0.01112
	B	0.00000	0.00000	0.00000
	B	0.01045	0.01080	0.01109
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01561	0.01624	0.01713
	B	0.00000	0.00000	0.00000
	B	0.01567	0.01634	0.01703
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02084	0.02182	0.02271
	B	0.00000	0.00000	0.00000
	B	0.02086	0.02192	0.02262
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00202	0.00178	0.00191
	B	0.00000	0.00000	0.00000
	B	0.00206	0.00180	0.00180

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	0.00634	0.00619	0.00660
	B	0.00000	0.00000	0.00000
	B	0.00712	0.00697	0.00735
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00800	0.00818	0.00855
	B	0.00000	0.00000	0.00000
	B	0.00879	0.00895	0.00928
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01211	0.01293	0.01341
	B	0.00000	0.00000	0.00000
	B	0.01289	0.01368	0.01408
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01626	0.01773	0.01837
	B	0.00000	0.00000	0.00000
	B	0.01703	0.01844	0.01897
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02025	0.02238	0.02323
	B	0.00000	0.00000	0.00000
	B	0.02104	0.02300	0.02374
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00496	0.00482	0.00508
	B	0.00000	0.00000	0.00000
	B	0.00555	0.00542	0.00564

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)	-0.00225	-0.00226	-0.00229
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00225	-0.00226	-0.00229
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00225	-0.00226	-0.00229
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00226	-0.00229	-0.00230
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00225	-0.00228	-0.00229
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00169	-0.00171	-0.00172

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)	0.00228	0.00231	0.00229
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00228	0.00231	0.00229
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00228	0.00231	0.00230
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00230	0.00232	0.00231
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00228	0.00231	0.00230
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00171	0.00174	0.00172

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)	-0.00213	-0.00215	-0.00214
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00214	-0.00214	-0.00214
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00213	-0.00214
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00214	-0.00214
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00215	-0.00214
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00161	-0.00162	-0.00161

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)	0.00217	0.00218	0.00215
sky130_osu_sc_18T_hs__and2_2	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00217	0.00218	0.00215
sky130_osu_sc_18T_hs__and2_4	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00217	0.00218	0.00215
sky130_osu_sc_18T_hs__and2_6	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00217	0.00218	0.00215
sky130_osu_sc_18T_hs__and2_8	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00217	0.00218	0.00215
sky130_osu_sc_18T_hs__and2_l	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00164	0.00164	0.00162

SKY130_OSU_SC_18T_HS__AOI21

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00469	0.00490	0.00476	0.46313

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi21_l	0.00000	0.01601	0.02991

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)	0.19842	1.49490	13.05940
	A1->Y (FR)	0.17211	1.43528	12.79840
	B0->Y (FR)	0.14619	1.38310	12.46050

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)	0.06827	0.67520	6.48151
	A1->Y (RF)	0.06142	0.68074	6.70462
	B0->Y (RF)	0.04142	0.63217	6.50410

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	0.00524	0.00518	0.00515
	A1	0.00000	0.00000	0.00000
	A1	0.00442	0.00435	0.00430
	B0	0.00424	0.00414	0.00416

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	0.00126	0.00111	0.00101
	A1	0.00000	0.00000	0.00000
	A1	0.00126	0.00110	0.00101
	B0	-0.00039	-0.00041	-0.00046

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)	-0.00185	-0.00198	-0.00196
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00201	-0.00202	-0.00201
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00200	-0.00201	-0.00201

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)	0.00195	0.00198	0.00196
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00201	0.00203	0.00202
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00204	0.00203	0.00202

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00183	-0.00193	-0.00194
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00198	-0.00199	-0.00198
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00214	-0.00215	-0.00218

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)	0.00192	0.00193	0.00194
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00198	0.00200	0.00199
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00217	0.00220	0.00218

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00113	-0.00114	-0.00114

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)	0.00130	0.00131	0.00119

SKY130_OSU_SC_18T_HS__AOI22

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00470	0.00491	0.00508	0.00485	0.45192

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi22_l	0.00000	0.01763	0.05981

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)	0.25370	1.55725	13.06080
	A1->Y (FR)	0.22801	1.51314	12.91520
	B0->Y (FR)	0.15518	1.37833	12.29600
	B1->Y (FR)	0.18091	1.42301	12.45800

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)	0.08608	0.69158	6.44006
	A1->Y (RF)	0.07923	0.69697	6.66100
	B0->Y (RF)	0.05178	0.66219	6.61286
	B1->Y (RF)	0.05839	0.65563	6.39473

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	0.00646	0.00639	0.00636
	A1	0.00566	0.00556	0.00550
	B0	0.00455	0.00441	0.00443
	B1	0.00532	0.00521	0.00524

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.00246	0.00233	0.00218
	A1	0.00247	0.00232	0.00219
	B0	-0.00017	-0.00019	-0.00023
	B1	-0.00016	-0.00017	-0.00023

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)	-0.00187	-0.00198	-0.00196
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00201	-0.00202	-0.00201
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00200	-0.00201	-0.00201
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00200	-0.00201	-0.00201

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)	0.00195	0.00198	0.00196
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00201	0.00203	0.00202
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00204	0.00203	0.00202
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00204	0.00203	0.00202

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00185	-0.00195	-0.00194
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00198	-0.00199	-0.00198
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00214	-0.00215	-0.00217
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00214	-0.00215	-0.00217

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)	0.00192	0.00195	0.00194
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00198	0.00200	0.00199
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00217	0.00219	0.00218
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00217	0.00219	0.00218

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)	-0.00114	-0.00115	-0.00114
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00114	-0.00115	-0.00114
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00220	-0.00222	-0.00224
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00220	-0.00222	-0.00224

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)	0.00138	0.00138	0.00121
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00114	0.00115	0.00114
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00223	0.00227	0.00224
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00223	0.00227	0.00224

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)	-0.00114	-0.00116	-0.00115
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00114	-0.00115	-0.00115
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00204	-0.00205	-0.00204
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00204	-0.00205	-0.00204

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)	0.00138	0.00139	0.00121
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00114	0.00115	0.00115
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00207	0.00206	0.00205
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00207	0.00206	0.00205

SKY130_OSU_SC_18T_HS__BUFx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00508	1.05664
sky130_osu_sc_18T_hs__buf_2	0.00508	2.09047
sky130_osu_sc_18T_hs__buf_4	0.00508	4.07281
sky130_osu_sc_18T_hs__buf_6	0.00096	1.80000
sky130_osu_sc_18T_hs__buf_8	0.00508	7.87934
sky130_osu_sc_18T_hs__buf_l	0.00406	0.75700

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__buf_1	0.00000	0.03218	0.03218
sky130_osu_sc_18T_hs__buf_2	0.00000	0.04826	0.06208
sky130_osu_sc_18T_hs__buf_4	0.00000	0.08043	0.12189
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_hs__buf_8	0.00000	0.14478	0.24152
sky130_osu_sc_18T_hs__buf_l	0.00000	0.02900	0.02900

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)**	0.10385	0.92522	7.88170
sky130_osu_sc_18T_hs__buf_2	**A->Y (RR)**	0.11238	0.83669	8.18141
sky130_osu_sc_18T_hs__buf_4	**A->Y (RR)**	0.15113	0.82939	8.67463
sky130_osu_sc_18T_hs__buf_8	**A->Y (RR)**	0.22679	0.89029	9.31368
sky130_osu_sc_18T_hs__buf_l	**A->Y (RR)**	0.11839	1.05026	8.26925

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)**	0.12603	0.81233	6.39915
sky130_osu_sc_18T_hs__buf_2	**A->Y (FF)**	0.15528	0.81438	6.82942
sky130_osu_sc_18T_hs__buf_4	**A->Y (FF)**	0.22704	0.87185	7.42732
sky130_osu_sc_18T_hs__buf_8	**A->Y (FF)**	0.37058	1.02130	8.14349
sky130_osu_sc_18T_hs__buf_l	**A->Y (FF)**	0.14093	0.86375	6.40021

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	0.00253	0.00217	0.00243
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00498	0.00477	0.00496
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01029	0.01048	0.01071
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02070	0.02158	0.02274
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00194	0.00164	0.00177

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	0.00618	0.00599	0.00644
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00782	0.00794	0.00832
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01195	0.01265	0.01314
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02012	0.02208	0.02285
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00488	0.00471	0.00498

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
	-0.00034	-0.00034	-0.00033

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
	0.00034	0.00034	0.00033

SKY130_OSU_SC_18T_HS__DFFRx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00483	0.00482	0.01434	1.04326	1.04845
sky130_osu_sc_18T_hs__dffr_l	0.00483	0.00482	0.01431	0.75698	0.75461

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__dffr_1	0.00000	0.10940	0.15942
sky130_osu_sc_18T_hs__dffr_l	0.00000	0.10622	0.15624

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)	0.68856	2.11943	14.98180
	QN->Q (FR)	0.06282	1.14099	13.21840
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RR)	0.67397	2.23146	14.85540
	QN->Q (FR)	0.07100	1.23250	13.22170

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)	0.61680	2.19711	17.21250
	QN->Q (RF)	0.03833	0.75770	8.93477
	RN->Q (FF)	0.42748	2.18153	19.13710
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RF)	0.63084	2.39744	17.36570
	QN->Q (RF)	0.03948	0.76893	8.61307
	RN->Q (FF)	0.44276	2.38105	19.27950

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)	0.54473	1.39632	8.65860
	RN->QN (FR)	0.35485	1.37962	10.58940
sky130_osu_sc_18T_hs__dffr_l	CK->QN (RR)	0.54943	1.49137	8.80517
	RN->QN (FR)	0.36033	1.47510	10.72510

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)**	0.58218	1.17926	5.05162
sky130_osu_sc_18T_hs__dffr_l	**CK->QN (RF)**	0.55902	1.16399	4.84309

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)	-0.10519	-0.14478	-0.84681
	setup	CK (R)	0.54471	0.55295	1.86200
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.10661	-0.14242	-0.84645
	setup	CK (R)	0.54615	0.55410	1.86955

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)	-0.29052	-0.69992	-7.16843
	setup	CK (R)	0.34305	0.72500	7.25011
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.28972	-0.69732	-7.16579
	setup	CK (R)	0.34278	0.72500	7.24946

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)	-0.10519	-0.14478	-0.84681
	setup	CK (R)	0.54471	0.55295	1.86200
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.10661	-0.14242	-0.84645
	setup	CK (R)	0.54615	0.55410	1.86955

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)	-0.29052	-0.69992	-7.16843
	setup	CK (R)	0.34305	0.72500	7.25011
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.28972	-0.69732	-7.16579
	setup	CK (R)	0.34278	0.72500	7.24946

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)	0.46870	0.47710	1.57742
	removal	CK (R)	-0.07738	-0.09001	-0.14609
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.47286	0.47929	1.58975
	removal	CK (R)	-0.07738	-0.09001	-0.14609

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)	0.46870	0.47710	1.57742
	removal	CK (R)	-0.07738	-0.09001	-0.14609
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.47286	0.47929	1.58975
	removal	CK (R)	-0.07738	-0.09001	-0.14609

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 ()	0.26342	0.64245	13.33370
	min_pulse_width	RN ()	0.26342	0.64245	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	RN ()	0.26258	0.64028	13.33370
	min_pulse_width	RN ()	0.26018	0.64028	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 ()	0.30781	0.55786	13.33370
	min_pulse_width	CK ()	0.34948	0.55786	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.28489	0.55786	13.33370
	min_pulse_width	CK ()	0.34115	0.55786	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 ()	0.69366	0.76609	13.33370
	min_pulse_width	CK ()	0.27829	0.60992	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.69271	0.76826	13.33370
	min_pulse_width	CK ()	0.27829	0.60992	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	0.00644	0.00545	-0.00204
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00578	0.00498	0.00083

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	0.00701	0.00657	0.00402
	RN	-0.00087	-0.03317	-0.37557
	RN	0.01570	0.01530	0.01261
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00633	0.00596	0.00460
	RN	-0.00087	-0.02736	-0.27251
	RN	0.01501	0.01468	0.01320

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	0.00701	0.00658	0.00402
	RN	-0.00087	-0.03326	-0.37744
	RN	0.01570	0.01530	0.01256
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00633	0.00596	0.00461
	RN	-0.00087	-0.02731	-0.27166
	RN	0.01502	0.01468	0.01320

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	0.00639	0.00540	-0.00226
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00573	0.00492	0.00078

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	-0.00173	-0.00195	-0.00196
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00732	0.00702	0.00684
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00344	0.00317	0.00305
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00173	-0.00195	-0.00196
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00732	0.00702	0.00684
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00344	0.00317	0.00305

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	0.00194	0.00195	0.00196
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01193	0.01177	0.01158
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00544	0.00532	0.00526
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00194	0.00195	0.00196
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01193	0.01177	0.01158
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00544	0.00532	0.00526

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)	0.00263	0.00227	0.00241
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00671	0.00620	0.00621
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)	0.00263	0.00227	0.00241
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00671	0.00620	0.00621

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)	0.00557	0.00532	0.00568
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01185	0.01144	0.01156
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)	0.00557	0.00532	0.00568
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01185	0.01144	0.01156

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)	-0.00014	-0.00058	-0.00055
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00344	0.00277	0.00254
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00047	-0.00091	-0.00084
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00014	-0.00058	-0.00055
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00344	0.00277	0.00254
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00047	-0.00091	-0.00084

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)	0.00908	0.00881	0.00907
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01873	0.01817	0.01791
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01426	0.01397	0.01404
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01868	0.01808	0.01863
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00977	0.00951	0.00981
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00908	0.00881	0.00907
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01873	0.01817	0.01791
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01426	0.01397	0.01404
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01868	0.01808	0.01863
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00977	0.00951	0.00981

SKY130_OSU_SC_18T_HS__DFFSRx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00479	0.00483	0.01037	0.01466	1.06828	1.07689
sky130_osu_sc_18T_hs__dffsr_l	0.00479	0.00483	0.01036	0.01466	0.75866	0.75865

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__dffsr_1	0.00000	0.11580	0.15759
sky130_osu_sc_18T_hs__dffsr_l	0.00000	0.11263	0.15441

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)	0.68818	2.10150	14.92510
	QN->Q (FR)	0.06017	1.11933	13.03310
	RN->Q (RR)	0.54661	1.96737	14.92350
	SN->Q (FR)	0.53620	2.11590	17.82730
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RR)	0.69204	2.26195	15.02940
	QN->Q (FR)	0.07094	1.23146	13.21440
	RN->Q (RR)	0.55109	2.12865	15.02950
	SN->Q (FR)	0.53971	2.27786	17.89770

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)	0.69118	2.26042	17.20690
	QN->Q (RF)	0.03519	0.72240	8.57966
	RN->Q (FF)	0.44664	2.18101	19.15950
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RF)	0.71232	2.48840	17.48440
	QN->Q (RF)	0.03941	0.76860	8.61350
	RN->Q (FF)	0.46903	2.40907	19.42560

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)	0.61964	1.47645	8.76640
	RN->QN (FR)	0.37695	1.39743	10.73040
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RR)	0.62871	1.58191	8.93347
	RN->QN (FR)	0.38675	1.50374	10.88340

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)	0.59094	1.18597	5.11961
	RN->QN (RF)	0.44908	1.05495	5.12272
	SN->QN (FF)	0.43923	1.20328	8.01824
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RF)	0.58144	1.19675	5.00761
	RN->QN (RF)	0.43992	1.06610	5.01120
	SN->QN (FF)	0.42957	1.21499	7.87326

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)	-0.11824	-0.15800	-0.93939
	setup	CK (R)	0.52268	0.52523	1.79787
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.11902	-0.15668	-0.94053
	setup	CK (R)	0.52346	0.52285	1.79609

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)	-0.33031	-0.72887	-7.38839
	setup	CK (R)	0.39663	0.75389	7.44107
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.32875	-0.72937	-7.38974
	setup	CK (R)	0.39417	0.75389	7.43709

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)	-0.11824	-0.15800	-0.93939
	setup	CK (R)	0.52268	0.52523	1.79787
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.11902	-0.15668	-0.94053
	setup	CK (R)	0.52346	0.52285	1.79609

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)	-0.33031	-0.72887	-7.38839
	setup	CK (R)	0.39663	0.75389	7.44107
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.32875	-0.72937	-7.38974
	setup	CK (R)	0.39417	0.75389	7.43709

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)	0.40670	0.40573	1.43666
	removal	CK (R)	-0.04204	-0.05069	-0.11698
	hold	SN (R)	-0.42150	-0.70720	-5.41077
	setup	SN (R)	0.45601	0.76627	7.44389
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.40665	0.40482	1.44047
	removal	CK (R)	-0.04204	-0.05069	-0.11698
	hold	SN (R)	-0.40699	-0.69529	-5.33034
	setup	SN (R)	0.45231	0.75397	7.35649

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)	0.40670	0.40573	1.43666
	removal	CK (R)	-0.04204	-0.05069	-0.11698
	hold	SN (R)	-0.42504	-0.70720	-5.41077
	hold	SN (R)	-0.42150	-0.70997	-5.42334
	setup	SN (R)	0.45601	0.75711	7.35719
	setup	SN (R)	0.44412	0.76627	7.44389
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.40665	0.40482	1.44047
	removal	CK (R)	-0.04204	-0.05069	-0.11698
	hold	SN (R)	-0.41428	-0.69529	-5.33034
	hold	SN (R)	-0.40699	-0.69790	-5.33686
	setup	SN (R)	0.45231	0.74588	7.28347
	setup	SN (R)	0.42547	0.75397	7.35649

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 ()	0.29680	0.66414	13.33370
	min_pulse_width	RN ()	0.30679	0.66414	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	RN ()	0.29743	0.65980	13.33370
	min_pulse_width	RN ()	0.30086	0.66197	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)	0.06652	0.10008	1.64383
	removal	CK (R)	-0.01637	-0.06143	-0.63096
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.06669	0.10003	1.53178
	removal	CK (R)	-0.01637	-0.06143	-0.62991

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)	0.06652	0.10008	1.64383
	removal	CK (R)	-0.01637	-0.06143	-0.63096
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.06669	0.10003	1.53178
	removal	CK (R)	-0.01637	-0.06143	-0.62991

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 ()	0.43955	0.81164	13.33370
	min_pulse_width	SN ()	0.43678	0.81814	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	SN ()	0.43874	0.79862	13.33370
	min_pulse_width	SN ()	0.42087	0.80513	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 ()	0.31198	0.55786	13.33370
	min_pulse_width	CK ()	0.37449	0.55786	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.29947	0.55786	13.33370
	min_pulse_width	CK ()	0.36824	0.55786	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 ()	0.67297	0.74006	13.33370
	min_pulse_width	CK ()	0.33936	0.64462	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.67297	0.74006	13.33370
	min_pulse_width	CK ()	0.33936	0.64462	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	0.00778	0.00706	0.00202
	RN	0.01412	0.01353	0.00829
	SN	-0.00087	-0.03364	-0.38458
	SN	0.01536	0.01487	0.00955
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00719	0.00642	0.00223
	RN	0.01352	0.01288	0.00854
	SN	-0.00087	-0.02740	-0.27312
	SN	0.01476	0.01422	0.00973

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	0.00811	0.00776	0.00569
	RN	-0.00087	-0.03364	-0.38458
	RN	0.01617	0.01579	0.01365
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00750	0.00718	0.00584
	RN	-0.00087	-0.02740	-0.27312
	RN	0.01555	0.01519	0.01372

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	0.00812	0.00777	0.00566
	RN	-0.00087	-0.03380	-0.38768
	RN	0.01617	0.01579	0.01362
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00751	0.00719	0.00588
	RN	-0.00087	-0.02740	-0.27311
	RN	0.01555	0.01520	0.01378

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	0.00772	0.00700	0.00182
	RN	0.01406	0.01347	0.00808
	SN	-0.00087	-0.03380	-0.38765
	SN	0.01530	0.01481	0.00941
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00713	0.00636	0.00220
	RN	0.01345	0.01281	0.00831
	SN	-0.00087	-0.02740	-0.27309
	SN	0.01470	0.01416	0.00964

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	-0.00190	-0.00196	-0.00195
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00920	0.00893	0.00880
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00378	0.00352	0.00338
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00375	0.00350	0.00337
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00379	0.00354	0.00340
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00190	-0.00196	-0.00195
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00920	0.00893	0.00880
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00378	0.00352	0.00338
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00375	0.00350	0.00337
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00379	0.00354	0.00340

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	0.00197	0.00196	0.00195
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.01361	0.01345	0.01314
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00576	0.00564	0.00562
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00580	0.00568	0.00564
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00573	0.00561	0.00559
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00197	0.00196	0.00195
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.01360	0.01345	0.01313
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00575	0.00564	0.00562
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00579	0.00568	0.00563
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00572	0.00560	0.00558

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)	0.00253	0.00217	0.00217
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00810	0.00757	0.00745
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)	0.00252	0.00217	0.00217
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00809	0.00758	0.00744

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)	0.00600	0.00577	0.00617
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01252	0.01208	0.01220
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)	0.00599	0.00576	0.00617
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01251	0.01208	0.01220

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)	-0.00448	-0.00448	-0.00454
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00450	-0.00464	-0.00467
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00438	-0.00449	-0.00447
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00312	0.00282	0.00264
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)	-0.00448	-0.00449	-0.00454
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00449	-0.00463	-0.00466
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00438	-0.00449	-0.00447
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00312	0.00282	0.00264

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)	0.00454	0.00458	0.00455
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00464	0.00464	0.00467
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00445	0.00452	0.00448
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00930	0.00912	0.00909
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)	0.00454	0.00458	0.00455
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00463	0.00463	0.00466
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00445	0.00452	0.00448
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00929	0.00911	0.00909

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)	-0.00015	-0.00058	-0.00055
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00390	0.00326	0.00305
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00383	0.00321	0.00302
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00035	-0.00080	-0.00072
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00318	0.00236	0.00257
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00015	-0.00058	-0.00055
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00389	0.00326	0.00305
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00382	0.00321	0.00301
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00035	-0.00080	-0.00072
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00318	0.00236	0.00257

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)	0.02072	0.02021	0.01991
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00911	0.00884	0.00909
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01446	0.01420	0.01424
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01450	0.01422	0.01428
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02034	0.01971	0.02013
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00968	0.00941	0.00972
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01172	0.01116	0.01189
sky130_osu_sc_18T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02072	0.02021	0.01991
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00911	0.00884	0.00909
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01446	0.01420	0.01424
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01450	0.01422	0.01428
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02033	0.01970	0.02010
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00968	0.00941	0.00972
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01172	0.01115	0.01188

SKY130_OSU_SC_18T_HS__DFFSx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00482	0.00845	0.01445	1.06399	1.05693
sky130_osu_sc_18T_hs__dffs_l	0.00482	0.00845	0.01445	0.75478	0.75971

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffs_1	0.00000	0.11193	0.17335
sky130_osu_sc_18T_hs__dffs_l	0.00000	0.10875	0.17017

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)	0.44661	1.85892	14.97310
	QN->Q (FR)	0.06262	1.14232	13.29450
	SN->Q (FR)	0.35890	1.95622	17.49490
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RR)	0.44727	1.97741	14.57760
	QN->Q (FR)	0.07081	1.22608	13.15220
	SN->Q (FR)	0.35730	2.07274	17.05100

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)	0.68356	2.27986	17.52730
	QN->Q (RF)	0.03805	0.75610	8.97853
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RF)	0.69330	2.45656	17.34750
	QN->Q (RF)	0.03926	0.76627	8.58184

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)	0.60804	1.46756	8.75159
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RR)	0.60899	1.55736	8.89753

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)	0.35630	0.91823	4.84634
	SN->QN (FF)	0.26705	1.01686	7.36549
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RF)	0.34689	0.92268	4.64478
	SN->QN (FF)	0.25567	1.01940	7.11900

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)	-0.07749	-0.11831	-0.76756
	setup	CK (R)	0.31204	0.32744	1.71636
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.07824	-0.11968	-0.76711
	setup	CK (R)	0.31465	0.32806	1.72280

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)	-0.29853	-0.70356	-7.23067
	setup	CK (R)	0.38421	0.73594	7.30927
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.29884	-0.70462	-7.23264
	setup	CK (R)	0.38376	0.73588	7.31113

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)	-0.07749	-0.11831	-0.76756
	setup	CK (R)	0.31204	0.32744	1.71636
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.07824	-0.11968	-0.76711
	setup	CK (R)	0.31465	0.32806	1.72280

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)	-0.29853	-0.70356	-7.23067
	setup	CK (R)	0.38421	0.73594	7.30927
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.29884	-0.70462	-7.23264
	setup	CK (R)	0.38376	0.73588	7.31113

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)	0.08233	0.11953	1.37976
	removal	CK (R)	-0.02376	-0.06888	-0.77053
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.08052	0.11953	1.30535
	removal	CK (R)	-0.02376	-0.06888	-0.77053

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)	0.08233	0.11953	1.37976
	removal	CK (R)	-0.02376	-0.06888	-0.77053
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.08052	0.11953	1.30535
	removal	CK (R)	-0.02376	-0.06888	-0.77053

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 ()	0.24800	0.71403	13.33370
	min_pulse_width	SN ()	0.25411	0.71620	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	SN ()	0.24378	0.70102	13.33370
	min_pulse_width	SN ()	0.23987	0.70535	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 ()	0.17028	0.55786	13.33370
	min_pulse_width	CK ()	0.37032	0.55786	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.16403	0.55786	13.33370
	min_pulse_width	CK ()	0.36199	0.55786	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 ()	0.45928	0.62944	13.33370
	min_pulse_width	CK ()	0.32835	0.62293	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.46007	0.62727	13.33370
	min_pulse_width	CK ()	0.32835	0.62293	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	0.00647	0.00541	-0.00202
	SN	-0.00087	-0.03356	-0.38304
	SN	0.01341	0.01247	0.00484
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00579	0.00495	0.00079
	SN	-0.00087	-0.02731	-0.27172
	SN	0.01273	0.01201	0.00771

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	0.00698	0.00658	0.00412
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00630	0.00597	0.00468

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	0.00698	0.00658	0.00413
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00630	0.00598	0.00469

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	0.00641	0.00537	-0.00213
	SN	-0.00087	-0.03343	-0.38046
	SN	0.01335	0.01242	0.00467
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00574	0.00490	0.00081
	SN	-0.00087	-0.02742	-0.27347
	SN	0.01267	0.01195	0.00758

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	-0.00192	-0.00198	-0.00197
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00720	0.00689	0.00662
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00335	0.00308	0.00295
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00192	-0.00198	-0.00197
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00720	0.00689	0.00662
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00335	0.00308	0.00295

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	0.00199	0.00198	0.00197
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01162	0.01144	0.01131
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00552	0.00539	0.00538
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00199	0.00198	0.00197
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01162	0.01144	0.01131
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00552	0.00539	0.00538

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)	-0.00340	-0.00342	-0.00343
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00250	0.00222	0.00225
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)	-0.00340	-0.00342	-0.00343
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00250	0.00223	0.00225

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)	0.00345	0.00348	0.00344
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00673	0.00644	0.00655
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)	0.00345	0.00348	0.00344
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00673	0.00644	0.00655

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)	-0.00015	-0.00059	-0.00056
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00041	-0.00086	-0.00079
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00275	0.00190	0.00213
sky130_osu_sc_18T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00015	-0.00059	-0.00056
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00041	-0.00088	-0.00079
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00275	0.00190	0.00213

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)	0.01860	0.01806	0.01772
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00909	0.00883	0.00907
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01833	0.01767	0.01824
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00971	0.00945	0.00975
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01144	0.01092	0.01164
sky130_osu_sc_18T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01860	0.01806	0.01772
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00909	0.00883	0.00907
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01833	0.01767	0.01824
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00971	0.00945	0.00975
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01144	0.01092	0.01164

SKY130_OSU_SC_18T_HS__DFFx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00497	0.01421	1.07657	1.08192
sky130_osu_sc_18T_hs__dff_l	0.00497	0.01422	0.74027	0.75220

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dff_1	0.00000	0.10404	0.12823
sky130_osu_sc_18T_hs__dff_l	0.00000	0.10086	0.12505

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)	0.38877	1.76396	14.60760
	QN->Q (FR)	0.05975	1.11773	13.05000
sky130_osu_sc_18T_hs__dff_l	CK->Q (RR)	0.40238	1.92133	14.38240
	QN->Q (FR)	0.07186	1.23063	13.15120

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)	0.58943	2.15207	17.16690
	QN->Q (RF)	0.03505	0.72085	8.58679
sky130_osu_sc_18T_hs__dff_l	CK->Q (RF)	0.61482	2.36849	17.07420
	QN->Q (RF)	0.03935	0.76253	8.51759

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)	0.52101	1.36793	8.65803
sky130_osu_sc_18T_hs__dff_l	CK->QN (RR)	0.53325	1.47944	8.81267

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)	0.30569	0.85278	4.74539
sky130_osu_sc_18T_hs__dff_l	CK->QN (RF)	0.30430	0.87480	4.60892

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)	-0.07445	-0.12035	-0.79631
	setup	CK (R)	0.25465	0.26727	1.69908
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.07593	-0.12035	-0.79778
	setup	CK (R)	0.25124	0.26594	1.70022

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)	-0.28081	-0.69859	-7.21385
	setup	CK (R)	0.33394	0.73351	7.31948
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.28136	-0.69806	-7.21645
	setup	CK (R)	0.33333	0.73347	7.31915

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 ()	0.15569	0.55786	13.33370
	min_pulse_width	CK ()	0.33490	0.55786	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.15152	0.55786	13.33370
	min_pulse_width	CK ()	0.32656	0.55786	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 ()	0.39998	0.61426	13.33370
	min_pulse_width	CK ()	0.26812	0.61859	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.39767	0.61426	13.33370
	min_pulse_width	CK ()	0.26812	0.61859	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	0.00677	0.00592	0.00112
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00617	0.00529	0.00113

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	0.00710	0.00676	0.00471
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00650	0.00617	0.00475

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	0.00711	0.00676	0.00469
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00651	0.00617	0.00474

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	0.00672	0.00587	0.00095
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00611	0.00523	0.00113

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	-0.00173	-0.00195	-0.00195
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00678	0.00650	0.00625
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00173	-0.00195	-0.00195
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00679	0.00650	0.00626

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	0.00194	0.00195	0.00195
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01204	0.01183	0.01165
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00194	0.00195	0.00195
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01204	0.01183	0.01166

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)	-0.00016	-0.00059	-0.00056
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00041	-0.00087	-0.00079
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00016	-0.00059	-0.00056
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00041	-0.00087	-0.00079

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)	0.00905	0.00878	0.00904
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01821	0.01766	0.01740
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01863	0.01793	0.01850
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00967	0.00940	0.00971
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00905	0.00878	0.00904
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01822	0.01766	0.01740
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01863	0.01793	0.01850
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00967	0.00940	0.00971

SKY130_OSU_SC_18T_HS__INVx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00486	1.05583
sky130_osu_sc_18T_hs__inv_10	0.04560	9.77865
sky130_osu_sc_18T_hs__inv_2	0.00931	2.07440
sky130_osu_sc_18T_hs__inv_3	0.01388	3.02814
sky130_osu_sc_18T_hs__inv_4	0.01835	4.06065
sky130_osu_sc_18T_hs__inv_6	0.02752	5.99462
sky130_osu_sc_18T_hs__inv_8	0.03657	7.94560
sky130_osu_sc_18T_hs__inv_l	0.00382	0.73854

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__inv_1	0.00000	0.01609	0.02991
sky130_osu_sc_18T_hs__inv_10	0.00000	0.16086	0.29906
sky130_osu_sc_18T_hs__inv_2	0.00000	0.03217	0.05981
sky130_osu_sc_18T_hs__inv_3	0.00000	0.04826	0.08972
sky130_osu_sc_18T_hs__inv_4	0.00000	0.06435	0.11962
sky130_osu_sc_18T_hs__inv_6	0.00000	0.09652	0.17944
sky130_osu_sc_18T_hs__inv_8	0.00000	0.12869	0.23925
sky130_osu_sc_18T_hs__inv_l	0.00000	0.01450	0.02624

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)**	0.05734	1.06443	12.39350
sky130_osu_sc_18T_hs__inv_10	**A->Y (FR)**	0.07709	0.74785	12.40790
sky130_osu_sc_18T_hs__inv_2	**A->Y (FR)**	0.04475	0.91824	12.32560
sky130_osu_sc_18T_hs__inv_3	**A->Y (FR)**	0.04875	0.86416	12.34600
sky130_osu_sc_18T_hs__inv_4	**A->Y (FR)**	0.04938	0.82155	12.33140
sky130_osu_sc_18T_hs__inv_6	**A->Y (FR)**	0.05567	0.77728	12.35930
sky130_osu_sc_18T_hs__inv_8	**A->Y (FR)**	0.06551	0.75767	12.36390
sky130_osu_sc_18T_hs__inv_l	**A->Y (FR)**	0.06799	1.17023	12.52130

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)**	0.03168	0.65892	7.86010
sky130_osu_sc_18T_hs__inv_10	**A->Y (RF)**	0.04873	0.48531	7.82355
sky130_osu_sc_18T_hs__inv_2	**A->Y (RF)**	0.02664	0.59078	7.82115
sky130_osu_sc_18T_hs__inv_3	**A->Y (RF)**	0.02885	0.56272	7.87199
sky130_osu_sc_18T_hs__inv_4	**A->Y (RF)**	0.02900	0.53728	7.86271
sky130_osu_sc_18T_hs__inv_6	**A->Y (RF)**	0.03553	0.51040	7.85701
sky130_osu_sc_18T_hs__inv_8	**A->Y (RF)**	0.04199	0.49630	7.86455
sky130_osu_sc_18T_hs__inv_l	**A->Y (RF)**	0.03532	0.69872	7.81768

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	0.00315	0.00310	0.00316
sky130_osu_sc_18T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02710	0.02741	0.00973
sky130_osu_sc_18T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00565	0.00565	0.00582
sky130_osu_sc_18T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00864	0.00863	0.00305
sky130_osu_sc_18T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01114	0.01112	0.00369
sky130_osu_sc_18T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01651	0.01585	0.01727
sky130_osu_sc_18T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02184	0.02207	0.00753
sky130_osu_sc_18T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00247	0.00243	0.00210

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	-0.00048	-0.00051	-0.00051
sky130_osu_sc_18T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00989	-0.00944	-0.00839
sky130_osu_sc_18T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00177	-0.00180	-0.00173
sky130_osu_sc_18T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00229	-0.00233	-0.00218
sky130_osu_sc_18T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00368	-0.00365	-0.00338
sky130_osu_sc_18T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00562	-0.00557	-0.00506
sky130_osu_sc_18T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00767	-0.00748	-0.00676
sky130_osu_sc_18T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00037	-0.00040	-0.00040

SKY130_OSU_SC_18T_HS__MUX2

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.63859	0.64264	0.00990	0.92634

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__mux2_1	0.00000	0.03222	0.03222

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)	-	0.03187	0.67692	7.96168
	A1->Y (RR)	-	0.03559	0.67689	7.97111
	S0->Y (RR)	(!A0 * A1)	0.08315	0.76479	6.91389
	S0->Y (FR)	(A0 * !A1)	0.07593	0.88594	8.71395

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)	-	0.02760	0.59105	6.87365
	A1->Y (FF)	-	0.02500	0.58626	6.84950
	S0->Y (FF)	(!A0 * A1)	0.13092	0.77739	6.13720
	S0->Y (RF)	(A0 * !A1)	0.03648	0.62993	6.72464

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	-	-0.00352	-0.00352	-0.00352
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00248	-0.00248	-0.00248
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00377	0.00352	0.00403
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00210	-0.00249	-0.00228

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	-	0.00352	0.00352	0.00352
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00248	0.00248	0.00248
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00091	0.00054	0.00076
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00846	0.00821	0.00865

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)	-0.00096	-0.00096	-0.00096

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)	0.00096	0.00096	0.00096

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)	-0.00113	-0.00113	-0.00113

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)	0.00113	0.00113	0.00113

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)	-0.00060	-0.00100	-0.00077
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00059	-0.00098	-0.00078

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)	0.00629	0.00604	0.00648
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00594	0.00569	0.00617

SKY130_OSU_SC_18T_HS__NAND2x

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00488	0.00486	1.04547
sky130_osu_sc_18T_hs__nand2_l	0.00383	0.00381	0.72254

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nand2_1	0.00000	0.01608	0.05981
sky130_osu_sc_18T_hs__nand2_l	0.00000	0.01452	0.05247

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)	0.06000	1.06953	12.39650
	B->Y (FR)	0.07022	1.07224	12.31820
sky130_osu_sc_18T_hs__nand2_l	A->Y (FR)	0.07022	1.16825	12.40240
	B->Y (FR)	0.08206	1.17650	12.37530

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)	0.04929	0.83755	9.72666
	B->Y (RF)	0.05599	0.83359	9.52667
sky130_osu_sc_18T_hs__nand2_l	A->Y (RF)	0.05539	0.90104	9.61854
	B->Y (RF)	0.06176	0.89087	9.33886

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	0.00335	0.00330	0.00336
	B	0.00000	0.00000	0.00000
	B	0.00416	0.00409	0.00414
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00260	0.00256	0.00132
	B	0.00000	0.00000	0.00000
	B	0.00320	0.00315	0.00189

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	-0.00023	-0.00029	-0.00028
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00026	-0.00027
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00022	-0.00026	-0.00026
	B	0.00000	0.00000	0.00000
	B	-0.00020	-0.00024	-0.00025

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)	-0.00221	-0.00224	-0.00225
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00165	-0.00166	-0.00167

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)	0.00224	0.00226	0.00225
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00167	0.00169	0.00168

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00206	-0.00207	-0.00206
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00153	-0.00154	-0.00154

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00209	0.00209	0.00207
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00156	0.00156	0.00154

SKY130_OSU_SC_18T_HS__NOR2x

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00487	0.00518	0.47546
sky130_osu_sc_18T_hs__nor2_l	0.00375	0.00409	0.33436

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nor2_1	0.00000	0.01201	0.02991
sky130_osu_sc_18T_hs__nor2_l	0.00000	0.01154	0.02624

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)	0.14988	1.41989	12.91800
	B->Y (FR)	0.11931	1.33077	12.30650
sky130_osu_sc_18T_hs__nor2_l	A->Y (FR)	0.17126	1.55815	12.84190
	B->Y (FR)	0.14490	1.48455	12.43490

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)	0.03841	0.56106	5.69963
	B->Y (RF)	0.03311	0.55004	5.67885
sky130_osu_sc_18T_hs__nor2_l	A->Y (RF)	0.04155	0.59057	5.72970
	B->Y (RF)	0.03675	0.58155	5.71136

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	0.00427	0.00421	0.00419
	B	0.00000	0.00000	0.00000
	B	0.00342	0.00332	0.00337
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00318	0.00314	0.00272
	B	0.00000	0.00000	0.00000
	B	0.00264	0.00255	0.00257

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	0.00058	0.00043	0.00038
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00043	-0.00047
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00037	0.00027	0.00023
	B	0.00000	0.00000	0.00000
	B	-0.00028	-0.00030	-0.00035

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)	-0.00174	-0.00196	-0.00196
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00127	-0.00142	-0.00142

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)	0.00195	0.00197	0.00196
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00142	0.00143	0.00142

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)	-0.00114	-0.00115	-0.00114
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00084	-0.00085	-0.00084

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)	0.00123	0.00124	0.00117
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00090	0.00091	0.00086

SKY130_OSU_SC_18T_HS__OAI21

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00494	0.00498	0.00424	0.47909

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai21_l	0.00000	0.01665	0.05614

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)	0.16350	1.38557	12.44860
	A1->Y (FR)	0.20075	1.48178	13.06890
	B0->Y (FR)	0.08711	1.02846	10.16520

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)	0.06823	0.69716	6.73741
	A1->Y (RF)	0.07698	0.69749	6.67870
	B0->Y (RF)	0.05467	0.70462	7.09113

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	0.00459	0.00448	0.00450
	A1	0.00000	0.00000	0.00000
	A1	0.00547	0.00539	0.00534
	B0	0.00376	0.00365	0.00366

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	0.00034	0.00030	0.00024
	A1	0.00000	0.00000	0.00000
	A1	0.00132	0.00118	0.00112
	B0	0.00170	0.00163	0.00157

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)	-0.00114	-0.00115	-0.00114
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00192	-0.00197	-0.00196
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00202	-0.00203	-0.00202

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)	0.00123	0.00124	0.00118
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00196	0.00197	0.00196
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00202	0.00205	0.00203

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)	-0.00171	-0.00192	-0.00193
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00190	-0.00196	-0.00195
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00199	-0.00199	-0.00200

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)	0.00191	0.00192	0.00193
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00194	0.00196	0.00195
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00200	0.00204	0.00200

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)	-0.00167	-0.00168	-0.00173

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)	0.00173	0.00176	0.00173

SKY130_OSU_SC_18T_HS__OAI22

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00476	0.00505	0.00518	0.00506	0.48109

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai22_l	0.00000	0.01789	0.05981

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)	0.21892	1.50062	13.09250
	A1->Y (FR)	0.18740	1.40685	12.47530
	B0->Y (FR)	0.13326	1.35304	12.42620
	B1->Y (FR)	0.16642	1.44490	13.04380

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)	0.10228	0.74801	6.85046
	A1->Y (RF)	0.08535	0.72301	6.79008
	B0->Y (RF)	0.07085	0.72619	7.13394
	B1->Y (RF)	0.08936	0.75895	7.27896

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	0.00698	0.00691	0.00685
	A1	0.00609	0.00597	0.00598
	B0	0.00455	0.00444	0.00447
	B1	0.00547	0.00539	0.00534

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.00195	0.00183	0.00173
	A1	0.00101	0.00098	0.00088
	B0	0.00102	0.00097	0.00088
	B1	0.00197	0.00182	0.00173

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)	-0.00173	-0.00196	-0.00197
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00173	-0.00196	-0.00196
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00191	-0.00197	-0.00196
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00200	-0.00201	-0.00200

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)	0.00195	0.00197	0.00197
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00195	0.00197	0.00196
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00195	0.00197	0.00196
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00200	0.00203	0.00201

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)	-0.00113	-0.00114	-0.00114
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00113	-0.00114	-0.00114
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00190	-0.00195	-0.00194
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00199	-0.00200	-0.00200

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)	0.00122	0.00123	0.00117
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00122	0.00123	0.00117
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00194	0.00195	0.00194
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00199	0.00202	0.00200

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)	-0.00112	-0.00114	-0.00113
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00112	-0.00114	-0.00113
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00213	-0.00219	-0.00217
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00214	-0.00217	-0.00222

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)	0.00122	0.00123	0.00116
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00122	0.00123	0.00116
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00217	0.00219	0.00217
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00222	0.00227	0.00223

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)	-0.00171	-0.00193	-0.00193
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00171	-0.00193	-0.00193
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00217	-0.00222	-0.00221
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00218	-0.00219	-0.00226

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)	0.00192	0.00194	0.00193
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00192	0.00195	0.00193
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00221	0.00222	0.00221
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00225	0.00228	0.00227

SKY130_OSU_SC_18T_HS__OR2x

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00521	0.00500	1.06905
sky130_osu_sc_18T_hs__or2_2	0.00520	0.00500	2.12184
sky130_osu_sc_18T_hs__or2_4	0.00520	0.00500	4.09505
sky130_osu_sc_18T_hs__or2_8	0.00520	0.00500	7.80332
sky130_osu_sc_18T_hs__or2_l	0.00415	0.00391	0.74429

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__or2_1	0.00000	0.02119	0.03444
sky130_osu_sc_18T_hs__or2_2	0.00000	0.03037	0.06435
sky130_osu_sc_18T_hs__or2_4	0.00000	0.04872	0.12416
sky130_osu_sc_18T_hs__or2_8	0.00000	0.08543	0.24378
sky130_osu_sc_18T_hs__or2_l	0.00000	0.02016	0.03176

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)	0.11471	0.96255	8.17017
	B->Y (RR)	0.10601	0.93432	7.98056
sky130_osu_sc_18T_hs__or2_2	A->Y (RR)	0.12382	0.87090	8.46574
	B->Y (RR)	0.11465	0.84714	8.31854
sky130_osu_sc_18T_hs__or2_4	A->Y (RR)	0.16305	0.85421	8.87367
	B->Y (RR)	0.15355	0.83704	8.76293
sky130_osu_sc_18T_hs__or2_8	A->Y (RR)	0.23850	0.90644	9.41479
	B->Y (RR)	0.22859	0.89485	9.34173
sky130_osu_sc_18T_hs__or2_l	A->Y (RR)	0.12958	1.08236	8.42959
	B->Y (RR)	0.12123	1.05599	8.24530

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)	0.27447	1.01101	7.39371
	B->Y (FF)	0.23296	0.92168	6.63072
sky130_osu_sc_18T_hs__or2_2	A->Y (FF)	0.34596	1.05532	7.82545
	B->Y (FF)	0.30457	0.96289	7.11272
sky130_osu_sc_18T_hs__or2_4	A->Y (FF)	0.50538	1.21571	8.44992
	B->Y (FF)	0.46363	1.12070	7.81339
sky130_osu_sc_18T_hs__or2_8	A->Y (FF)	0.82009	1.56593	9.22233
	B->Y (FF)	0.77934	1.46621	8.67791
sky130_osu_sc_18T_hs__or2_l	A->Y (FF)	0.30468	1.05936	7.21339
	B->Y (FF)	0.26252	0.98025	6.56641

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	0.00363	0.00330	0.00332
	B	0.00000	0.00000	0.00000
	B	0.00265	0.00234	0.00257
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00610	0.00595	0.00595
	B	0.00000	0.00000	0.00000
	B	0.00509	0.00501	0.00514
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01140	0.01164	0.01191
	B	0.00000	0.00000	0.00000
	B	0.01039	0.01078	0.01091
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02185	0.02273	0.02369
	B	0.00000	0.00000	0.00000
	B	0.02081	0.02192	0.02321
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00271	0.00244	0.00244
	B	0.00000	0.00000	0.00000
	B	0.00205	0.00180	0.00193

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	0.00724	0.00721	0.00717
	B	0.00000	0.00000	0.00000
	B	0.00621	0.00617	0.00659
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00885	0.00921	0.00915
	B	0.00000	0.00000	0.00000
	B	0.00782	0.00811	0.00853
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01289	0.01391	0.01404
	B	0.00000	0.00000	0.00000
	B	0.01185	0.01280	0.01331
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02102	0.02289	0.02379
	B	0.00000	0.00000	0.00000
	B	0.01995	0.02179	0.02292
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00559	0.00554	0.00548
	B	0.00000	0.00000	0.00000
	B	0.00485	0.00480	0.00507

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)	-0.00176	-0.00196	-0.00197
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00176	-0.00196	-0.00197
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00176	-0.00196	-0.00197
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00176	-0.00196	-0.00197
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00128	-0.00143	-0.00143

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)	0.00195	0.00198	0.00197
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00195	0.00198	0.00197
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00195	0.00198	0.00197
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00195	0.00198	0.00197
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00142	0.00143	0.00143

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)	-0.00115	-0.00115	-0.00115
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00115	-0.00115	-0.00115
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00115	-0.00115	-0.00115
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00115	-0.00115	-0.00115
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00086	-0.00086	-0.00086

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)	0.00125	0.00125	0.00118
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00125	0.00125	0.00118
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00125	0.00125	0.00118
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00125	0.00125	0.00118
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00093	0.00093	0.00088

SKY130_OSU_SC_18T_HS__TBUFIx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00518	0.00659	0.47564
sky130_osu_sc_18T_hs__tbufi_l	0.00410	0.00522	0.33359

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tbufi_1	0.00000	0.01719	0.05982
sky130_osu_sc_18T_hs__tbufi_l	0.00000	0.01594	0.05247

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)	0.11342	1.32397	12.30220
	OE->Y (FR)	0.08483	0.47976	3.47452
	OE->Y (RR)	0.17453	1.23684	8.30520
sky130_osu_sc_18T_hs__tbufi_l	A->Y (FR)	0.13893	1.47745	12.42280
	OE->Y (FR)	0.09386	0.49322	3.47461
	OE->Y (RR)	0.19645	1.39785	8.54352

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)	0.04726	0.66668	6.75572
	OE->Y (FF)	0.08565	0.48136	3.47454
	OE->Y (RF)	0.04657	0.65228	6.52445
sky130_osu_sc_18T_hs__tbufi_l	A->Y (RF)	0.05401	0.71088	6.78831
	OE->Y (FF)	0.09485	0.49486	3.47460
	OE->Y (RF)	0.05364	0.69180	6.48278

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	0.00320	0.00311	0.00314
	OE	0.00000	0.00000	0.00000
	OE	0.00316	0.00278	0.00304
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00249	0.00240	0.00240
	OE	0.00000	0.00000	0.00000
	OE	0.00230	0.00200	0.00218

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	-0.00040	-0.00042	-0.00047
	OE	0.00000	0.00000	0.00000
	OE	0.00242	0.00204	0.00230
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00028	-0.00030	-0.00035
	OE	0.00000	0.00000	0.00000
	OE	0.00171	0.00141	0.00158

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)	-0.00175	-0.00177	-0.00176
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00162	-0.00164	-0.00163
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00135	-0.00136	-0.00135
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00126	-0.00128	-0.00127

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)	0.00175	0.00177	0.00176
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00169	0.00171	0.00167
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00135	0.00136	0.00135
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00131	0.00132	0.00129

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)	0.00136	0.00099	0.00126
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00125	0.00086	0.00112
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00095	0.00066	0.00084
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00086	0.00056	0.00073

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)	0.00371	0.00338	0.00377
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00376	0.00345	0.00384
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00298	0.00271	0.00295
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00303	0.00276	0.00300

SKY130_OSU_SC_18T_HS__TNBUFIx

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00518	0.00802	0.47566
sky130_osu_sc_18T_hs__tnbufi_l	0.00409	0.00613	0.33363

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tnbufi_1	0.00000	0.02640	0.03218
sky130_osu_sc_18T_hs__tnbufi_l	0.00000	0.02376	0.02900

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)	0.11484	1.32409	12.30250
	OE->Y (RR)	0.03640	0.27741	3.47461
	OE->Y (FR)	0.13761	1.40783	12.90590
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (FR)	0.14040	1.47747	12.42360
	OE->Y (RR)	0.03815	0.27884	3.47487
	OE->Y (FR)	0.15712	1.54461	12.84220

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)	0.04643	0.66633	6.75556
	OE->Y (RF)	0.03575	0.27719	3.47460
	OE->Y (FF)	0.10515	0.76565	5.25132
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (RF)	0.05292	0.71044	6.78825
	OE->Y (RF)	0.03759	0.27878	3.47487
	OE->Y (FF)	0.11971	0.81476	5.20645

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	0.00329	0.00319	0.00322
	OE	0.00000	0.00000	0.00000
	OE	0.00774	0.00758	0.00812
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00258	0.00249	0.00249
	OE	0.00000	0.00000	0.00000
	OE	0.00588	0.00574	0.00591

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	-0.00050	-0.00052	-0.00057
	OE	0.00000	0.00000	0.00000
	OE	0.00714	0.00699	0.00753
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00039	-0.00041	-0.00045
	OE	0.00000	0.00000	0.00000
	OE	0.00541	0.00525	0.00559

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)	-0.00151	-0.00153	-0.00152
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00140	-0.00142	-0.00141
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00112	-0.00113	-0.00113
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00105	-0.00107	-0.00105

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)	0.00151	0.00153	0.00152
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00146	0.00147	0.00144
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00112	0.00113	0.00113
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00109	0.00109	0.00107

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)	-0.00217	-0.00275	-0.00249
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00216	-0.00271	-0.00247
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00157	-0.00200	-0.00182
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00156	-0.00195	-0.00180

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)	0.00594	0.00580	0.00632
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00584	0.00569	0.00623
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00454	0.00440	0.00474
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00447	0.00432	0.00467

SKY130_OSU_SC_18T_HS__XNOR2

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.01024	0.00925	0.48058

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xnor2_l	0.00000	0.05562	0.09199

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	0.22468	1.30799	8.55892
	A->Y (FR)	!B	0.15094	1.36893	12.39380
	B->Y (RR)	A	0.17957	1.25465	8.42721
	B->Y (FR)	!A	0.18937	1.46073	12.99700

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	0.16993	0.87612	5.84272
	A->Y (RF)	!B	0.06997	0.68277	6.66305
	B->Y (FF)	A	0.16019	0.86254	5.82770
	B->Y (RF)	!A	0.07853	0.69587	6.68042

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	0.00301	0.00257	0.00275
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00774	0.00740	0.00787
	B	A	0.00000	0.00000	0.00000
	B	A	0.00137	0.00104	0.00122
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00831	0.00802	0.00847

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	0.00991	0.00951	0.00980
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00249	0.00207	0.00224
	B	A	0.00000	0.00000	0.00000
	B	A	0.00890	0.00872	0.00918
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00332	0.00283	0.00296

SKY130_OSU_SC_18T_HS__XOR2

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.01022	0.00930	0.47965

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xor2_1	0.00000	0.05562	0.08556

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	0.21820	1.28482	8.46866
	A->Y (FR)	B	0.17407	1.44418	13.00690
	B->Y (RR)	!A	0.18424	1.25998	8.45207
	B->Y (FR)	A	0.18774	1.46243	13.02300

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	0.16404	0.86119	5.78571
	A->Y (RF)	B	0.06175	0.69059	6.80913
	B->Y (FF)	!A	0.15386	0.84936	5.74828
	B->Y (RF)	A	0.07150	0.68303	6.58019

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	0.00900	0.00871	0.00914
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00179	0.00115	0.00126
	B	A	0.00000	0.00000	0.00000
	B	A	0.00916	0.00890	0.00938
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00121	0.00086	0.00105

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	0.00236	0.00181	0.00192
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01009	0.00988	0.01029
	B	A	0.00000	0.00000	0.00000
	B	A	0.00236	0.00185	0.00199
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00907	0.00894	0.00938

SKY130_OSU_SC_18T_HS_x

sky130_osu_sc_18T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.21050
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	66982.20000	133964.00000
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
	-0.00193	0.01085	0.15424

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
	1.16658	1.09411	0.20829