sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_15T_HS__ADDFx
SKY130_OSU_SC_15T_HS__ADDHx
SKY130_OSU_SC_15T_HS__AND2x
SKY130_OSU_SC_15T_HS__AOI21
SKY130_OSU_SC_15T_HS__AOI22
SKY130_OSU_SC_15T_HS__BUFx
SKY130_OSU_SC_15T_HS__DFFRx
SKY130_OSU_SC_15T_HS__DFFSRx
SKY130_OSU_SC_15T_HS__DFFSx
SKY130_OSU_SC_15T_HS__DFFx
SKY130_OSU_SC_15T_HS__INVx
SKY130_OSU_SC_15T_HS__MUX2
SKY130_OSU_SC_15T_HS__NAND2x
SKY130_OSU_SC_15T_HS__NOR2x
SKY130_OSU_SC_15T_HS__OAI21
SKY130_OSU_SC_15T_HS__OAI22
SKY130_OSU_SC_15T_HS__OR2x
SKY130_OSU_SC_15T_HS__TBUFIx
SKY130_OSU_SC_15T_HS__TNBUFIx
SKY130_OSU_SC_15T_HS__XNOR2
SKY130_OSU_SC_15T_HS__XOR2
SKY130_OSU_SC_15T_HS_x

SKY130_OSU_SC_15T_HS__ADDFx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__addf_1	39.07200
sky130_osu_sc_15T_hs__addf_l	39.07200

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	**B**	**CI**	**CO**	**CON**	**S**
sky130_osu_sc_15T_hs__addf_1	0.01401	0.01398	0.01105	0.59975	0.24528	0.58204
sky130_osu_sc_15T_hs__addf_l	0.01401	0.01398	0.01102	0.37040	0.24550	0.37402

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.00036	0.00038
sky130_osu_sc_15T_hs__addf_l	0.00000	0.00038	0.00040

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CO (RR)	0.27054	2.10063	20.56690
	B->CO (RR)	0.25750	2.03805	20.17180
	CI->CO (RR)	0.25962	2.11662	20.98550
	CON->CO (FR)	0.06547	1.14130	13.00230
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.29093	2.05443	17.27150
	B->CO (RR)	0.27776	2.01102	17.20350
	CI->CO (RR)	0.28003	2.07217	17.72960
	CON->CO (FR)	0.09109	1.32351	13.32070

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CO (FF)	0.64811	3.90941	36.43160
	B->CO (FF)	0.60022	3.78043	35.59000
	CI->CO (FF)	0.58205	3.79654	35.98790
	CON->CO (RF)	0.03136	0.61064	7.29881
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.62603	3.25298	25.77690
	B->CO (FF)	0.57843	3.14491	25.23630
	CI->CO (FF)	0.56010	3.13957	25.34300
	CON->CO (RF)	0.03189	0.59236	6.56057

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CON (FR)	0.48254	1.85625	13.57660
	B->CON (FR)	0.44058	1.78161	13.33080
	CI->CON (FR)	0.41641	1.74252	13.15540
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.45738	1.83135	13.55890
	B->CON (FR)	0.41653	1.75771	13.30500
	CI->CON (FR)	0.39090	1.71783	13.13600

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CON (RF)	0.12380	0.66109	5.81087
	B->CON (RF)	0.11723	0.66634	6.01003
	CI->CON (RF)	0.11295	0.67979	6.20563
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.11899	0.65643	5.80675
	B->CON (RF)	0.11270	0.66208	6.00581
	CI->CON (RF)	0.10814	0.67517	6.20120

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->S (-R)	0.87774	4.08195	33.19340
	B->S (-R)	0.85388	4.03332	32.80850
	CI->S (-R)	0.80759	3.96230	32.72140
	CON->S (RR)	0.16447	1.12585	9.11554
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.85027	3.69574	26.59830
	B->S (-R)	0.82749	3.65803	26.37150
	CI->S (-R)	0.78016	3.57515	26.13580
	CON->S (RR)	0.18143	1.28036	9.25686

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->S (-F)	0.53699	1.94268	14.55930
	B->S (-F)	0.54147	1.87301	14.35050
	CI->S (-F)	0.52542	1.95274	14.96390
	CON->S (FF)	0.25514	0.98124	7.61831
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.49616	1.68885	11.39570
	B->S (-F)	0.50333	1.63413	11.41090
	CI->S (-F)	0.48478	1.69905	11.84020
	CON->S (FF)	0.23502	0.93095	6.97771

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00201	0.00194	0.00187
	B	0.00242	0.00245	0.00241
	CI	0.00264	0.00270	0.00265
sky130_osu_sc_15T_hs__addf_l	A	0.00157	0.00147	0.00137
	B	0.00198	0.00196	0.00187
	CI	0.00219	0.00221	0.00215

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00777	0.00777	0.00772
	B	0.00765	0.00773	0.00768
	CI	0.00670	0.00688	0.00682
sky130_osu_sc_15T_hs__addf_l	A	0.00734	0.00732	0.00725
	B	0.00722	0.00728	0.00719
	CI	0.00627	0.00642	0.00636

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00776	0.00775	0.00769
	B	0.00764	0.00770	0.00766
	CI	0.00669	0.00686	0.00679
sky130_osu_sc_15T_hs__addf_l	A	0.00734	0.00732	0.00727
	B	0.00722	0.00727	0.00720
	CI	0.00627	0.00641	0.00635

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00198	0.00192	0.00179
	B	0.00239	0.00242	0.00224
	CI	0.00263	0.00269	0.00261
sky130_osu_sc_15T_hs__addf_l	A	0.00154	0.00145	0.00130
	B	0.00195	0.00194	0.00176
	CI	0.00219	0.00221	0.00211

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00777	0.00777	0.00773
	B	0.00765	0.00773	0.00766
	CI	0.00670	0.00688	0.00682
sky130_osu_sc_15T_hs__addf_l	A	0.00735	0.00733	0.00725
	B	0.00723	0.00729	0.00724
	CI	0.00627	0.00643	0.00638

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01584	0.01597	0.01586
	B	0.01446	0.01435	0.01417
	CI	0.01278	0.01285	0.01278
sky130_osu_sc_15T_hs__addf_l	A	0.01528	0.01528	0.01522
	B	0.01393	0.01374	0.01353
	CI	0.01225	0.01223	0.01214

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__addh_1	23.19900
sky130_osu_sc_15T_hs__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_hs__addh_1	0.00720	0.00786	0.59245	0.26111	0.59777
sky130_osu_sc_15T_hs__addh_l	0.00734	0.00812	0.37770	0.25877	0.38039

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.00030	0.00034
sky130_osu_sc_15T_hs__addh_l	0.00000	0.00031	0.00036

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CO (RR)	0.20850	1.15336	8.95244
	B->CO (RR)	0.21205	1.14509	9.05749
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.19190	1.24488	8.80938
	B->CO (RR)	0.19598	1.24146	8.93848

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CO (FF)	0.21225	0.86020	6.99978
	B->CO (FF)	0.22221	0.87119	7.05020
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.20545	0.84422	6.62937
	B->CO (FF)	0.21986	0.86275	6.70384

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CON (RR)	B	0.30671	0.97507	5.17157
	A->CON (FR)	!B	0.30142	1.62038	13.19000
	B->CON (RR)	A	0.31018	0.96559	5.27385
	B->CON (FR)	!A	0.35024	1.71418	13.61700
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.24869	0.88970	4.77155
	A->CON (FR)	!B	0.27660	1.58987	13.09890
	B->CON (RR)	A	0.25276	0.88456	4.91438
	B->CON (FR)	!A	0.32510	1.68318	13.53180

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CON (FF)	B	0.26915	0.88889	6.46203
	A->CON (RF)	!B	0.06149	0.56669	5.49173
	B->CON (FF)	A	0.27602	0.90785	6.58888
	B->CON (RF)	!A	0.06890	0.56421	5.36805
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.24974	0.86285	6.34761
	A->CON (RF)	!B	0.05803	0.56129	5.46528
	B->CON (FF)	A	0.26132	0.88938	6.50012
	B->CON (RF)	!A	0.06551	0.55939	5.34272

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->S (RR)	!B	0.17369	1.78115	18.33850
	A->S (FR)	B	0.38601	2.08235	18.58860
	B->S (RR)	!A	0.18022	1.74418	17.87790
	B->S (FR)	A	0.39554	2.13545	19.09450
	CON->S (FR)	-	0.06837	1.15413	13.10640
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.18875	1.78558	16.09890
	A->S (FR)	B	0.38557	2.07253	16.35030
	B->S (RR)	!A	0.19580	1.75904	15.78860
	B->S (FR)	A	0.39938	2.12303	16.71250
	CON->S (FR)	-	0.09003	1.32415	13.41030

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->S (FF)	!B	0.44019	3.51991	34.67880
	A->S (RF)	B	0.39915	2.05909	16.88260
	B->S (FF)	!A	0.48902	3.61525	35.14580
	B->S (RF)	A	0.40270	2.04834	17.00960
	CON->S (RF)	-	0.03073	0.61031	7.31983
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.41270	2.90969	24.91020
	A->S (RF)	B	0.33776	1.68235	11.60840
	B->S (FF)	!A	0.46128	3.00412	25.35410
	B->S (RF)	A	0.34170	1.67632	11.74000
	CON->S (RF)	-	0.03018	0.58949	6.58268

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00367	0.00353	0.00338
	B	0.00000	0.00000	0.00000
	B	0.00345	0.00329	0.00315
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00318	0.00299	0.00288
	B	0.00000	0.00000	0.00000
	B	0.00296	0.00277	0.00267

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00561	0.00547	0.00513
	B	0.00000	0.00000	0.00000
	B	0.00579	0.00580	0.00548
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00518	0.00499	0.00473
	B	0.00000	0.00000	0.00000
	B	0.00545	0.00541	0.00516

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00367	0.00352	0.00339
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00491	0.00486	0.00481
	B	A	0.00000	0.00000	0.00000
	B	A	0.00344	0.00328	0.00330
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00531	0.00524	0.00522
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00318	0.00298	0.00284
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00466	0.00460	0.00454
	B	A	0.00000	0.00000	0.00000
	B	A	0.00295	0.00276	0.00272
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00504	0.00495	0.00493

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00561	0.00549	0.00530
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00077	0.00077	0.00066
	B	A	0.00000	0.00000	0.00000
	B	A	0.00580	0.00581	0.00568
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00129	0.00121	0.00115
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00518	0.00500	0.00479
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00034	0.00033	0.00020
	B	A	0.00000	0.00000	0.00000
	B	A	0.00545	0.00542	0.00521
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00087	0.00080	0.00068

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00562	0.00548	0.00535
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00078	0.00079	0.00073
	B	A	0.00000	0.00000	0.00000
	B	A	0.00580	0.00581	0.00572
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00130	0.00125	0.00117
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00520	0.00500	0.00490
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00035	0.00034	0.00031
	B	A	0.00000	0.00000	0.00000
	B	A	0.00545	0.00542	0.00529
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00088	0.00081	0.00078

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00367	0.00353	0.00339
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00490	0.00489	0.00486
	B	A	0.00000	0.00000	0.00000
	B	A	0.00344	0.00329	0.00316
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00531	0.00528	0.00526
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00317	0.00298	0.00284
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00466	0.00461	0.00458
	B	A	0.00000	0.00000	0.00000
	B	A	0.00295	0.00276	0.00263
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00504	0.00496	0.00493

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__and2_1	10.37850
sky130_osu_sc_15T_hs__and2_2	12.82050
sky130_osu_sc_15T_hs__and2_4	17.70450
sky130_osu_sc_15T_hs__and2_6	22.58850
sky130_osu_sc_15T_hs__and2_8	27.47250
sky130_osu_sc_15T_hs__and2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__and2_1	0.00368	0.00378	0.59313
sky130_osu_sc_15T_hs__and2_2	0.00368	0.00377	1.19663
sky130_osu_sc_15T_hs__and2_4	0.00368	0.00377	2.30990
sky130_osu_sc_15T_hs__and2_6	0.00372	0.00377	3.42007
sky130_osu_sc_15T_hs__and2_8	0.00369	0.00378	4.47332
sky130_osu_sc_15T_hs__and2_l	0.00288	0.00299	0.36924

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.00013	0.00017
sky130_osu_sc_15T_hs__and2_2	0.00000	0.00019	0.00022
sky130_osu_sc_15T_hs__and2_4	0.00000	0.00031	0.00033
sky130_osu_sc_15T_hs__and2_6	0.00000	0.00042	0.00046
sky130_osu_sc_15T_hs__and2_8	0.00000	0.00054	0.00058
sky130_osu_sc_15T_hs__and2_l	0.00000	0.00015	0.00020

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.15194	1.05368	8.49223
	B->Y (RR)	0.15778	1.05588	8.66626
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.16626	0.95637	8.88571
	B->Y (RR)	0.17202	0.95116	9.00953
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.23538	0.95640	9.31232
	B->Y (RR)	0.24123	0.94466	9.38488
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.30059	0.99699	9.66252
	B->Y (RR)	0.30630	0.98272	9.69901
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.36443	1.05093	9.94254
	B->Y (RR)	0.37038	1.03648	9.95302
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.17819	1.23454	8.79374
	B->Y (RR)	0.18453	1.23146	8.91974

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__and2_1	A->Y (FF)	0.15724	0.83645	7.18606
	B->Y (FF)	0.16780	0.85256	7.27988
sky130_osu_sc_15T_hs__and2_2	A->Y (FF)	0.19331	0.83644	7.44808
	B->Y (FF)	0.20381	0.84918	7.51912
sky130_osu_sc_15T_hs__and2_4	A->Y (FF)	0.28684	0.92476	8.04360
	B->Y (FF)	0.29705	0.93589	8.10121
sky130_osu_sc_15T_hs__and2_6	A->Y (FF)	0.38206	1.02013	8.42198
	B->Y (FF)	0.39092	1.03223	8.46657
sky130_osu_sc_15T_hs__and2_8	A->Y (FF)	0.47224	1.11677	8.69059
	B->Y (FF)	0.48138	1.12860	8.72505
sky130_osu_sc_15T_hs__and2_l	A->Y (FF)	0.18679	0.85078	6.77040
	B->Y (FF)	0.20424	0.87183	6.88079

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00272	0.00242	0.00228
	B	0.00000	0.00000	0.00000
	B	0.00277	0.00244	0.00232
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00526	0.00517	0.00512
	B	0.00000	0.00000	0.00000
	B	0.00531	0.00524	0.00517
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01086	0.01106	0.01118
	B	0.00000	0.00000	0.00000
	B	0.01090	0.01105	0.01126
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01641	0.01696	0.01708
	B	0.00000	0.00000	0.00000
	B	0.01645	0.01701	0.01716
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02194	0.02244	0.02289
	B	0.00000	0.00000	0.00000
	B	0.02201	0.02265	0.02296
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00204	0.00186	0.00176
	B	0.00000	0.00000	0.00000
	B	0.00210	0.00191	0.00181

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00664	0.00648	0.00641
	B	0.00000	0.00000	0.00000
	B	0.00732	0.00715	0.00709
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00821	0.00839	0.00835
	B	0.00000	0.00000	0.00000
	B	0.00890	0.00907	0.00900
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01229	0.01317	0.01320
	B	0.00000	0.00000	0.00000
	B	0.01300	0.01380	0.01382
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01644	0.01793	0.01816
	B	0.00000	0.00000	0.00000
	B	0.01711	0.01853	0.01871
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02037	0.02244	0.02296
	B	0.00000	0.00000	0.00000
	B	0.02109	0.02301	0.02345
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00522	0.00504	0.00499
	B	0.00000	0.00000	0.00000
	B	0.00579	0.00561	0.00554

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00243	-0.00246	-0.00245
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00243	-0.00245	-0.00245
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00243	-0.00245	-0.00245
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00245	-0.00246	-0.00247
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00243	-0.00244	-0.00245
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00171	-0.00173	-0.00173

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00244	0.00246	0.00246
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00244	0.00246	0.00245
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00244	0.00246	0.00246
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00246	0.00247	0.00247
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00244	0.00246	0.00246
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00173	0.00174	0.00173

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00233	-0.00235	-0.00233
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00233	-0.00234	-0.00233
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00233	-0.00235	-0.00234
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00233	-0.00234	-0.00234
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00233	-0.00234	-0.00234
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00163	-0.00164	-0.00164

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00233	0.00235	0.00234
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00233	0.00235	0.00234
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00233	0.00235	0.00234
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00233	0.00235	0.00234
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00233	0.00235	0.00234
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00164	0.00164	0.00164

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_hs__aoi21_l	0.00341	0.00359	0.00366	0.25012

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.00008	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi21_l	A0->Y (FR)	0.24230	1.64807	13.62100
	A1->Y (FR)	0.20901	1.57684	13.33530
	B0->Y (FR)	0.18963	1.54420	13.20490

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi21_l	A0->Y (RF)	0.06154	0.59662	5.74965
	A1->Y (RF)	0.05605	0.60714	5.98027
	B0->Y (RF)	0.03679	0.54769	5.64551

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00518	0.00512	0.00511
	A1	0.00000	0.00000	0.00000
	A1	0.00448	0.00439	0.00435
	B0	0.00435	0.00422	0.00416

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00078	0.00064	0.00053
	A1	0.00000	0.00000	0.00000
	A1	0.00080	0.00064	0.00053
	B0	-0.00053	-0.00053	-0.00062

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00204	-0.00210	-0.00209
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00214	-0.00216	-0.00215
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00215	-0.00215	-0.00215

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00209	0.00210	0.00209
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00215	0.00217	0.00216
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00215	0.00216	0.00216

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00200	-0.00207	-0.00206
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00210	-0.00212	-0.00211
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00226	-0.00227	-0.00229

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00204	0.00207	0.00206
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00211	0.00212	0.00212
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00228	0.00230	0.00229

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00130	-0.00131	-0.00131

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00142	0.00142	0.00134

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	x	0	x	1
0	x	1	0	1
x	x	1	1	0
1	0	0	x	1
1	0	1	0	1
1	1	x	x	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_hs__aoi22_l	0.00340	0.00356	0.00374	0.00353	0.25207

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.00011	0.00015

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi22_l	A0->Y (FR)	0.29888	1.70239	13.64180
	A1->Y (FR)	0.26975	1.66093	13.55000
	B0->Y (FR)	0.19435	1.53152	13.10280
	B1->Y (FR)	0.22333	1.57408	13.21280

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi22_l	A0->Y (RF)	0.07724	0.61561	5.79196
	A1->Y (RF)	0.07188	0.62733	6.02713
	B0->Y (RF)	0.04881	0.59767	5.97997
	B1->Y (RF)	0.05348	0.58463	5.74802

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00624	0.00617	0.00616
	A1	0.00556	0.00545	0.00542
	B0	0.00461	0.00445	0.00438
	B1	0.00526	0.00513	0.00507

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00182	0.00170	0.00155
	A1	0.00184	0.00170	0.00156
	B0	-0.00033	-0.00033	-0.00041
	B1	-0.00032	-0.00032	-0.00040

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00204	-0.00210	-0.00209
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00215	-0.00215	-0.00215
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00214	-0.00216	-0.00215
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00214	-0.00216	-0.00215

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00207	0.00210	0.00209
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00215	0.00217	0.00216
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00215	0.00216	0.00215
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00215	0.00216	0.00215

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00200	-0.00207	-0.00205
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00210	-0.00212	-0.00211
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00226	-0.00228	-0.00228
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00226	-0.00228	-0.00228

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00204	0.00207	0.00205
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00211	0.00212	0.00212
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00227	0.00229	0.00228
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00227	0.00229	0.00228

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00131	-0.00132	-0.00131
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00131	-0.00132	-0.00131
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00234	-0.00237	-0.00237
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00234	-0.00237	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00146	0.00147	0.00135
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00131	0.00132	0.00131
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00236	0.00238	0.00237
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00236	0.00238	0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00132	-0.00132	-0.00132
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00132	-0.00132	-0.00132
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00219	-0.00220	-0.00219
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00219	-0.00220	-0.00219

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00147	0.00147	0.00136
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00132	0.00132	0.00132
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00219	0.00220	0.00220
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00219	0.00220	0.00220

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__buf_1	7.93650
sky130_osu_sc_15T_hs__buf_2	10.37850
sky130_osu_sc_15T_hs__buf_4	15.26250
sky130_osu_sc_15T_hs__buf_6	20.14650
sky130_osu_sc_15T_hs__buf_8	25.03050
sky130_osu_sc_15T_hs__buf_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_hs__buf_1	0.00380	0.59079
sky130_osu_sc_15T_hs__buf_2	0.00380	1.17416
sky130_osu_sc_15T_hs__buf_4	0.00380	2.30535
sky130_osu_sc_15T_hs__buf_6	0.00090	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00380	4.50233
sky130_osu_sc_15T_hs__buf_l	0.00302	0.37002

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.00011	0.00011
sky130_osu_sc_15T_hs__buf_2	0.00000	0.00016	0.00017
sky130_osu_sc_15T_hs__buf_4	0.00000	0.00027	0.00030
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	0.00048	0.00056
sky130_osu_sc_15T_hs__buf_l	0.00000	0.00012	0.00012

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__buf_1	**A->Y (RR)**	0.11571	1.00963	8.42706
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.12111	0.89364	8.66330
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.16285	0.86629	9.10639
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.24671	0.91224	9.66434
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.13833	1.17922	8.67823

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__buf_1	**A->Y (FF)**	0.15015	0.82846	7.11828
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.18787	0.83303	7.46322
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.28062	0.91643	8.00556
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.46731	1.11214	8.68645
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.18080	0.84222	6.72001

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00255	0.00218	0.00203
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00509	0.00487	0.00472
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01071	0.01080	0.01072
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02180	0.02244	0.02279
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00202	0.00174	0.00162

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00653	0.00632	0.00627
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00809	0.00819	0.00814
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01216	0.01295	0.01295
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02031	0.02223	0.02266
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00516	0.00495	0.00489

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00045	-0.00045	-0.00045

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
	0.00045	0.00045	0.00045

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffr_1	53.11350
sky130_osu_sc_15T_hs__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_hs__dffr_1	0.00351	0.00355	0.01089	0.56663	0.56708
sky130_osu_sc_15T_hs__dffr_l	0.00351	0.00355	0.01087	0.37096	0.36882

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.00060	0.00065
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.00061	0.00067

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->Q (RR)	0.89226	2.32497	14.05590
	QN->Q (FR)	0.07690	1.25525	13.98800
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.86701	2.49831	14.21120
	QN->Q (FR)	0.09342	1.38491	13.95350

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->Q (RF)	0.74554	2.37764	16.72860
	QN->Q (RF)	0.03441	0.65368	7.78631
	RN->Q (FF)	0.51437	2.32713	19.48270
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.77531	2.66392	16.89550
	QN->Q (RF)	0.03814	0.67972	7.53819
	RN->Q (FF)	0.54580	2.61253	19.64010

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->QN (RR)	0.66470	1.58982	9.25520
	RN->QN (FR)	0.43270	1.53834	12.00220
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.67783	1.73689	9.41821
	RN->QN (FR)	0.44699	1.68589	12.15450

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	**CK->QN (RF)**	0.76120	1.33052	4.79178
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.71543	1.29952	4.64008

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.10325	-0.13430	-0.70217
	setup	CK (R)	0.68799	0.68204	1.56335
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.10577	-0.13392	-0.70191
	setup	CK (R)	0.68933	0.68534	1.57188

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.35681	-0.73621	-9.46330
	setup	CK (R)	0.40783	0.76635	9.55311
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.35543	-0.73709	-9.46459
	setup	CK (R)	0.40745	0.76605	9.55328

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.10325	-0.13430	-0.70217
	setup	CK (R)	0.68799	0.68204	1.56335
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.10577	-0.13392	-0.70191
	setup	CK (R)	0.68933	0.68534	1.57188

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.35681	-0.73621	-9.46330
	setup	CK (R)	0.40783	0.76635	9.55311
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.35543	-0.73709	-9.46459
	setup	CK (R)	0.40745	0.76605	9.55328

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	recovery	CK (R)	0.63985	0.63571	1.34627
	removal	CK (R)	-0.12377	-0.14948	-0.13755
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.64046	0.63913	1.35119
	removal	CK (R)	-0.12377	-0.14948	-0.13755

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	recovery	CK (R)	0.63985	0.63571	1.34627
	removal	CK (R)	-0.12377	-0.14948	-0.13755
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.64046	0.63913	1.35119
	removal	CK (R)	-0.12377	-0.14948	-0.13755

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	min_pulse_width	RN ()	0.32441	0.66456	13.33370
	min_pulse_width	RN ()	0.32189	0.66456	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.32234	0.66017	13.33370
	min_pulse_width	RN ()	0.31983	0.66017	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_15T_hs__dffr_1	min_pulse_width	CK ()	0.40005	0.50659	13.33370
	min_pulse_width	CK ()	0.39624	0.50659	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.35819	0.50659	13.33370
	min_pulse_width	CK ()	0.38863	0.50659	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_15T_hs__dffr_1	min_pulse_width	CK ()	0.87622	0.94101	13.33370
	min_pulse_width	CK ()	0.33517	0.65579	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.87509	0.94759	13.33370
	min_pulse_width	CK ()	0.33269	0.65579	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00626	0.00555	0.00054
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00542	0.00482	0.00246

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00706	0.00665	0.00440
	RN	-0.00090	-0.02896	-0.29374
	RN	0.01592	0.01562	0.01316
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00619	0.00585	0.00474
	RN	-0.00090	-0.02246	-0.19230
	RN	0.01504	0.01481	0.01346

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00707	0.00665	0.00443
	RN	-0.00090	-0.02897	-0.29397
	RN	0.01592	0.01562	0.01312
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00619	0.00585	0.00477
	RN	-0.00090	-0.02238	-0.19120
	RN	0.01504	0.01481	0.01349

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00623	0.00552	0.00042
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00538	0.00479	0.00232

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00200	-0.00207	-0.00208
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00689	0.00661	0.00637
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00304	0.00279	0.00259
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00200	-0.00207	-0.00208
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00689	0.00661	0.00637
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00304	0.00279	0.00259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00206	0.00209	0.00208
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01195	0.01182	0.01163
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00537	0.00522	0.00520
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00206	0.00209	0.00208
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01195	0.01182	0.01163
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00537	0.00522	0.00520

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00257	0.00225	0.00207
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00676	0.00627	0.00599
sky130_osu_sc_15T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00257	0.00225	0.00207
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00676	0.00627	0.00599

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00583	0.00558	0.00555
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01250	0.01216	0.01188
sky130_osu_sc_15T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00583	0.00559	0.00555
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01250	0.01216	0.01188

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00046	-0.00084	-0.00106
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00311	0.00245	0.00196
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00068	-0.00106	-0.00131
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00046	-0.00084	-0.00106
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00311	0.00245	0.00196
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00068	-0.00106	-0.00131

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00992	0.00962	0.00946
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01916	0.01867	0.01806
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01494	0.01461	0.01422
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01950	0.01896	0.01855
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01060	0.01032	0.01019
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00992	0.00962	0.00946
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01916	0.01867	0.01806
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01494	0.01461	0.01422
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01950	0.01896	0.01855
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01060	0.01032	0.01019

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffsr_1	57.99750
sky130_osu_sc_15T_hs__dffsr_l	57.99750

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_15T_hs__dffsr_1	0.00346	0.00355	0.00777	0.01114	0.60222	0.59624
sky130_osu_sc_15T_hs__dffsr_l	0.00346	0.00355	0.00776	0.01113	0.36947	0.37060

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.00061	0.00071
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.00062	0.00072

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->Q (RR)	0.82318	2.25970	14.45110
	QN->Q (FR)	0.06910	1.18995	13.57190
	RN->Q (RR)	0.67749	2.12445	14.43830
	SN->Q (FR)	0.66744	2.27513	18.01830
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.82713	2.46006	14.24200
	QN->Q (FR)	0.09346	1.38951	13.91080
	RN->Q (RR)	0.68291	2.32621	14.24070
	SN->Q (FR)	0.66853	2.47451	17.79320

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->Q (RF)	0.81565	2.45329	17.09470
	QN->Q (RF)	0.03408	0.66426	7.98407
	RN->Q (FF)	0.54766	2.35335	19.89230
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.85858	2.75075	16.92540
	QN->Q (RF)	0.03809	0.67852	7.52230
	RN->Q (FF)	0.59065	2.65137	19.72070

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->QN (RR)	0.73599	1.65341	9.28188
	RN->QN (FR)	0.46876	1.55400	12.08500
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.75944	1.83097	9.54056
	RN->QN (FR)	0.49176	1.73111	12.33530

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->QN (RF)	0.70641	1.27916	4.97332
	RN->QN (RF)	0.56026	1.14869	4.95604
	SN->QN (FF)	0.54990	1.29919	8.53199
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.68390	1.27044	4.74164
	RN->QN (RF)	0.53813	1.14064	4.72538
	SN->QN (FF)	0.52575	1.28848	8.26377

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.11251	-0.14266	-0.79536
	setup	CK (R)	0.61867	0.61096	1.50755
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.11287	-0.14193	-0.79167
	setup	CK (R)	0.61916	0.60900	1.50991

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.40599	-0.77828	-9.70201
	setup	CK (R)	0.46585	0.80540	9.75981
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.40600	-0.77614	-9.70234
	setup	CK (R)	0.46288	0.80540	9.76052

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.11251	-0.14266	-0.79536
	setup	CK (R)	0.61867	0.61096	1.50755
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.11287	-0.14193	-0.79167
	setup	CK (R)	0.61916	0.60900	1.50991

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.40599	-0.77828	-9.70201
	setup	CK (R)	0.46585	0.80540	9.75981
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.40600	-0.77614	-9.70234
	setup	CK (R)	0.46288	0.80540	9.76052

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.51919	0.51627	1.22071
	removal	CK (R)	-0.05927	-0.07021	-0.09433
	hold	SN (R)	-0.54491	-0.79648	-7.02027
	setup	SN (R)	0.57082	0.84408	8.32446
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.52109	0.51386	1.21770
	removal	CK (R)	-0.06231	-0.07563	-0.09441
	hold	SN (R)	-0.50940	-0.76736	-6.92059
	setup	SN (R)	0.56761	0.81673	8.21300

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.51919	0.51627	1.22071
	removal	CK (R)	-0.05927	-0.07021	-0.09433
	hold	SN (R)	-0.54736	-0.79648	-7.02027
	hold	SN (R)	-0.54491	-0.79806	-7.02791
	setup	SN (R)	0.57082	0.83781	8.30116
	setup	SN (R)	0.56169	0.84408	8.32446
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.52109	0.51386	1.21770
	removal	CK (R)	-0.06231	-0.07563	-0.09441
	hold	SN (R)	-0.53190	-0.76914	-6.92059
	hold	SN (R)	-0.50940	-0.76736	-6.93875
	setup	SN (R)	0.56761	0.81502	8.18615
	setup	SN (R)	0.52519	0.81673	8.21300

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	RN ()	0.36946	0.69309	13.33370
	min_pulse_width	RN ()	0.38525	0.69309	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.38025	0.68870	13.33370
	min_pulse_width	RN ()	0.37764	0.68870	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.06053	0.08365	0.98311
	removal	CK (R)	-0.01554	-0.05057	-0.51466
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.05628	0.08267	0.87048
	removal	CK (R)	-0.01554	-0.05057	-0.51760

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.06053	0.08365	0.98311
	removal	CK (R)	-0.01554	-0.05057	-0.51466
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.05628	0.08267	0.87048
	removal	CK (R)	-0.01554	-0.05057	-0.51760

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	SN ()	0.55236	0.88836	13.33370
	min_pulse_width	SN ()	0.55165	0.89274	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.54335	0.85764	13.33370
	min_pulse_width	SN ()	0.51575	0.86642	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_15T_hs__dffsr_1	min_pulse_width	CK ()	0.35058	0.50659	13.33370
	min_pulse_width	CK ()	0.42668	0.50659	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.32775	0.50659	13.33370
	min_pulse_width	CK ()	0.41907	0.50659	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_15T_hs__dffsr_1	min_pulse_width	CK ()	0.81095	0.87080	13.33370
	min_pulse_width	CK ()	0.39823	0.69747	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.80762	0.87080	13.33370
	min_pulse_width	CK ()	0.39558	0.69747	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00760	0.00687	0.00144
	RN	0.01449	0.01392	0.00853
	SN	-0.00090	-0.03003	-0.31219
	SN	0.01569	0.01520	0.00989
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00683	0.00627	0.00392
	RN	0.01372	0.01332	0.01100
	SN	-0.00090	-0.02240	-0.19153
	SN	0.01491	0.01460	0.01234

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00807	0.00783	0.00640
	RN	-0.00090	-0.03003	-0.31219
	RN	0.01674	0.01649	0.01488
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00728	0.00700	0.00589
	RN	-0.00090	-0.02240	-0.19153
	RN	0.01592	0.01564	0.01436

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00808	0.00784	0.00647
	RN	-0.00090	-0.02985	-0.30909
	RN	0.01674	0.01649	0.01492
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00729	0.00702	0.00591
	RN	-0.00090	-0.02244	-0.19212
	RN	0.01593	0.01565	0.01436

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00756	0.00684	0.00137
	RN	0.01446	0.01389	0.00833
	SN	-0.00090	-0.02985	-0.30908
	SN	0.01566	0.01517	0.00975
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00679	0.00624	0.00379
	RN	0.01369	0.01328	0.01079
	SN	-0.00090	-0.02244	-0.19211
	SN	0.01488	0.01457	0.01213

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00201	-0.00207	-0.00208
	(!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)	0.00885	0.00859	0.00838
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00352	0.00329	0.00309
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00351	0.00328	0.00308
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00356	0.00332	0.00312
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00201	-0.00207	-0.00208
	(!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)	0.00885	0.00859	0.00838
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00352	0.00329	0.00309
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00351	0.00328	0.00308
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00356	0.00332	0.00312

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00207	0.00209	0.00208
	(!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)	0.01369	0.01357	0.01328
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00586	0.00573	0.00572
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00588	0.00575	0.00573
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00583	0.00570	0.00568
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00207	0.00209	0.00208
	(!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)	0.01369	0.01357	0.01327
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00586	0.00573	0.00571
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00588	0.00574	0.00572
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00582	0.00569	0.00568

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.00275	0.00244	0.00217
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00842	0.00795	0.00754
sky130_osu_sc_15T_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)	0.00276	0.00244	0.00218
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00842	0.00795	0.00754

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.00645	0.00620	0.00617
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01338	0.01299	0.01266
sky130_osu_sc_15T_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)	0.00644	0.00619	0.00616
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01337	0.01298	0.01266

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	-0.00479	-0.00484	-0.00485
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00513	-0.00522	-0.00519
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00490	-0.00493	-0.00493
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00266	0.00240	0.00208
sky130_osu_sc_15T_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)	-0.00479	-0.00485	-0.00485
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00511	-0.00520	-0.00517
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00490	-0.00493	-0.00493
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00267	0.00240	0.00209

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.00483	0.00486	0.00485
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00516	0.00522	0.00519
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00490	0.00493	0.00493
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00977	0.00956	0.00956
sky130_osu_sc_15T_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)	0.00483	0.00488	0.00485
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00514	0.00520	0.00517
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00490	0.00493	0.00493
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00976	0.00956	0.00955

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00046	-0.00084	-0.00106
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00375	0.00313	0.00263
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00370	0.00308	0.00260
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00055	-0.00094	-0.00117
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00307	0.00239	0.00195
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00046	-0.00084	-0.00106
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00374	0.00312	0.00262
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00369	0.00307	0.00259
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00055	-0.00093	-0.00117
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00307	0.00239	0.00195

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_15T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02126	0.02080	0.02018
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00996	0.00965	0.00949
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01527	0.01497	0.01459
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01533	0.01505	0.01463
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02119	0.02060	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)	0.01050	0.01021	0.01010
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01272	0.01216	0.01198
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02126	0.02080	0.02018
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00996	0.00965	0.00949
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01527	0.01497	0.01459
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01533	0.01505	0.01463
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02118	0.02059	0.02009
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01050	0.01021	0.01010
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01271	0.01215	0.01197

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffs_1	48.22950
sky130_osu_sc_15T_hs__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_hs__dffs_1	0.00349	0.00615	0.01085	0.56732	0.56835
sky130_osu_sc_15T_hs__dffs_l	0.00349	0.00615	0.01085	0.37007	0.37380

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.00056	0.00071
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.00058	0.00073

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->Q (RR)	0.56299	1.95584	13.72220
	QN->Q (FR)	0.07707	1.24887	13.95580
	SN->Q (FR)	0.48006	2.05147	17.25280
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.56624	2.16531	13.88970
	QN->Q (FR)	0.09349	1.38635	13.90910
	SN->Q (FR)	0.48096	2.26210	17.37580

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->Q (RF)	0.82169	2.45692	16.79510
	QN->Q (RF)	0.03425	0.65301	7.77113
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.84678	2.73344	16.91510
	QN->Q (RF)	0.03801	0.67778	7.51835

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->QN (RR)	0.73767	1.66890	9.33105
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.74689	1.81523	9.57254

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->QN (RF)	0.45317	0.97910	4.45532
	SN->QN (FF)	0.36709	1.07743	7.99206
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.43444	0.98404	4.37423
	SN->QN (FF)	0.34694	1.08303	7.86587

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.07660	-0.10600	-0.65095
	setup	CK (R)	0.39866	0.39547	1.33959
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.07591	-0.10626	-0.65107
	setup	CK (R)	0.39646	0.39434	1.35324

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.36472	-0.74327	-9.52643
	setup	CK (R)	0.45290	0.77683	9.60882
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.36489	-0.74246	-9.52738
	setup	CK (R)	0.45126	0.77683	9.61657

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.07660	-0.10600	-0.65095
	setup	CK (R)	0.39866	0.39547	1.33959
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.07591	-0.10626	-0.65107
	setup	CK (R)	0.39646	0.39434	1.35324

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.36472	-0.74327	-9.52643
	setup	CK (R)	0.45290	0.77683	9.60882
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.36489	-0.74246	-9.52738
	setup	CK (R)	0.45126	0.77683	9.61657

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	recovery	CK (R)	0.09315	0.12209	0.93814
	removal	CK (R)	-0.03253	-0.07329	-0.64264
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.09008	0.11876	0.88892
	removal	CK (R)	-0.03253	-0.07329	-0.64264

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	recovery	CK (R)	0.09315	0.12209	0.93814
	removal	CK (R)	-0.03253	-0.07329	-0.64264
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.09008	0.11876	0.88892
	removal	CK (R)	-0.03253	-0.07329	-0.64264

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	min_pulse_width	SN ()	0.34929	0.79401	13.33370
	min_pulse_width	SN ()	0.35645	0.78962	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.33912	0.76329	13.33370
	min_pulse_width	SN ()	0.32729	0.76988	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_15T_hs__dffs_1	min_pulse_width	CK ()	0.19837	0.50659	13.33370
	min_pulse_width	CK ()	0.41907	0.50659	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.18315	0.50659	13.33370
	min_pulse_width	CK ()	0.40385	0.50659	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_15T_hs__dffs_1	min_pulse_width	CK ()	0.58376	0.68212	13.33370
	min_pulse_width	CK ()	0.38737	0.66895	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.58376	0.68212	13.33370
	min_pulse_width	CK ()	0.38483	0.66895	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00628	0.00553	0.00060
	SN	-0.00090	-0.02898	-0.29410
	SN	0.01344	0.01289	0.00799
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00541	0.00481	0.00249
	SN	-0.00090	-0.02242	-0.19185
	SN	0.01258	0.01218	0.00983

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00704	0.00667	0.00446
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00618	0.00586	0.00479

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00705	0.00667	0.00447
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00618	0.00587	0.00478

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00625	0.00550	0.00044
	SN	-0.00090	-0.02901	-0.29462
	SN	0.01342	0.01286	0.00779
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00539	0.00478	0.00230
	SN	-0.00090	-0.02256	-0.19377
	SN	0.01254	0.01214	0.00965

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00205	-0.00213	-0.00212
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00670	0.00642	0.00611
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00297	0.00272	0.00252
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00205	-0.00213	-0.00212
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00670	0.00642	0.00611
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00297	0.00272	0.00252

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00210	0.00213	0.00212
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01196	0.01182	0.01165
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00552	0.00538	0.00536
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00210	0.00213	0.00212
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01196	0.01182	0.01165
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00552	0.00538	0.00536

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00346	-0.00348	-0.00348
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00270	0.00248	0.00230
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00346	-0.00347	-0.00347
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00270	0.00248	0.00230

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00347	0.00348	0.00348
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00690	0.00665	0.00654
sky130_osu_sc_15T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00347	0.00348	0.00348
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00690	0.00665	0.00654

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00047	-0.00086	-0.00108
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00064	-0.00105	-0.00127
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00253	0.00176	0.00136
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00047	-0.00086	-0.00108
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00064	-0.00106	-0.00127
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00253	0.00176	0.00136

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01903	0.01855	0.01791
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00993	0.00963	0.00947
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01944	0.01880	0.01841
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01056	0.01023	0.01015
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01233	0.01174	0.01154
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01903	0.01855	0.01791
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00993	0.00963	0.00947
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01944	0.01880	0.01841
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01056	0.01022	0.01015
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01233	0.01174	0.01154

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dff_1	40.29300
sky130_osu_sc_15T_hs__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_hs__dff_1	0.00365	0.01065	0.60553	0.60475
sky130_osu_sc_15T_hs__dff_l	0.00365	0.01063	0.35295	0.35108

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.00050	0.00052
sky130_osu_sc_15T_hs__dff_l	0.00000	0.00051	0.00053

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->Q (RR)	0.44336	1.83384	14.03380
	QN->Q (FR)	0.06870	1.17880	13.58670
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.46370	1.96095	12.77550
	QN->Q (FR)	0.10562	1.45663	14.30730

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->Q (RF)	0.71399	2.34748	17.03640
	QN->Q (RF)	0.03399	0.66522	7.98815
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.77229	2.60879	16.11860
	QN->Q (RF)	0.03412	0.62461	6.97165

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->QN (RR)	0.63655	1.55176	9.25056
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.67578	1.75628	9.41413

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->QN (RF)	0.34537	0.86500	4.54583
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.33508	0.81555	3.74154

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	hold	CK (R)	-0.07515	-0.10363	-0.70248
	setup	CK (R)	0.27843	0.28133	1.29250
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.07398	-0.10701	-0.70137
	setup	CK (R)	0.27587	0.27850	1.29762

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	hold	CK (R)	-0.35400	-0.75184	-9.61700
	setup	CK (R)	0.41665	0.79042	9.74183
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.35567	-0.75366	-9.61681
	setup	CK (R)	0.41598	0.79385	9.74668

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	min_pulse_width	CK ()	0.15652	0.50659	13.33370
	min_pulse_width	CK ()	0.39244	0.50659	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.15271	0.50659	13.33370
	min_pulse_width	CK ()	0.38483	0.50659	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_15T_hs__dff_1	min_pulse_width	CK ()	0.46808	0.64701	13.33370
	min_pulse_width	CK ()	0.33683	0.67992	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.46563	0.64701	13.33370
	min_pulse_width	CK ()	0.33425	0.67992	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00670	0.00582	0.00040
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00610	0.00540	0.00290

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00718	0.00693	0.00553
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00655	0.00621	0.00466

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00719	0.00694	0.00556
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00656	0.00622	0.00467

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00667	0.00579	0.00034
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00606	0.00538	0.00266

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00199	-0.00207	-0.00207
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00655	0.00631	0.00604
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00199	-0.00207	-0.00207
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00655	0.00632	0.00605

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00206	0.00209	0.00207
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01255	0.01237	0.01216
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00206	0.00209	0.00207
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01256	0.01237	0.01217

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00047	-0.00085	-0.00108
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00063	-0.00102	-0.00126
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00047	-0.00085	-0.00108
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00063	-0.00102	-0.00126

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00988	0.00958	0.00942
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01887	0.01841	0.01781
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01988	0.01922	0.01877
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01050	0.01020	0.01008
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00988	0.00958	0.00942
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01887	0.01841	0.01782
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01988	0.01923	0.01880
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01050	0.01020	0.01008

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__inv_1	5.49450
sky130_osu_sc_15T_hs__inv_10	27.47250
sky130_osu_sc_15T_hs__inv_2	7.93650
sky130_osu_sc_15T_hs__inv_3	10.37850
sky130_osu_sc_15T_hs__inv_4	12.82050
sky130_osu_sc_15T_hs__inv_6	17.70450
sky130_osu_sc_15T_hs__inv_8	22.58850
sky130_osu_sc_15T_hs__inv_l	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_hs__inv_1	0.00359	0.58732
sky130_osu_sc_15T_hs__inv_10	0.03277	5.59644
sky130_osu_sc_15T_hs__inv_2	0.00676	1.18745
sky130_osu_sc_15T_hs__inv_3	0.01004	1.71960
sky130_osu_sc_15T_hs__inv_4	0.01325	2.31556
sky130_osu_sc_15T_hs__inv_6	0.01985	3.43480
sky130_osu_sc_15T_hs__inv_8	0.02629	4.58375
sky130_osu_sc_15T_hs__inv_l	0.00278	0.35443

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.00005	0.00006
sky130_osu_sc_15T_hs__inv_10	0.00000	0.00054	0.00064
sky130_osu_sc_15T_hs__inv_2	0.00000	0.00011	0.00013
sky130_osu_sc_15T_hs__inv_3	0.00000	0.00016	0.00019
sky130_osu_sc_15T_hs__inv_4	0.00000	0.00022	0.00026
sky130_osu_sc_15T_hs__inv_6	0.00000	0.00032	0.00039
sky130_osu_sc_15T_hs__inv_8	0.00000	0.00043	0.00051
sky130_osu_sc_15T_hs__inv_l	0.00000	0.00006	0.00008

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__inv_1	**A->Y (FR)**	0.06718	1.14551	12.98700
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.07421	0.76879	13.01260
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.04931	0.98026	13.03380
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.05247	0.91354	13.00510
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.05111	0.86549	13.01400
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.05466	0.81307	13.01070
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.06393	0.78641	13.07250
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.09609	1.34292	13.34140

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__inv_1	**A->Y (RF)**	0.03081	0.60867	7.23863
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.04057	0.44677	7.29755
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.02475	0.54555	7.28239
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.02646	0.52040	7.32260
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.02574	0.49673	7.31953
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.02987	0.47183	7.32960
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.03553	0.45866	7.35812
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.03126	0.58511	6.44213

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00337	0.00331	0.00330
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02876	0.02884	0.02930
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00598	0.00592	0.00590
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00918	0.00906	0.00916
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01179	0.01170	0.01183
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01754	0.01746	0.01767
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02315	0.02311	0.02353
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00258	0.00251	0.00250

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00062	-0.00065	-0.00068
sky130_osu_sc_15T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01089	-0.01059	-0.00994
sky130_osu_sc_15T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00201	-0.00206	-0.00204
sky130_osu_sc_15T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00263	-0.00273	-0.00266
sky130_osu_sc_15T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00411	-0.00416	-0.00404
sky130_osu_sc_15T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00623	-0.00625	-0.00601
sky130_osu_sc_15T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00848	-0.00847	-0.00797
sky130_osu_sc_15T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00037	-0.00041	-0.00044

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT			OUTPUT
A0	**A1**	**S0**	**Y**
0	**0**	**x**	**0**
0	**1**	**0**	**0**
x	**1**	**1**	**1**
1	**x**	**0**	**1**
1	**0**	**1**	**0**

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_15T_hs__mux2_1	0.40541	0.40742	0.00734	0.53448

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.00018	0.00019

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__mux2_1	A0->Y (RR)	-	0.03192	0.67612	8.30541
	A1->Y (RR)	-	0.03831	0.68106	8.32021
	S0->Y (RR)	(!A0 * A1)	0.08785	0.79256	7.48111
	S0->Y (FR)	(A0 * !A1)	0.07794	0.94583	9.34216

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__mux2_1	A0->Y (FF)	-	0.02847	0.56152	6.64558
	A1->Y (FF)	-	0.02498	0.55646	6.62767
	S0->Y (FF)	(!A0 * A1)	0.15334	0.79580	6.92146
	S0->Y (RF)	(A0 * !A1)	0.03405	0.59163	6.46980

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00346	-0.00346	-0.00346
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00243	-0.00243	-0.00244
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00442	0.00416	0.00411
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00224	-0.00263	-0.00279

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00346	0.00346	0.00346
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00243	0.00243	0.00244
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00073	0.00035	0.00020
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00896	0.00870	0.00861

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00095	-0.00094	-0.00095

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00095	0.00094	0.00095

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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_15T_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_15T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00076	-0.00116	-0.00131
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00075	-0.00114	-0.00130

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00685	0.00658	0.00652
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00653	0.00626	0.00622

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__nand2_1	7.93650
sky130_osu_sc_15T_hs__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__nand2_1	0.00359	0.00355	0.58397
sky130_osu_sc_15T_hs__nand2_l	0.00278	0.00277	0.35220

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.00007	0.00013
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.00008	0.00016

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nand2_1	A->Y (FR)	0.07084	1.15011	12.99330
	B->Y (FR)	0.08211	1.15108	12.88200
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.09943	1.34714	13.32550
	B->Y (FR)	0.11739	1.36299	13.32260

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nand2_1	A->Y (RF)	0.04676	0.74869	8.59538
	B->Y (RF)	0.05185	0.73782	8.32110
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.04943	0.73378	7.75015
	B->Y (RF)	0.05423	0.71251	7.31602

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00358	0.00351	0.00350
	B	0.00000	0.00000	0.00000
	B	0.00425	0.00417	0.00416
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00271	0.00264	0.00263
	B	0.00000	0.00000	0.00000
	B	0.00327	0.00320	0.00320

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00038	-0.00045	-0.00047
	B	0.00000	0.00000	0.00000
	B	-0.00037	-0.00042	-0.00044
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00025	-0.00030	-0.00032
	B	0.00000	0.00000	0.00000
	B	-0.00024	-0.00028	-0.00030

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00237	-0.00239	-0.00239
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00164	-0.00165	-0.00166

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00238	0.00240	0.00239
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00165	0.00166	0.00166

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00222	-0.00224	-0.00223
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00152	-0.00153	-0.00153

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00223	0.00224	0.00223
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00152	0.00154	0.00153

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
x	1	0
1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__nor2_1	7.93650
sky130_osu_sc_15T_hs__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__nor2_1	0.00353	0.00385	0.26064
sky130_osu_sc_15T_hs__nor2_l	0.00266	0.00300	0.17029

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.00007	0.00009
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.00007	0.00008

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nor2_1	A->Y (FR)	0.18179	1.55528	13.48910
	B->Y (FR)	0.15260	1.47986	13.07870
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.22776	1.77674	13.61080
	B->Y (FR)	0.20563	1.71142	13.33570

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nor2_1	A->Y (RF)	0.03645	0.51472	5.24695
	B->Y (RF)	0.03208	0.50546	5.22861
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.03505	0.50421	4.88089
	B->Y (RF)	0.03243	0.49772	4.86578

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00432	0.00422	0.00423
	B	0.00000	0.00000	0.00000
	B	0.00361	0.00349	0.00345
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00316	0.00310	0.00307
	B	0.00000	0.00000	0.00000
	B	0.00276	0.00264	0.00260

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00026	0.00011	0.00003
	B	0.00000	0.00000	0.00000
	B	-0.00054	-0.00055	-0.00064
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00017	0.00008	0.00002
	B	0.00000	0.00000	0.00000
	B	-0.00030	-0.00031	-0.00039

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00201	-0.00210	-0.00209
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00133	-0.00137	-0.00137

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00208	0.00210	0.00209
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00136	0.00137	0.00137

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00131	-0.00132	-0.00132
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00084	-0.00084	-0.00084

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00136	0.00136	0.00133
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00086	0.00087	0.00085

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_hs__oai21_l	0.00359	0.00363	0.00301	0.25865

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.00009	0.00014

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai21_l	A0->Y (FR)	0.21129	1.55170	13.19820
	A1->Y (FR)	0.24912	1.63645	13.62240
	B0->Y (FR)	0.11755	1.18655	11.22430

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai21_l	A0->Y (RF)	0.06118	0.60484	5.85475
	A1->Y (RF)	0.06782	0.60550	5.82696
	B0->Y (RF)	0.05076	0.62210	6.25079

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00465	0.00453	0.00447
	A1	0.00000	0.00000	0.00000
	A1	0.00540	0.00531	0.00530
	B0	0.00371	0.00356	0.00355

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00015	0.00014	0.00006
	A1	0.00000	0.00000	0.00000
	A1	0.00098	0.00085	0.00077
	B0	0.00150	0.00145	0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00132	-0.00135	-0.00132
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00205	-0.00211	-0.00210
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00216	-0.00217	-0.00216

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00137	0.00136	0.00133
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00210	0.00211	0.00210
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00216	0.00217	0.00217

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00196	-0.00205	-0.00204
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00202	-0.00208	-0.00209
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00213	-0.00214	-0.00213

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00203	0.00205	0.00204
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00207	0.00208	0.00209
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00213	0.00215	0.00214

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00166	-0.00166	-0.00170

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00170	0.00171	0.00170

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	0	x	x	1
x	1	0	0	1
x	1	x	1	0
x	1	1	x	0
1	x	0	0	1
1	x	x	1	0
1	x	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__oai22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_hs__oai22_l	0.00342	0.00367	0.00380	0.00367	0.26066

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.00012	0.00014

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai22_l	A0->Y (FR)	0.26899	1.64903	13.59150
	A1->Y (FR)	0.23668	1.56783	13.17780
	B0->Y (FR)	0.16729	1.49576	13.10720
	B1->Y (FR)	0.20283	1.57819	13.52430

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai22_l	A0->Y (RF)	0.08764	0.64123	5.92891
	A1->Y (RF)	0.07429	0.62457	5.89792
	B0->Y (RF)	0.06385	0.63996	6.29605
	B1->Y (RF)	0.07794	0.65816	6.35781

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00674	0.00666	0.00663
	A1	0.00594	0.00582	0.00575
	B0	0.00460	0.00447	0.00440
	B1	0.00543	0.00532	0.00529

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00144	0.00130	0.00120
	A1	0.00067	0.00066	0.00054
	B0	0.00068	0.00065	0.00054
	B1	0.00146	0.00132	0.00121

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00200	-0.00210	-0.00208
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00200	-0.00210	-0.00208
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00203	-0.00211	-0.00209
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00213	-0.00214	-0.00214

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00208	0.00210	0.00208
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00208	0.00210	0.00208
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00208	0.00211	0.00209
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00213	0.00216	0.00215

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00130	-0.00131	-0.00131
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00130	-0.00131	-0.00131
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00201	-0.00207	-0.00206
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00212	-0.00213	-0.00212

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00135	0.00136	0.00132
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00135	0.00136	0.00132
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00206	0.00207	0.00206
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00212	0.00214	0.00213

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00129	-0.00131	-0.00130
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00129	-0.00130	-0.00130
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00224	-0.00230	-0.00229
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00229	-0.00231	-0.00235

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00134	0.00134	0.00131
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00134	0.00135	0.00131
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00228	0.00230	0.00229
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00234	0.00237	0.00235

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00196	-0.00205	-0.00204
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00196	-0.00206	-0.00204
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00229	-0.00237	-0.00235
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00234	-0.00236	-0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(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	0.00207	0.00204
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00235	0.00237	0.00235
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00239	0.00242	0.00240

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
x	1	1
1	x	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__or2_1	10.37850
sky130_osu_sc_15T_hs__or2_2	12.82050
sky130_osu_sc_15T_hs__or2_4	17.70450
sky130_osu_sc_15T_hs__or2_8	27.47250
sky130_osu_sc_15T_hs__or2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__or2_1	0.00387	0.00368	0.58605
sky130_osu_sc_15T_hs__or2_2	0.00387	0.00368	1.17344
sky130_osu_sc_15T_hs__or2_4	0.00387	0.00368	2.29364
sky130_osu_sc_15T_hs__or2_8	0.00387	0.00368	4.47104
sky130_osu_sc_15T_hs__or2_l	0.00305	0.00283	0.35409

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.00012	0.00015
sky130_osu_sc_15T_hs__or2_2	0.00000	0.00017	0.00022
sky130_osu_sc_15T_hs__or2_4	0.00000	0.00026	0.00034
sky130_osu_sc_15T_hs__or2_8	0.00000	0.00046	0.00060
sky130_osu_sc_15T_hs__or2_l	0.00000	0.00013	0.00016

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__or2_1	A->Y (RR)	0.12589	1.03438	8.53857
	B->Y (RR)	0.11765	1.01290	8.41152
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.13224	0.91765	8.78100
	B->Y (RR)	0.12321	0.89941	8.67554
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.17432	0.88508	9.17811
	B->Y (RR)	0.16497	0.87157	9.10322
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.25803	0.92600	9.73281
	B->Y (RR)	0.24835	0.91601	9.67899
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.15043	1.22696	8.86405
	B->Y (RR)	0.14397	1.20861	8.74503

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__or2_1	A->Y (FF)	0.33955	1.05244	7.96210
	B->Y (FF)	0.29420	0.96715	7.34882
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.43460	1.12949	8.34073
	B->Y (FF)	0.38962	1.04485	7.80195
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.64720	1.35180	8.93948
	B->Y (FF)	0.60222	1.26609	8.48655
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	1.07098	1.81660	9.76186
	B->Y (FF)	1.02615	1.72397	9.41496
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.40421	1.08698	7.40407
	B->Y (FF)	0.35424	1.00633	6.92012

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00346	0.00313	0.00290
	B	0.00000	0.00000	0.00000
	B	0.00267	0.00242	0.00224
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00603	0.00583	0.00572
	B	0.00000	0.00000	0.00000
	B	0.00520	0.00518	0.00502
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01164	0.01177	0.01154
	B	0.00000	0.00000	0.00000
	B	0.01081	0.01119	0.01126
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02279	0.02347	0.02364
	B	0.00000	0.00000	0.00000
	B	0.02191	0.02290	0.02341
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00258	0.00236	0.00220
	B	0.00000	0.00000	0.00000
	B	0.00209	0.00192	0.00177

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00744	0.00738	0.00733
	B	0.00000	0.00000	0.00000
	B	0.00646	0.00642	0.00637
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00900	0.00932	0.00927
	B	0.00000	0.00000	0.00000
	B	0.00802	0.00834	0.00830
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01299	0.01392	0.01409
	B	0.00000	0.00000	0.00000
	B	0.01202	0.01292	0.01306
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02097	0.02271	0.02373
	B	0.00000	0.00000	0.00000
	B	0.01995	0.02170	0.02264
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00577	0.00562	0.00558
	B	0.00000	0.00000	0.00000
	B	0.00508	0.00499	0.00494

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00203	-0.00211	-0.00210
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00203	-0.00211	-0.00210
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00203	-0.00210	-0.00210
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00202	-0.00211	-0.00210
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00135	-0.00139	-0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00209	0.00211	0.00210
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00209	0.00211	0.00210
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00209	0.00210	0.00210
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00209	0.00211	0.00210
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00138	0.00139	0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00132	-0.00135	-0.00132
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00132	-0.00135	-0.00132
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00132	-0.00135	-0.00132
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00131	-0.00135	-0.00132
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00086	-0.00088	-0.00086

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00137	0.00137	0.00133
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00137	0.00137	0.00133
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00137	0.00137	0.00134
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00137	0.00137	0.00134
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00089	0.00090	0.00087

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT		OUTPUT
A	OE	Y
-	0	HiZ
0	1	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__tbufi_1	10.37850
sky130_osu_sc_15T_hs__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_hs__tbufi_1	0.00383	0.00478	0.26206
sky130_osu_sc_15T_hs__tbufi_l	0.00300	0.00387	0.17027

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.00009	0.00013
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.00009	0.00016

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tbufi_1	A->Y (FR)	0.14527	1.47242	13.07910
	OE->Y (FR)	0.10991	0.53400	4.40857
	OE->Y (RR)	0.20410	1.37293	8.85512
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.19756	1.70533	13.33330
	OE->Y (FR)	0.13454	0.56976	4.61235
	OE->Y (RR)	0.23916	1.58741	9.02704

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tbufi_1	A->Y (RF)	0.04478	0.59887	6.07043
	OE->Y (FF)	0.11089	0.53736	4.40794
	OE->Y (RF)	0.04316	0.57993	5.82540
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.04845	0.60202	5.71153
	OE->Y (FF)	0.13484	0.57419	4.61486
	OE->Y (RF)	0.04652	0.57324	5.36317

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00342	0.00329	0.00323
	OE	0.00000	0.00000	0.00000
	OE	0.00311	0.00272	0.00260
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00260	0.00248	0.00242
	OE	0.00000	0.00000	0.00000
	OE	0.00225	0.00196	0.00185

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00054	-0.00055	-0.00063
	OE	0.00000	0.00000	0.00000
	OE	0.00240	0.00203	0.00188
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00030	-0.00031	-0.00038
	OE	0.00000	0.00000	0.00000
	OE	0.00162	0.00134	0.00122

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00192	-0.00193	-0.00193
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00182	-0.00184	-0.00183
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00136	-0.00136	-0.00136
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00129	-0.00130	-0.00129

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00192	0.00193	0.00193
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00186	0.00187	0.00185
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00136	0.00136	0.00136
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00131	0.00131	0.00130

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00135	0.00096	0.00083
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00121	0.00085	0.00070
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00089	0.00061	0.00050
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00080	0.00051	0.00040

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00395	0.00361	0.00357
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00408	0.00378	0.00366
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00314	0.00285	0.00281
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00323	0.00297	0.00288

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT		OUTPUT
A	OE	Y
0	0	1
1	0	0
-	1	HiZ

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__tnbufi_1	10.37850
sky130_osu_sc_15T_hs__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_hs__tnbufi_1	0.00382	0.00591	0.26205
sky130_osu_sc_15T_hs__tnbufi_l	0.00299	0.00432	0.17028

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.00009	0.00011
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.00010	0.00012

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tnbufi_1	A->Y (FR)	0.14667	1.47220	13.07860
	OE->Y (RR)	0.03610	0.31385	4.28395
	OE->Y (FR)	0.16613	1.54092	13.48260
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.19894	1.70486	13.33320
	OE->Y (RR)	0.03540	0.31384	4.28392
	OE->Y (FR)	0.20708	1.75946	13.60260

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tnbufi_1	A->Y (RF)	0.04387	0.59855	6.07000
	OE->Y (RF)	0.03565	0.31388	4.28390
	OE->Y (FF)	0.11398	0.76000	5.99973
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.04724	0.60154	5.71112
	OE->Y (RF)	0.03516	0.31385	4.28383
	OE->Y (FF)	0.14149	0.79832	5.93846

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00352	0.00340	0.00334
	OE	0.00000	0.00000	0.00000
	OE	0.00806	0.00786	0.00782
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00271	0.00259	0.00253
	OE	0.00000	0.00000	0.00000
	OE	0.00602	0.00584	0.00583

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00068	-0.00068	-0.00076
	OE	0.00000	0.00000	0.00000
	OE	0.00746	0.00725	0.00724
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00043	-0.00044	-0.00051
	OE	0.00000	0.00000	0.00000
	OE	0.00547	0.00530	0.00527

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00166	-0.00167	-0.00166
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00157	-0.00158	-0.00158
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00110	-0.00110	-0.00110
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00104	-0.00105	-0.00104

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00166	0.00167	0.00166
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00160	0.00161	0.00159
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00110	0.00110	0.00110
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00105	0.00106	0.00105

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00252	-0.00300	-0.00314
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00242	-0.00294	-0.00311
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00159	-0.00191	-0.00202
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00151	-0.00187	-0.00200

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00631	0.00607	0.00609
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00620	0.00598	0.00597
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00468	0.00448	0.00446
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00459	0.00439	0.00438

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__xnor2_l	0.00757	0.00662	0.26201

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.00023	0.00024

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xnor2_l	A->Y (RR)	B	0.25944	1.43700	9.00212
	A->Y (FR)	!B	0.18942	1.51744	13.10110
	B->Y (RR)	A	0.21449	1.39047	8.88490
	B->Y (FR)	!A	0.22456	1.59424	13.50270

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xnor2_l	A->Y (FF)	B	0.18804	0.85544	6.42409
	A->Y (RF)	!B	0.06083	0.59490	5.83545
	B->Y (FF)	A	0.17914	0.84384	6.40968
	B->Y (RF)	!A	0.06766	0.60386	5.84984

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00275	0.00231	0.00213
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00815	0.00774	0.00766
	B	A	0.00000	0.00000	0.00000
	B	A	0.00133	0.00095	0.00078
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00847	0.00818	0.00810

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00999	0.00962	0.00941
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00226	0.00188	0.00165
	B	A	0.00000	0.00000	0.00000
	B	A	0.00924	0.00908	0.00901
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00281	0.00235	0.00210

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__xor2_1	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__xor2_1	0.00757	0.00667	0.26193

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.00023	0.00025

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xor2_l	A->Y (RR)	!B	0.26543	1.43749	9.01531
	A->Y (FR)	B	0.21187	1.58445	13.56120
	B->Y (RR)	!A	0.22220	1.40630	8.96896
	B->Y (FR)	A	0.22853	1.60669	13.57410

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xor2_l	A->Y (FF)	!B	0.18612	0.85246	6.44436
	A->Y (RF)	B	0.05736	0.61636	6.09735
	B->Y (FF)	!A	0.17782	0.84520	6.41687
	B->Y (RF)	A	0.06514	0.60462	5.85577

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00938	0.00902	0.00899
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00157	0.00092	0.00066
	B	A	0.00000	0.00000	0.00000
	B	A	0.00935	0.00909	0.00899
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00116	0.00080	0.00062

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00188	0.00137	0.00110
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01047	0.01023	0.01017
	B	A	0.00000	0.00000	0.00000
	B	A	0.00190	0.00142	0.00116
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00945	0.00933	0.00924

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__ant	5.49450
sky130_osu_sc_15T_hs__tiehi	5.49450
sky130_osu_sc_15T_hs__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_hs__ant	0.09940
sky130_osu_sc_15T_hs__tiehi	0.00000
sky130_osu_sc_15T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__ant	0.00000	52440.50000	104881.00000
sky130_osu_sc_15T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_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_15T_hs__ant	0.00000	0.00000	0.00000
	-0.00223	0.00599	0.10381

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__ant	0.00000	0.00000	0.00000
	0.91420	0.86098	0.14749