sky130_osu_sc_15T_hs_ff_1P95_-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_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.01421	0.01417	0.01098	2.94111	1.40164	2.75515
sky130_osu_sc_15T_hs__addf_l	0.01420	0.01416	0.01095	1.69898	1.40571	1.76695

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.13239	0.18110
sky130_osu_sc_15T_hs__addf_l	0.00000	0.12291	0.17162

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)	0.08377	1.22141	23.36410
	B->CO (RR)	0.08036	1.17046	22.20850
	CI->CO (RR)	0.07940	1.25854	24.02840
	CON->CO (FR)	0.01549	0.57011	10.56660
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.08851	1.11110	17.20040
	B->CO (RR)	0.08484	1.07855	16.73680
	CI->CO (RR)	0.08411	1.15114	17.94750
	CON->CO (FR)	0.01982	0.64779	10.54130

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)	0.10158	1.45594	27.47780
	B->CO (FF)	0.08991	1.38781	26.18090
	CI->CO (FF)	0.08661	1.45714	27.75630
	CON->CO (RF)	0.01408	0.44747	8.49954
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.09884	1.18770	18.28080
	B->CO (FF)	0.08479	1.13436	17.66110
	CI->CO (FF)	0.08388	1.19165	18.62660
	CON->CO (RF)	0.01423	0.40477	6.57256

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)	0.08590	0.69825	9.86074
	B->CON (FR)	0.07103	0.66136	9.56433
	CI->CON (FR)	0.07093	0.70416	10.22560
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.08149	0.69510	9.87530
	B->CON (FR)	0.06706	0.65831	9.57528
	CI->CON (FR)	0.06651	0.70095	10.23970

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)	0.05535	0.42550	5.85253
	B->CON (RF)	0.05307	0.43137	5.95803
	CI->CON (RF)	0.05096	0.46719	6.59564
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.05323	0.42379	5.86395
	B->CON (RF)	0.05113	0.42980	5.96906
	CI->CON (RF)	0.04882	0.46549	6.60753

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)	0.15310	1.30632	22.11650
	B->S (-R)	0.16014	1.28243	21.13710
	CI->S (-R)	0.13697	1.30596	22.40830
	CON->S (RR)	0.04856	0.41016	6.42642
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.14986	1.21275	17.72180
	B->S (-R)	0.15729	1.20157	17.16800
	CI->S (-R)	0.13373	1.21461	18.05870
	CON->S (RR)	0.05080	0.46757	6.36231

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)	0.13065	1.09803	18.39710
	B->S (-F)	0.12594	1.04427	17.52230
	CI->S (-F)	0.12583	1.13388	19.06950
	CON->S (FF)	0.05246	0.51779	7.92521
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.12341	0.92566	13.01580
	B->S (-F)	0.11854	0.88463	12.59840
	CI->S (-F)	0.11853	0.96367	13.75870
	CON->S (FF)	0.04995	0.47983	6.44269

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	0.00356	0.00761	0.10358
	B	0.00395	0.00734	0.08985
	CI	0.00548	0.00969	0.10616
sky130_osu_sc_15T_hs__addf_l	A	0.00264	0.00530	0.06089
	B	0.00305	0.00523	0.05473
	CI	0.00368	0.00606	0.05725

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01405	0.01983	0.15868
	B	0.01466	0.01919	0.14128
	CI	0.01183	0.01815	0.15984
sky130_osu_sc_15T_hs__addf_l	A	0.01311	0.01691	0.09462
	B	0.01330	0.01658	0.08682
	CI	0.01089	0.01530	0.09699

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01404	0.01764	0.09089
	B	0.01416	0.01743	0.08596
	CI	0.01181	0.01612	0.09411
sky130_osu_sc_15T_hs__addf_l	A	0.01310	0.01645	0.08375
	B	0.01329	0.01628	0.07959
	CI	0.01088	0.01494	0.08661

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00401	0.00585	0.05171
	B	0.00393	0.00618	0.05488
	CI	0.00457	0.00709	0.05945
sky130_osu_sc_15T_hs__addf_l	A	0.00313	0.00468	0.04596
	B	0.00304	0.00504	0.04933
	CI	0.00453	0.00717	0.05847

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	-0.00139	-0.00043	0.12302
	B	-0.00514	-0.00101	0.09636
	CI	0.00462	0.00745	0.12542
sky130_osu_sc_15T_hs__addf_l	A	-0.00273	-0.00139	0.12455
	B	-0.00650	-0.00197	0.11160
	CI	0.00326	0.00644	0.12699

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.03039	0.03381	0.13061
	B	0.02695	0.03202	0.16783
	CI	0.02252	0.02617	0.11741
sky130_osu_sc_15T_hs__addf_l	A	0.02920	0.03283	0.13398
	B	0.02580	0.03140	0.17211
	CI	0.02136	0.02505	0.12069

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00719	0.00800	2.85343	1.56439	2.94767
sky130_osu_sc_15T_hs__addh_l	0.00730	0.00823	1.81379	1.56248	1.82981

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.15236	0.17806
sky130_osu_sc_15T_hs__addh_l	0.00000	0.14155	0.16936

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)	0.05764	0.40861	6.15448
	B->CO (RR)	0.05972	0.40720	6.31265
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.05066	0.44063	5.92054
	B->CO (RR)	0.05276	0.43937	5.96412

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)	0.04445	0.41974	6.28690
	B->CO (FF)	0.04777	0.43023	6.34702
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.04333	0.41614	5.59586
	B->CO (FF)	0.04730	0.42806	5.67257

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	0.08170	0.32397	3.07308
	A->CON (FR)	!B	0.04595	0.65939	10.15590
	B->CON (RR)	A	0.08352	0.32216	3.23546
	B->CON (FR)	!A	0.05740	0.66157	9.99488
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.06534	0.28868	2.85804
	A->CON (FR)	!B	0.04218	0.65520	10.14430
	B->CON (RR)	A	0.06729	0.28686	2.92325
	B->CON (FR)	!A	0.05360	0.65724	9.98512

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	0.06687	0.42229	5.05617
	A->CON (RF)	!B	0.02563	0.37500	5.71563
	B->CON (FF)	A	0.06594	0.44557	5.40546
	B->CON (RF)	!A	0.02964	0.35639	5.28280
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.06269	0.41828	5.14986
	A->CON (RF)	!B	0.02434	0.37284	5.70834
	B->CON (FF)	A	0.06283	0.44320	5.50791
	B->CON (RF)	!A	0.02833	0.35446	5.27634

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	0.04911	1.04625	20.29050
	A->S (FR)	B	0.09091	1.06721	19.08220
	B->S (RR)	!A	0.05329	0.99712	19.18270
	B->S (FR)	A	0.09052	1.12209	20.16780
	CON->S (FR)	-	0.01744	0.58641	10.89280
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.05149	0.98187	16.10550
	A->S (FR)	B	0.09050	1.00603	15.13800
	B->S (RR)	!A	0.05573	0.94308	15.32540
	B->S (FR)	A	0.09114	1.05376	15.90210
	CON->S (FR)	-	0.02039	0.65631	10.86510

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	0.06288	1.34200	25.92230
	A->S (RF)	B	0.09867	0.87784	15.38200
	B->S (FF)	!A	0.07435	1.34806	25.83270
	B->S (RF)	A	0.10053	0.87702	15.51820
	CON->S (RF)	-	0.01382	0.44981	8.57351
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.05935	1.12016	18.33620
	A->S (RF)	B	0.08215	0.69025	9.77837
	B->S (FF)	!A	0.07080	1.12382	18.19610
	B->S (RF)	A	0.08411	0.68764	9.81329
	CON->S (RF)	-	0.01329	0.40851	6.80923

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	0.00688	0.00904	0.06260
	B	0.00000	0.00000	0.00000
	B	0.00622	0.00837	0.07518
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00596	0.00825	0.06769
	B	0.00000	0.00000	0.00000
	B	0.00530	0.00762	0.07730

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	0.01004	0.01285	0.08307
	B	0.00000	0.00000	0.00000
	B	0.01043	0.01411	0.09022
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00924	0.01255	0.08360
	B	0.00000	0.00000	0.00000
	B	0.00979	0.01353	0.08794

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	0.00688	0.00902	0.06114
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00898	0.01191	0.05220
	B	A	0.00000	0.00000	0.00000
	B	A	0.00620	0.00833	0.07440
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01010	0.01161	0.04440
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00595	0.00826	0.06695
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00841	0.01079	0.04252
	B	A	0.00000	0.00000	0.00000
	B	A	0.00529	0.00761	0.07710
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00950	0.01048	0.03472

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	0.01003	0.01280	0.08078
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00118	0.00296	0.02820
	B	A	0.00000	0.00000	0.00000
	B	A	0.01043	0.01395	0.08548
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00219	0.00345	0.02893
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00923	0.01257	0.08333
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00046	0.00179	0.01991
	B	A	0.00000	0.00000	0.00000
	B	A	0.00979	0.01351	0.08768
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00148	0.00246	0.02188

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	0.01004	0.01289	0.08527
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00119	0.00299	0.02803
	B	A	0.00000	0.00000	0.00000
	B	A	0.01043	0.01416	0.09060
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00221	0.00334	0.02681
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00924	0.01257	0.08403
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00048	0.00193	0.02012
	B	A	0.00000	0.00000	0.00000
	B	A	0.00979	0.01353	0.08813
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00150	0.00245	0.02076

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	0.00689	0.00928	0.06338
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00899	0.01179	0.05557
	B	A	0.00000	0.00000	0.00000
	B	A	0.00622	0.00836	0.07568
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01012	0.01183	0.04924
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00596	0.00827	0.06735
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00842	0.01063	0.04082
	B	A	0.00000	0.00000	0.00000
	B	A	0.00530	0.00765	0.07755
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00951	0.01049	0.03375

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00374	0.00386	2.87162
sky130_osu_sc_15T_hs__and2_2	0.00373	0.00385	5.48984
sky130_osu_sc_15T_hs__and2_4	0.00374	0.00386	10.42528
sky130_osu_sc_15T_hs__and2_6	0.00377	0.00387	15.42513
sky130_osu_sc_15T_hs__and2_8	0.00375	0.00388	19.65760
sky130_osu_sc_15T_hs__and2_l	0.00298	0.00310	1.70676

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.07409	0.11821
sky130_osu_sc_15T_hs__and2_2	0.00000	0.11804	0.12125
sky130_osu_sc_15T_hs__and2_4	0.00000	0.20593	0.23337
sky130_osu_sc_15T_hs__and2_6	0.00000	0.29383	0.34853
sky130_osu_sc_15T_hs__and2_8	0.00000	0.38172	0.46370
sky130_osu_sc_15T_hs__and2_l	0.00000	0.06325	0.10099

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)	0.04164	0.36476	6.19025
	B->Y (RR)	0.04450	0.35704	5.84305
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.04676	0.31120	6.06564
	B->Y (RR)	0.04954	0.30259	5.70570
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.06672	0.31304	6.20279
	B->Y (RR)	0.06961	0.30341	5.85297
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.08676	0.33362	6.35822
	B->Y (RR)	0.08958	0.32249	6.01581
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.10644	0.35817	6.37301
	B->Y (RR)	0.10933	0.34546	6.02777
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.04463	0.41967	5.70680
	B->Y (RR)	0.04758	0.41323	5.39765

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)**	0.03699	0.44952	7.29205
	B->Y (FF)	0.03851	0.45626	7.32373
sky130_osu_sc_15T_hs__and2_2	**A->Y (FF)**	0.04004	0.39257	6.97404
	B->Y (FF)	0.04180	0.39905	7.02665
sky130_osu_sc_15T_hs__and2_4	**A->Y (FF)**	0.05517	0.39916	7.22580
	B->Y (FF)	0.05661	0.40435	7.29919
sky130_osu_sc_15T_hs__and2_6	**A->Y (FF)**	0.07163	0.41800	7.34701
	B->Y (FF)	0.07261	0.42167	7.42072
sky130_osu_sc_15T_hs__and2_8	**A->Y (FF)**	0.08694	0.43516	7.21779
	B->Y (FF)	0.08776	0.43781	7.29703
sky130_osu_sc_15T_hs__and2_l	**A->Y (FF)**	0.04160	0.43744	5.81592
	B->Y (FF)	0.04476	0.44814	5.88361

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	0.00425	0.01259	0.20731
	B	0.00000	0.00000	0.00000
	B	0.00427	0.00962	0.14332
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00894	0.01722	0.22336
	B	0.00000	0.00000	0.00000
	B	0.00900	0.01473	0.15378
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.02012	0.02680	0.22369
	B	0.00000	0.00000	0.00000
	B	0.02020	0.02448	0.15316
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03487	0.03757	0.23167
	B	0.00000	0.00000	0.00000
	B	0.03494	0.03593	0.16604
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.05154	0.05007	0.24214
	B	0.00000	0.00000	0.00000
	B	0.05160	0.04785	0.17388
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00321	0.00767	0.12444
	B	0.00000	0.00000	0.00000
	B	0.00329	0.00596	0.08214

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	0.01174	0.02085	0.17511
	B	0.00000	0.00000	0.00000
	B	0.01305	0.02164	0.16391
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01542	0.02477	0.20151
	B	0.00000	0.00000	0.00000
	B	0.01671	0.02554	0.18849
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.02675	0.03414	0.18771
	B	0.00000	0.00000	0.00000
	B	0.02789	0.03405	0.17737
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03933	0.04330	0.19699
	B	0.00000	0.00000	0.00000
	B	0.04026	0.04349	0.18623
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.05580	0.05410	0.20642
	B	0.00000	0.00000	0.00000
	B	0.05650	0.05425	0.19462
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00933	0.01527	0.11021
	B	0.00000	0.00000	0.00000
	B	0.01047	0.01581	0.10479

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)	-0.00446	-0.00447	-0.00449
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00445	-0.00446	-0.00448
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00446	-0.00447	-0.00449
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00449	-0.00450	-0.00452
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00446	-0.00447	-0.00449
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00318	-0.00319	-0.00321

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)	0.00448	0.00455	0.00450
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00447	0.00454	0.00449
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00448	0.00455	0.00450
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00451	0.00459	0.00454
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00448	0.00455	0.00450
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00319	0.00325	0.00321

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)	-0.00425	-0.00427	-0.00426
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00425	-0.00429	-0.00426
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00425	-0.00427	-0.00426
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00425	-0.00429	-0.00426
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00425	-0.00429	-0.00426
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00301	-0.00304	-0.00302

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)	0.00436	0.00432	0.00427
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00435	0.00431	0.00427
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00436	0.00432	0.00428
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00436	0.00432	0.00428
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00436	0.00432	0.00428
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00308	0.00305	0.00303

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00353	0.00367	0.00372	1.32704

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.02690	0.05758

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)	0.04471	0.66182	9.75227
	A1->Y (FR)	0.03795	0.62417	9.28592
	B0->Y (FR)	0.03169	0.67142	10.13380

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)	0.02934	0.38190	5.44145
	A1->Y (RF)	0.02640	0.39455	5.71620
	B0->Y (RF)	0.01634	0.36791	5.51218

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	0.01032	0.01133	0.04332
	A1	0.00000	0.00000	0.00000
	A1	0.00872	0.00972	0.04080
	B0	0.00615	0.01000	0.06401

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	0.00215	0.00295	0.02761
	A1	0.00000	0.00000	0.00000
	A1	0.00222	0.00390	0.03424
	B0	-0.00113	0.00083	0.02714

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)	-0.00327	-0.00388	-0.00388
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00391	-0.00394	-0.00392
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00392	-0.00394	-0.00392

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)	0.00385	0.00388	0.00388
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00391	0.00396	0.00393
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00401	0.00396	0.00393

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)	-0.00323	-0.00382	-0.00381
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00384	-0.00388	-0.00385
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00416	-0.00417	-0.00419

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)	0.00379	0.00382	0.00381
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00384	0.00388	0.00386
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00417	0.00424	0.00419

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)	-0.00175	-0.00178	-0.00176

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)	0.00187	0.00188	0.00179

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00353	0.00365	0.00379	0.00361	1.37824

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.03020	0.11516

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)	0.05318	0.66753	9.79042
	A1->Y (FR)	0.04815	0.65430	9.66994
	B0->Y (FR)	0.03155	0.65680	10.00800
	B1->Y (FR)	0.03670	0.67539	10.21440

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)	0.03863	0.39982	5.62685
	A1->Y (RF)	0.03584	0.41281	5.90629
	B0->Y (RF)	0.01874	0.39010	5.88874
	B1->Y (RF)	0.02162	0.37742	5.61028

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	0.01265	0.01332	0.04657
	A1	0.01105	0.01191	0.04402
	B0	0.00660	0.01024	0.06175
	B1	0.00817	0.01084	0.06275

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00453	0.00532	0.03107
	A1	0.00459	0.00622	0.03764
	B0	-0.00080	0.00145	0.03197
	B1	-0.00074	0.00049	0.02542

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)	-0.00337	-0.00389	-0.00387
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00391	-0.00392	-0.00392
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00391	-0.00394	-0.00392
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00391	-0.00393	-0.00392

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)	0.00385	0.00389	0.00387
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00392	0.00396	0.00393
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00402	0.00396	0.00393
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00402	0.00396	0.00393

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)	-0.00333	-0.00383	-0.00381
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00384	-0.00386	-0.00385
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00415	-0.00417	-0.00417
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00415	-0.00417	-0.00417

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)	0.00378	0.00384	0.00381
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00384	0.00387	0.00386
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00416	0.00425	0.00418
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00416	0.00425	0.00418

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)	-0.00176	-0.00179	-0.00177
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00176	-0.00177	-0.00177
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00431	-0.00434	-0.00434
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00431	-0.00434	-0.00434

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)	0.00192	0.00194	0.00181
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00176	0.00177	0.00177
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00432	0.00439	0.00435
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00433	0.00439	0.00435

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)	-0.00178	-0.00180	-0.00179
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00177	-0.00179	-0.00178
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00400	-0.00402	-0.00400
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00400	-0.00402	-0.00400

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)	0.00195	0.00195	0.00182
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00177	0.00179	0.00178
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00410	0.00405	0.00401
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00410	0.00405	0.00401

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00386	2.80793
sky130_osu_sc_15T_hs__buf_2	0.00386	5.54794
sky130_osu_sc_15T_hs__buf_4	0.00386	10.52688
sky130_osu_sc_15T_hs__buf_6	0.00089	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00388	20.10807
sky130_osu_sc_15T_hs__buf_l	0.00311	1.69440

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.06062	0.06062
sky130_osu_sc_15T_hs__buf_2	0.00000	0.09094	0.11821
sky130_osu_sc_15T_hs__buf_4	0.00000	0.15156	0.23337
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	0.27281	0.46370
sky130_osu_sc_15T_hs__buf_l	0.00000	0.05114	0.05114

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)**	0.03445	0.33906	5.71270
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.03845	0.28657	5.71229
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.05252	0.27741	5.74386
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.08203	0.31269	5.91910
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.03753	0.39209	5.26198

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)**	0.03488	0.44316	7.23251
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.03903	0.40317	7.33840
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.05342	0.39964	7.39338
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.08499	0.43611	7.45676
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.03967	0.43367	5.85685

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	0.00392	0.01106	0.15609
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00842	0.01565	0.16227
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01883	0.02606	0.17121
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.04542	0.04984	0.18590
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00310	0.00686	0.09293

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	0.01117	0.02022	0.17363
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01478	0.02358	0.17794
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.02582	0.03281	0.18619
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.05480	0.05308	0.20233
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00891	0.01464	0.10991

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
	-0.00083	-0.00084	-0.00081

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
	0.00083	0.00084	0.00081

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00363	0.00360	0.01057	2.57297	2.52071
sky130_osu_sc_15T_hs__dffr_l	0.00363	0.00360	0.01054	1.69668	1.69502

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.19291	0.27045
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.18247	0.26001

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)	0.16199	0.90864	13.73940
	QN->Q (FR)	0.02035	0.69605	12.56280
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.16658	1.05661	13.99660
	QN->Q (FR)	0.02219	0.73098	11.91730

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)	0.16743	0.88031	13.37000
	QN->Q (RF)	0.01587	0.49908	9.03339
	RN->Q (FF)	0.12859	0.99263	15.71610
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.17300	1.04234	13.87990
	QN->Q (RF)	0.01808	0.54999	8.95355
	RN->Q (FF)	0.13432	1.15339	16.22010

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)	0.15161	0.47799	5.60737
	RN->QN (FR)	0.11275	0.58910	7.95079
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.15220	0.53520	5.65472
	RN->QN (FR)	0.11342	0.64615	7.99338

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)**	0.13722	0.41175	4.21476
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.13717	0.46482	4.42647

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)	-0.03929	-0.03974	0.15641
	setup	CK (R)	0.13000	0.16172	0.00503
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.03936	-0.03974	0.15641
	setup	CK (R)	0.12841	0.16072	0.00802

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)	-0.06445	-0.22582	-4.54927
	setup	CK (R)	0.08506	0.23678	4.62118
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.06535	-0.22617	-4.54928
	setup	CK (R)	0.08506	0.23678	4.62107

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)	-0.03929	-0.03974	0.15641
	setup	CK (R)	0.13000	0.16172	0.00503
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.03936	-0.03974	0.15641
	setup	CK (R)	0.12841	0.16072	0.00802

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)	-0.06445	-0.22582	-4.54927
	setup	CK (R)	0.08506	0.23678	4.62118
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.06535	-0.22617	-4.54928
	setup	CK (R)	0.08506	0.23678	4.62107

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)	0.11102	0.14968	0.61454
	removal	CK (R)	-0.02861	-0.03501	-0.09346
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.11305	0.14860	0.61474
	removal	CK (R)	-0.02861	-0.03501	-0.09346

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)	0.11102	0.14968	0.61454
	removal	CK (R)	-0.02861	-0.03501	-0.09346
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.11305	0.14860	0.61474
	removal	CK (R)	-0.02861	-0.03501	-0.09346

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 ()	0.07504	0.40771	13.33370
	min_pulse_width	RN ()	0.07812	0.40771	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.07504	0.40771	13.33370
	min_pulse_width	RN ()	0.07504	0.40771	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 ()	0.07812	0.40771	13.33370
	min_pulse_width	CK ()	0.08736	0.40771	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.07195	0.40771	13.33370
	min_pulse_width	CK ()	0.08428	0.40771	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 ()	0.16437	0.40771	13.33370
	min_pulse_width	CK ()	0.07195	0.40771	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.16437	0.40771	13.33370
	min_pulse_width	CK ()	0.06887	0.40771	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	0.01152	0.01486	0.08387
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00987	0.01553	0.13381

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	0.01288	0.01263	0.04083
	RN	-0.00142	-0.12431	-2.44592
	RN	0.02979	0.02988	0.05862
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01142	0.01346	0.09304
	RN	-0.00142	-0.09683	-1.61290
	RN	0.02830	0.03074	0.11049

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	0.01287	0.01262	0.04310
	RN	-0.00142	-0.12279	-2.39620
	RN	0.02977	0.02992	0.06034
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01142	0.01344	0.09300
	RN	-0.00142	-0.09677	-1.61131
	RN	0.02829	0.03072	0.11012

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	0.01148	0.01491	0.08342
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00982	0.01552	0.13184

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	-0.00320	-0.00381	-0.00384
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01394	0.01858	0.15988
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00607	0.01090	0.15046
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00320	-0.00381	-0.00384
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01394	0.01858	0.15988
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00607	0.01090	0.15046

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	0.00382	0.00385	0.00384
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02290	0.02793	0.17103
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01066	0.01570	0.15528
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00382	0.00385	0.00384
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02290	0.02794	0.17103
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01066	0.01570	0.15528

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)	0.00430	0.01384	0.23953
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01243	0.02175	0.25453
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)	0.00430	0.01384	0.23954
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01243	0.02175	0.25452

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)	0.01077	0.02143	0.24697
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02304	0.03309	0.26517
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)	0.01078	0.02143	0.24697
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02304	0.03309	0.26517

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)	-0.00108	0.00818	0.23444
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00645	0.01513	0.25812
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00146	0.00780	0.23351
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00108	0.00818	0.23444
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00645	0.01510	0.25812
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00146	0.00780	0.23351

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)	0.01648	0.02799	0.25378
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03568	0.04557	0.35071
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02743	0.03747	0.27923
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03459	0.05501	0.39810
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01871	0.02904	0.25468
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01648	0.02797	0.25378
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03568	0.04557	0.35070
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02743	0.03746	0.27922
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03459	0.05500	0.39811
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01871	0.02904	0.25468

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00359	0.00360	0.00801	0.01087	2.93999	2.93747
sky130_osu_sc_15T_hs__dffsr_l	0.00359	0.00360	0.00799	0.01087	1.69364	1.70158

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.20067	0.27432
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.19023	0.26388

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)	0.15857	0.92428	14.98300
	QN->Q (FR)	0.01743	0.63336	11.78630
	RN->Q (RR)	0.13048	0.91156	15.17340
	SN->Q (FR)	0.11649	1.04336	17.61890
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.16787	1.05471	13.95390
	QN->Q (FR)	0.02217	0.72881	11.87490
	RN->Q (RR)	0.13890	1.04063	14.12850
	SN->Q (FR)	0.12558	1.17250	16.59990

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)	0.18128	0.91618	14.51420
	QN->Q (RF)	0.01564	0.52680	9.92875
	RN->Q (FF)	0.12864	1.01564	16.89910
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.19081	1.06155	13.86460
	QN->Q (RF)	0.01804	0.54908	8.93363
	RN->Q (FF)	0.13711	1.15986	16.24820

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)	0.16524	0.48734	5.85514
	RN->QN (FR)	0.11265	0.58713	8.23932
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.16991	0.55660	5.69164
	RN->QN (FR)	0.11626	0.65466	8.07128

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)	0.13644	0.43314	5.07150
	RN->QN (RF)	0.10874	0.42030	5.26496
	SN->QN (FF)	0.09479	0.55067	7.70336
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.13956	0.46520	4.43600
	RN->QN (RF)	0.11178	0.45277	4.62847
	SN->QN (FF)	0.09770	0.58239	7.07650

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)	-0.03932	-0.04241	0.14178
	setup	CK (R)	0.12496	0.15733	0.03469
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.03965	-0.04241	0.14460
	setup	CK (R)	0.12182	0.15506	0.03768

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)	-0.06951	-0.23324	-4.56265
	setup	CK (R)	0.08977	0.24384	4.63316
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.07148	-0.23324	-4.56089
	setup	CK (R)	0.08997	0.24284	4.63363

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)	-0.03932	-0.04241	0.14178
	setup	CK (R)	0.12496	0.15733	0.03469
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.03965	-0.04241	0.14460
	setup	CK (R)	0.12182	0.15506	0.03768

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)	-0.06951	-0.23324	-4.56265
	setup	CK (R)	0.08977	0.24384	4.63316
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.07148	-0.23324	-4.56089
	setup	CK (R)	0.08997	0.24284	4.63363

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)	0.09638	0.13320	0.57987
	removal	CK (R)	-0.01379	-0.01767	-0.02391
	hold	SN (R)	-0.09351	-0.18023	-0.90474
	setup	SN (R)	0.10791	0.21973	2.07905
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.09376	0.13094	0.58318
	removal	CK (R)	-0.01379	-0.01767	-0.02391
	hold	SN (R)	-0.09167	-0.18023	-0.88631
	setup	SN (R)	0.10968	0.21838	2.07619

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)	0.09638	0.13320	0.57987
	removal	CK (R)	-0.01379	-0.01767	-0.02391
	hold	SN (R)	-0.09351	-0.18023	-0.90474
	hold	SN (R)	-0.09351	-0.18023	-0.90582
	setup	SN (R)	0.10789	0.21860	1.91009
	setup	SN (R)	0.10791	0.21973	2.07905
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.09376	0.13094	0.58318
	removal	CK (R)	-0.01379	-0.01767	-0.02391
	hold	SN (R)	-0.09289	-0.18023	-0.90691
	hold	SN (R)	-0.09167	-0.18023	-0.88631
	setup	SN (R)	0.10968	0.21687	1.90406
	setup	SN (R)	0.10195	0.21838	2.07619

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 ()	0.09044	0.40771	13.33370
	min_pulse_width	RN ()	0.09352	0.40771	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.09044	0.40771	13.33370
	min_pulse_width	RN ()	0.08736	0.40771	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)	0.02739	0.05654	1.45900
	removal	CK (R)	-0.01267	-0.04241	-0.27648
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.02592	0.05654	1.43393
	removal	CK (R)	-0.01267	-0.04241	-0.27648

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)	0.02739	0.05654	1.45900
	removal	CK (R)	-0.01267	-0.04241	-0.27648
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.02592	0.05654	1.43393
	removal	CK (R)	-0.01267	-0.04241	-0.27648

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 ()	0.09352	0.40771	13.33370
	min_pulse_width	SN ()	0.09352	0.40771	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.09352	0.40771	13.33370
	min_pulse_width	SN ()	0.09044	0.40771	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 ()	0.07195	0.40771	13.33370
	min_pulse_width	CK ()	0.09352	0.40771	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.06887	0.40771	13.33370
	min_pulse_width	CK ()	0.09044	0.40771	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 ()	0.15821	0.40771	13.33370
	min_pulse_width	CK ()	0.07812	0.40771	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.15513	0.40771	13.33370
	min_pulse_width	CK ()	0.07812	0.40771	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	0.01435	0.01691	0.06972
	RN	0.02662	0.02633	0.05013
	SN	-0.00142	-0.13467	-2.79483
	SN	0.02521	0.02358	0.03633
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01293	0.01837	0.13766
	RN	0.02523	0.02777	0.11793
	SN	-0.00142	-0.09673	-1.61002
	SN	0.02383	0.02504	0.10232

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	0.01516	0.01663	0.07325
	RN	-0.00142	-0.13467	-2.79481
	RN	0.03078	0.03268	0.09589
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01373	0.01586	0.09625
	RN	-0.00142	-0.09673	-1.61002
	RN	0.02935	0.03187	0.11838

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	0.01514	0.01664	0.07368
	RN	-0.00142	-0.13460	-2.79206
	RN	0.03077	0.03265	0.09516
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01372	0.01583	0.09602
	RN	-0.00142	-0.09700	-1.61754
	RN	0.02934	0.03186	0.11738

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	0.01431	0.01695	0.06852
	RN	0.02657	0.02625	0.04991
	SN	-0.00142	-0.13460	-2.79222
	SN	0.02517	0.02356	0.03533
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01289	0.01836	0.13575
	RN	0.02518	0.02771	0.11693
	SN	-0.00142	-0.09700	-1.61751
	SN	0.02379	0.02498	0.10196

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	-0.00375	-0.00381	-0.00384
	(!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)	0.01806	0.02253	0.16601
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00696	0.01161	0.15067
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00692	0.01160	0.15077
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00698	0.01163	0.15073
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00375	-0.00381	-0.00384
	(!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)	0.01806	0.02253	0.16601
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00696	0.01161	0.15067
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00692	0.01160	0.15077
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00698	0.01164	0.15073

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	0.00392	0.00387	0.00384
	(!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)	0.02668	0.03138	0.17649
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01146	0.01633	0.15554
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01157	0.01633	0.15545
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01138	0.01624	0.15545
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00391	0.00387	0.00384
	(!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)	0.02666	0.03137	0.17648
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01144	0.01632	0.15553
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01155	0.01632	0.15544
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01137	0.01623	0.15544

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)	0.00349	0.01286	0.23835
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01492	0.02414	0.26162
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)	0.00349	0.01287	0.23836
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01492	0.02414	0.26164

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)	0.01168	0.02255	0.24818
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02445	0.03452	0.27049
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)	0.01166	0.02253	0.24816
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02443	0.03450	0.27048

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)	-0.00882	-0.00885	-0.00887
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00849	-0.00955	-0.00951
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00847	-0.00903	-0.00900
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00578	0.01056	0.15661
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)	-0.00882	-0.00886	-0.00887
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00847	-0.00953	-0.00949
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00847	-0.00903	-0.00900
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00579	0.01057	0.15662

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)	0.00884	0.00899	0.00889
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00947	0.00955	0.00953
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00899	0.00904	0.00903
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01894	0.02248	0.16657
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)	0.00884	0.00899	0.00889
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00945	0.00953	0.00951
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00897	0.00903	0.00902
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01893	0.02247	0.16656

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)	-0.00108	0.00817	0.23461
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00760	0.01623	0.25887
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00744	0.01613	0.25884
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00122	0.00804	0.23393
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00466	0.02166	0.42355
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00108	0.00817	0.23461
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00759	0.01621	0.25886
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00742	0.01612	0.25883
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00122	0.00804	0.23393
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00466	0.02166	0.42356

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)	0.04004	0.04996	0.35466
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01655	0.02816	0.25401
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02801	0.03811	0.27963
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02806	0.03820	0.28032
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03824	0.05831	0.40475
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01854	0.02887	0.25468
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02187	0.04107	0.44297
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04004	0.04997	0.35466
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01655	0.02817	0.25401
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02801	0.03811	0.27963
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02807	0.03820	0.28033
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03823	0.05722	0.40473
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01853	0.02887	0.25468
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02186	0.04106	0.44296

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00362	0.00635	0.01065	2.54880	2.53384
sky130_osu_sc_15T_hs__dffs_l	0.00362	0.00634	0.01065	1.70815	1.69772

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.19805	0.32527
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.18761	0.31483

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)	0.13196	0.86433	13.47670
	QN->Q (FR)	0.02031	0.68909	12.40120
	SN->Q (FR)	0.10460	1.02525	16.17980
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.13794	1.02419	14.00110
	QN->Q (FR)	0.02214	0.72922	11.90830
	SN->Q (FR)	0.11107	1.18209	16.70480

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)	0.18192	0.89307	13.21390
	QN->Q (RF)	0.01578	0.49488	8.93576
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.18715	1.06138	13.97130
	QN->Q (RF)	0.01801	0.54967	8.96558

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)	0.16611	0.49607	5.62995
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.16617	0.55148	5.66204

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)	0.10905	0.37513	4.15823
	SN->QN (FF)	0.08138	0.53425	6.86188
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.11055	0.43070	4.35527
	SN->QN (FF)	0.08327	0.58793	7.05651

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)	-0.02970	-0.03181	0.17139
	setup	CK (R)	0.09773	0.13538	0.00220
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.02950	-0.03181	0.17139
	setup	CK (R)	0.09680	0.13401	0.00364

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)	-0.06518	-0.22617	-4.56116
	setup	CK (R)	0.09074	0.23678	4.63462
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.06577	-0.22617	-4.56015
	setup	CK (R)	0.09074	0.23678	4.63462

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)	-0.02970	-0.03181	0.17139
	setup	CK (R)	0.09773	0.13538	0.00220
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.02950	-0.03181	0.17139
	setup	CK (R)	0.09680	0.13401	0.00364

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)	-0.06518	-0.22617	-4.56116
	setup	CK (R)	0.09074	0.23678	4.63462
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.06577	-0.22617	-4.56015
	setup	CK (R)	0.09074	0.23678	4.63462

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)	0.03351	0.06714	1.30428
	removal	CK (R)	-0.01735	-0.05654	-0.34616
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.03351	0.06714	1.24887
	removal	CK (R)	-0.01735	-0.05654	-0.34616

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)	0.03351	0.06714	1.30428
	removal	CK (R)	-0.01735	-0.05654	-0.34616
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.03351	0.06714	1.24887
	removal	CK (R)	-0.01735	-0.05654	-0.34616

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 ()	0.07195	0.40771	13.33370
	min_pulse_width	SN ()	0.07504	0.40771	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.07195	0.40771	13.33370
	min_pulse_width	SN ()	0.07195	0.40771	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 ()	0.05963	0.40771	13.33370
	min_pulse_width	CK ()	0.09352	0.40771	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.05655	0.40771	13.33370
	min_pulse_width	CK ()	0.08736	0.40771	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 ()	0.13048	0.40771	13.33370
	min_pulse_width	CK ()	0.07812	0.40771	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.13048	0.40771	13.33370
	min_pulse_width	CK ()	0.07812	0.40771	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	0.01137	0.01472	0.08670
	SN	-0.00142	-0.12361	-2.42295
	SN	0.02073	0.01976	0.02284
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00983	0.01548	0.13367
	SN	-0.00142	-0.09722	-1.62381
	SN	0.01918	0.02038	0.07153

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	0.01287	0.01270	0.04509
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01136	0.01349	0.09443

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	0.01286	0.01271	0.04571
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01136	0.01349	0.09483

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	0.01133	0.01485	0.08468
	SN	-0.00142	-0.12318	-2.40855
	SN	0.02068	0.01977	0.02309
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00979	0.01547	0.13210
	SN	-0.00142	-0.09687	-1.61385
	SN	0.01915	0.02036	0.07099

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	-0.00381	-0.00390	-0.00390
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01326	0.01803	0.16208
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00594	0.01075	0.15047
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00381	-0.00390	-0.00390
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01326	0.01803	0.16208
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00594	0.01074	0.15047

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	0.00398	0.00394	0.00390
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02258	0.02746	0.17053
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01083	0.01591	0.15591
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00398	0.00394	0.00390
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02258	0.02746	0.17053
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01083	0.01591	0.15591

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)	-0.00640	-0.00641	-0.00643
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00482	0.00706	0.10178
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)	-0.00639	-0.00639	-0.00642
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00483	0.00706	0.10178

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)	0.00644	0.00643	0.00644
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01301	0.01624	0.11267
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)	0.00645	0.00643	0.00644
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01301	0.01624	0.11266

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)	-0.00112	0.00816	0.23481
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00140	0.00789	0.23400
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00357	0.02108	0.42440
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00112	0.00816	0.23481
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00140	0.00789	0.23400
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00357	0.02108	0.42440

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)	0.03520	0.04520	0.35164
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01650	0.02805	0.25420
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03406	0.05434	0.39803
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01862	0.02901	0.25502
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02112	0.04078	0.44406
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03520	0.04520	0.35164
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01650	0.02806	0.25420
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03405	0.05433	0.39803
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01862	0.02900	0.25502
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02112	0.04077	0.44406

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00378	0.01046	2.96351	2.95010
sky130_osu_sc_15T_hs__dff_l	0.00378	0.01045	1.51525	1.48815

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.18768	0.24106
sky130_osu_sc_15T_hs__dff_l	0.00000	0.17819	0.23158

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)	0.10794	0.86818	14.97660
	QN->Q (FR)	0.01730	0.63240	11.78230
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.11284	0.85173	10.92650
	QN->Q (FR)	0.02600	0.79572	12.58700

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)	0.15073	0.88294	14.57480
	QN->Q (RF)	0.01558	0.52673	9.95303
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.16051	0.91776	11.41930
	QN->Q (RF)	0.01544	0.44883	7.07778

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)	0.13472	0.45309	5.82889
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.14390	0.53632	5.46444

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)	0.08802	0.37517	4.98507
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.08637	0.30502	2.45460

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)	-0.02159	-0.02481	0.15401
	setup	CK (R)	0.07350	0.11709	0.00095
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.02132	-0.02535	0.15661
	setup	CK (R)	0.07064	0.11593	0.00446

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)	-0.05685	-0.21890	-4.51016
	setup	CK (R)	0.07111	0.22971	4.57894
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.05735	-0.21954	-4.51059
	setup	CK (R)	0.07293	0.22971	4.57799

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 ()	0.04731	0.40771	13.33370
	min_pulse_width	CK ()	0.07812	0.40771	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.04423	0.40771	13.33370
	min_pulse_width	CK ()	0.07504	0.40771	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 ()	0.10584	0.40771	13.33370
	min_pulse_width	CK ()	0.05655	0.40771	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.10584	0.40771	13.33370
	min_pulse_width	CK ()	0.05655	0.40771	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	0.01188	0.01496	0.07056
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01087	0.01602	0.13019

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	0.01311	0.01498	0.07386
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01196	0.01329	0.08263

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	0.01310	0.01487	0.07444
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01196	0.01332	0.08357

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	0.01184	0.01501	0.07017
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01081	0.01601	0.12872

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	-0.00320	-0.00379	-0.00383
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01230	0.01743	0.16526
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00320	-0.00379	-0.00383
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01231	0.01744	0.16527

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	0.00380	0.00384	0.00383
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02338	0.02826	0.17605
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00380	0.00384	0.00383
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02338	0.02826	0.17606

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)	-0.00111	0.00818	0.23480
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00138	0.00793	0.23399
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00111	0.00818	0.23480
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00138	0.00793	0.23399

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)	0.01641	0.02743	0.25409
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03433	0.04461	0.35378
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03470	0.05436	0.40806
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01852	0.02889	0.25496
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01641	0.02743	0.25409
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03434	0.04462	0.35376
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03471	0.05436	0.40808
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01852	0.02889	0.25496

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00364	2.68773
sky130_osu_sc_15T_hs__inv_10	0.03325	23.56482
sky130_osu_sc_15T_hs__inv_2	0.00686	5.21210
sky130_osu_sc_15T_hs__inv_3	0.01019	7.46446
sky130_osu_sc_15T_hs__inv_4	0.01345	10.02013
sky130_osu_sc_15T_hs__inv_6	0.02013	14.70962
sky130_osu_sc_15T_hs__inv_8	0.02667	19.42237
sky130_osu_sc_15T_hs__inv_l	0.00287	1.43524

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.03031	0.05758
sky130_osu_sc_15T_hs__inv_10	0.00000	0.30312	0.57582
sky130_osu_sc_15T_hs__inv_2	0.00000	0.06062	0.11516
sky130_osu_sc_15T_hs__inv_3	0.00000	0.09094	0.17275
sky130_osu_sc_15T_hs__inv_4	0.00000	0.12125	0.23033
sky130_osu_sc_15T_hs__inv_6	0.00000	0.18187	0.34549
sky130_osu_sc_15T_hs__inv_8	0.00000	0.24250	0.46066
sky130_osu_sc_15T_hs__inv_l	0.00000	0.02557	0.04984

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)**	0.01634	0.56534	10.24380
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.02661	0.37665	10.10530
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.01363	0.48538	10.07610
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.01542	0.45511	10.12560
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.01604	0.42883	10.07590
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.01812	0.40017	10.07520
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.02219	0.38510	10.11120
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.02187	0.65064	10.15850

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)**	0.01375	0.42839	7.96893
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.02190	0.22656	7.74048
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.01143	0.34758	7.86410
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.01272	0.31678	7.93504
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.01270	0.28831	7.90618
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.01548	0.25768	7.88604
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.01881	0.24057	7.88604
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.01382	0.37497	5.78364

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	0.00569	0.00994	0.05491
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.05119	0.10175	0.51470
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.01005	0.01939	0.10473
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01549	0.02933	0.15564
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01993	0.03833	0.20512
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02966	0.06024	0.30642
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.03992	0.08308	0.40984
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00440	0.00696	0.03896

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	-0.00133	0.00106	0.02606
sky130_osu_sc_15T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01468	0.01426	0.25547
sky130_osu_sc_15T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00399	0.00107	0.05082
sky130_osu_sc_15T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00518	0.00264	0.07534
sky130_osu_sc_15T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00763	0.00323	0.09993
sky130_osu_sc_15T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01168	0.00623	0.15028
sky130_osu_sc_15T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01443	0.01098	0.20051
sky130_osu_sc_15T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00084	0.00010	0.01528

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.01061	0.01045	0.00744	0.00528

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.06219	0.06353

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)	-	0.00718	0.01309	0.01794
	A1->Y (RR)	-	0.00777	0.01307	0.01782
	S0->Y (RR)	(!A0 * A1)	0.02704	0.01916	-1.03393
	S0->Y (FR)	(A0 * !A1)	0.02247	0.13742	1.37003

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)	-	0.00733	0.01387	0.01805
	A1->Y (FF)	-	0.00713	0.01370	0.01791
	S0->Y (FF)	(!A0 * A1)	0.03388	0.16284	1.35785
	S0->Y (RF)	(A0 * !A1)	0.01631	-0.01566	-1.15081

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	-	-0.00606	-0.00608	-0.00608
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00403	-0.00405	-0.00405
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00701	0.01892	0.24303
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00418	0.00633	0.22957

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	-	0.00606	0.00608	0.00608
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00404	0.00405	0.00405
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00103	0.01236	0.23639
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01586	0.02676	0.25013

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)	-0.00145	-0.00145	-0.00145

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)	0.00145	0.00145	0.00145

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)	-0.00175	-0.00174	-0.00175

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)	0.00175	0.00174	0.00175

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)	-0.00160	0.00931	0.23283
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00157	0.00939	0.23301

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)	0.01201	0.02330	0.24663
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01088	0.02277	0.24638

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00363	0.00363	2.46044
sky130_osu_sc_15T_hs__nand2_l	0.00287	0.00288	1.42126

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.03015	0.11516
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.02554	0.09969

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)	0.01675	0.55203	9.77753
	B->Y (FR)	0.01943	0.54499	9.57721
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.02242	0.65011	10.12770
	B->Y (FR)	0.02731	0.65324	10.09650

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)	0.01809	0.50149	9.06121
	B->Y (RF)	0.02065	0.48862	8.82745
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.01786	0.45142	6.94258
	B->Y (RF)	0.02022	0.42859	6.51058

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	0.00610	0.01009	0.05001
	B	0.00000	0.00000	0.00000
	B	0.00768	0.01139	0.05309
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00467	0.00711	0.03460
	B	0.00000	0.00000	0.00000
	B	0.00606	0.00805	0.03673

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	-0.00098	0.00073	0.02386
	B	0.00000	0.00000	0.00000
	B	-0.00097	0.00017	0.01938
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00062	0.00015	0.01331
	B	0.00000	0.00000	0.00000
	B	-0.00061	-0.00007	0.01153

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)	-0.00435	-0.00436	-0.00438
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00305	-0.00306	-0.00307

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)	0.00436	0.00444	0.00439
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00306	0.00311	0.00307

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)	-0.00405	-0.00407	-0.00406
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00281	-0.00282	-0.00282

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)	0.00415	0.00412	0.00407
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00288	0.00284	0.00282

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00361	0.00390	1.55419
sky130_osu_sc_15T_hs__nor2_l	0.00277	0.00309	0.93942

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.02076	0.05758
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.01923	0.04984

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)	0.03221	0.64029	10.01180
	B->Y (FR)	0.02376	0.64145	10.16930
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.04018	0.74775	10.21120
	B->Y (FR)	0.03265	0.75476	10.47100

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)	0.01913	0.34546	5.29204
	B->Y (RF)	0.01470	0.33555	5.27219
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.01721	0.31673	4.12800
	B->Y (RF)	0.01460	0.31067	4.11236

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	0.00836	0.00976	0.04289
	B	0.00000	0.00000	0.00000
	B	0.00614	0.00993	0.06162
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00607	0.00679	0.02935
	B	0.00000	0.00000	0.00000
	B	0.00474	0.00689	0.04037

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	0.00085	0.00260	0.03526
	B	0.00000	0.00000	0.00000
	B	-0.00101	0.00146	0.03211
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00049	0.00129	0.01982
	B	0.00000	0.00000	0.00000
	B	-0.00060	0.00040	0.01784

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)	-0.00322	-0.00387	-0.00386
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00220	-0.00257	-0.00256

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)	0.00384	0.00387	0.00386
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00254	0.00257	0.00256

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)	-0.00177	-0.00179	-0.00178
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00119	-0.00121	-0.00119

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)	0.00184	0.00184	0.00179
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00124	0.00124	0.00121

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00366	0.00375	0.00309	1.46298

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.03001	0.10743

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)	0.03282	0.65119	10.03410
	A1->Y (FR)	0.04405	0.65497	9.91054
	B0->Y (FR)	0.02512	0.62072	9.68154

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)	0.02542	0.40063	6.02512
	A1->Y (RF)	0.03060	0.39791	5.87145
	B0->Y (RF)	0.01961	0.43688	6.74736

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	0.00859	0.01122	0.05440
	A1	0.00000	0.00000	0.00000
	A1	0.01079	0.01192	0.04217
	B0	0.00502	0.00736	0.04107

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	0.00010	0.00114	0.02369
	A1	0.00000	0.00000	0.00000
	A1	0.00205	0.00283	0.02662
	B0	0.00077	0.00222	0.02169

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)	-0.00178	-0.00180	-0.00178
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00383	-0.00390	-0.00389
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00394	-0.00397	-0.00395

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)	0.00185	0.00186	0.00180
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00388	0.00390	0.00389
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00399	0.00398	0.00396

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)	-0.00311	-0.00375	-0.00377
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00377	-0.00386	-0.00386
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00388	-0.00391	-0.00389

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)	0.00375	0.00380	0.00377
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00384	0.00389	0.00386
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00393	0.00391	0.00390

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)	-0.00310	-0.00311	-0.00315

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)	0.00314	0.00319	0.00315

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00354	0.00375	0.00385	0.00376	1.53294

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.03084	0.11516

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)	0.04584	0.65136	9.94509
	A1->Y (FR)	0.03735	0.65204	10.11080
	B0->Y (FR)	0.02619	0.64207	10.11140
	B1->Y (FR)	0.03529	0.64187	9.94855

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)	0.04399	0.43464	6.32291
	A1->Y (RF)	0.03486	0.42154	6.26867
	B0->Y (RF)	0.02965	0.46005	7.02648
	B1->Y (RF)	0.03893	0.47891	7.15517

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	0.01280	0.01389	0.04360
	A1	0.01056	0.01383	0.06136
	B0	0.00654	0.00988	0.05650
	B1	0.00891	0.01005	0.03881

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00135	0.00213	0.02614
	A1	-0.00048	0.00059	0.02363
	B0	-0.00044	0.00167	0.02972
	B1	0.00136	0.00272	0.03027

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)	-0.00321	-0.00387	-0.00386
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00321	-0.00387	-0.00386
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00378	-0.00386	-0.00387
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00389	-0.00393	-0.00390

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)	0.00384	0.00390	0.00386
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00384	0.00390	0.00386
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00385	0.00391	0.00387
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00393	0.00393	0.00391

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)	-0.00176	-0.00178	-0.00176
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00176	-0.00178	-0.00176
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00375	-0.00383	-0.00382
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00386	-0.00388	-0.00387

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)	0.00182	0.00184	0.00178
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00182	0.00184	0.00178
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00381	0.00385	0.00382
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00390	0.00388	0.00388

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)	-0.00174	-0.00176	-0.00174
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00174	-0.00176	-0.00174
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00418	-0.00429	-0.00427
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00423	-0.00425	-0.00430

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)	0.00180	0.00182	0.00176
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00180	0.00182	0.00176
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00429	0.00430	0.00427
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00429	0.00436	0.00432

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)	-0.00314	-0.00379	-0.00378
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00315	-0.00379	-0.00378
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00427	-0.00439	-0.00436
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00433	-0.00434	-0.00439

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)	0.00376	0.00382	0.00379
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00376	0.00380	0.00379
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00437	0.00444	0.00437
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00438	0.00446	0.00440

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00397	0.00373	2.80590
sky130_osu_sc_15T_hs__or2_2	0.00397	0.00373	5.43191
sky130_osu_sc_15T_hs__or2_4	0.00397	0.00374	10.37144
sky130_osu_sc_15T_hs__or2_8	0.00398	0.00375	19.67170
sky130_osu_sc_15T_hs__or2_l	0.00318	0.00292	1.49916

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.03743	0.06367
sky130_osu_sc_15T_hs__or2_2	0.00000	0.05411	0.12125
sky130_osu_sc_15T_hs__or2_4	0.00000	0.08746	0.23641
sky130_osu_sc_15T_hs__or2_8	0.00000	0.15417	0.46674
sky130_osu_sc_15T_hs__or2_l	0.00000	0.03267	0.05244

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)	0.04166	0.35258	5.47432
	B->Y (RR)	0.03560	0.33461	5.48141
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.04615	0.29821	5.39537
	B->Y (RR)	0.03985	0.28107	5.36634
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.06051	0.29055	5.53039
	B->Y (RR)	0.05413	0.27578	5.48135
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.09013	0.32472	5.74611
	B->Y (RR)	0.08379	0.31231	5.67513
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.04428	0.41989	4.92044
	B->Y (RR)	0.03989	0.40397	4.86707

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)	0.05810	0.48611	7.48505
	B->Y (FF)	0.04655	0.48478	7.84446
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.06699	0.44794	7.47660
	B->Y (FF)	0.05550	0.44755	7.80707
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.09305	0.45566	7.61757
	B->Y (FF)	0.08161	0.45804	7.89814
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.14799	0.51081	7.67473
	B->Y (FF)	0.13662	0.51709	7.91325
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.07023	0.46758	5.67604
	B->Y (FF)	0.05740	0.46733	5.96254

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	0.00613	0.01102	0.11279
	B	0.00000	0.00000	0.00000
	B	0.00444	0.01140	0.14605
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01077	0.01603	0.12005
	B	0.00000	0.00000	0.00000
	B	0.00893	0.01614	0.15020
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02130	0.02637	0.13190
	B	0.00000	0.00000	0.00000
	B	0.01938	0.02682	0.16035
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.04817	0.05041	0.15365
	B	0.00000	0.00000	0.00000
	B	0.04618	0.05069	0.17741
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00453	0.00668	0.05338
	B	0.00000	0.00000	0.00000
	B	0.00349	0.00658	0.06575

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	0.01393	0.01806	0.11852
	B	0.00000	0.00000	0.00000
	B	0.01137	0.02007	0.19716
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01807	0.02154	0.12253
	B	0.00000	0.00000	0.00000
	B	0.01550	0.02311	0.19912
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.03192	0.03064	0.12921
	B	0.00000	0.00000	0.00000
	B	0.02934	0.03201	0.20262
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.07174	0.05146	0.14523
	B	0.00000	0.00000	0.00000
	B	0.06929	0.05362	0.21153
sky130_osu_sc_15T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.01066	0.01256	0.06938
	B	0.00000	0.00000	0.00000
	B	0.00894	0.01327	0.10601

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)	-0.00324	-0.00391	-0.00389
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00324	-0.00391	-0.00388
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00324	-0.00391	-0.00389
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00324	-0.00391	-0.00389
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00220	-0.00258	-0.00259

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)	0.00386	0.00392	0.00389
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00386	0.00392	0.00388
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00386	0.00393	0.00389
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00386	0.00393	0.00389
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00257	0.00261	0.00259

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)	-0.00178	-0.00180	-0.00178
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00178	-0.00180	-0.00178
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00178	-0.00180	-0.00178
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00178	-0.00180	-0.00178
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00122	-0.00123	-0.00122

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)	0.00185	0.00185	0.00180
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00185	0.00185	0.00180
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00185	0.00186	0.00180
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00185	0.00186	0.00180
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00127	0.00127	0.00124

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00388	0.00492	1.57329
sky130_osu_sc_15T_hs__tbufi_l	0.00309	0.00406	0.91278

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.03142	0.11516
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.02611	0.09969

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)	0.02286	0.63714	10.14100
	OE->Y (FR)	0.02962	0.32894	5.34284
	OE->Y (RR)	0.04525	0.42687	5.77765
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.03155	0.74438	10.27100
	OE->Y (FR)	0.03504	0.32876	5.34266
	OE->Y (RR)	0.05055	0.50526	5.32470

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)	0.01775	0.41183	6.50850
	OE->Y (FF)	0.02985	0.32891	5.34280
	OE->Y (RF)	0.01695	0.39550	6.20841
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.01772	0.37289	4.94295
	OE->Y (FF)	0.03527	0.32874	5.34269
	OE->Y (RF)	0.01724	0.34753	4.53666

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	0.00582	0.00915	0.05315
	OE	0.00000	0.00000	0.00000
	OE	0.00599	0.01570	0.20798
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00447	0.00632	0.03626
	OE	0.00000	0.00000	0.00000
	OE	0.00424	0.00921	0.11705

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	-0.00104	0.00104	0.02747
	OE	0.00000	0.00000	0.00000
	OE	0.00384	0.01454	0.23404
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00061	0.00027	0.01585
	OE	0.00000	0.00000	0.00000
	OE	0.00257	0.00824	0.13587

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)	-0.00307	-0.00312	-0.00308
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00271	-0.00274	-0.00272
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00225	-0.00226	-0.00226
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00201	-0.00204	-0.00202

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)	0.00307	0.00312	0.00308
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00275	0.00278	0.00274
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00225	0.00226	0.00226
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00204	0.00206	0.00203

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)	0.00232	0.01369	0.24167
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00210	0.01342	0.24144
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00149	0.00748	0.13883
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00135	0.00732	0.13865

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)	0.00700	0.01948	0.24638
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00703	0.01957	0.24643
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00552	0.01243	0.14322
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00558	0.01253	0.14325

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00387	0.00597	1.57163
sky130_osu_sc_15T_hs__tnbufi_l	0.00308	0.00444	0.91301

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.04960	0.06062
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.04229	0.05114

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)	0.02295	0.63681	10.13360
	OE->Y (RR)	0.01839	0.32937	5.34325
	OE->Y (FR)	0.03107	0.63410	9.92056
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.03166	0.74429	10.27210
	OE->Y (RR)	0.01794	0.32933	5.34325
	OE->Y (FR)	0.03913	0.73710	9.93139

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)	0.01748	0.41156	6.50341
	OE->Y (RF)	0.01820	0.32936	5.34325
	OE->Y (FF)	0.03050	0.41003	5.84377
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.01740	0.37281	4.94400
	OE->Y (RF)	0.01780	0.32932	5.34320
	OE->Y (FF)	0.03522	0.39591	4.73841

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	0.00601	0.00932	0.05337
	OE	0.00000	0.00000	0.00000
	OE	0.01489	0.02740	0.25055
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00467	0.00651	0.03644
	OE	0.00000	0.00000	0.00000
	OE	0.01114	0.01804	0.14641

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	-0.00130	0.00079	0.02729
	OE	0.00000	0.00000	0.00000
	OE	0.01300	0.02404	0.20625
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00086	0.00003	0.01562
	OE	0.00000	0.00000	0.00000
	OE	0.00968	0.01620	0.12490

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)	-0.00257	-0.00261	-0.00258
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00224	-0.00227	-0.00225
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00177	-0.00178	-0.00178
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00156	-0.00158	-0.00157

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)	0.00257	0.00261	0.00258
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00227	0.00230	0.00227
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00177	0.00178	0.00178
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00158	0.00159	0.00157

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)	-0.00457	0.00699	0.23529
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00453	0.00707	0.23528
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00292	0.00329	0.13460
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00289	0.00321	0.13468

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)	0.01122	0.02469	0.25258
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01110	0.02423	0.25248
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00839	0.01591	0.14730
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00831	0.01565	0.14722

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00769	0.00679	1.61533

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.10026	0.17579

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	0.05562	0.44665	5.91126
	A->Y (FR)	!B	0.02862	0.64073	10.17850
	B->Y (RR)	A	0.04400	0.43807	6.04322
	B->Y (FR)	!A	0.04087	0.64634	10.07450

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	0.05282	0.45420	6.20730
	A->Y (RF)	!B	0.02399	0.40912	6.39947
	B->Y (FF)	A	0.04583	0.44871	6.22811
	B->Y (RF)	!A	0.03074	0.41768	6.38015

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	0.00577	0.01514	0.21252
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01412	0.02903	0.29168
	B	A	0.00000	0.00000	0.00000
	B	A	0.00168	0.01341	0.24530
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01561	0.02781	0.26888

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	0.01818	0.02951	0.25161
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00386	0.01528	0.25720
	B	A	0.00000	0.00000	0.00000
	B	A	0.01649	0.02829	0.25888
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00528	0.01650	0.25378

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.00771	0.00684	1.59388

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.10026	0.14791

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	0.05306	0.44451	6.05114
	A->Y (FR)	B	0.03910	0.65554	10.24570
	B->Y (RR)	!A	0.04679	0.44661	6.11128
	B->Y (FR)	A	0.04143	0.65479	10.18470

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	0.04697	0.44881	5.97842
	A->Y (RF)	B	0.02499	0.42646	6.55031
	B->Y (FF)	!A	0.04381	0.44906	6.20223
	B->Y (RF)	A	0.03095	0.41695	6.32164

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	0.01715	0.02956	0.27559
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00245	0.01151	0.23068
	B	A	0.00000	0.00000	0.00000
	B	A	0.01746	0.02959	0.26586
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00144	0.01241	0.24151

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	0.00323	0.01468	0.26094
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01880	0.02911	0.21003
	B	A	0.00000	0.00000	0.00000
	B	A	0.00331	0.01396	0.24573
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01684	0.02872	0.25617

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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	0.97083
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	464756.00000	929512.00000
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
	-0.00139	0.11965	1.87788

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
	8.08856	7.73839	2.22913