sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs Library

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

SKY130_OSU_SC_15T_HS__ADDFx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.01341	0.01342	0.01067	0.30761	0.11042	0.30169
sky130_osu_sc_15T_hs__addf_l	0.01343	0.01343	0.01069	0.18782	0.11123	0.18686

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.00025	0.00026
sky130_osu_sc_15T_hs__addf_l	0.00000	0.00025	0.00027

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)	0.40017	2.42103	18.60510
	B->CO (RR)	0.38132	2.35819	18.38060
	CI->CO (RR)	0.38603	2.42469	18.89170
	CON->CO (FR)	0.11433	1.42450	13.37230
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.44211	2.44599	16.25930
	B->CO (RR)	0.42339	2.40292	16.27990
	CI->CO (RR)	0.42785	2.45044	16.59620
	CON->CO (FR)	0.16743	1.68165	13.74970

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)	1.33187	5.79368	40.06050
	B->CO (FF)	1.24817	5.62984	39.39530
	CI->CO (FF)	1.20941	5.57519	39.33700
	CON->CO (RF)	0.03894	0.64782	6.83895
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	1.28859	4.80821	28.20200
	B->CO (FF)	1.20381	4.66413	27.76300
	CI->CO (FF)	1.16568	4.58804	27.48200
	CON->CO (RF)	0.04021	0.63211	6.30482

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)	0.94976	2.64187	14.27500
	B->CON (FR)	0.87868	2.54077	14.06980
	CI->CON (FR)	0.82671	2.42501	13.58990
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.90311	2.60015	14.27660
	B->CON (FR)	0.83324	2.50015	14.07220
	CI->CON (FR)	0.77996	2.38330	13.59210

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)	0.15830	0.72457	5.67471
	B->CON (RF)	0.14844	0.72314	5.76988
	CI->CON (RF)	0.14407	0.73077	5.87795
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.15190	0.71917	5.67809
	B->CON (RF)	0.14241	0.71811	5.77268
	CI->CON (RF)	0.13766	0.72540	5.88086

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)	1.74314	6.27296	38.74060
	B->S (-R)	1.67552	6.16948	38.37400
	CI->S (-R)	1.61370	6.04045	37.97930
	CON->S (RR)	0.25286	1.48104	10.13460
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	1.69200	5.57612	30.07090
	B->S (-R)	1.62655	5.49218	29.82290
	CI->S (-R)	1.56175	5.34461	29.31430
	CON->S (RR)	0.29352	1.70486	10.26320

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)	0.94784	2.39229	13.41990
	B->S (-F)	0.97315	2.34819	13.24680
	CI->S (-F)	0.93243	2.39175	13.69910
	CON->S (FF)	0.49659	1.25651	8.40361
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.87378	2.08153	10.71700
	B->S (-F)	0.90235	2.05440	10.71500
	CI->S (-F)	0.85844	2.08138	11.03030
	CON->S (FF)	0.45613	1.18330	7.89109

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	0.00157	0.00155	0.00148
	B	0.00182	0.00186	0.00181
	CI	0.00200	0.00203	0.00201
sky130_osu_sc_15T_hs__addf_l	A	0.00123	0.00118	0.00111
	B	0.00149	0.00149	0.00140
	CI	0.00166	0.00168	0.00162

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00589	0.00587	0.00584
	B	0.00578	0.00582	0.00578
	CI	0.00507	0.00519	0.00515
sky130_osu_sc_15T_hs__addf_l	A	0.00556	0.00554	0.00550
	B	0.00546	0.00548	0.00543
	CI	0.00474	0.00484	0.00480

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00588	0.00587	0.00574
	B	0.00578	0.00580	0.00574
	CI	0.00506	0.00515	0.00513
sky130_osu_sc_15T_hs__addf_l	A	0.00556	0.00554	0.00541
	B	0.00546	0.00547	0.00541
	CI	0.00474	0.00482	0.00480

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00155	0.00153	0.00143
	B	0.00180	0.00183	0.00171
	CI	0.00199	0.00203	0.00197
sky130_osu_sc_15T_hs__addf_l	A	0.00121	0.00116	0.00102
	B	0.00146	0.00147	0.00131
	CI	0.00165	0.00167	0.00157

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00589	0.00587	0.00584
	B	0.00579	0.00583	0.00577
	CI	0.00507	0.00520	0.00516
sky130_osu_sc_15T_hs__addf_l	A	0.00557	0.00555	0.00552
	B	0.00547	0.00549	0.00544
	CI	0.00474	0.00485	0.00481

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01191	0.01196	0.01188
	B	0.01100	0.01093	0.01076
	CI	0.00960	0.00964	0.00959
sky130_osu_sc_15T_hs__addf_l	A	0.01147	0.01145	0.01136
	B	0.01054	0.01044	0.01026
	CI	0.00917	0.00916	0.00909

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00694	0.00757	0.30473	0.11683	0.30764
sky130_osu_sc_15T_hs__addh_l	0.00707	0.00781	0.19049	0.11745	0.19167

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.00020	0.00023
sky130_osu_sc_15T_hs__addh_l	0.00000	0.00020	0.00023

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)	0.32004	1.51527	9.98977
	B->CO (RR)	0.32394	1.50964	10.10460
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.30950	1.67028	9.91120
	B->CO (RR)	0.31410	1.66659	10.05000

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)	0.38650	1.09446	7.93582
	B->CO (FF)	0.40292	1.11267	7.97994
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.37225	1.06775	7.65595
	B->CO (FF)	0.39672	1.09383	7.72377

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	0.48761	1.29238	6.01890
	A->CON (FR)	!B	0.61765	2.22445	13.57050
	B->CON (RR)	A	0.49164	1.28514	6.13488
	B->CON (FR)	!A	0.70651	2.40026	14.23720
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.40097	1.19034	5.63112
	A->CON (FR)	!B	0.56991	2.17981	13.55990
	B->CON (RR)	A	0.40589	1.18442	5.77481
	B->CON (FR)	!A	0.65834	2.35527	14.22530

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	0.47429	1.12692	7.53757
	A->CON (RF)	!B	0.08009	0.61301	5.28661
	B->CON (FF)	A	0.48882	1.15025	7.62328
	B->CON (RF)	!A	0.08773	0.61764	5.22582
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.43881	1.09045	7.44377
	A->CON (RF)	!B	0.07540	0.61107	5.28572
	B->CON (FF)	A	0.46141	1.12183	7.55486
	B->CON (RF)	!A	0.08318	0.61311	5.22478

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	0.26582	2.05888	16.90230
	A->S (FR)	B	0.67377	2.55997	18.28790
	B->S (RR)	!A	0.27285	2.03640	16.62100
	B->S (FR)	A	0.69152	2.61215	18.61520
	CON->S (FR)	-	0.11751	1.43808	13.46020
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.30086	2.13230	15.30570
	A->S (FR)	B	0.67805	2.60901	16.69430
	B->S (RR)	!A	0.30915	2.11948	15.10790
	B->S (FR)	A	0.70327	2.65922	16.93610
	CON->S (FR)	-	0.16423	1.67921	13.81450

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	0.93180	5.15103	38.23240
	A->S (RF)	B	0.66853	2.74876	17.74740
	B->S (FF)	!A	1.02084	5.32866	38.93900
	B->S (RF)	A	0.67264	2.74173	17.86510
	CON->S (RF)	-	0.03826	0.64821	6.86077
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.87435	4.19838	27.00160
	A->S (RF)	B	0.57465	2.24580	12.35510
	B->S (FF)	!A	0.96418	4.38352	27.68250
	B->S (RF)	A	0.57954	2.23941	12.49090
	CON->S (RF)	-	0.03815	0.62895	6.31429

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	0.00283	0.00275	0.00264
	B	0.00000	0.00000	0.00000
	B	0.00268	0.00260	0.00250
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00245	0.00234	0.00223
	B	0.00000	0.00000	0.00000
	B	0.00230	0.00220	0.00210

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	0.00431	0.00424	0.00400
	B	0.00000	0.00000	0.00000
	B	0.00445	0.00447	0.00424
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00398	0.00389	0.00367
	B	0.00000	0.00000	0.00000
	B	0.00418	0.00417	0.00398

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	0.00282	0.00274	0.00261
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00378	0.00373	0.00370
	B	A	0.00000	0.00000	0.00000
	B	A	0.00267	0.00259	0.00247
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00404	0.00397	0.00394
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00244	0.00233	0.00222
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00358	0.00352	0.00350
	B	A	0.00000	0.00000	0.00000
	B	A	0.00229	0.00219	0.00208
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00382	0.00375	0.00372

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	0.00431	0.00426	0.00409
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00063	0.00064	0.00060
	B	A	0.00000	0.00000	0.00000
	B	A	0.00445	0.00447	0.00432
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00100	0.00097	0.00092
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00398	0.00390	0.00372
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00030	0.00030	0.00019
	B	A	0.00000	0.00000	0.00000
	B	A	0.00418	0.00417	0.00399
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00069	0.00066	0.00053

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	0.00431	0.00425	0.00419
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00063	0.00065	0.00057
	B	A	0.00000	0.00000	0.00000
	B	A	0.00446	0.00447	0.00442
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00102	0.00100	0.00091
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00399	0.00390	0.00384
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00031	0.00031	0.00012
	B	A	0.00000	0.00000	0.00000
	B	A	0.00419	0.00417	0.00413
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00070	0.00067	0.00061

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	0.00282	0.00275	0.00265
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00377	0.00377	0.00373
	B	A	0.00000	0.00000	0.00000
	B	A	0.00267	0.00260	0.00251
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00403	0.00400	0.00398
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00244	0.00233	0.00222
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00358	0.00356	0.00352
	B	A	0.00000	0.00000	0.00000
	B	A	0.00229	0.00219	0.00210
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00382	0.00376	0.00374

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00354	0.00363	0.30627
sky130_osu_sc_15T_hs__and2_2	0.00353	0.00362	0.59879
sky130_osu_sc_15T_hs__and2_4	0.00354	0.00363	1.19822
sky130_osu_sc_15T_hs__and2_6	0.00357	0.00363	1.74720
sky130_osu_sc_15T_hs__and2_8	0.00354	0.00363	2.34299
sky130_osu_sc_15T_hs__and2_l	0.00279	0.00289	0.18365

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.00008	0.00011
sky130_osu_sc_15T_hs__and2_2	0.00000	0.00012	0.00014
sky130_osu_sc_15T_hs__and2_4	0.00000	0.00019	0.00021
sky130_osu_sc_15T_hs__and2_6	0.00000	0.00026	0.00028
sky130_osu_sc_15T_hs__and2_8	0.00000	0.00033	0.00035
sky130_osu_sc_15T_hs__and2_l	0.00000	0.00009	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.23586	1.40051	9.54999
	B->Y (RR)	0.24338	1.40178	9.73132
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.25085	1.24929	9.73797
	B->Y (RR)	0.25823	1.24625	9.86719
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.35201	1.24952	10.39920
	B->Y (RR)	0.35948	1.24272	10.46900
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.45003	1.29791	10.66270
	B->Y (RR)	0.45740	1.29161	10.69530
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.54551	1.37728	11.11020
	B->Y (RR)	0.55297	1.37365	11.11170
sky130_osu_sc_15T_hs__and2_l	A->Y (RR)	0.28789	1.64320	9.76657
	B->Y (RR)	0.29589	1.63945	9.93024

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)	0.27730	1.00748	7.90031
	B->Y (FF)	0.29728	1.02752	7.98742
sky130_osu_sc_15T_hs__and2_2	A->Y (FF)	0.35278	1.05504	8.15630
	B->Y (FF)	0.37255	1.07508	8.21880
sky130_osu_sc_15T_hs__and2_4	A->Y (FF)	0.53301	1.25170	8.78549
	B->Y (FF)	0.55236	1.27219	8.83548
sky130_osu_sc_15T_hs__and2_6	A->Y (FF)	0.71464	1.44605	9.15694
	B->Y (FF)	0.73301	1.46611	9.19184
sky130_osu_sc_15T_hs__and2_8	A->Y (FF)	0.88795	1.62664	9.48728
	B->Y (FF)	0.90543	1.65615	9.51850
sky130_osu_sc_15T_hs__and2_1	A->Y (FF)	0.34254	1.05119	7.67409
	B->Y (FF)	0.37549	1.08456	7.77712

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	0.00214	0.00200	0.00188
	B	0.00000	0.00000	0.00000
	B	0.00217	0.00203	0.00192
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00406	0.00405	0.00394
	B	0.00000	0.00000	0.00000
	B	0.00410	0.00411	0.00410
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00834	0.00843	0.00850
	B	0.00000	0.00000	0.00000
	B	0.00838	0.00855	0.00860
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01261	0.01292	0.01318
	B	0.00000	0.00000	0.00000
	B	0.01266	0.01305	0.01326
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01684	0.01732	0.01761
	B	0.00000	0.00000	0.00000
	B	0.01687	0.01743	0.01769
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00161	0.00153	0.00143
	B	0.00000	0.00000	0.00000
	B	0.00165	0.00157	0.00166

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	0.00513	0.00502	0.00493
	B	0.00000	0.00000	0.00000
	B	0.00565	0.00553	0.00545
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00637	0.00645	0.00638
	B	0.00000	0.00000	0.00000
	B	0.00689	0.00696	0.00688
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00961	0.01010	0.01005
	B	0.00000	0.00000	0.00000
	B	0.01013	0.01060	0.01054
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01290	0.01376	0.01382
	B	0.00000	0.00000	0.00000
	B	0.01341	0.01423	0.01428
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01601	0.01717	0.01743
	B	0.00000	0.00000	0.00000
	B	0.01654	0.01768	0.01788
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00405	0.00393	0.00386
	B	0.00000	0.00000	0.00000
	B	0.00448	0.00436	0.00428

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)	-0.00183	-0.00184	-0.00184
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00182	-0.00184	-0.00184
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00183	-0.00184	-0.00184
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00184	-0.00186	-0.00186
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00183	-0.00184	-0.00184
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00130	-0.00130	-0.00131

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)	0.00184	0.00186	0.00184
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00184	0.00185	0.00184
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00184	0.00185	0.00184
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00186	0.00186	0.00186
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00184	0.00185	0.00184
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00130	0.00132	0.00131

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)	-0.00174	-0.00176	-0.00175
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00174	-0.00175	-0.00175
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00174	-0.00175	-0.00175
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00174	-0.00174	-0.00175
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00174	-0.00175	-0.00175
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00123	-0.00123	-0.00123

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)	0.00174	0.00177	0.00175
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00174	0.00176	0.00175
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00175	0.00176	0.00175
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00175	0.00176	0.00175
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00175	0.00176	0.00175
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00123	0.00125	0.00124

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00325	0.00344	0.00352	0.11647

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.00005	0.00009

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)	0.47604	2.23220	14.28130
	A1->Y (FR)	0.41554	2.13538	14.05750
	B0->Y (FR)	0.38210	2.02327	13.59610

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)	0.07558	0.64508	5.63849
	A1->Y (RF)	0.06885	0.64972	5.73896
	B0->Y (RF)	0.04575	0.58615	5.48127

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	0.00384	0.00378	0.00376
	A1	0.00000	0.00000	0.00000
	A1	0.00332	0.00325	0.00322
	B0	0.00331	0.00310	0.00317

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	0.00050	0.00042	0.00032
	A1	0.00000	0.00000	0.00000
	A1	0.00051	0.00043	0.00033
	B0	-0.00038	-0.00038	-0.00044

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)	-0.00152	-0.00156	-0.00155
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00160	-0.00161	-0.00160
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00160	-0.00161	-0.00160

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)	0.00155	0.00156	0.00155
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00160	0.00162	0.00161
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00160	0.00161	0.00161

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)	-0.00150	-0.00154	-0.00152
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00157	-0.00157	-0.00157
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00170	-0.00171	-0.00171

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)	0.00151	0.00154	0.00152
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00157	0.00159	0.00158
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00170	0.00172	0.00171

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)	-0.00105	-0.00105	-0.00105

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)	0.00114	0.00115	0.00107

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00325	0.00341	0.00360	0.00339	0.11701

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.00008	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi22_l	A0->Y (FR)	0.59144	2.34289	14.36840
	A1->Y (FR)	0.53624	2.27287	14.26300
	B0->Y (FR)	0.39597	2.02340	13.53200
	B1->Y (FR)	0.45008	2.09148	13.64740

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)	0.09162	0.66410	5.67710
	A1->Y (RF)	0.08507	0.66935	5.78259
	B0->Y (RF)	0.06446	0.64178	5.72430
	B1->Y (RF)	0.07029	0.63488	5.62331

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	0.00463	0.00458	0.00450
	A1	0.00412	0.00404	0.00395
	B0	0.00351	0.00330	0.00334
	B1	0.00398	0.00378	0.00386

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00121	0.00115	0.00102
	A1	0.00122	0.00116	0.00103
	B0	-0.00021	-0.00022	-0.00027
	B1	-0.00022	-0.00022	-0.00027

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)	-0.00153	-0.00156	-0.00155
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00160	-0.00161	-0.00160
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00160	-0.00161	-0.00160
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00160	-0.00161	-0.00160

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)	0.00155	0.00156	0.00155
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00160	0.00161	0.00161
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00160	0.00161	0.00161
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00160	0.00161	0.00161

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)	-0.00151	-0.00153	-0.00152
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00157	-0.00158	-0.00157
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00169	-0.00171	-0.00171
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00169	-0.00171	-0.00171

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)	0.00151	0.00153	0.00152
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00157	0.00159	0.00158
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00170	0.00172	0.00171
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00170	0.00172	0.00171

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)	-0.00106	-0.00106	-0.00105
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00105	-0.00106	-0.00105
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00176	-0.00178	-0.00178
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00176	-0.00178	-0.00178

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)	0.00114	0.00115	0.00107
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00105	0.00106	0.00105
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00177	0.00180	0.00178
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00177	0.00179	0.00178

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)	-0.00105	-0.00107	-0.00106
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00105	-0.00106	-0.00106
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00163	-0.00164	-0.00164
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00163	-0.00164	-0.00164

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)	0.00115	0.00115	0.00108
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00106	0.00106	0.00106
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00164	0.00164	0.00164
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00164	0.00164	0.00164

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00366	0.30361
sky130_osu_sc_15T_hs__buf_2	0.00366	0.59584
sky130_osu_sc_15T_hs__buf_4	0.00365	1.17570
sky130_osu_sc_15T_hs__buf_6	0.00090	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00366	2.35965
sky130_osu_sc_15T_hs__buf_l	0.00293	0.18776

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.00007	0.00007
sky130_osu_sc_15T_hs__buf_2	0.00000	0.00011	0.00011
sky130_osu_sc_15T_hs__buf_4	0.00000	0.00018	0.00018
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	0.00032	0.00032
sky130_osu_sc_15T_hs__buf_l	0.00000	0.00007	0.00007

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)	0.17984	1.33791	9.42039
sky130_osu_sc_15T_hs__buf_2	A->Y (RR)	0.17777	1.16964	9.56517
sky130_osu_sc_15T_hs__buf_4	A->Y (RR)	0.23413	1.12080	10.03300
sky130_osu_sc_15T_hs__buf_8	A->Y (RR)	0.35175	1.16820	10.77090
sky130_osu_sc_15T_hs__buf_l	A->Y (RR)	0.22816	1.58489	9.76982

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)	0.26439	0.99064	7.83221
sky130_osu_sc_15T_hs__buf_2	A->Y (FF)	0.34208	1.04624	8.16632
sky130_osu_sc_15T_hs__buf_4	A->Y (FF)	0.52138	1.23496	8.72975
sky130_osu_sc_15T_hs__buf_8	A->Y (FF)	0.87858	1.62497	9.48016
sky130_osu_sc_15T_hs__buf_l	A->Y (FF)	0.33174	1.03956	7.65197

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	0.00201	0.00182	0.00169
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00393	0.00385	0.00373
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00823	0.00836	0.00828
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01674	0.01714	0.01740
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00159	0.00146	0.00134

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	0.00506	0.00493	0.00485
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00630	0.00634	0.00627
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00952	0.00997	0.00992
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01597	0.01710	0.01730
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00402	0.00389	0.00382

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
	-0.00035	-0.00036	-0.00035

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
	0.00035	0.00036	0.00035

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00335	0.00341	0.01069	0.28929	0.29398
sky130_osu_sc_15T_hs__dffr_l	0.00335	0.00341	0.01069	0.18570	0.18638

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.00040	0.00044
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.00040	0.00044

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)	1.76932	3.45498	14.32250
	QN->Q (FR)	0.13041	1.52573	13.97240
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	1.69994	3.61298	14.45740
	QN->Q (FR)	0.16801	1.72156	14.09870

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)	1.36179	3.40482	17.74010
	QN->Q (RF)	0.04258	0.67843	7.22665
	RN->Q (FF)	0.89277	3.09098	20.58720
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	1.43250	3.80232	17.99070
	QN->Q (RF)	0.04768	0.70220	6.98092
	RN->Q (FF)	0.96620	3.49292	20.82930

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)	1.20894	2.39133	10.68960
	RN->QN (FR)	0.73799	2.07719	13.54150
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	1.24582	2.61292	10.95330
	RN->QN (FR)	0.77690	2.30057	13.79470

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)**	1.52148	2.20822	5.96040
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	1.41636	2.10460	5.73382

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)	-0.15173	-0.18422	-0.93448
	setup	CK (R)	1.37097	1.36223	2.01598
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.15090	-0.18385	-0.93668
	setup	CK (R)	1.37512	1.36915	2.02839

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)	-0.71259	-1.12365	-12.51870
	setup	CK (R)	0.79805	1.19579	12.64860
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.71112	-1.12463	-12.51820
	setup	CK (R)	0.79705	1.19536	12.64840

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)	-0.15173	-0.18422	-0.93448
	setup	CK (R)	1.37097	1.36223	2.01598
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.15090	-0.18385	-0.93668
	setup	CK (R)	1.37512	1.36915	2.02839

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)	-0.71259	-1.12365	-12.51870
	setup	CK (R)	0.79805	1.19579	12.64860
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.71112	-1.12463	-12.51820
	setup	CK (R)	0.79705	1.19536	12.64840

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)	1.30713	1.30041	1.76786
	removal	CK (R)	-0.21449	-0.25033	-0.17447
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	1.30870	1.30802	1.77972
	removal	CK (R)	-0.21449	-0.25033	-0.16957

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)	1.30713	1.30041	1.76786
	removal	CK (R)	-0.21449	-0.25033	-0.17447
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	1.30870	1.30802	1.77972
	removal	CK (R)	-0.21449	-0.25033	-0.16957

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 ()	0.57362	0.92646	13.33370
	min_pulse_width	RN ()	0.57009	0.92646	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.57881	0.91777	13.33370
	min_pulse_width	RN ()	0.57532	0.91777	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 ()	0.83243	0.90475	13.33370
	min_pulse_width	CK ()	0.77382	0.66589	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.73328	0.81355	13.33370
	min_pulse_width	CK ()	0.75687	0.65503	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 ()	1.73409	1.79285	13.33370
	min_pulse_width	CK ()	0.66441	1.00029	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	1.73901	1.80153	13.33370
	min_pulse_width	CK ()	0.66059	1.00029	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	0.00488	0.00463	0.00304
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00422	0.00399	0.00322

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	0.00543	0.00528	0.00478
	RN	-0.00072	-0.01537	-0.11849
	RN	0.01211	0.01203	0.01138
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00475	0.00462	0.00432
	RN	-0.00072	-0.01178	-0.07606
	RN	0.01143	0.01135	0.01093

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	0.00543	0.00529	0.00478
	RN	-0.00072	-0.01552	-0.12041
	RN	0.01211	0.01203	0.01138
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00476	0.00462	0.00433
	RN	-0.00072	-0.01181	-0.07634
	RN	0.01143	0.01136	0.01093

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	0.00486	0.00461	0.00283
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00420	0.00397	0.00301

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	-0.00151	-0.00154	-0.00154
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00519	0.00507	0.00487
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00226	0.00214	0.00199
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00151	-0.00154	-0.00154
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00519	0.00506	0.00487
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00226	0.00214	0.00199

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	0.00153	0.00155	0.00154
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00892	0.00883	0.00869
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00400	0.00389	0.00388
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00153	0.00155	0.00154
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00892	0.00883	0.00870
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00400	0.00389	0.00388

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)	0.00201	0.00186	0.00172
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00524	0.00500	0.00475
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)	0.00201	0.00186	0.00172
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00524	0.00500	0.00475

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)	0.00450	0.00433	0.00429
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00955	0.00938	0.00916
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)	0.00450	0.00433	0.00430
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00955	0.00938	0.00916

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)	-0.00032	-0.00051	-0.00069
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00233	0.00201	0.00163
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00050	-0.00068	-0.00087
sky130_osu_sc_15T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00032	-0.00051	-0.00069
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00233	0.00204	0.00163
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00050	-0.00065	-0.00087

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)	0.00772	0.00752	0.00741
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01464	0.01441	0.01392
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01140	0.01125	0.01100
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01493	0.01461	0.01429
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00811	0.00790	0.00780
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00772	0.00752	0.00741
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01464	0.01440	0.01392
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01140	0.01125	0.01100
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01493	0.01461	0.01429
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00811	0.00790	0.00780

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00330	0.00341	0.00741	0.01094	0.30792	0.30627
sky130_osu_sc_15T_hs__dffsr_l	0.00330	0.00341	0.00741	0.01094	0.18807	0.18449

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.00042	0.00048
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.00042	0.00048

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)	1.56667	3.25288	14.58760
	QN->Q (FR)	0.11890	1.47163	13.77420
	RN->Q (RR)	1.30689	3.00384	14.42380
	SN->Q (FR)	1.32501	3.16765	18.15030
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	1.56178	3.47829	14.57460
	QN->Q (FR)	0.16806	1.73986	14.18230
	RN->Q (RR)	1.30396	3.22994	14.41520
	SN->Q (FR)	1.31635	3.38646	18.12300

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)	1.49052	3.55646	18.28830
	QN->Q (RF)	0.04212	0.68735	7.37755
	RN->Q (FF)	0.95359	3.16305	21.13070
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	1.58246	3.98535	18.32780
	QN->Q (RF)	0.04762	0.70238	7.00469
	RN->Q (FF)	1.04591	3.59243	21.16690

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)	1.34027	2.52008	10.81910
	RN->QN (FR)	0.80454	2.12769	13.66710
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	1.39235	2.76685	11.04910
	RN->QN (FR)	0.85713	2.37603	13.88740

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)	1.35164	2.02915	5.96263
	RN->QN (RF)	1.08609	1.78982	5.80732
	SN->QN (FF)	1.10415	1.95339	9.52907
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	1.29720	1.97334	5.71506
	RN->QN (RF)	1.03222	1.73460	5.56176
	SN->QN (FF)	1.05135	1.89890	9.26241

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)	-0.17289	-0.19622	-1.04649
	setup	CK (R)	1.20567	1.18790	1.79208
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.17026	-0.19655	-1.05600
	setup	CK (R)	1.20564	1.18822	1.78214

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)	-0.81647	-1.22142	-12.77610
	setup	CK (R)	0.91522	1.28395	12.86600
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.81303	-1.21826	-12.77630
	setup	CK (R)	0.91092	1.28361	12.86590

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)	-0.17289	-0.19622	-1.04649
	setup	CK (R)	1.20567	1.18790	1.79208
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.17026	-0.19655	-1.05600
	setup	CK (R)	1.20564	1.18822	1.78214

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)	-0.81647	-1.22142	-12.77610
	setup	CK (R)	0.91522	1.28395	12.86600
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.81303	-1.21826	-12.77630
	setup	CK (R)	0.91092	1.28361	12.86590

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)	1.04459	1.03808	1.44814
	removal	CK (R)	-0.09924	-0.12308	-0.12548
	hold	SN (R)	-1.07857	-1.34561	-9.95678
	setup	SN (R)	1.11811	1.40311	10.83370
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	1.04705	1.03738	1.44881
	removal	CK (R)	-0.10027	-0.12255	-0.12451
	hold	SN (R)	-0.99795	-1.27169	-9.87106
	setup	SN (R)	1.10575	1.36498	10.74760

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)	1.04459	1.03808	1.44814
	removal	CK (R)	-0.09924	-0.12308	-0.12548
	hold	SN (R)	-1.09172	-1.34942	-9.95678
	hold	SN (R)	-1.07857	-1.34561	-9.98372
	setup	SN (R)	1.11811	1.39424	10.81310
	setup	SN (R)	1.09900	1.40311	10.83370
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	1.04705	1.03738	1.44881
	removal	CK (R)	-0.10027	-0.12255	-0.12451
	hold	SN (R)	-1.04782	-1.28944	-9.87106
	hold	SN (R)	-0.99795	-1.27169	-9.89206
	setup	SN (R)	1.10575	1.36498	10.70970
	setup	SN (R)	1.01892	1.34048	10.74760

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 ()	0.66281	0.98074	13.33370
	min_pulse_width	RN ()	0.68151	0.98074	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.69714	0.97640	13.33370
	min_pulse_width	RN ()	0.69189	0.97423	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)	0.07432	0.09180	0.68593
	removal	CK (R)	-0.01249	-0.04164	-0.50222
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.07233	0.08992	0.68296
	removal	CK (R)	-0.01249	-0.04164	-0.50518

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)	0.07432	0.09180	0.68593
	removal	CK (R)	-0.01249	-0.04164	-0.50222
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.07233	0.08992	0.68296
	removal	CK (R)	-0.01249	-0.04164	-0.50518

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 ()	1.11625	1.46931	13.73410
	min_pulse_width	SN ()	1.11670	1.47365	13.73740
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	1.10072	1.41285	13.56480
	min_pulse_width	SN ()	1.03671	1.41068	13.61040

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 ()	0.68150	0.75275	13.33370
	min_pulse_width	CK ()	0.84157	0.73538	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.62582	0.70281	13.33370
	min_pulse_width	CK ()	0.83099	0.72452	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 ()	1.57449	1.62131	13.33370
	min_pulse_width	CK ()	0.78367	1.09583	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	1.57136	1.62131	13.33370
	min_pulse_width	CK ()	0.78004	1.09366	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	0.00582	0.00558	0.00385
	RN	0.01111	0.01091	0.00924
	SN	-0.00072	-0.01596	-0.12612
	SN	0.01189	0.01172	0.01016
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00524	0.00503	0.00423
	RN	0.01052	0.01036	0.00960
	SN	-0.00072	-0.01187	-0.07703
	SN	0.01130	0.01116	0.01049

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	0.00614	0.00605	0.00571
	RN	-0.00072	-0.01596	-0.12612
	RN	0.01275	0.01271	0.01224
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00553	0.00543	0.00513
	RN	-0.00072	-0.01187	-0.07703
	RN	0.01213	0.01207	0.01164

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	0.00615	0.00607	0.00573
	RN	-0.00072	-0.01591	-0.12545
	RN	0.01275	0.01271	0.01222
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00554	0.00544	0.00516
	RN	-0.00072	-0.01174	-0.07557
	RN	0.01214	0.01207	0.01163

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	0.00579	0.00555	0.00367
	RN	0.01108	0.01088	0.00904
	SN	-0.00072	-0.01591	-0.12544
	SN	0.01186	0.01169	0.00991
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00520	0.00500	0.00405
	RN	0.01048	0.01032	0.00941
	SN	-0.00072	-0.01174	-0.07556
	SN	0.01126	0.01113	0.01027

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	-0.00151	-0.00154	-0.00154
	(!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)	0.00660	0.00648	0.00633
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00260	0.00250	0.00234
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00260	0.00249	0.00233
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00263	0.00253	0.00237
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00151	-0.00154	-0.00154
	(!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)	0.00660	0.00649	0.00633
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00260	0.00250	0.00234
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00260	0.00249	0.00233
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00263	0.00253	0.00237

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	0.00153	0.00156	0.00154
	(!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)	0.01017	0.01010	0.00984
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00438	0.00430	0.00427
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00440	0.00430	0.00429
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00435	0.00426	0.00425
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00153	0.00156	0.00154
	(!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)	0.01017	0.01009	0.00983
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00437	0.00430	0.00426
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00439	0.00430	0.00428
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00435	0.00425	0.00424

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)	0.00225	0.00211	0.00188
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00654	0.00631	0.00598
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)	0.00225	0.00212	0.00189
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00655	0.00631	0.00599

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)	0.00499	0.00482	0.00478
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01023	0.01005	0.00980
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)	0.00498	0.00481	0.00477
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01022	0.01004	0.00979

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)	-0.00361	-0.00364	-0.00364
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00387	-0.00392	-0.00390
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00368	-0.00372	-0.00370
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00187	0.00176	0.00151
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)	-0.00362	-0.00364	-0.00364
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00386	-0.00391	-0.00389
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00367	-0.00372	-0.00370
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00187	0.00176	0.00151

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)	0.00362	0.00366	0.00364
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00388	0.00393	0.00390
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00368	0.00374	0.00370
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00734	0.00722	0.00721
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)	0.00362	0.00366	0.00364
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00387	0.00392	0.00389
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00368	0.00374	0.00370
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00734	0.00721	0.00721

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)	-0.00032	-0.00052	-0.00069
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00282	0.00254	0.00215
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00278	0.00250	0.00212
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00036	-0.00058	-0.00077
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00244	0.00212	0.00176
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00032	-0.00052	-0.00069
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00282	0.00253	0.00215
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00278	0.00250	0.00212
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00036	-0.00058	-0.00077
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00244	0.00212	0.00176

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)	0.01617	0.01596	0.01547
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00775	0.00754	0.00744
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01163	0.01151	0.01125
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01164	0.01153	0.01128
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01614	0.01581	0.01536
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00803	0.00783	0.00771
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00984	0.00946	0.00932
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01617	0.01596	0.01547
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00775	0.00754	0.00744
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01163	0.01151	0.01125
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01164	0.01153	0.01128
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01613	0.01580	0.01536
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00803	0.00783	0.00771
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00984	0.00945	0.00931

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00333	0.00597	0.01065	0.29125	0.29574
sky130_osu_sc_15T_hs__dffs_l	0.00333	0.00597	0.01064	0.18433	0.18460

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.00037	0.00043
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.00037	0.00043

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)	0.98788	2.60876	13.54740
	QN->Q (FR)	0.13078	1.52506	13.98990
	SN->Q (FR)	0.87769	2.64060	17.22450
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.98966	2.83772	13.64250
	QN->Q (FR)	0.16815	1.72434	13.96670
	SN->Q (FR)	0.87126	2.87325	17.28090

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)	1.47835	3.52127	17.91760
	QN->Q (RF)	0.04237	0.67757	7.22653
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	1.53848	3.90232	17.98120
	QN->Q (RF)	0.04753	0.69960	6.95504

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)	1.32040	2.50910	10.83730
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	1.34841	2.71155	10.98950

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)	0.79285	1.41094	5.15610
	SN->QN (FF)	0.67295	1.45611	8.84012
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.75254	1.37711	4.99220
	SN->QN (FF)	0.62853	1.41825	8.63819

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)	-0.10707	-0.13595	-0.87443
	setup	CK (R)	0.70449	0.69389	1.42687
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.10854	-0.13739	-0.87657
	setup	CK (R)	0.70620	0.69414	1.42641

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)	-0.73079	-1.14453	-12.58840
	setup	CK (R)	0.88657	1.23031	12.72370
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.72852	-1.14422	-12.58820
	setup	CK (R)	0.88603	1.23006	12.72370

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)	-0.10707	-0.13595	-0.87443
	setup	CK (R)	0.70449	0.69389	1.42687
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.10854	-0.13739	-0.87657
	setup	CK (R)	0.70620	0.69414	1.42641

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)	-0.73079	-1.14453	-12.58840
	setup	CK (R)	0.88657	1.23031	12.72370
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.72852	-1.14422	-12.58820
	setup	CK (R)	0.88603	1.23006	12.72370

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)	0.12956	0.14600	0.93378
	removal	CK (R)	-0.03608	-0.07413	-0.68240
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.12588	0.14307	0.93113
	removal	CK (R)	-0.03608	-0.07413	-0.68240

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)	0.12956	0.14600	0.93378
	removal	CK (R)	-0.03608	-0.07413	-0.68240
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.12588	0.14307	0.93113
	removal	CK (R)	-0.03608	-0.07413	-0.68240

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 ()	0.64804	1.17400	13.33370
	min_pulse_width	SN ()	0.66239	1.16748	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.62873	1.11103	13.33370
	min_pulse_width	SN ()	0.60588	1.12406	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 ()	0.29453	0.56166	13.33370
	min_pulse_width	CK ()	0.79290	0.68978	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.27153	0.55298	13.33370
	min_pulse_width	CK ()	0.77383	0.67023	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 ()	1.07012	1.12840	13.33370
	min_pulse_width	CK ()	0.75993	1.03720	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	1.06796	1.12840	13.33370
	min_pulse_width	CK ()	0.75597	1.03720	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	0.00489	0.00461	0.00303
	SN	-0.00072	-0.01544	-0.11929
	SN	0.01031	0.01014	0.00861
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00422	0.00398	0.00318
	SN	-0.00072	-0.01173	-0.07550
	SN	0.00963	0.00950	0.00873

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	0.00542	0.00529	0.00479
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00475	0.00463	0.00434

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	0.00542	0.00530	0.00479
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00475	0.00464	0.00434

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	0.00486	0.00459	0.00278
	SN	-0.00072	-0.01558	-0.12113
	SN	0.01027	0.01011	0.00834
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00419	0.00395	0.00298
	SN	-0.00072	-0.01174	-0.07561
	SN	0.00959	0.00946	0.00851

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	-0.00154	-0.00157	-0.00157
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00510	0.00497	0.00472
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00220	0.00209	0.00193
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00154	-0.00157	-0.00157
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00510	0.00497	0.00472
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00220	0.00209	0.00193

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	0.00156	0.00158	0.00157
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00900	0.00890	0.00882
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00412	0.00401	0.00400
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00156	0.00158	0.00157
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00900	0.00890	0.00882
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00412	0.00401	0.00400

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)	-0.00261	-0.00262	-0.00262
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00203	0.00195	0.00180
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)	-0.00260	-0.00262	-0.00262
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00203	0.00195	0.00180

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)	0.00261	0.00264	0.00263
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00528	0.00512	0.00502
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)	0.00261	0.00264	0.00263
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00528	0.00512	0.00502

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)	-0.00033	-0.00053	-0.00070
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00047	-0.00062	-0.00084
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00203	0.00169	0.00133
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00033	-0.00053	-0.00070
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00047	-0.00062	-0.00084
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00203	0.00169	0.00133

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)	0.01459	0.01436	0.01389
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00773	0.00753	0.00742
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01496	0.01459	0.01428
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00808	0.00783	0.00776
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00955	0.00916	0.00901
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01459	0.01436	0.01389
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00773	0.00753	0.00742
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01496	0.01459	0.01428
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00807	0.00783	0.00776
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00955	0.00916	0.00901

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00351	0.01059	0.30688	0.30449
sky130_osu_sc_15T_hs__dff_l	0.00351	0.01057	0.18218	0.17824

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.00034	0.00035
sky130_osu_sc_15T_hs__dff_l	0.00000	0.00034	0.00035

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)	0.75088	2.35281	13.59530
	QN->Q (FR)	0.11833	1.46937	13.72890
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.79156	2.56516	13.02610
	QN->Q (FR)	0.18692	1.80069	14.49620

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)	1.33110	3.37839	18.04220
	QN->Q (RF)	0.04203	0.68933	7.36021
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	1.45264	3.80806	17.75360
	QN->Q (RF)	0.04284	0.66135	6.66805

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)	1.18433	2.34991	10.59600
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	1.26221	2.64555	10.91570

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)	0.57924	1.17083	5.01566
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.56080	1.11849	4.51124

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)	-0.10685	-0.13992	-0.93087
	setup	CK (R)	0.47520	0.46343	1.29254
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.10893	-0.14019	-0.93197
	setup	CK (R)	0.47102	0.45969	1.28661

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)	-0.72446	-1.16161	-12.65750
	setup	CK (R)	0.84301	1.26593	12.87130
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.72630	-1.16158	-12.65980
	setup	CK (R)	0.84040	1.26559	12.87180

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 ()	0.22600	0.55298	13.33370
	min_pulse_width	CK ()	0.78868	0.68761	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.22186	0.55298	13.33370
	min_pulse_width	CK ()	0.77595	0.67458	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 ()	0.83927	0.93949	13.33370
	min_pulse_width	CK ()	0.69355	1.06326	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.83761	0.94166	13.33370
	min_pulse_width	CK ()	0.69012	1.06109	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	0.00521	0.00485	0.00313
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00475	0.00444	0.00357

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	0.00552	0.00544	0.00511
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00504	0.00493	0.00454

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	0.00552	0.00544	0.00511
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00504	0.00494	0.00456

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	0.00519	0.00482	0.00296
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00472	0.00441	0.00334

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	-0.00150	-0.00154	-0.00153
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00501	0.00490	0.00468
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00150	-0.00154	-0.00153
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00501	0.00490	0.00468

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	0.00152	0.00155	0.00153
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00948	0.00936	0.00923
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00152	0.00155	0.00153
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00949	0.00937	0.00924

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)	-0.00033	-0.00053	-0.00070
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00046	-0.00064	-0.00083
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00033	-0.00053	-0.00070
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00046	-0.00064	-0.00083

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)	0.00769	0.00749	0.00738
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01448	0.01427	0.01382
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01531	0.01494	0.01460
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00802	0.00783	0.00771
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00769	0.00749	0.00738
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01449	0.01427	0.01382
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01531	0.01494	0.01460
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00802	0.00783	0.00771

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00345	0.29873
sky130_osu_sc_15T_hs__inv_10	0.03136	2.93478
sky130_osu_sc_15T_hs__inv_2	0.00648	0.59956
sky130_osu_sc_15T_hs__inv_3	0.00962	0.87925
sky130_osu_sc_15T_hs__inv_4	0.01269	1.18033
sky130_osu_sc_15T_hs__inv_6	0.01900	1.76513
sky130_osu_sc_15T_hs__inv_8	0.02516	2.33119
sky130_osu_sc_15T_hs__inv_l	0.00268	0.17751

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.00004	0.00004
sky130_osu_sc_15T_hs__inv_10	0.00000	0.00035	0.00036
sky130_osu_sc_15T_hs__inv_2	0.00000	0.00007	0.00007
sky130_osu_sc_15T_hs__inv_3	0.00000	0.00011	0.00011
sky130_osu_sc_15T_hs__inv_4	0.00000	0.00014	0.00014
sky130_osu_sc_15T_hs__inv_6	0.00000	0.00021	0.00022
sky130_osu_sc_15T_hs__inv_8	0.00000	0.00028	0.00029
sky130_osu_sc_15T_hs__inv_l	0.00000	0.00004	0.00004

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)**	0.11649	1.40761	13.26880
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.10638	0.93044	13.41260
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.08156	1.20246	13.26530
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.08468	1.12194	13.27280
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.07962	1.05795	13.27170
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.08268	0.99441	13.30660
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.09349	0.95614	13.29320
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.17381	1.67318	13.59460

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)**	0.03828	0.64343	6.77497
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.04773	0.50669	6.87666
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.03055	0.58503	6.78678
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.03239	0.56659	6.83651
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.03133	0.54539	6.82872
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.03554	0.52521	6.85274
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.04187	0.51325	6.85069
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.03946	0.62416	6.19238

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	0.00259	0.00253	0.00255
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02210	0.02188	0.02208
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00458	0.00449	0.00458
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00703	0.00683	0.00703
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.00903	0.00886	0.00907
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01344	0.01331	0.01331
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01777	0.01757	0.01780
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00199	0.00193	0.00192

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	-0.00043	-0.00046	-0.00048
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	-0.00760	-0.00753	-0.00728
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00145	-0.00150	-0.00151
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00186	-0.00193	-0.00193
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00292	-0.00298	-0.00296
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00441	-0.00448	-0.00441
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	-0.00596	-0.00601	-0.00584
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00026	-0.00028	-0.00031

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.23644	0.23772	0.00706	0.27788

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.00012	0.00012

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)	-	0.05603	0.86625	9.13525
	A1->Y (RR)	-	0.06884	0.87530	9.11501
	S0->Y (RR)	(!A0 * A1)	0.13262	1.01776	8.44982
	S0->Y (FR)	(A0 * !A1)	0.12899	1.26096	10.40790

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)	-	0.03953	0.62638	6.65610
	A1->Y (FF)	-	0.03326	0.61743	6.63710
	S0->Y (FF)	(!A0 * A1)	0.27115	0.96420	7.71320
	S0->Y (RF)	(A0 * !A1)	0.04194	0.63975	6.43243

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	-	-0.00269	-0.00269	-0.00269
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00190	-0.00190	-0.00190
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00348	0.00331	0.00324
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00168	-0.00186	-0.00201

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	-	0.00269	0.00269	0.00269
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00190	0.00190	0.00190
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00060	0.00040	0.00027
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00685	0.00666	0.00659

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)	-0.00076	-0.00076	-0.00076

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)	0.00076	0.00076	0.00076

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)	-0.00091	-0.00091	-0.00091

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)	0.00091	0.00091	0.00091

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)	-0.00054	-0.00074	-0.00087
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00053	-0.00074	-0.00087

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)	0.00525	0.00507	0.00499
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00508	0.00489	0.00484

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00344	0.00341	0.30091
sky130_osu_sc_15T_hs__nand2_l	0.00268	0.00267	0.17757

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.00005	0.00007
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.00005	0.00008

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)	0.12375	1.42532	13.35090
	B->Y (FR)	0.14270	1.43096	13.28310
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.18034	1.69440	13.62070
	B->Y (FR)	0.21084	1.70404	13.64030

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)	0.06162	0.78948	7.94106
	B->Y (RF)	0.06804	0.78840	7.73915
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.06591	0.77554	7.25871
	B->Y (RF)	0.07198	0.76301	6.94896

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	0.00274	0.00268	0.00265
	B	0.00000	0.00000	0.00000
	B	0.00323	0.00317	0.00313
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00208	0.00202	0.00200
	B	0.00000	0.00000	0.00000
	B	0.00250	0.00234	0.00242

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	-0.00025	-0.00029	-0.00030
	B	0.00000	0.00000	0.00000
	B	-0.00024	-0.00027	-0.00028
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00016	-0.00019	-0.00021
	B	0.00000	0.00000	0.00000
	B	-0.00016	-0.00018	-0.00020

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)	-0.00178	-0.00179	-0.00179
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00124	-0.00124	-0.00125

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)	0.00179	0.00181	0.00180
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00124	0.00126	0.00125

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)	-0.00166	-0.00167	-0.00166
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00114	-0.00114	-0.00115

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)	0.00166	0.00168	0.00167
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00114	0.00116	0.00115

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00338	0.00371	0.12246
sky130_osu_sc_15T_hs__nor2_l	0.00256	0.00291	0.07845

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.00005	0.00007
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.00005	0.00007

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)	0.36314	2.11113	14.27590
	B->Y (FR)	0.31543	1.95141	13.64360
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.46542	2.41847	14.29830
	B->Y (FR)	0.43221	2.29698	13.82960

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)	0.04291	0.55462	5.16722
	B->Y (RF)	0.03976	0.54728	5.14725
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.04249	0.54737	4.90648
	B->Y (RF)	0.04087	0.54175	4.89126

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	0.00322	0.00315	0.00313
	B	0.00000	0.00000	0.00000
	B	0.00278	0.00257	0.00266
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00237	0.00232	0.00229
	B	0.00000	0.00000	0.00000
	B	0.00213	0.00204	0.00201

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	0.00014	0.00007	-0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00039	-0.00039	-0.00045
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00009	0.00005	-0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00022	-0.00027

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)	-0.00151	-0.00156	-0.00155
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00100	-0.00103	-0.00102

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)	0.00154	0.00156	0.00155
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00101	0.00103	0.00102

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)	-0.00106	-0.00106	-0.00106
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00068	-0.00068	-0.00067

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)	0.00107	0.00108	0.00106
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00068	0.00069	0.00068

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00344	0.00347	0.00292	0.11836

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.00006	0.00009

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)	0.43149	2.06107	13.59770
	A1->Y (FR)	0.49408	2.23280	14.25460
	B0->Y (FR)	0.21726	1.45289	11.23690

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)	0.07948	0.65213	5.67118
	A1->Y (RF)	0.08496	0.65385	5.67139
	B0->Y (RF)	0.06747	0.65893	5.87327

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	0.00352	0.00329	0.00339
	A1	0.00000	0.00000	0.00000
	A1	0.00401	0.00394	0.00390
	B0	0.00276	0.00265	0.00261

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00015	0.00016	0.00010
	A1	0.00000	0.00000	0.00000
	A1	0.00072	0.00065	0.00057
	B0	0.00112	0.00109	0.00103

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)	-0.00106	-0.00106	-0.00106
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00153	-0.00157	-0.00156
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00161	-0.00162	-0.00161

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)	0.00108	0.00108	0.00106
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00156	0.00157	0.00156
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00161	0.00163	0.00162

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)	-0.00147	-0.00151	-0.00151
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00151	-0.00155	-0.00155
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00159	-0.00159	-0.00159

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)	0.00150	0.00152	0.00151
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00154	0.00155	0.00155
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00159	0.00161	0.00159

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)	-0.00125	-0.00125	-0.00128

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)	0.00128	0.00130	0.00128

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00326	0.00353	0.00366	0.00352	0.11982

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.00008	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai22_l	A0->Y (FR)	0.53437	2.27488	14.31160
	A1->Y (FR)	0.47946	2.10639	13.67050
	B0->Y (FR)	0.34453	1.96332	13.51770
	B1->Y (FR)	0.40652	2.13589	14.16670

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)	0.10446	0.68813	5.75247
	A1->Y (RF)	0.09184	0.67268	5.72303
	B0->Y (RF)	0.07869	0.67653	5.92770
	B1->Y (RF)	0.09215	0.69273	5.97958

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	0.00492	0.00486	0.00483
	A1	0.00441	0.00421	0.00428
	B0	0.00343	0.00322	0.00327
	B1	0.00396	0.00387	0.00383

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00097	0.00089	0.00080
	A1	0.00045	0.00045	0.00037
	B0	0.00045	0.00046	0.00037
	B1	0.00099	0.00092	0.00082

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)	-0.00151	-0.00156	-0.00154
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00151	-0.00156	-0.00154
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00152	-0.00157	-0.00155
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00159	-0.00160	-0.00160

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)	0.00154	0.00157	0.00154
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00154	0.00157	0.00154
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00155	0.00157	0.00155
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00159	0.00161	0.00160

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)	-0.00105	-0.00105	-0.00105
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00105	-0.00105	-0.00105
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00150	-0.00153	-0.00153
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00158	-0.00158	-0.00158

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)	0.00106	0.00107	0.00105
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00106	0.00107	0.00105
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00153	0.00153	0.00153
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00158	0.00160	0.00159

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)	-0.00104	-0.00105	-0.00104
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00104	-0.00105	-0.00104
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00168	-0.00171	-0.00171
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00171	-0.00171	-0.00176

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)	0.00106	0.00107	0.00105
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00106	0.00107	0.00105
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00171	0.00171	0.00171
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00175	0.00179	0.00176

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)	-0.00148	-0.00153	-0.00151
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00148	-0.00153	-0.00151
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00172	-0.00177	-0.00176
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00175	-0.00176	-0.00180

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)	0.00151	0.00153	0.00151
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00151	0.00153	0.00151
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00175	0.00178	0.00176
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00180	0.00181	0.00180

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00372	0.00354	0.30336
sky130_osu_sc_15T_hs__or2_2	0.00372	0.00353	0.60789
sky130_osu_sc_15T_hs__or2_4	0.00369	0.00353	1.17648
sky130_osu_sc_15T_hs__or2_8	0.00369	0.00353	2.34917
sky130_osu_sc_15T_hs__or2_l	0.00295	0.00274	0.17750

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.00008	0.00010
sky130_osu_sc_15T_hs__or2_2	0.00000	0.00012	0.00014
sky130_osu_sc_15T_hs__or2_4	0.00000	0.00018	0.00021
sky130_osu_sc_15T_hs__or2_8	0.00000	0.00032	0.00036
sky130_osu_sc_15T_hs__or2_l	0.00000	0.00008	0.00010

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)	0.19062	1.36090	9.53994
	B->Y (RR)	0.18240	1.34415	9.41741
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.18967	1.19853	9.79247
	B->Y (RR)	0.18038	1.18373	9.72149
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.24615	1.13803	10.12610
	B->Y (RR)	0.23666	1.12617	10.06580
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.36344	1.18103	10.83700
	B->Y (RR)	0.35362	1.17239	10.79130
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.24301	1.61350	9.76195
	B->Y (RR)	0.23645	1.59927	9.66431

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)	0.68341	1.46736	8.84277
	B->Y (FF)	0.60358	1.32285	8.20038
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.89230	1.69061	9.28641
	B->Y (FF)	0.81219	1.53588	8.71494
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	1.34420	2.18758	9.99486
	B->Y (FF)	1.26444	2.03722	9.48455
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	2.23752	3.17148	11.28680
	B->Y (FF)	2.15752	2.99850	10.72080
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.82460	1.57974	8.52647
	B->Y (FF)	0.73613	1.43620	8.02075

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	0.00262	0.00248	0.00232
	B	0.00000	0.00000	0.00000
	B	0.00206	0.00197	0.00180
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00456	0.00452	0.00437
	B	0.00000	0.00000	0.00000
	B	0.00398	0.00404	0.00387
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00887	0.00900	0.00889
	B	0.00000	0.00000	0.00000
	B	0.00829	0.00855	0.00849
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01742	0.01780	0.01820
	B	0.00000	0.00000	0.00000
	B	0.01682	0.01734	0.01787
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00197	0.00188	0.00174
	B	0.00000	0.00000	0.00000
	B	0.00162	0.00156	0.00142

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	0.00566	0.00562	0.00558
	B	0.00000	0.00000	0.00000
	B	0.00501	0.00498	0.00492
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00689	0.00707	0.00705
	B	0.00000	0.00000	0.00000
	B	0.00624	0.00641	0.00637
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01005	0.01057	0.01070
	B	0.00000	0.00000	0.00000
	B	0.00939	0.00991	0.01000
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01634	0.01731	0.01806
	B	0.00000	0.00000	0.00000
	B	0.01567	0.01668	0.01731
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00443	0.00433	0.00430
	B	0.00000	0.00000	0.00000
	B	0.00395	0.00390	0.00385

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)	-0.00152	-0.00157	-0.00156
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00152	-0.00157	-0.00156
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00152	-0.00157	-0.00156
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00152	-0.00157	-0.00156
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00101	-0.00103	-0.00103

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)	0.00156	0.00157	0.00156
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00156	0.00157	0.00156
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00156	0.00157	0.00156
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00156	0.00157	0.00156
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00103	0.00104	0.00103

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)	-0.00106	-0.00106	-0.00106
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00106	-0.00106	-0.00106
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00106	-0.00106	-0.00106
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00105	-0.00106	-0.00106
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00069	-0.00069	-0.00069

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)	0.00108	0.00109	0.00107
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00109	0.00109	0.00107
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00109	0.00109	0.00107
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00109	0.00109	0.00107
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00070	0.00070	0.00069

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00369	0.00461	0.12287
sky130_osu_sc_15T_hs__tbufi_l	0.00291	0.00375	0.07977

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.00006	0.00007
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.00006	0.00008

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tbufi_1	A->Y (FR)	0.29950	1.93795	13.63010
	OE->Y (FR)	0.18576	0.69102	5.85676
	OE->Y (RR)	0.37504	1.93775	10.07290
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.41362	2.27404	13.93510
	OE->Y (FR)	0.23616	0.73742	6.07153
	OE->Y (RR)	0.45583	2.24794	10.30050

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)	0.05877	0.64206	5.80547
	OE->Y (FF)	0.18568	0.69235	5.85996
	OE->Y (RF)	0.05766	0.62777	5.68598
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.06440	0.64577	5.55673
	OE->Y (FF)	0.23708	0.74056	6.07418
	OE->Y (RF)	0.06249	0.62376	5.35925

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	0.00261	0.00241	0.00248
	OE	0.00000	0.00000	0.00000
	OE	0.00230	0.00210	0.00198
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00200	0.00179	0.00186
	OE	0.00000	0.00000	0.00000
	OE	0.00168	0.00154	0.00144

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	-0.00040	-0.00039	-0.00045
	OE	0.00000	0.00000	0.00000
	OE	0.00188	0.00168	0.00155
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00022	-0.00022	-0.00027
	OE	0.00000	0.00000	0.00000
	OE	0.00127	0.00112	0.00102

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)	-0.00151	-0.00152	-0.00152
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00145	-0.00147	-0.00146
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00107	-0.00107	-0.00107
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00103	-0.00103	-0.00103

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)	0.00151	0.00152	0.00152
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00148	0.00149	0.00147
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00107	0.00107	0.00107
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00104	0.00104	0.00103

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)	0.00102	0.00082	0.00070
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00093	0.00073	0.00061
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00068	0.00053	0.00044
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00061	0.00046	0.00037

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)	0.00304	0.00281	0.00277
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00312	0.00293	0.00283
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00244	0.00223	0.00219
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00250	0.00233	0.00225

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00368	0.00564	0.12203
sky130_osu_sc_15T_hs__tnbufi_l	0.00290	0.00415	0.07859

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.00006	0.00007
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.00006	0.00007

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)	0.30214	1.93193	13.57690
	OE->Y (RR)	0.04342	0.33663	3.77752
	OE->Y (FR)	0.32623	2.07205	14.19580
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.41607	2.25833	13.82530
	OE->Y (RR)	0.04330	0.34514	3.77747
	OE->Y (FR)	0.41464	2.37793	14.27320

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)	0.05732	0.64057	5.79180
	OE->Y (RF)	0.04285	0.33695	3.77753
	OE->Y (FF)	0.19448	0.90358	6.92550
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.06244	0.64284	5.52976
	OE->Y (RF)	0.04265	0.34462	3.77747
	OE->Y (FF)	0.25095	0.95148	6.96722

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	0.00270	0.00250	0.00255
	OE	0.00000	0.00000	0.00000
	OE	0.00608	0.00592	0.00589
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00209	0.00188	0.00195
	OE	0.00000	0.00000	0.00000
	OE	0.00458	0.00444	0.00440

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	-0.00050	-0.00050	-0.00055
	OE	0.00000	0.00000	0.00000
	OE	0.00572	0.00557	0.00554
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00032	-0.00032	-0.00037
	OE	0.00000	0.00000	0.00000
	OE	0.00422	0.00408	0.00404

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)	-0.00130	-0.00132	-0.00131
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00125	-0.00126	-0.00126
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00087	-0.00087	-0.00087
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00083	-0.00084	-0.00083

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)	0.00130	0.00132	0.00131
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00127	0.00128	0.00127
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00087	0.00087	0.00087
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00084	0.00084	0.00084

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)	-0.00186	-0.00212	-0.00224
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00180	-0.00205	-0.00222
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00115	-0.00134	-0.00144
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00111	-0.00130	-0.00141

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)	0.00480	0.00464	0.00462
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00472	0.00456	0.00454
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00358	0.00342	0.00341
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00352	0.00337	0.00335

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00728	0.00632	0.12022

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.00016	0.00018

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	0.48327	2.03577	10.12690
	A->Y (FR)	!B	0.38966	2.05426	13.56880
	B->Y (RR)	A	0.40846	1.95677	9.97472
	B->Y (FR)	!A	0.44015	2.17168	14.18180

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	0.31275	1.02251	7.34965
	A->Y (RF)	!B	0.08047	0.64543	5.66838
	B->Y (FF)	A	0.30598	1.01287	7.33420
	B->Y (RF)	!A	0.08570	0.65173	5.68456

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	0.00200	0.00178	0.00160
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00625	0.00595	0.00589
	B	A	0.00000	0.00000	0.00000
	B	A	0.00110	0.00091	0.00074
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00638	0.00617	0.00611

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	0.00757	0.00739	0.00722
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00176	0.00157	0.00139
	B	A	0.00000	0.00000	0.00000
	B	A	0.00706	0.00697	0.00688
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00215	0.00191	0.00168

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00728	0.00638	0.12070

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.00016	0.00018

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	0.50292	2.04996	10.14090
	A->Y (FR)	B	0.41633	2.14590	14.21200
	B->Y (RR)	!A	0.42010	1.97724	10.06390
	B->Y (FR)	A	0.44677	2.18993	14.26030

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	0.31968	1.02625	7.38238
	A->Y (RF)	B	0.07212	0.65470	5.80870
	B->Y (FF)	!A	0.30656	1.01530	7.34694
	B->Y (RF)	A	0.08065	0.65116	5.69502

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	0.00713	0.00685	0.00677
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00125	0.00091	0.00072
	B	A	0.00000	0.00000	0.00000
	B	A	0.00706	0.00685	0.00679
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00098	0.00078	0.00061

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	0.00145	0.00119	0.00095
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00801	0.00786	0.00780
	B	A	0.00000	0.00000	0.00000
	B	A	0.00145	0.00121	0.00098
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00724	0.00716	0.00706

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.04212
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	22838.50000	45677.00000
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
	-0.00185	0.00097	0.03289

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__ant	0.00000	0.00000	0.00000
	0.39892	0.37363	0.05368