sky130_osu_sc_15T_hs_ss_1P60_100C.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_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.01564	0.01559	0.01204	1.49085	0.66831	1.43263
sky130_osu_sc_15T_hs__addf_l	0.01563	0.01558	0.01202	0.78684	0.66933	0.79954

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.93185	1.12746
sky130_osu_sc_15T_hs__addf_l	0.00000	0.58397	0.77959

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)	0.22381	2.20535	29.50220
	B->CO (RR)	0.22545	2.17527	28.96880
	CI->CO (RR)	0.21308	2.24019	30.12040
	CON->CO (FR)	0.03253	0.79577	11.09470
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.24345	2.01018	21.24060
	B->CO (RR)	0.24503	1.99619	21.18850
	CI->CO (RR)	0.23276	2.04509	21.89170
	CON->CO (FR)	0.04828	0.96136	11.43180

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CO (FF)	0.27737	2.59991	34.55230
	B->CO (FF)	0.24910	2.50304	33.65030
	CI->CO (FF)	0.24396	2.58383	34.89090
	CON->CO (RF)	0.03268	0.75718	10.54470
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.26739	2.00813	20.88620
	B->CO (FF)	0.23955	1.93719	20.60330
	CI->CO (FF)	0.23398	1.99259	21.27550
	CON->CO (RF)	0.03311	0.67933	8.22326

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)	0.19601	1.06945	10.36350
	B->CON (FR)	0.17011	1.02487	10.38950
	CI->CON (FR)	0.16271	1.05477	10.76800
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.18494	1.05926	10.36320
	B->CON (FR)	0.15975	1.01530	10.38920
	CI->CON (FR)	0.15171	1.04468	10.76770

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)	0.14952	0.84455	8.39698
	B->CON (RF)	0.15248	0.86547	8.75928
	CI->CON (RF)	0.13876	0.88040	9.06441
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.14358	0.83927	8.39907
	B->CON (RF)	0.14674	0.86066	8.76121
	CI->CON (RF)	0.13280	0.87510	9.06673

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->S (-R)	0.40625	2.35281	26.39670
	B->S (-R)	0.44172	2.39421	25.88770
	CI->S (-R)	0.37033	2.33191	26.73790
	CON->S (RR)	0.11758	0.78993	7.87229
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.40256	2.11437	19.63380
	B->S (-R)	0.38717	2.08684	19.51330
	CI->S (-R)	0.36632	2.09389	20.00880
	CON->S (RR)	0.12996	0.91937	8.00465

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)	0.37063	2.07236	22.13190
	B->S (-F)	0.36724	2.00350	21.71630
	CI->S (-F)	0.35908	2.10179	22.74900
	CON->S (FF)	0.13860	0.83655	7.64114
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.34601	1.68845	14.73150
	B->S (-F)	0.34320	1.64295	14.76450
	CI->S (-F)	0.33436	1.71815	15.37610
	CON->S (FF)	0.13029	0.74465	5.48208

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	0.00242	0.00281	0.01052
	B	0.00384	0.00405	0.01081
	CI	0.00393	0.00443	0.01226
sky130_osu_sc_15T_hs__addf_l	A	0.00178	0.00192	0.00580
	B	0.00320	0.00316	0.00649
	CI	0.00329	0.00353	0.00736

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01032	0.01082	0.02147
	B	0.01101	0.01155	0.02072
	CI	0.00860	0.00914	0.01994
sky130_osu_sc_15T_hs__addf_l	A	0.00971	0.00998	0.01501
	B	0.01038	0.01073	0.01485
	CI	0.00905	0.00956	0.01401

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01031	0.01058	0.01504
	B	0.01098	0.01133	0.01497
	CI	0.00966	0.01018	0.01424
sky130_osu_sc_15T_hs__addf_l	A	0.00970	0.00994	0.01416
	B	0.01038	0.01070	0.01409
	CI	0.00905	0.00954	0.01336

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00240	0.00261	0.00612
	B	0.00379	0.00383	0.00694
	CI	0.00391	0.00421	0.00774
sky130_osu_sc_15T_hs__addf_l	A	0.00177	0.00190	0.00516
	B	0.00317	0.00312	0.00602
	CI	0.00328	0.00350	0.00680

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01031	0.01081	0.02090
	B	0.01100	0.01153	0.02023
	CI	0.00859	0.00913	0.01947
sky130_osu_sc_15T_hs__addf_l	A	0.00971	0.00998	0.01514
	B	0.01039	0.01074	0.01492
	CI	0.00906	0.00957	0.01409

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.02272	0.02297	0.02998
	B	0.02050	0.02061	0.03124
	CI	0.01857	0.01868	0.02583
sky130_osu_sc_15T_hs__addf_l	A	0.02195	0.02200	0.02911
	B	0.01976	0.01973	0.03068
	CI	0.01781	0.01780	0.02523

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00800	0.00873	1.46040	0.70688	1.48636
sky130_osu_sc_15T_hs__addh_l	0.00812	0.00899	0.81175	0.70379	0.82107

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.97947	1.09994
sky130_osu_sc_15T_hs__addh_l	0.00000	0.56177	0.76942

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)	0.15754	0.84357	7.87463
	B->CO (RR)	0.16198	0.82515	7.87235
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.14438	0.92026	7.80947
	B->CO (RR)	0.14928	0.90909	7.80473

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)	0.11151	0.68237	5.92507
	B->CO (FF)	0.11692	0.69593	5.96984
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.10992	0.64393	4.67313
	B->CO (FF)	0.11713	0.66221	4.73341

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	0.21317	0.71527	4.40167
	A->CON (FR)	!B	0.11441	0.98532	10.66600
	B->CON (RR)	A	0.21679	0.69545	4.39634
	B->CON (FR)	!A	0.13967	0.99500	10.34120
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.16640	0.63470	4.08347
	A->CON (FR)	!B	0.10423	0.97323	10.62630
	B->CON (RR)	A	0.17073	0.62345	4.07990
	B->CON (FR)	!A	0.12936	0.98272	10.30080

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	0.17287	0.75094	5.06952
	A->CON (RF)	!B	0.06971	0.69784	7.86806
	B->CON (FF)	A	0.16839	0.77351	5.30744
	B->CON (RF)	!A	0.08589	0.70253	7.67772
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.16158	0.72789	5.05327
	A->CON (RF)	!B	0.06556	0.69244	7.84469
	B->CON (FF)	A	0.15917	0.75589	5.30629
	B->CON (RF)	!A	0.08170	0.69736	7.65551

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	0.13011	1.83068	25.35540
	A->S (FR)	B	0.23478	1.87155	22.37250
	B->S (RR)	!A	0.14715	1.80641	24.65050
	B->S (FR)	A	0.23039	1.92467	23.13780
	CON->S (FR)	-	0.03484	0.80893	11.24860
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.14322	1.71774	19.47210
	A->S (FR)	B	0.24116	1.74527	16.54410
	B->S (RR)	!A	0.16041	1.70472	19.03850
	B->S (FR)	A	0.23848	1.79198	17.04970
	CON->S (FR)	-	0.04830	0.96969	11.65800

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	0.18406	2.40466	33.27820
	A->S (RF)	B	0.27118	1.71523	19.68700
	B->S (FF)	!A	0.20937	2.42175	33.02610
	B->S (RF)	A	0.27471	1.69583	19.69040
	CON->S (RF)	-	0.03223	0.75687	10.56660
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.17216	1.87492	21.00990
	A->S (RF)	B	0.22131	1.31679	11.78780
	B->S (FF)	!A	0.19756	1.88691	20.70170
	B->S (RF)	A	0.22558	1.30446	11.77950
	CON->S (RF)	-	0.03157	0.67810	8.32618

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	0.00504	0.00494	0.00824
	B	0.00000	0.00000	0.00000
	B	0.00454	0.00435	0.00776
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00437	0.00423	0.00874
	B	0.00000	0.00000	0.00000
	B	0.00387	0.00363	0.00808

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	0.00773	0.00759	0.01207
	B	0.00000	0.00000	0.00000
	B	0.00790	0.00813	0.01278
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00713	0.00697	0.01194
	B	0.00000	0.00000	0.00000
	B	0.00743	0.00758	0.01259

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	0.00504	0.00492	0.00840
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00667	0.00683	0.00882
	B	A	0.00000	0.00000	0.00000
	B	A	0.00453	0.00434	0.00800
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00755	0.00757	0.00890
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00435	0.00422	0.00843
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00634	0.00643	0.00799
	B	A	0.00000	0.00000	0.00000
	B	A	0.00386	0.00365	0.00781
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00720	0.00715	0.00803

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	0.00773	0.00760	0.01200
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00107	0.00116	0.00216
	B	A	0.00000	0.00000	0.00000
	B	A	0.00790	0.00811	0.01271
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00182	0.00175	0.00271
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00713	0.00697	0.01206
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00051	0.00056	0.00134
	B	A	0.00000	0.00000	0.00000
	B	A	0.00743	0.00759	0.01276
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00123	0.00112	0.00194

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	0.00774	0.00762	0.01234
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00110	0.00122	0.00246
	B	A	0.00000	0.00000	0.00000
	B	A	0.00791	0.00816	0.01306
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00185	0.00181	0.00294
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00715	0.00700	0.01221
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00052	0.00057	0.00148
	B	A	0.00000	0.00000	0.00000
	B	A	0.00744	0.00760	0.01289
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00124	0.00114	0.00188

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	0.00505	0.00495	0.00843
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00669	0.00691	0.00917
	B	A	0.00000	0.00000	0.00000
	B	A	0.00455	0.00436	0.00773
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00758	0.00768	0.00952
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00437	0.00422	0.00851
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00634	0.00643	0.00795
	B	A	0.00000	0.00000	0.00000
	B	A	0.00387	0.00363	0.00786
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00721	0.00714	0.00802

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00411	0.00422	1.47718
sky130_osu_sc_15T_hs__and2_2	0.00410	0.00422	2.87703
sky130_osu_sc_15T_hs__and2_4	0.00411	0.00422	5.56173
sky130_osu_sc_15T_hs__and2_6	0.00414	0.00422	8.21754
sky130_osu_sc_15T_hs__and2_8	0.00412	0.00423	10.70732
sky130_osu_sc_15T_hs__and2_l	0.00316	0.00329	0.78588

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.45533	0.71396
sky130_osu_sc_15T_hs__and2_2	0.00000	0.71477	0.75080
sky130_osu_sc_15T_hs__and2_4	0.00000	1.23970	1.38843
sky130_osu_sc_15T_hs__and2_6	0.00000	1.76464	2.06290
sky130_osu_sc_15T_hs__and2_8	0.00000	2.28957	2.73737
sky130_osu_sc_15T_hs__and2_l	0.00000	0.03154	0.04150

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)	0.11353	0.74899	7.66793
	B->Y (RR)	0.12040	0.74080	7.58613
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.12931	0.70143	7.74203
	B->Y (RR)	0.13594	0.68539	7.64981
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.18126	0.74459	8.11048
	B->Y (RR)	0.18806	0.72063	8.00915
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.23044	0.80167	8.41075
	B->Y (RR)	0.23707	0.77432	8.29235
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.27833	0.86101	8.66993
	B->Y (RR)	0.28513	0.83135	8.52817
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.13276	0.89853	7.61500
	B->Y (RR)	0.13987	0.88683	7.55726

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)	0.09000	0.71240	7.19339
	B->Y (FF)	0.09350	0.72681	7.25598
sky130_osu_sc_15T_hs__and2_2	A->Y (FF)	0.10096	0.65447	7.07142
	B->Y (FF)	0.10501	0.66625	7.13003
sky130_osu_sc_15T_hs__and2_4	A->Y (FF)	0.14146	0.69200	7.63385
	B->Y (FF)	0.14511	0.69946	7.69442
sky130_osu_sc_15T_hs__and2_6	A->Y (FF)	0.18413	0.73724	7.92056
	B->Y (FF)	0.18723	0.74354	7.97650
sky130_osu_sc_15T_hs__and2_8	A->Y (FF)	0.22414	0.78178	8.05649
	B->Y (FF)	0.22691	0.78560	8.11555
sky130_osu_sc_15T_hs__and2_1	A->Y (FF)	0.11072	0.69718	5.26282
	B->Y (FF)	0.11891	0.72337	5.35714

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	0.00358	0.00354	0.01677
	B	0.00000	0.00000	0.00000
	B	0.00366	0.00318	0.01263
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00718	0.00739	0.02037
	B	0.00000	0.00000	0.00000
	B	0.00724	0.00709	0.01662
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01514	0.01543	0.02688
	B	0.00000	0.00000	0.00000
	B	0.01526	0.01534	0.02394
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02361	0.02382	0.03409
	B	0.00000	0.00000	0.00000
	B	0.02368	0.02362	0.03134
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03259	0.03184	0.04241
	B	0.00000	0.00000	0.00000
	B	0.03268	0.03150	0.03997
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00267	0.00256	0.00944
	B	0.00000	0.00000	0.00000
	B	0.00275	0.00241	0.00733

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	0.00894	0.00946	0.02258
	B	0.00000	0.00000	0.00000
	B	0.00992	0.01034	0.02280
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01100	0.01203	0.02539
	B	0.00000	0.00000	0.00000
	B	0.01199	0.01285	0.02553
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01654	0.01844	0.03114
	B	0.00000	0.00000	0.00000
	B	0.01754	0.01911	0.03139
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02245	0.02517	0.03767
	B	0.00000	0.00000	0.00000
	B	0.02325	0.02537	0.03765
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02831	0.03135	0.04389
	B	0.00000	0.00000	0.00000
	B	0.02940	0.03130	0.04362
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00694	0.00708	0.01397
	B	0.00000	0.00000	0.00000
	B	0.00776	0.00781	0.01439

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)	-0.00347	-0.00349	-0.00350
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00346	-0.00348	-0.00349
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00345	-0.00348	-0.00349
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00347	-0.00349	-0.00350
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00344	-0.00346	-0.00348
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00241	-0.00242	-0.00244

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)	0.00350	0.00352	0.00351
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00350	0.00351	0.00351
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00351	0.00353	0.00352
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00354	0.00355	0.00355
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00353	0.00354	0.00353
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00243	0.00245	0.00244

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)	-0.00334	-0.00337	-0.00335
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00333	-0.00335	-0.00334
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00333	-0.00336	-0.00334
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00333	-0.00335	-0.00333
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00332	-0.00334	-0.00333
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00233	-0.00232

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)	0.00343	0.00338	0.00337
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00343	0.00338	0.00337
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00344	0.00339	0.00338
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00345	0.00339	0.00338
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00345	0.00340	0.00339
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00237	0.00234	0.00233

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00389	0.00404	0.00408	0.65404

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.19418	0.35472

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)	0.10209	0.98205	10.29660
	A1->Y (FR)	0.08878	0.93795	9.98755
	B0->Y (FR)	0.07339	0.97226	10.70440

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)	0.08343	0.75846	8.06600
	A1->Y (RF)	0.07749	0.78527	8.59547
	B0->Y (RF)	0.03978	0.64824	7.51955

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	0.00781	0.00777	0.00874
	A1	0.00000	0.00000	0.00000
	A1	0.00676	0.00670	0.00768
	B0	0.00607	0.00606	0.00805

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	0.00191	0.00158	0.00268
	A1	0.00000	0.00000	0.00000
	A1	0.00194	0.00168	0.00307
	B0	-0.00085	-0.00084	0.00041

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)	-0.00256	-0.00307	-0.00309
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00311	-0.00314	-0.00312
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00311	-0.00314	-0.00312

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)	0.00307	0.00310	0.00309
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00312	0.00315	0.00314
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00320	0.00315	0.00313

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)	-0.00255	-0.00303	-0.00304
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00307	-0.00309	-0.00308
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00327	-0.00329	-0.00329

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)	0.00301	0.00306	0.00304
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00307	0.00312	0.00309
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00328	0.00331	0.00330

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)	-0.00150	-0.00151	-0.00151

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)	0.00166	0.00167	0.00155

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00389	0.00402	0.00416	0.00398	0.66215

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.22744	0.67445

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)	0.12286	1.00070	10.27450
	A1->Y (FR)	0.11198	0.98129	10.19290
	B0->Y (FR)	0.07379	0.95617	10.57570
	B1->Y (FR)	0.08472	0.97955	10.69860

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)	0.11279	0.79426	8.15740
	A1->Y (RF)	0.10688	0.82035	8.68567
	B0->Y (RF)	0.05447	0.76164	8.63021
	B1->Y (RF)	0.06049	0.73545	8.09772

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	0.00956	0.00949	0.01046
	A1	0.00853	0.00844	0.00944
	B0	0.00526	0.00529	0.00755
	B1	0.00740	0.00739	0.00955

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00390	0.00356	0.00465
	A1	0.00392	0.00364	0.00504
	B0	-0.00058	-0.00059	0.00087
	B1	-0.00051	-0.00063	0.00052

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)	-0.00253	-0.00307	-0.00309
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00311	-0.00314	-0.00312
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00311	-0.00312	-0.00312
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00311	-0.00314	-0.00312

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)	0.00307	0.00309	0.00309
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00312	0.00317	0.00314
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00320	0.00315	0.00313
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00320	0.00315	0.00313

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)	-0.00252	-0.00302	-0.00304
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00307	-0.00309	-0.00307
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00326	-0.00328	-0.00329
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00326	-0.00328	-0.00329

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)	0.00301	0.00305	0.00304
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00308	0.00312	0.00309
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00328	0.00330	0.00329
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00328	0.00330	0.00329

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)	-0.00151	-0.00152	-0.00151
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00149	-0.00151	-0.00151
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00335	-0.00338	-0.00340
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00335	-0.00338	-0.00340

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)	0.00174	0.00175	0.00157
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00151	0.00152	0.00151
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00338	0.00342	0.00340
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00338	0.00342	0.00340

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)	-0.00152	-0.00153	-0.00152
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00150	-0.00152	-0.00152
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00317	-0.00319	-0.00318
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00317	-0.00319	-0.00318

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)	0.00175	0.00175	0.00158
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00152	0.00153	0.00152
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00325	0.00322	0.00319
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00325	0.00322	0.00319

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00423	1.46378
sky130_osu_sc_15T_hs__buf_2	0.00423	2.87163
sky130_osu_sc_15T_hs__buf_4	0.00423	5.57977
sky130_osu_sc_15T_hs__buf_6	0.00091	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00423	10.84277
sky130_osu_sc_15T_hs__buf_l	0.00330	0.79169

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.38033	0.38033
sky130_osu_sc_15T_hs__buf_2	0.00000	0.56557	0.71396
sky130_osu_sc_15T_hs__buf_4	0.00000	0.94097	1.38843
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	1.69177	2.73737
sky130_osu_sc_15T_hs__buf_l	0.00000	0.03246	0.03246

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)**	0.08125	0.69629	7.47134
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.09079	0.63431	7.52304
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.12281	0.64781	7.83862
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.18419	0.72219	8.32984
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.09557	0.83896	7.44339

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)**	0.08585	0.69946	7.12165
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.09830	0.65836	7.27750
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.13807	0.68595	7.65023
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.22069	0.77776	8.12447
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.10700	0.69086	5.27734

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	0.00337	0.00326	0.01428
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00690	0.00697	0.01761
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01474	0.01526	0.02630
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03081	0.03173	0.04247
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00263	0.00235	0.00856

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	0.00870	0.00919	0.02240
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01076	0.01163	0.02460
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01633	0.01791	0.03063
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02806	0.03023	0.04298
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00679	0.00695	0.01383

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
	-0.00058	-0.00058	-0.00056

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
	0.00058	0.00058	0.00056

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00399	0.00397	0.01162	1.36096	1.36704
sky130_osu_sc_15T_hs__dffr_l	0.00399	0.00397	0.01162	0.78742	0.79057

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	1.13190	1.83341
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.77894	1.48045

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->Q (RR)	0.48166	1.83804	17.79540
	QN->Q (FR)	0.03955	0.90310	12.32820
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.48280	2.03537	17.05010
	QN->Q (FR)	0.05022	1.02376	12.21230

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->Q (RF)	0.43049	1.81612	18.40710
	QN->Q (RF)	0.03535	0.79219	10.80690
	RN->Q (FF)	0.31405	1.73650	18.50810
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.45512	2.06602	17.82310
	QN->Q (RF)	0.03946	0.80703	9.71579
	RN->Q (FF)	0.33991	1.98732	17.91790

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->QN (RR)	0.37813	1.03333	7.71412
	RN->QN (FR)	0.26151	0.95356	7.81624
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.39056	1.16963	7.95749
	RN->QN (FR)	0.27458	1.09030	8.05351

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	**CK->QN (RF)**	0.42111	1.04640	7.01899
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.40369	1.04329	6.15302

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)	-0.12877	-0.13790	-0.22436
	setup	CK (R)	0.38805	0.40067	0.92910
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.12962	-0.13806	-0.22473
	setup	CK (R)	0.38733	0.40013	0.93217

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)	-0.15754	-0.39040	-2.40413
	setup	CK (R)	0.19475	0.40286	2.43312
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.15988	-0.38837	-2.40302
	setup	CK (R)	0.19565	0.40286	2.43565

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)	-0.12877	-0.13790	-0.22436
	setup	CK (R)	0.38805	0.40067	0.92910
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.12962	-0.13806	-0.22473
	setup	CK (R)	0.38733	0.40013	0.93217

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)	-0.15754	-0.39040	-2.40413
	setup	CK (R)	0.19475	0.40286	2.43312
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.15988	-0.38837	-2.40302
	setup	CK (R)	0.19565	0.40286	2.43565

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	recovery	CK (R)	0.32195	0.34238	1.08578
	removal	CK (R)	-0.09489	-0.10956	-0.20375
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.32191	0.34093	1.08777
	removal	CK (R)	-0.09489	-0.10956	-0.20375

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	recovery	CK (R)	0.32195	0.34238	1.08578
	removal	CK (R)	-0.09489	-0.10956	-0.20375
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.32191	0.34093	1.08777
	removal	CK (R)	-0.09489	-0.10956	-0.20375

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 ()	0.18498	0.52124	13.33370
	min_pulse_width	RN ()	0.18498	0.52124	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.18498	0.52124	13.33370
	min_pulse_width	RN ()	0.18498	0.52124	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 ()	0.24363	0.52124	13.33370
	min_pulse_width	CK ()	0.22798	0.52124	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.22407	0.52124	13.33370
	min_pulse_width	CK ()	0.22016	0.52124	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	min_pulse_width	CK ()	0.46650	0.52124	13.33370
	min_pulse_width	CK ()	0.16542	0.52124	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.46650	0.52124	13.33370
	min_pulse_width	CK ()	0.16542	0.52124	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	0.00868	0.00756	0.00568
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00751	0.00675	0.01315

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	0.00983	0.00837	-0.00264
	RN	-0.00112	-0.06083	-0.87101
	RN	0.02243	0.02110	0.01064
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00866	0.00790	0.00883
	RN	-0.00112	-0.04381	-0.50395
	RN	0.02124	0.02063	0.02191

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	0.00982	0.00837	-0.00271
	RN	-0.00112	-0.06099	-0.87472
	RN	0.02241	0.02110	0.01050
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00865	0.00789	0.00870
	RN	-0.00112	-0.04391	-0.50594
	RN	0.02124	0.02062	0.02185

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	0.00863	0.00752	0.00558
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00747	0.00672	0.01284

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	-0.00248	-0.00299	-0.00305
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01026	0.00970	0.01766
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00470	0.00417	0.01232
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00248	-0.00299	-0.00306
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01026	0.00969	0.01766
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00469	0.00417	0.01232

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	0.00307	0.00310	0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01768	0.01746	0.02591
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00806	0.00788	0.01633
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00306	0.00309	0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01768	0.01745	0.02591
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00806	0.00788	0.01632

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)	0.00328	0.00298	0.01677
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00906	0.00857	0.02219
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)	0.00328	0.00298	0.01676
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00906	0.00856	0.02219

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)	0.00790	0.00811	0.02284
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01736	0.01723	0.03162
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)	0.00790	0.00810	0.02284
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01736	0.01723	0.03161

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)	-0.00071	-0.00110	0.01239
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00450	0.00369	0.01745
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	-0.00149	0.01193
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00071	-0.00110	0.01239
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00450	0.00369	0.01745
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	-0.00149	0.01193

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)	0.01266	0.01293	0.02759
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02690	0.02635	0.04179
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02095	0.02087	0.03514
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02671	0.02700	0.05271
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01449	0.01464	0.02895
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01265	0.01293	0.02759
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02690	0.02635	0.04179
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02094	0.02087	0.03514
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02670	0.02700	0.05271
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01449	0.01464	0.02895

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00395	0.00398	0.00873	0.01187	1.49209	1.49431
sky130_osu_sc_15T_hs__dffsr_l	0.00395	0.00398	0.00871	0.01187	0.78825	0.79217

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	1.43807	1.88756
sky130_osu_sc_15T_hs__dffsr_l	0.00000	1.08511	1.53460

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->Q (RR)	0.43320	1.81928	18.83760
	QN->Q (FR)	0.03507	0.84924	11.87290
	RN->Q (RR)	0.34903	1.74999	18.82500
	SN->Q (FR)	0.31055	1.74700	19.19670
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.45017	2.00550	17.03980
	QN->Q (FR)	0.05021	1.02295	12.20500
	RN->Q (RR)	0.36667	1.93710	17.01640
	SN->Q (FR)	0.32769	1.93178	17.37420

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->Q (RF)	0.49717	1.90777	19.35240
	QN->Q (RF)	0.03493	0.81886	11.45010
	RN->Q (FF)	0.32630	1.77827	19.45260
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.53063	2.14926	17.93130
	QN->Q (RF)	0.03940	0.80677	9.71572
	RN->Q (FF)	0.35942	2.02130	18.02900

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->QN (RR)	0.44460	1.10058	7.88830
	RN->QN (FR)	0.27459	0.97140	7.99065
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.46451	1.25327	8.06431
	RN->QN (FR)	0.29385	1.12368	8.16014

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->QN (RF)	0.37888	1.02339	7.54109
	RN->QN (RF)	0.29495	0.95484	7.52459
	SN->QN (FF)	0.25653	0.95210	7.89718
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.37477	1.01429	6.14430
	RN->QN (RF)	0.29116	0.94671	6.12347
	SN->QN (FF)	0.25254	0.94105	6.47812

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)	-0.11792	-0.12730	-0.25738
	setup	CK (R)	0.33041	0.34443	0.95748
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.11893	-0.12722	-0.25863
	setup	CK (R)	0.32684	0.33992	0.95231

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)	-0.18446	-0.41457	-2.52524
	setup	CK (R)	0.23930	0.43050	2.55117
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.18345	-0.41674	-2.52651
	setup	CK (R)	0.23451	0.42947	2.55001

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)	-0.11792	-0.12730	-0.25738
	setup	CK (R)	0.33041	0.34443	0.95748
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.11893	-0.12722	-0.25863
	setup	CK (R)	0.32684	0.33992	0.95231

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)	-0.18446	-0.41457	-2.52524
	setup	CK (R)	0.23930	0.43050	2.55117
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.18345	-0.41674	-2.52651
	setup	CK (R)	0.23451	0.42947	2.55001

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.23599	0.26285	0.99863
	removal	CK (R)	-0.03309	-0.04008	-0.08427
	hold	SN (R)	-0.25009	-0.44350	-1.87822
	setup	SN (R)	0.28503	0.49032	3.88659
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.23556	0.25943	0.99721
	removal	CK (R)	-0.03383	-0.04008	-0.08427
	hold	SN (R)	-0.24634	-0.43346	-1.80708
	setup	SN (R)	0.28299	0.48226	3.73741

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.23599	0.26285	0.99863
	removal	CK (R)	-0.03309	-0.04008	-0.08427
	hold	SN (R)	-0.25009	-0.44350	-1.87822
	hold	SN (R)	-0.25158	-0.44601	-1.88759
	setup	SN (R)	0.28473	0.48853	3.67806
	setup	SN (R)	0.28503	0.49032	3.88659
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.23556	0.25943	0.99721
	removal	CK (R)	-0.03383	-0.04008	-0.08427
	hold	SN (R)	-0.24634	-0.43346	-1.80708
	hold	SN (R)	-0.24699	-0.43685	-1.81872
	setup	SN (R)	0.28299	0.48171	3.53942
	setup	SN (R)	0.26645	0.48226	3.73741

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 ()	0.21626	0.52124	13.33370
	min_pulse_width	RN ()	0.22016	0.52124	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.21626	0.52124	13.33370
	min_pulse_width	RN ()	0.21235	0.52124	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)	0.07316	0.10727	3.07286
	removal	CK (R)	-0.03149	-0.08086	-0.41730
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.06828	0.10417	2.95403
	removal	CK (R)	-0.03082	-0.07859	-0.41557

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)	0.07316	0.10727	3.07286
	removal	CK (R)	-0.03149	-0.08086	-0.41730
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.06828	0.10417	2.95403
	removal	CK (R)	-0.03082	-0.07859	-0.41557

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	SN ()	0.24363	0.52124	13.33370
	min_pulse_width	SN ()	0.24754	0.52124	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.24363	0.52124	13.33370
	min_pulse_width	SN ()	0.23189	0.52124	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	CK ()	0.20453	0.52124	13.33370
	min_pulse_width	CK ()	0.25145	0.52124	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.19670	0.52124	13.33370
	min_pulse_width	CK ()	0.24363	0.52124	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	CK ()	0.41176	0.52124	13.33370
	min_pulse_width	CK ()	0.21626	0.52124	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.40785	0.52124	13.33370
	min_pulse_width	CK ()	0.21235	0.52124	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	0.01090	0.00971	0.00566
	RN	0.02023	0.01922	0.01075
	SN	-0.00112	-0.06428	-0.95493
	SN	0.02253	0.02136	0.01276
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00985	0.00911	0.01524
	RN	0.01917	0.01861	0.02039
	SN	-0.00112	-0.04384	-0.50448
	SN	0.02146	0.02075	0.02229

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	0.01166	0.01087	0.00649
	RN	-0.00112	-0.06428	-0.95493
	RN	0.02351	0.02262	0.01890
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01056	0.00990	0.01103
	RN	-0.00112	-0.04384	-0.50448
	RN	0.02237	0.02162	0.02311

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	0.01163	0.01084	0.00655
	RN	-0.00112	-0.06434	-0.95587
	RN	0.02347	0.02258	0.01889
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01055	0.00989	0.01070
	RN	-0.00112	-0.04397	-0.50697
	RN	0.02236	0.02161	0.02306

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	0.01086	0.00968	0.00571
	RN	0.02019	0.01918	0.01074
	SN	-0.00112	-0.06434	-0.95629
	SN	0.02248	0.02132	0.01284
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00981	0.00907	0.01510
	RN	0.01911	0.01856	0.02022
	SN	-0.00112	-0.04397	-0.50694
	SN	0.02141	0.02070	0.02215

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	-0.00300	-0.00304	-0.00305
	(!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)	0.01332	0.01280	0.02070
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00550	0.00499	0.01296
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00546	0.00496	0.01300
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00551	0.00501	0.01300
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00300	-0.00304	-0.00306
	(!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)	0.01332	0.01279	0.02070
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00549	0.00499	0.01296
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00546	0.00496	0.01299
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00550	0.00501	0.01299

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	0.00313	0.00309	0.00306
	(!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)	0.02068	0.02042	0.02853
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00863	0.00851	0.01683
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00879	0.00860	0.01682
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00858	0.00846	0.01677
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00313	0.00309	0.00306
	(!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)	0.02066	0.02041	0.02852
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00862	0.00850	0.01682
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00878	0.00860	0.01681
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00857	0.00845	0.01676

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)	0.00309	0.00283	0.01627
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01114	0.01065	0.02409
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)	0.00309	0.00283	0.01626
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01113	0.01065	0.02409

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)	0.00854	0.00884	0.02364
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01841	0.01821	0.03272
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)	0.00853	0.00882	0.02363
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01840	0.01819	0.03271

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)	-0.00686	-0.00690	-0.00691
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00645	-0.00736	-0.00736
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00656	-0.00702	-0.00702
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00482	0.00433	0.01298
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)	-0.00686	-0.00690	-0.00692
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00643	-0.00735	-0.00735
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00655	-0.00702	-0.00702
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00482	0.00435	0.01299

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)	0.00692	0.00698	0.00695
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00736	0.00739	0.00741
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00703	0.00707	0.00707
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01407	0.01380	0.02153
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)	0.00691	0.00698	0.00695
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00734	0.00737	0.00739
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00702	0.00707	0.00706
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01406	0.01379	0.02152

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)	-0.00071	-0.00107	0.01239
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00537	0.00461	0.01831
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00517	0.00443	0.01822
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00087	-0.00132	0.01209
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00399	0.00310	0.02886
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00071	-0.00107	0.01238
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00536	0.00459	0.01830
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00516	0.00442	0.01821
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00087	-0.00132	0.01209
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00398	0.00310	0.02886

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)	0.03018	0.02967	0.04516
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01270	0.01297	0.02763
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02152	0.02148	0.03577
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02154	0.02150	0.03572
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02962	0.02972	0.05535
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01438	0.01454	0.02883
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01672	0.01713	0.04466
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03017	0.02967	0.04516
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01270	0.01297	0.02763
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02152	0.02148	0.03577
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02154	0.02150	0.03572
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02961	0.02971	0.05534
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01438	0.01453	0.02883
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01670	0.01712	0.04465

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00397	0.00669	0.01166	1.36969	1.37160
sky130_osu_sc_15T_hs__dffs_l	0.00397	0.00668	0.01166	0.78945	0.79580

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.97041	1.46904
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.61745	1.11608

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)	0.36101	1.69823	17.72720
	QN->Q (FR)	0.03952	0.90153	12.32280
	SN->Q (FR)	0.27021	1.73486	18.44620
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.37193	1.90841	16.94310
	QN->Q (FR)	0.05019	1.02164	12.20010
	SN->Q (FR)	0.27992	1.93751	17.61060

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->Q (RF)	0.49998	1.90504	18.56250
	QN->Q (RF)	0.03520	0.79122	10.81920
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.52389	2.14787	17.92200
	QN->Q (RF)	0.03934	0.80573	9.71267

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->QN (RR)	0.44418	1.11824	7.79883
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.45617	1.25009	8.06739

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)	0.30641	0.90746	6.89525
	SN->QN (FF)	0.21525	0.94468	7.60726
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.29927	0.91953	6.05873
	SN->QN (FF)	0.20671	0.94855	6.72334

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)	-0.09834	-0.10767	-0.19499
	setup	CK (R)	0.26787	0.28726	0.87761
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.09670	-0.10990	-0.19750
	setup	CK (R)	0.26569	0.28593	0.88136

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)	-0.16533	-0.39149	-2.41650
	setup	CK (R)	0.22952	0.40836	2.44825
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.16590	-0.39289	-2.41652
	setup	CK (R)	0.22984	0.40836	2.44804

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)	-0.09834	-0.10767	-0.19499
	setup	CK (R)	0.26787	0.28726	0.87761
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.09670	-0.10990	-0.19750
	setup	CK (R)	0.26569	0.28593	0.88136

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)	-0.16533	-0.39149	-2.41650
	setup	CK (R)	0.22952	0.40836	2.44825
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.16590	-0.39289	-2.41652
	setup	CK (R)	0.22984	0.40836	2.44804

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)	0.08525	0.12022	2.04174
	removal	CK (R)	-0.04140	-0.08693	-0.32042
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.08250	0.11906	1.95293
	removal	CK (R)	-0.04140	-0.08693	-0.31938

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)	0.08525	0.12022	2.04174
	removal	CK (R)	-0.04140	-0.08693	-0.32042
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.08250	0.11906	1.95293
	removal	CK (R)	-0.04140	-0.08693	-0.31938

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 ()	0.18888	0.52124	13.33370
	min_pulse_width	SN ()	0.19279	0.52124	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.18888	0.52124	13.33370
	min_pulse_width	SN ()	0.18107	0.52124	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 ()	0.17324	0.52124	13.33370
	min_pulse_width	CK ()	0.24754	0.52124	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.16151	0.52124	13.33370
	min_pulse_width	CK ()	0.23972	0.52124	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	min_pulse_width	CK ()	0.34529	0.52124	13.33370
	min_pulse_width	CK ()	0.21235	0.52124	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.34529	0.52124	13.33370
	min_pulse_width	CK ()	0.20844	0.52124	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	0.00869	0.00761	0.00554
	SN	-0.00112	-0.06107	-0.87660
	SN	0.01861	0.01751	0.01006
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00753	0.00682	0.01316
	SN	-0.00112	-0.04387	-0.50525
	SN	0.01744	0.01671	0.01748

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	0.00974	0.00837	-0.00226
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00857	0.00787	0.00919

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	0.00973	0.00834	-0.00231
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00857	0.00786	0.00881

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	0.00866	0.00758	0.00567
	SN	-0.00112	-0.06112	-0.87775
	SN	0.01857	0.01747	0.01010
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00750	0.00677	0.01289
	SN	-0.00112	-0.04409	-0.50926
	SN	0.01740	0.01667	0.01721

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	-0.00305	-0.00309	-0.00310
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00963	0.00905	0.01712
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00461	0.00410	0.01221
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00305	-0.00310	-0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00962	0.00905	0.01712
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00461	0.00410	0.01220

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	0.00316	0.00313	0.00310
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01731	0.01701	0.02536
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00817	0.00804	0.01650
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00316	0.00312	0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01730	0.01700	0.02536
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00817	0.00804	0.01650

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)	-0.00486	-0.00487	-0.00488
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00395	0.00353	0.00883
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)	-0.00486	-0.00488	-0.00488
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00395	0.00353	0.00883

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)	0.00493	0.00496	0.00491
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00951	0.00919	0.01512
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)	0.00493	0.00495	0.00491
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00950	0.00918	0.01511

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)	-0.00074	-0.00113	0.01237
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00100	-0.00145	0.01198
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00305	0.00221	0.02834
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00074	-0.00113	0.01237
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00101	-0.00145	0.01198
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00304	0.00221	0.02834

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)	0.02645	0.02595	0.04165
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01267	0.01294	0.02761
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02621	0.02633	0.05202
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01444	0.01459	0.02890
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01619	0.01666	0.04447
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02645	0.02595	0.04165
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01266	0.01294	0.02761
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02620	0.02633	0.05202
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01443	0.01458	0.02890
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01618	0.01668	0.04446

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00413	0.01162	1.50012	1.49857
sky130_osu_sc_15T_hs__dff_l	0.00413	0.01162	0.73773	0.73900

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	1.28288	1.52144
sky130_osu_sc_15T_hs__dff_l	0.00000	0.93501	1.17357

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)	0.28774	1.65051	18.71240
	QN->Q (FR)	0.03488	0.84763	11.87770
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.30394	1.68300	14.65920
	QN->Q (FR)	0.05695	1.07718	12.57600

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->Q (RF)	0.39947	1.79965	19.30440
	QN->Q (RF)	0.03482	0.81842	11.46820
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.43594	1.94207	16.16370
	QN->Q (RF)	0.03490	0.70671	8.46008

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->QN (RR)	0.34950	0.99070	7.77288
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.37642	1.16418	7.87649

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)	0.23876	0.85454	7.35641
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.23287	0.75009	4.69037

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)	-0.07903	-0.09507	-0.18479
	setup	CK (R)	0.20017	0.22239	0.88513
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.08224	-0.09781	-0.18529
	setup	CK (R)	0.19852	0.21967	0.87989

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)	-0.14865	-0.39583	-2.46661
	setup	CK (R)	0.17765	0.40819	2.49363
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.15212	-0.39678	-2.46589
	setup	CK (R)	0.17765	0.40819	2.49363

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 ()	0.13414	0.52124	13.33370
	min_pulse_width	CK ()	0.21626	0.52124	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.13023	0.52124	13.33370
	min_pulse_width	CK ()	0.21235	0.52124	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 ()	0.27882	0.52124	13.33370
	min_pulse_width	CK ()	0.14587	0.52124	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.27491	0.52124	13.33370
	min_pulse_width	CK ()	0.14587	0.52124	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	0.00933	0.00807	0.00440
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00849	0.00762	0.01321

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	0.00999	0.00917	0.00549
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00908	0.00809	0.00624

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	0.00998	0.00915	0.00524
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00908	0.00810	0.00625

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	0.00930	0.00806	0.00442
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00844	0.00758	0.01294

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	-0.00248	-0.00298	-0.00305
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00953	0.00897	0.01724
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00248	-0.00299	-0.00305
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00954	0.00897	0.01724

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	0.00306	0.00308	0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01801	0.01765	0.02621
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00305	0.00308	0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01801	0.01765	0.02621

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)	-0.00073	-0.00109	0.01239
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00098	-0.00142	0.01202
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00074	-0.00109	0.01239
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00098	-0.00142	0.01201

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)	0.01264	0.01285	0.02756
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02636	0.02585	0.04183
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02667	0.02679	0.05297
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01436	0.01452	0.02884
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01264	0.01285	0.02755
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02636	0.02591	0.04183
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02668	0.02674	0.05297
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01436	0.01452	0.02884

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00401	1.40968
sky130_osu_sc_15T_hs__inv_10	0.03700	13.04559
sky130_osu_sc_15T_hs__inv_2	0.00760	2.77605
sky130_osu_sc_15T_hs__inv_3	0.01131	4.03451
sky130_osu_sc_15T_hs__inv_4	0.01494	5.39154
sky130_osu_sc_15T_hs__inv_6	0.02238	7.99521
sky130_osu_sc_15T_hs__inv_8	0.02967	10.52256
sky130_osu_sc_15T_hs__inv_l	0.00306	0.71408

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.19017	0.34084
sky130_osu_sc_15T_hs__inv_10	0.00000	1.87700	3.37234
sky130_osu_sc_15T_hs__inv_2	0.00000	0.37540	0.67447
sky130_osu_sc_15T_hs__inv_3	0.00000	0.56557	1.01531
sky130_osu_sc_15T_hs__inv_4	0.00000	0.75080	1.34894
sky130_osu_sc_15T_hs__inv_6	0.00000	1.12620	2.02341
sky130_osu_sc_15T_hs__inv_8	0.00000	1.50160	2.69787
sky130_osu_sc_15T_hs__inv_l	0.00000	0.01623	0.01857

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)**	0.03371	0.79129	10.89000
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.04297	0.52930	10.82180
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.02674	0.67731	10.78230
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.02913	0.63389	10.81390
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.02930	0.59929	10.76390
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.03174	0.56342	10.77850
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.03724	0.54043	10.75980
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.05125	0.96039	11.14900

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)**	0.03223	0.74042	10.19880
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.04106	0.48559	10.08880
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.02541	0.63522	10.13670
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.02718	0.59632	10.19470
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.02637	0.56215	10.15460
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.03063	0.52467	10.15990
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.03625	0.50020	10.12180
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.03259	0.65665	7.82668

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	0.00463	0.00477	0.00635
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.03961	0.04311	0.05931
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00822	0.00872	0.01192
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01260	0.01342	0.01822
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01620	0.01779	0.02381
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02406	0.02591	0.03571
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.03180	0.03489	0.04752
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00349	0.00352	0.00426

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	-0.00100	-0.00095	0.00012
sky130_osu_sc_15T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01670	-0.01487	-0.00242
sky130_osu_sc_15T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00318	-0.00280	-0.00065
sky130_osu_sc_15T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00425	-0.00366	-0.00037
sky130_osu_sc_15T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00648	-0.00581	-0.00112
sky130_osu_sc_15T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00989	-0.00874	-0.00164
sky130_osu_sc_15T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01338	-0.01108	-0.00213
sky130_osu_sc_15T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00058	-0.00061	0.00002

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.36670	0.36692	0.00819	0.38661

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.38497	0.38497

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)	-	0.01969	0.36783	3.80361
	A1->Y (RR)	-	0.02199	0.37051	3.80135
	S0->Y (RR)	(!A0 * A1)	0.06756	0.41343	2.43167
	S0->Y (FR)	(A0 * !A1)	0.04178	0.46280	3.82148

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)	-	0.02083	0.36115	3.66801
	A1->Y (FF)	-	0.01865	0.35837	3.66063
	S0->Y (FF)	(!A0 * A1)	0.07975	0.44441	2.50444
	S0->Y (RF)	(A0 * !A1)	0.03557	0.44498	3.83807

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	-	-0.00470	-0.00470	-0.00470
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00335	-0.00336	-0.00335
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00546	0.00581	0.02144
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00334	-0.00358	0.01091

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	-	0.00470	0.00470	0.00470
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00336	0.00337	0.00337
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00095	0.00082	0.01559
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01238	0.01266	0.02779

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)	-0.00119	-0.00119	-0.00119

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)	0.00119	0.00119	0.00119

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)	-0.00142	-0.00142	-0.00142

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)	0.00142	0.00142	0.00142

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)	-0.00122	-0.00140	0.01321
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00119	-0.00141	0.01331

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)	0.00939	0.00967	0.02482
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00847	0.00889	0.02432

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00401	0.00400	0.98665
sky130_osu_sc_15T_hs__nand2_l	0.00306	0.00306	0.71447

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.18983	0.67447
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.01648	0.02294

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)	0.03497	0.70825	8.97640
	B->Y (FR)	0.03986	0.70407	8.88240
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.05283	0.96430	11.17160
	B->Y (FR)	0.06208	0.97197	11.15800

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)	0.05083	0.87520	10.92490
	B->Y (RF)	0.05682	0.84670	10.41800
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.05333	0.90735	10.43700
	B->Y (RF)	0.05912	0.86715	9.77691

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	0.00490	0.00488	0.00702
	B	0.00000	0.00000	0.00000
	B	0.00594	0.00568	0.00790
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00367	0.00370	0.00384
	B	0.00000	0.00000	0.00000
	B	0.00453	0.00452	0.00468

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	-0.00069	-0.00073	0.00044
	B	0.00000	0.00000	0.00000
	B	-0.00064	-0.00078	0.00016
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00042	-0.00047	0.00007
	B	0.00000	0.00000	0.00000
	B	-0.00039	-0.00047	-0.00003

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)	-0.00340	-0.00341	-0.00342
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00232	-0.00233	-0.00234

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)	0.00342	0.00344	0.00343
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00234	0.00235	0.00235

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)	-0.00321	-0.00321	-0.00322
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00218	-0.00219	-0.00218

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)	0.00329	0.00324	0.00323
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00223	0.00220	0.00219

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00398	0.00427	0.71708
sky130_osu_sc_15T_hs__nor2_l	0.00296	0.00328	0.39191

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.15641	0.34084
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.01584	0.03479

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)	0.07683	0.94364	10.43670
	B->Y (FR)	0.05895	0.94114	10.75620
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.10801	1.14690	10.65680
	B->Y (FR)	0.08990	1.13750	10.94930

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)	0.04545	0.61816	7.16222
	B->Y (RF)	0.03437	0.60282	7.14069
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.04105	0.56510	5.80876
	B->Y (RF)	0.03430	0.55316	5.78970

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	0.00650	0.00647	0.00758
	B	0.00000	0.00000	0.00000
	B	0.00494	0.00497	0.00729
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00466	0.00459	0.00527
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00366	0.00496

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	0.00082	0.00064	0.00215
	B	0.00000	0.00000	0.00000
	B	-0.00078	-0.00070	0.00077
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00050	0.00037	0.00123
	B	0.00000	0.00000	0.00000
	B	-0.00042	-0.00040	0.00041

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)	-0.00252	-0.00305	-0.00308
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00169	-0.00199	-0.00199

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)	0.00305	0.00310	0.00309
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00198	0.00199	0.00199

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)	-0.00150	-0.00152	-0.00151
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00097	-0.00097	-0.00097

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)	0.00159	0.00160	0.00154
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00101	0.00102	0.00098

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00403	0.00411	0.00330	0.69339

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.09913	0.35472

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)	0.08000	0.96364	10.69910
	A1->Y (FR)	0.10228	0.97219	10.39520
	B0->Y (FR)	0.06256	0.93117	10.64430

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)	0.06850	0.77237	8.51054
	A1->Y (RF)	0.08690	0.77450	8.33399
	B0->Y (RF)	0.05419	0.80084	9.16057

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	0.00656	0.00659	0.00864
	A1	0.00000	0.00000	0.00000
	A1	0.00817	0.00810	0.00913
	B0	0.00557	0.00555	0.00664

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	0.00016	0.00004	0.00109
	A1	0.00000	0.00000	0.00000
	A1	0.00177	0.00146	0.00253
	B0	0.00248	0.00240	0.00313

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)	-0.00152	-0.00152	-0.00152
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00307	-0.00309	-0.00308
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00313	-0.00316	-0.00314

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00160	0.00160	0.00154
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00307	0.00309	0.00308
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00317	0.00317	0.00315

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)	-0.00245	-0.00298	-0.00302
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00304	-0.00306	-0.00306
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00310	-0.00312	-0.00310

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)	0.00300	0.00306	0.00302
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00304	0.00306	0.00306
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00313	0.00314	0.00311

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)	-0.00234	-0.00235	-0.00240

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)	0.00239	0.00242	0.00240

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00390	0.00412	0.00423	0.00412	0.70985

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.23064	0.67469

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)	0.10346	0.97118	10.41370
	A1->Y (FR)	0.08985	0.96891	10.73190
	B0->Y (FR)	0.06610	0.94565	10.71810
	B1->Y (FR)	0.08602	0.95192	10.40210

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)	0.12162	0.84462	8.73730
	A1->Y (RF)	0.09570	0.81224	8.66675
	B0->Y (RF)	0.08302	0.83766	9.32520
	B1->Y (RF)	0.10973	0.87498	9.41729

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	0.01057	0.01052	0.01151
	A1	0.00893	0.00892	0.01090
	B0	0.00683	0.00688	0.00892
	B1	0.00852	0.00848	0.00949

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00298	0.00269	0.00366
	A1	0.00152	0.00135	0.00231
	B0	-0.00032	-0.00029	0.00107
	B1	0.00300	0.00277	0.00402

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)	-0.00251	-0.00304	-0.00308
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00251	-0.00304	-0.00308
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00304	-0.00307	-0.00306
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00310	-0.00313	-0.00311

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)	0.00306	0.00310	0.00309
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00306	0.00310	0.00309
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00304	0.00307	0.00306
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00313	0.00314	0.00312

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)	-0.00150	-0.00151	-0.00150
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00149	-0.00151	-0.00150
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00301	-0.00304	-0.00303
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00308	-0.00310	-0.00309

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)	0.00158	0.00159	0.00153
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00158	0.00159	0.00153
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00303	0.00304	0.00303
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00311	0.00312	0.00310

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)	-0.00148	-0.00150	-0.00149
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00148	-0.00150	-0.00149
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00329	-0.00332	-0.00331
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00328	-0.00329	-0.00337

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)	0.00157	0.00158	0.00152
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00157	0.00158	0.00152
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00330	0.00332	0.00331
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00336	0.00340	0.00338

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)	-0.00247	-0.00299	-0.00302
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00247	-0.00299	-0.00302
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00337	-0.00340	-0.00338
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00334	-0.00336	-0.00343

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)	0.00301	0.00305	0.00303
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00301	0.00305	0.00303
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00337	0.00340	0.00338
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00342	0.00346	0.00344

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00433	0.00411	1.45045
sky130_osu_sc_15T_hs__or2_2	0.00434	0.00411	2.87496
sky130_osu_sc_15T_hs__or2_4	0.00434	0.00411	5.54318
sky130_osu_sc_15T_hs__or2_8	0.00434	0.00411	10.80165
sky130_osu_sc_15T_hs__or2_l	0.00336	0.00311	0.73409

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.27133	0.41718
sky130_osu_sc_15T_hs__or2_2	0.00000	0.38238	0.75081
sky130_osu_sc_15T_hs__or2_4	0.00000	0.60824	1.42528
sky130_osu_sc_15T_hs__or2_8	0.00000	1.05998	2.77423
sky130_osu_sc_15T_hs__or2_l	0.00000	0.03332	0.04868

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)	0.09877	0.74486	7.50267
	B->Y (RR)	0.08342	0.70002	7.36902
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.10884	0.67956	7.62993
	B->Y (RR)	0.09312	0.64165	7.50345
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.14120	0.68306	7.91558
	B->Y (RR)	0.12507	0.65219	7.79890
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.20267	0.74921	8.45785
	B->Y (RR)	0.18622	0.72686	8.36610
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.11123	0.89113	7.44878
	B->Y (RR)	0.09931	0.85503	7.29433

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)	0.15800	0.80657	7.42961
	B->Y (FF)	0.13355	0.77753	7.35507
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.18848	0.77872	7.66170
	B->Y (FF)	0.16410	0.76385	7.58795
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.26785	0.83585	8.05005
	B->Y (FF)	0.24356	0.83054	7.99593
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.43003	1.00263	8.61474
	B->Y (FF)	0.40580	0.99618	8.62117
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.20518	0.80268	5.35952
	B->Y (FF)	0.17427	0.77499	5.27606

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	0.00520	0.00483	0.01321
	B	0.00000	0.00000	0.00000
	B	0.00365	0.00351	0.01414
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00877	0.00867	0.01754
	B	0.00000	0.00000	0.00000
	B	0.00718	0.00732	0.01762
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01663	0.01690	0.02598
	B	0.00000	0.00000	0.00000
	B	0.01498	0.01584	0.02651
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03272	0.03335	0.04175
	B	0.00000	0.00000	0.00000
	B	0.03108	0.03249	0.04420
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00375	0.00343	0.00786
	B	0.00000	0.00000	0.00000
	B	0.00281	0.00261	0.00787

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	0.01053	0.01051	0.01842
	B	0.00000	0.00000	0.00000
	B	0.00865	0.00923	0.02239
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01266	0.01316	0.02076
	B	0.00000	0.00000	0.00000
	B	0.01079	0.01172	0.02435
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01848	0.01954	0.02685
	B	0.00000	0.00000	0.00000
	B	0.01659	0.01789	0.03002
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03235	0.03186	0.03939
	B	0.00000	0.00000	0.00000
	B	0.03044	0.03058	0.04232
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00798	0.00776	0.01198
	B	0.00000	0.00000	0.00000
	B	0.00669	0.00689	0.01334

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)	-0.00253	-0.00307	-0.00309
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00253	-0.00307	-0.00309
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00253	-0.00308	-0.00309
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00252	-0.00308	-0.00309
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00170	-0.00203	-0.00201

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)	0.00308	0.00312	0.00310
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00307	0.00312	0.00310
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00308	0.00312	0.00310
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00308	0.00313	0.00311
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00200	0.00203	0.00201

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)	-0.00151	-0.00152	-0.00152
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00152	-0.00152
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00152	-0.00152
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00151	-0.00152
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00098	-0.00101	-0.00099

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)	0.00161	0.00161	0.00155
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00161	0.00161	0.00155
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00161	0.00162	0.00155
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00161	0.00162	0.00155
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00104	0.00104	0.00100

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00425	0.00527	0.72224
sky130_osu_sc_15T_hs__tbufi_l	0.00328	0.00421	0.39193

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.21364	0.68168
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.02597	0.03246

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)	0.05636	0.93635	10.75730
	OE->Y (FR)	0.05775	0.35096	4.68854
	OE->Y (RR)	0.11115	0.86011	7.51206
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.08674	1.13269	10.95090
	OE->Y (FR)	0.07650	0.35112	4.68830
	OE->Y (RR)	0.13582	1.03951	7.36886

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)	0.04980	0.77907	9.04709
	OE->Y (FF)	0.05848	0.35095	4.68852
	OE->Y (RF)	0.04472	0.74183	8.51070
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.05302	0.72815	7.45134
	OE->Y (FF)	0.07827	0.35110	4.68828
	OE->Y (RF)	0.04800	0.67992	6.72572

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	0.00471	0.00479	0.00684
	OE	0.00000	0.00000	0.00000
	OE	0.00469	0.00458	0.01808
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00353	0.00336	0.00465
	OE	0.00000	0.00000	0.00000
	OE	0.00334	0.00309	0.01002

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	-0.00079	-0.00072	0.00058
	OE	0.00000	0.00000	0.00000
	OE	0.00319	0.00306	0.01792
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00043	-0.00042	0.00030
	OE	0.00000	0.00000	0.00000
	OE	0.00215	0.00188	0.00948

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)	-0.00245	-0.00248	-0.00244
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00217	-0.00218	-0.00217
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00171	-0.00174	-0.00172
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00154	-0.00154	-0.00153

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)	0.00245	0.00248	0.00244
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00221	0.00223	0.00220
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00171	0.00174	0.00172
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00156	0.00156	0.00154

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)	0.00194	0.00198	0.01680
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00168	0.00164	0.01650
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00125	0.00108	0.00865
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00110	0.00090	0.00848

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)	0.00562	0.00576	0.02108
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00562	0.00582	0.02115
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00430	0.00418	0.01198
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00437	0.00430	0.01207

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00424	0.00674	0.72243
sky130_osu_sc_15T_hs__tnbufi_l	0.00327	0.00486	0.39247

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.31409	0.38032
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.02441	0.03714

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)	0.05698	0.93656	10.75920
	OE->Y (RR)	0.03897	0.35149	4.68913
	OE->Y (FR)	0.07172	0.93716	10.42900
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.08760	1.13331	10.96020
	OE->Y (RR)	0.03840	0.35143	4.68927
	OE->Y (FR)	0.10017	1.14144	10.65830

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)	0.04894	0.77882	9.04820
	OE->Y (RF)	0.03854	0.35147	4.68915
	OE->Y (FF)	0.07527	0.66224	5.76562
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.05196	0.72808	7.45643
	OE->Y (RF)	0.03780	0.35143	4.68906
	OE->Y (FF)	0.09403	0.67289	4.54003

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	0.00484	0.00491	0.00697
	OE	0.00000	0.00000	0.00000
	OE	0.01158	0.01220	0.02828
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00367	0.00350	0.00479
	OE	0.00000	0.00000	0.00000
	OE	0.00848	0.00865	0.01687

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	-0.00097	-0.00089	0.00041
	OE	0.00000	0.00000	0.00000
	OE	0.01021	0.01087	0.02562
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00060	-0.00058	0.00013
	OE	0.00000	0.00000	0.00000
	OE	0.00742	0.00761	0.01534

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)	-0.00210	-0.00213	-0.00210
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00184	-0.00186	-0.00185
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00139	-0.00141	-0.00139
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00123	-0.00123	-0.00123

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)	0.00210	0.00213	0.00210
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00189	0.00190	0.00188
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00139	0.00141	0.00139
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00125	0.00125	0.00123

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)	-0.00355	-0.00383	0.01151
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00358	-0.00393	0.01153
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00220	-0.00265	0.00518
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00220	-0.00262	0.00519

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)	0.00879	0.00957	0.02550
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00865	0.00937	0.02537
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00639	0.00662	0.01475
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00630	0.00652	0.01468

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00843	0.00752	0.72256

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.67633	1.05534

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	0.13744	0.89712	7.56514
	A->Y (FR)	!B	0.07163	0.94955	10.72520
	B->Y (RR)	A	0.11031	0.87078	7.57481
	B->Y (FR)	!A	0.09396	0.95507	10.41010

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	0.14175	0.78410	6.06097
	A->Y (RF)	!B	0.06651	0.75938	8.53287
	B->Y (FF)	A	0.11697	0.75921	6.03716
	B->Y (RF)	!A	0.08695	0.78489	8.55438

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	0.00443	0.00413	0.01732
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01122	0.01153	0.02908
	B	A	0.00000	0.00000	0.00000
	B	A	0.00133	0.00133	0.01620
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01228	0.01265	0.02911

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	0.01439	0.01431	0.02938
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00306	0.00276	0.01841
	B	A	0.00000	0.00000	0.00000
	B	A	0.01280	0.01337	0.02885
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00423	0.00380	0.01949

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.00845	0.00757	0.71267

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.67633	1.04564

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	0.13026	0.88690	7.58025
	A->Y (FR)	B	0.09175	0.95361	10.42210
	B->Y (RR)	!A	0.11468	0.87852	7.58427
	B->Y (FR)	A	0.09703	0.95969	10.41760

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	0.12087	0.75947	5.94299
	A->Y (RF)	B	0.07603	0.81115	9.01083
	B->Y (FF)	!A	0.11512	0.75698	5.98378
	B->Y (RF)	A	0.08518	0.78262	8.49209

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	0.01330	0.01360	0.03015
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00191	0.00126	0.01570
	B	A	0.00000	0.00000	0.00000
	B	A	0.01349	0.01386	0.03026
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00118	0.00111	0.01585

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	0.00291	0.00242	0.01838
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01442	0.01487	0.02910
	B	A	0.00000	0.00000	0.00000
	B	A	0.00297	0.00248	0.01805
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01302	0.01369	0.02912

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

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	0.43625
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	155766.00000	311531.00000
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
	-0.00198	0.04205	0.56603

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
	2.71150	2.56507	0.68733