sky130_osu_sc_15T_hs_ss_1P60_150C.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_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.01604	0.01599	0.01230	1.58701	0.74989	1.56579
sky130_osu_sc_15T_hs__addf_l	0.01604	0.01598	0.01229	0.83967	0.75076	0.85409

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	16.59210	19.63010
sky130_osu_sc_15T_hs__addf_l	0.00000	10.61190	13.64980

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)	0.22864	2.22564	30.25860
	B->CO (RR)	0.23555	2.21049	29.82930
	CI->CO (RR)	0.21769	2.26293	30.89980
	CON->CO (FR)	0.02965	0.72735	10.18790
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.25087	2.05568	22.04240
	B->CO (RR)	0.25773	2.05320	22.04820
	CI->CO (RR)	0.24011	2.09337	22.70900
	CON->CO (FR)	0.04544	0.91115	10.88830

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)	0.25344	2.44477	33.23510
	B->CO (FF)	0.22722	2.36894	32.53330
	CI->CO (FF)	0.22339	2.44718	33.76920
	CON->CO (RF)	0.03484	0.80634	11.31940
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.24335	1.87946	19.89070
	B->CO (FF)	0.21766	1.82962	19.81500
	CI->CO (FF)	0.21329	1.88351	20.48160
	CON->CO (RF)	0.03505	0.71301	8.64460

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)	0.17140	0.95298	9.44775
	B->CON (FR)	0.14786	0.93080	9.67049
	CI->CON (FR)	0.14147	0.95903	10.05340
sky130_osu_sc_15T_hs__addf_1	A->CON (FR)	0.16183	0.94429	9.44591
	B->CON (FR)	0.13888	0.92246	9.66898
	CI->CON (FR)	0.13188	0.95012	10.05180

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)	0.16604	0.92993	9.37681
	B->CON (RF)	0.17350	0.95577	9.73285
	CI->CON (RF)	0.15509	0.96820	10.06120
sky130_osu_sc_15T_hs__addf_1	A->CON (RF)	0.15922	0.92338	9.37791
	B->CON (RF)	0.16677	0.94990	9.73354
	CI->CON (RF)	0.14821	0.96209	10.06180

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)	0.37446	2.17644	25.38710
	B->S (-R)	0.36844	2.14945	24.84170
	CI->S (-R)	0.34220	2.17456	25.92450
	CON->S (RR)	0.11611	0.76054	7.87594
sky130_osu_sc_15T_hs__addf_1	A->S (-R)	0.37469	1.96109	18.63270
	B->S (-R)	0.36739	1.95671	18.66550
	CI->S (-R)	0.34192	1.96021	19.21210
	CON->S (RR)	0.12990	0.90324	8.23241

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)	0.37635	2.16231	24.35500
	B->S (-F)	0.37393	2.09378	23.90640
	CI->S (-F)	0.36500	2.19551	25.00670
	CON->S (FF)	0.13420	0.83177	8.12626
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.35105	1.74074	15.70630
	B->S (-F)	0.34938	1.69660	15.73930
	CI->S (-F)	0.33976	1.77378	16.38090
	CON->S (FF)	0.12604	0.72207	5.47478

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	0.00279	0.00376	0.02193
	B	0.00433	0.00509	0.02154
	CI	0.00444	0.00553	0.02382
sky130_osu_sc_15T_hs__addf_l	A	0.00198	0.00246	0.01162
	B	0.00352	0.00378	0.01219
	CI	0.00362	0.00421	0.01345

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01102	0.01213	0.03322
	B	0.01174	0.01269	0.03140
	CI	0.00921	0.01038	0.03177
sky130_osu_sc_15T_hs__addf_l	A	0.01018	0.01081	0.02118
	B	0.01090	0.01147	0.02045
	CI	0.00837	0.00906	0.01997

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01088	0.01149	0.02167
	B	0.01161	0.01218	0.02109
	CI	0.00907	0.00977	0.02047
sky130_osu_sc_15T_hs__addf_l	A	0.01016	0.01068	0.02009
	B	0.01088	0.01140	0.01958
	CI	0.00836	0.00897	0.01889

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00268	0.00325	0.01235
	B	0.00419	0.00453	0.01285
	CI	0.00432	0.00497	0.01413
sky130_osu_sc_15T_hs__addf_l	A	0.00193	0.00241	0.01069
	B	0.00346	0.00370	0.01125
	CI	0.00357	0.00412	0.01244

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01094	0.01204	0.03273
	B	0.01167	0.01262	0.03098
	CI	0.00913	0.01030	0.03128
sky130_osu_sc_15T_hs__addf_l	A	0.01019	0.01083	0.02133
	B	0.01091	0.01149	0.02065
	CI	0.00338	0.00308	0.02032

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.02411	0.02450	0.04196
	B	0.02160	0.02213	0.04326
	CI	0.01959	0.01982	0.03688
sky130_osu_sc_15T_hs__addf_l	A	0.02304	0.02326	0.04104
	B	0.02049	0.02098	0.04274
	CI	0.01845	0.01866	0.03642

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00819	0.00895	1.64246	0.80308	1.58386
sky130_osu_sc_15T_hs__addh_l	0.00832	0.00921	0.86731	0.80380	0.88063

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	17.45580	19.65460
sky130_osu_sc_15T_hs__addh_l	0.00000	10.10050	13.72070

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)	0.15798	0.83008	8.13244
	B->CO (RR)	0.16288	0.80605	8.10733
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.14599	0.91269	8.09666
	B->CO (RR)	0.15134	0.89421	8.04824

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)	0.10530	0.66322	6.23471
	B->CO (FF)	0.11045	0.67732	6.30818
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.10434	0.61378	4.59636
	B->CO (FF)	0.11099	0.63238	4.67890

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	0.21155	0.70943	4.75309
	A->CON (FR)	!B	0.09944	0.89950	10.02620
	B->CON (RR)	A	0.21501	0.68465	4.72284
	B->CON (FR)	!A	0.12265	0.89375	9.52308
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.16411	0.62907	4.44349
	A->CON (FR)	!B	0.09063	0.88943	10.02290
	B->CON (RR)	A	0.16835	0.61037	4.39710
	B->CON (FR)	!A	0.11376	0.88475	9.51969

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	0.17322	0.75003	5.33135
	A->CON (RF)	!B	0.07670	0.76521	8.71439
	B->CON (FF)	A	0.16594	0.77305	5.62372
	B->CON (RF)	!A	0.09614	0.77092	8.51553
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.16193	0.73046	5.39920
	A->CON (RF)	!B	0.07193	0.76036	8.71256
	B->CON (FF)	A	0.15646	0.75833	5.70066
	B->CON (RF)	!A	0.09130	0.76628	8.51470

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	0.12991	1.84445	25.96530
	A->S (FR)	B	0.22789	1.82166	22.45500
	B->S (RR)	!A	0.15042	1.82743	25.30540
	B->S (FR)	A	0.22023	1.86954	23.22000
	CON->S (FR)	-	0.03184	0.74043	10.35200
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.14462	1.75554	20.23060
	A->S (FR)	B	0.23679	1.71991	16.80790
	B->S (RR)	!A	0.16566	1.74832	19.81150
	B->S (FR)	A	0.23034	1.76422	17.33170
	CON->S (FR)	-	0.04555	0.92211	11.15800

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	0.16947	2.28488	32.21160
	A->S (RF)	B	0.27104	1.71284	20.29500
	B->S (FF)	!A	0.19266	2.28264	31.78500
	B->S (RF)	A	0.27452	1.68854	20.26630
	CON->S (RF)	-	0.03441	0.80586	11.35440
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.15804	1.77934	20.31180
	A->S (RF)	B	0.21961	1.32184	12.36870
	B->S (FF)	!A	0.18129	1.77410	19.82120
	B->S (RF)	A	0.22381	1.30150	12.31600
	CON->S (RF)	-	0.03352	0.71440	8.78557

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	0.00540	0.00552	0.01285
	B	0.00000	0.00000	0.00000
	B	0.00484	0.00479	0.01312
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00462	0.00477	0.01387
	B	0.00000	0.00000	0.00000
	B	0.00407	0.00400	0.01376

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	0.00807	0.00825	0.01827
	B	0.00000	0.00000	0.00000
	B	0.00825	0.00885	0.01945
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00738	0.00752	0.01780
	B	0.00000	0.00000	0.00000
	B	0.00769	0.00819	0.01878

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	0.00532	0.00544	0.01274
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00704	0.00738	0.01242
	B	A	0.00000	0.00000	0.00000
	B	A	0.00476	0.00470	0.01297
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00802	0.00819	0.01230
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00457	0.00470	0.01378
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00653	0.00667	0.01053
	B	A	0.00000	0.00000	0.00000
	B	A	0.00401	0.00394	0.01368
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00749	0.00751	0.01039

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	0.00805	0.00821	0.01760
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00132	0.00159	0.00509
	B	A	0.00000	0.00000	0.00000
	B	A	0.00824	0.00877	0.01850
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00207	0.00214	0.00562
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00739	0.00754	0.01799
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00067	0.00085	0.00336
	B	A	0.00000	0.00000	0.00000
	B	A	0.00771	0.00820	0.01887
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00138	0.00136	0.00396

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	0.00816	0.00835	0.01846
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00151	0.00183	0.00581
	B	A	0.00000	0.00000	0.00000
	B	A	0.00837	0.00897	0.01971
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00224	0.00235	0.00610
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00745	0.00759	0.01811
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00076	0.00092	0.00339
	B	A	0.00000	0.00000	0.00000
	B	A	0.00777	0.00828	0.01920
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00146	0.00145	0.00399

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	0.00547	0.00559	0.01349
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00718	0.00769	0.01356
	B	A	0.00000	0.00000	0.00000
	B	A	0.00491	0.00484	0.01361
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00816	0.00848	0.01379
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00461	0.00475	0.01386
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00653	0.00680	0.01052
	B	A	0.00000	0.00000	0.00000
	B	A	0.00405	0.00399	0.01374
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00749	0.00754	0.01034

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00421	0.00433	1.59388
sky130_osu_sc_15T_hs__and2_2	0.00420	0.00433	3.21758
sky130_osu_sc_15T_hs__and2_4	0.00421	0.00433	6.02923
sky130_osu_sc_15T_hs__and2_6	0.00424	0.00433	8.93704
sky130_osu_sc_15T_hs__and2_8	0.00422	0.00434	11.88176
sky130_osu_sc_15T_hs__and2_l	0.00323	0.00336	0.84026

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	8.12420	12.67840
sky130_osu_sc_15T_hs__and2_2	0.00000	12.69770	12.90170
sky130_osu_sc_15T_hs__and2_4	0.00000	22.10040	25.04620
sky130_osu_sc_15T_hs__and2_6	0.00000	31.50310	37.40070
sky130_osu_sc_15T_hs__and2_8	0.00000	40.90570	49.75520
sky130_osu_sc_15T_hs__and2_l	0.00000	0.73671	0.95424

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)	0.11408	0.72567	7.74297
	B->Y (RR)	0.12123	0.71038	7.55064
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.13033	0.69625	8.02131
	B->Y (RR)	0.13736	0.67334	7.82507
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.18233	0.74067	8.14639
	B->Y (RR)	0.18959	0.71056	7.94040
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.23312	0.80183	8.43211
	B->Y (RR)	0.24020	0.76899	8.21645
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.28286	0.86630	8.79253
	B->Y (RR)	0.29010	0.83135	8.55529
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.13317	0.88282	7.84204
	B->Y (RR)	0.14070	0.86482	7.68375

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)	0.08682	0.69932	7.53816
	B->Y (FF)	0.08962	0.71377	7.62673
sky130_osu_sc_15T_hs__and2_2	A->Y (FF)	0.09552	0.63361	7.61966
	B->Y (FF)	0.09892	0.64641	7.69848
sky130_osu_sc_15T_hs__and2_4	A->Y (FF)	0.13235	0.65719	7.89882
	B->Y (FF)	0.13545	0.66521	7.96565
sky130_osu_sc_15T_hs__and2_6	A->Y (FF)	0.17165	0.70005	8.14866
	B->Y (FF)	0.17424	0.70739	8.22360
sky130_osu_sc_15T_hs__and2_8	A->Y (FF)	0.20886	0.74495	8.39136
	B->Y (FF)	0.21107	0.74870	8.45313
sky130_osu_sc_15T_hs__and2_l	A->Y (FF)	0.10822	0.68205	5.29251
	B->Y (FF)	0.11585	0.70435	5.38909

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	0.00398	0.00462	0.03140
	B	0.00000	0.00000	0.00000
	B	0.00404	0.00403	0.02470
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00780	0.00842	0.03500
	B	0.00000	0.00000	0.00000
	B	0.00789	0.00806	0.02890
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01659	0.01690	0.04141
	B	0.00000	0.00000	0.00000
	B	0.01667	0.01656	0.03637
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02664	0.02534	0.04853
	B	0.00000	0.00000	0.00000
	B	0.02669	0.02539	0.04358
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03773	0.03464	0.05717
	B	0.00000	0.00000	0.00000
	B	0.03776	0.03413	0.05117
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00275	0.00301	0.01742
	B	0.00000	0.00000	0.00000
	B	0.00282	0.00267	0.01424

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	0.00932	0.01070	0.03617
	B	0.00000	0.00000	0.00000
	B	0.01033	0.01154	0.03629
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01164	0.01349	0.03982
	B	0.00000	0.00000	0.00000
	B	0.01269	0.01425	0.03972
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01802	0.02035	0.04505
	B	0.00000	0.00000	0.00000
	B	0.01908	0.02098	0.04510
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02487	0.02754	0.05184
	B	0.00000	0.00000	0.00000
	B	0.02582	0.02768	0.05163
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03257	0.03431	0.05857
	B	0.00000	0.00000	0.00000
	B	0.03345	0.03438	0.05786
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00710	0.00766	0.02154
	B	0.00000	0.00000	0.00000
	B	0.00794	0.00840	0.02188

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)	-0.00353	-0.00355	-0.00356
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00348	-0.00349	-0.00351
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00337	-0.00339	-0.00341
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00328	-0.00330	-0.00332
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00315	-0.00317	-0.00319
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00248	-0.00249	-0.00251

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)	0.00367	0.00370	0.00369
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00372	0.00375	0.00373
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00383	0.00386	0.00385
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00396	0.00399	0.00398
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00405	0.00408	0.00406
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00251	0.00254	0.00252

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)	-0.00341	-0.00342	-0.00341
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00336	-0.00337	-0.00336
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00326	-0.00326	-0.00326
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00315	-0.00315	-0.00315
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00304	-0.00305	-0.00304
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00239	-0.00240	-0.00239

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)	0.00363	0.00361	0.00354
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00367	0.00366	0.00359
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00379	0.00377	0.00370
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00390	0.00388	0.00381
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00401	0.00399	0.00392
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00247	0.00244	0.00241

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00400	0.00414	0.00418	0.72281

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	3.61746	7.46191

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)	0.09010	0.87335	9.29738
	A1->Y (FR)	0.07857	0.83459	9.01607
	B0->Y (FR)	0.06412	0.88239	9.90960

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)	0.09447	0.83046	8.88963
	A1->Y (RF)	0.08819	0.85803	9.45047
	B0->Y (RF)	0.04252	0.69005	8.03619

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	0.00814	0.00815	0.01157
	A1	0.00000	0.00000	0.00000
	A1	0.00705	0.00706	0.01048
	B0	0.00505	0.00517	0.01048

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	0.00225	0.00198	0.00539
	A1	0.00000	0.00000	0.00000
	A1	0.00228	0.00216	0.00597
	B0	-0.00078	-0.00058	0.00315

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)	-0.00250	-0.00308	-0.00316
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00318	-0.00319	-0.00319
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00323	-0.00325	-0.00324

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)	0.00326	0.00331	0.00329
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00330	0.00332	0.00331
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00334	0.00332	0.00326

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)	-0.00249	-0.00303	-0.00312
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00314	-0.00316	-0.00314
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00337	-0.00340	-0.00341

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)	0.00322	0.00326	0.00325
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00325	0.00329	0.00326
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00341	0.00344	0.00343

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)	-0.00146	-0.00148	-0.00147

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)	0.00169	0.00169	0.00155

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00400	0.00412	0.00427	0.00408	0.73509

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi22_l	0.00000	4.09168	12.35060

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)	0.10765	0.88977	9.30042
	A1->Y (FR)	0.09837	0.87296	9.22297
	B0->Y (FR)	0.06419	0.86992	9.80692
	B1->Y (FR)	0.07353	0.88977	9.93035

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)	0.12885	0.87214	9.01974
	A1->Y (RF)	0.09861	0.88088	9.55935
	B0->Y (RF)	0.05978	0.83558	9.51729
	B1->Y (RF)	0.06612	0.80576	8.95968

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	0.01006	0.01003	0.01335
	A1	0.00896	0.00892	0.01231
	B0	0.00540	0.00571	0.01104
	B1	0.00646	0.00659	0.01207

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00442	0.00414	0.00763
	A1	0.00444	0.00429	0.00819
	B0	-0.00033	-0.00016	0.00371
	B1	-0.00026	-0.00030	0.00316

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)	-0.00233	-0.00301	-0.00311
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00313	-0.00314	-0.00314
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00324	-0.00324	-0.00324
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00324	-0.00324	-0.00324

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)	0.00333	0.00334	0.00335
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00335	0.00338	0.00336
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00334	0.00332	0.00326
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00334	0.00332	0.00326

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)	-0.00232	-0.00298	-0.00306
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00309	-0.00310	-0.00309
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00336	-0.00339	-0.00340
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00336	-0.00339	-0.00340

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)	0.00328	0.00328	0.00330
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00330	0.00330	0.00331
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00340	0.00343	0.00342
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00340	0.00343	0.00342

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)	-0.00147	-0.00149	-0.00148
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00137	-0.00139	-0.00140
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00347	-0.00349	-0.00352
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00347	-0.00349	-0.00352

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)	0.00177	0.00178	0.00158
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00152	0.00154	0.00153
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00352	0.00355	0.00353
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00353	0.00355	0.00353

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)	-0.00148	-0.00150	-0.00149
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00138	-0.00140	-0.00141
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00329	-0.00331	-0.00329
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00329	-0.00331	-0.00329

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)	0.00179	0.00178	0.00159
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00153	0.00155	0.00154
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00340	0.00336	0.00331
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00340	0.00336	0.00331

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00434	1.59492
sky130_osu_sc_15T_hs__buf_2	0.00434	3.13511
sky130_osu_sc_15T_hs__buf_4	0.00434	6.05869
sky130_osu_sc_15T_hs__buf_6	0.00091	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00434	11.86852
sky130_osu_sc_15T_hs__buf_l	0.00337	0.84429

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	6.65544	6.65551
sky130_osu_sc_15T_hs__buf_2	0.00000	9.77880	12.67910
sky130_osu_sc_15T_hs__buf_4	0.00000	16.22980	25.03370
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	29.13190	49.74280
sky130_osu_sc_15T_hs__buf_l	0.00000	0.67539	0.67539

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)**	0.08043	0.67031	7.49202
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.09030	0.61774	7.52423
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.12173	0.63548	7.76612
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.18292	0.71701	8.25818
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.09478	0.81724	7.54916

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)**	0.08277	0.68924	7.61448
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.09307	0.63411	7.71904
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.12915	0.65210	7.98604
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.20550	0.74157	8.41838
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.10458	0.67270	5.34956

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	0.00357	0.00429	0.02714
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00729	0.00813	0.03081
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01558	0.01668	0.03970
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03363	0.03402	0.05525
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00269	0.00281	0.01607

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	0.00905	0.01048	0.03699
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01138	0.01311	0.03920
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01771	0.01981	0.04532
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03219	0.03324	0.05821
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00693	0.00750	0.02184

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
	-0.00060	-0.00060	-0.00057

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
	0.00060	0.00060	0.00057

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00411	0.00407	0.01192	1.52073	1.52819
sky130_osu_sc_15T_hs__dffr_l	0.00411	0.00407	0.01192	0.84556	0.84508

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	20.15640	34.08720
sky130_osu_sc_15T_hs__dffr_l	0.00000	14.13130	28.06210

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)	0.46597	1.86218	19.26310
	QN->Q (FR)	0.03618	0.84777	11.78500
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.46962	2.06071	18.10090
	QN->Q (FR)	0.04722	0.97431	11.69460

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)	0.41750	1.82799	19.65700
	QN->Q (RF)	0.03748	0.85237	11.87240
	RN->Q (FF)	0.30578	1.69122	18.92650
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.44486	2.08281	18.75750
	QN->Q (RF)	0.04189	0.85601	10.33590
	RN->Q (FF)	0.33459	1.94712	18.02660

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)	0.36400	0.99917	7.82470
	RN->QN (FR)	0.25208	0.86241	7.09841
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.37857	1.14237	8.12022
	RN->QN (FR)	0.26748	1.00617	7.38816

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)**	0.41355	1.10202	8.43704
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.39720	1.08883	7.12432

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)	-0.14228	-0.14644	-0.11385
	setup	CK (R)	0.38356	0.39268	0.63776
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.14541	-0.14776	-0.11393
	setup	CK (R)	0.38206	0.39242	0.64154

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)	-0.14682	-0.32336	-1.62918
	setup	CK (R)	0.18005	0.33774	1.65328
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.14390	-0.32218	-1.62932
	setup	CK (R)	0.17962	0.33764	1.65296

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)	-0.14228	-0.14644	-0.11385
	setup	CK (R)	0.38356	0.39268	0.63776
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.14541	-0.14776	-0.11393
	setup	CK (R)	0.38206	0.39242	0.64154

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)	-0.14682	-0.32336	-1.62918
	setup	CK (R)	0.18005	0.33774	1.65328
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.14390	-0.32218	-1.62932
	setup	CK (R)	0.17962	0.33764	1.65296

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)	0.31066	0.33144	0.94365
	removal	CK (R)	-0.09795	-0.10947	-0.21486
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.30952	0.33034	0.94676
	removal	CK (R)	-0.09795	-0.10947	-0.21486

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)	0.31066	0.33144	0.94365
	removal	CK (R)	-0.09795	-0.10947	-0.21486
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.30952	0.33034	0.94676
	removal	CK (R)	-0.09795	-0.10947	-0.21486

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 ()	0.17418	0.53467	13.33370
	min_pulse_width	RN ()	0.17418	0.53467	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.17819	0.53467	13.33370
	min_pulse_width	RN ()	0.17618	0.53467	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 ()	0.24227	0.53467	13.33370
	min_pulse_width	CK ()	0.21824	0.53467	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.22425	0.53467	13.33370
	min_pulse_width	CK ()	0.21223	0.53467	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 ()	0.45055	0.53467	13.33370
	min_pulse_width	CK ()	0.15615	0.53467	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.45055	0.53467	13.33370
	min_pulse_width	CK ()	0.15415	0.53467	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	0.00942	0.00899	0.01878
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00805	0.00802	0.02600

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	0.01049	0.00915	0.00163
	RN	-0.00113	-0.06516	-0.97325
	RN	0.02345	0.02227	0.01520
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00915	0.00874	0.01710
	RN	-0.00113	-0.04582	-0.54115
	RN	0.02210	0.02186	0.03046

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	0.01039	0.00904	0.00131
	RN	-0.00113	-0.06535	-0.97668
	RN	0.02336	0.02218	0.01464
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00910	0.00871	0.01694
	RN	-0.00113	-0.04580	-0.54069
	RN	0.02207	0.02182	0.03034

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	0.00928	0.00885	0.01874
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00791	0.00787	0.02584

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	-0.00225	-0.00282	-0.00289
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01104	0.01081	0.03024
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00507	0.00488	0.02444
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00230	-0.00287	-0.00294
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01099	0.01076	0.03019
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00501	0.00482	0.02439

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	0.00350	0.00354	0.00351
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01867	0.01873	0.03913
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00856	0.00869	0.02883
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00345	0.00349	0.00346
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01862	0.01868	0.03908
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00851	0.00864	0.02877

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)	0.00347	0.00392	0.03321
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00949	0.00972	0.03911
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)	0.00342	0.00387	0.03316
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00943	0.00967	0.03906

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)	0.00825	0.00935	0.03939
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01809	0.01886	0.04891
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)	0.00820	0.00930	0.03934
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01804	0.01881	0.04885

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)	-0.00058	-0.00021	0.02874
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00482	0.00480	0.03493
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00094	-0.00062	0.02816
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00063	-0.00026	0.02869
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00477	0.00475	0.03488
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00099	-0.00068	0.02810

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)	0.01295	0.01400	0.04416
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02791	0.02816	0.06235
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02174	0.02248	0.05264
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02757	0.02936	0.07963
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01499	0.01599	0.04556
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01289	0.01394	0.04411
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02786	0.02811	0.06229
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02168	0.02243	0.05259
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02752	0.02938	0.07958
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01493	0.01593	0.04551

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00406	0.00408	0.00894	0.01216	1.57732	1.58068
sky130_osu_sc_15T_hs__dffsr_l	0.00406	0.00408	0.00893	0.01216	0.84283	0.84651

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	26.14000	35.26870
sky130_osu_sc_15T_hs__dffsr_l	0.00000	20.11480	29.24350

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)	0.41223	1.79491	19.33760
	QN->Q (FR)	0.03204	0.77883	10.91130
	RN->Q (RR)	0.33187	1.72982	19.29820
	SN->Q (FR)	0.28692	1.65516	18.70780
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.43129	2.01560	17.98290
	QN->Q (FR)	0.04721	0.97273	11.65560
	RN->Q (RR)	0.35139	1.95186	17.93680
	SN->Q (FR)	0.30633	1.87306	17.34850

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)	0.49175	1.89206	19.64900
	QN->Q (RF)	0.03700	0.86487	12.18090
	RN->Q (FF)	0.31552	1.69151	18.90080
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.52813	2.17447	18.80200
	QN->Q (RF)	0.04182	0.85437	10.31070
	RN->Q (FF)	0.35104	1.97465	18.04760

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)	0.43758	1.06241	7.63246
	RN->QN (FR)	0.26203	0.86380	6.88477
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.46009	1.23586	8.23328
	RN->QN (FR)	0.28399	1.03641	7.48158

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)	0.36501	1.05552	8.61572
	RN->QN (RF)	0.28474	0.99081	8.57750
	SN->QN (FF)	0.23995	0.91616	7.99408
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.36201	1.04947	7.07973
	RN->QN (RF)	0.28217	0.98551	7.03536
	SN->QN (FF)	0.23733	0.90717	6.44138

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)	-0.12613	-0.12953	-0.11962
	setup	CK (R)	0.31742	0.33313	0.66015
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.12710	-0.12796	-0.12153
	setup	CK (R)	0.31406	0.32701	0.65923

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)	-0.17096	-0.34980	-1.72423
	setup	CK (R)	0.22593	0.36492	1.74696
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.17206	-0.35123	-1.72455
	setup	CK (R)	0.22661	0.36464	1.74893

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)	-0.12613	-0.12953	-0.11962
	setup	CK (R)	0.31742	0.33313	0.66015
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.12710	-0.12796	-0.12153
	setup	CK (R)	0.31406	0.32701	0.65923

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)	-0.17096	-0.34980	-1.72423
	setup	CK (R)	0.22593	0.36492	1.74696
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.17206	-0.35123	-1.72455
	setup	CK (R)	0.22661	0.36464	1.74893

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)	0.22216	0.24563	0.84962
	removal	CK (R)	-0.03110	-0.03649	-0.07280
	hold	SN (R)	-0.23182	-0.41507	-1.55580
	setup	SN (R)	0.26975	0.46309	3.10485
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.21972	0.24286	0.84437
	removal	CK (R)	-0.03153	-0.03699	-0.07642
	hold	SN (R)	-0.23116	-0.40484	-1.49169
	setup	SN (R)	0.26983	0.45556	2.99437

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)	0.22216	0.24563	0.84962
	removal	CK (R)	-0.03110	-0.03649	-0.07280
	hold	SN (R)	-0.23182	-0.41507	-1.55580
	hold	SN (R)	-0.23265	-0.41671	-1.56557
	setup	SN (R)	0.26759	0.46309	2.92910
	setup	SN (R)	0.26975	0.46309	3.10485
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.21972	0.24286	0.84437
	removal	CK (R)	-0.03153	-0.03699	-0.07642
	hold	SN (R)	-0.23208	-0.40496	-1.49169
	hold	SN (R)	-0.23116	-0.40484	-1.49938
	setup	SN (R)	0.26983	0.45189	2.81144
	setup	SN (R)	0.25710	0.45556	2.99437

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 ()	0.20222	0.53467	13.33370
	min_pulse_width	RN ()	0.20622	0.53467	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.20422	0.53467	13.33370
	min_pulse_width	RN ()	0.20021	0.53467	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)	0.07787	0.11264	2.53619
	removal	CK (R)	-0.03525	-0.08289	-0.38037
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.07601	0.11096	2.45089
	removal	CK (R)	-0.03525	-0.08289	-0.37803

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)	0.07787	0.11264	2.53619
	removal	CK (R)	-0.03525	-0.08289	-0.38037
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.07601	0.11096	2.45089
	removal	CK (R)	-0.03525	-0.08289	-0.37803

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 ()	0.22024	0.53467	13.33370
	min_pulse_width	SN ()	0.22425	0.53467	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.22024	0.53467	13.33370
	min_pulse_width	SN ()	0.21223	0.53467	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 ()	0.19821	0.53467	13.33370
	min_pulse_width	CK ()	0.24227	0.53467	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.19020	0.53467	13.33370
	min_pulse_width	CK ()	0.23827	0.53467	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 ()	0.38847	0.53467	13.33370
	min_pulse_width	CK ()	0.20822	0.53467	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.38647	0.53467	13.33370
	min_pulse_width	CK ()	0.20422	0.53467	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	0.01173	0.01127	0.01997
	RN	0.02135	0.02085	0.02243
	SN	-0.00113	-0.06661	-1.00947
	SN	0.02382	0.02287	0.02460
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01051	0.01048	0.02817
	RN	0.02013	0.02004	0.03053
	SN	-0.00113	-0.04573	-0.53941
	SN	0.02260	0.02209	0.03336

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	0.01267	0.01213	0.01406
	RN	-0.00113	-0.06661	-1.00946
	RN	0.02468	0.02411	0.02687
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01136	0.01104	0.01934
	RN	-0.00113	-0.04573	-0.53941
	RN	0.02338	0.02302	0.03221

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	0.01247	0.01192	0.01382
	RN	-0.00113	-0.06669	-1.00865
	RN	0.02455	0.02396	0.02639
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01127	0.01095	0.01917
	RN	-0.00113	-0.04585	-0.54161
	RN	0.02333	0.02296	0.03197

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	0.01161	0.01118	0.01989
	RN	0.02122	0.02071	0.02206
	SN	-0.00113	-0.06669	-1.01153
	SN	0.02369	0.02273	0.02466
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01036	0.01032	0.02781
	RN	0.01997	0.01988	0.03039
	SN	-0.00113	-0.04585	-0.54170
	SN	0.02244	0.02192	0.03305

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	-0.00287	-0.00289	-0.00289
	(!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)	0.01421	0.01400	0.03340
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00598	0.00579	0.02510
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00595	0.00576	0.02515
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00601	0.00582	0.02515
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00292	-0.00295	-0.00294
	(!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)	0.01416	0.01395	0.03335
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00593	0.00573	0.02504
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00590	0.00571	0.02510
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00596	0.00577	0.02509

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	0.00358	0.00354	0.00350
	(!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)	0.02190	0.02187	0.04195
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00915	0.00932	0.02928
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00942	0.00948	0.02931
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00911	0.00929	0.02926
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00353	0.00349	0.00344
	(!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)	0.02184	0.02181	0.04189
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00909	0.00926	0.02922
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00936	0.00942	0.02925
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00905	0.00923	0.02920

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)	0.00326	0.00376	0.03265
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01161	0.01193	0.04141
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)	0.00321	0.00371	0.03260
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01156	0.01188	0.04136

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)	0.00882	0.01002	0.04023
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01913	0.01988	0.05035
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)	0.00876	0.00996	0.04016
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01907	0.01979	0.05028

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)	-0.00687	-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)	-0.00614	-0.00723	-0.00737
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00637	-0.00693	-0.00701
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00545	0.00533	0.02509
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)	-0.00687	-0.00695	-0.00697
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00618	-0.00727	-0.00741
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00642	-0.00698	-0.00706
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00541	0.00531	0.02504

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)	0.00740	0.00747	0.00744
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00784	0.00793	0.00790
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00753	0.00766	0.00758
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01484	0.01473	0.03390
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)	0.00735	0.00742	0.00738
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00777	0.00786	0.00783
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00747	0.00761	0.00752
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01477	0.01467	0.03384

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)	-0.00057	-0.00015	0.02874
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00584	0.00584	0.03590
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00555	0.00559	0.03576
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00067	-0.00040	0.02841
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00428	0.00470	0.05824
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00062	-0.00021	0.02869
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00578	0.00578	0.03584
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00549	0.00553	0.03569
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00072	-0.00045	0.02836
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00422	0.00465	0.05819

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)	0.03142	0.03178	0.06609
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01299	0.01405	0.04420
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02244	0.02324	0.05330
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02247	0.02329	0.05325
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03070	0.03229	0.08282
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01502	0.01601	0.04558
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01714	0.01911	0.07436
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03137	0.03173	0.06605
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01294	0.01400	0.04414
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02238	0.02319	0.05325
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02241	0.02324	0.05320
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03064	0.03220	0.08275
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01497	0.01595	0.04553
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01708	0.01905	0.07430

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00409	0.00682	0.01192	1.52500	1.53456
sky130_osu_sc_15T_hs__dffs_l	0.00409	0.00682	0.01192	0.84243	0.84787

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	17.90690	27.64350
sky130_osu_sc_15T_hs__dffs_l	0.00000	11.88190	21.61850

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)	0.35784	1.73360	19.13980
	QN->Q (FR)	0.03613	0.84522	11.75160
	SN->Q (FR)	0.25947	1.71045	18.95750
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.37017	1.94069	17.90080
	QN->Q (FR)	0.04718	0.97140	11.63500
	SN->Q (FR)	0.27251	1.91065	17.67110

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)	0.48952	1.92235	19.76620
	QN->Q (RF)	0.03732	0.85049	11.86370
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.51720	2.16507	18.75780
	QN->Q (RF)	0.04177	0.85354	10.29630

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)	0.43213	1.09197	7.92267
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.44718	1.22862	8.21500

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)	0.30951	0.97606	8.32616
	SN->QN (FF)	0.21043	0.95352	8.14342
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.30282	0.97613	7.01902
	SN->QN (FF)	0.20444	0.94672	6.78713

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)	-0.10920	-0.11693	-0.09279
	setup	CK (R)	0.27252	0.28818	0.58651
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.11161	-0.11737	-0.09048
	setup	CK (R)	0.27040	0.28664	0.59276

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)	-0.15506	-0.32637	-1.64116
	setup	CK (R)	0.21771	0.34195	1.66420
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.15394	-0.32457	-1.63973
	setup	CK (R)	0.21635	0.34178	1.66321

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)	-0.10920	-0.11693	-0.09279
	setup	CK (R)	0.27252	0.28818	0.58651
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.11161	-0.11737	-0.09048
	setup	CK (R)	0.27040	0.28664	0.59276

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)	-0.15506	-0.32637	-1.64116
	setup	CK (R)	0.21771	0.34195	1.66420
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.15394	-0.32457	-1.63973
	setup	CK (R)	0.21635	0.34178	1.66321

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)	0.09208	0.12018	1.40186
	removal	CK (R)	-0.04494	-0.08783	-0.19658
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.08680	0.11875	1.33672
	removal	CK (R)	-0.04253	-0.08755	-0.19285

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)	0.09208	0.12018	1.40186
	removal	CK (R)	-0.04494	-0.08783	-0.19658
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.08680	0.11875	1.33672
	removal	CK (R)	-0.04253	-0.08755	-0.19285

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 ()	0.18019	0.53467	13.33370
	min_pulse_width	SN ()	0.18619	0.53467	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.18019	0.53467	13.33370
	min_pulse_width	SN ()	0.17017	0.53467	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 ()	0.17819	0.53467	13.33370
	min_pulse_width	CK ()	0.24227	0.53467	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.16817	0.53467	13.33370
	min_pulse_width	CK ()	0.23226	0.53467	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 ()	0.34041	0.53467	13.33370
	min_pulse_width	CK ()	0.20222	0.53467	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.34041	0.53467	13.33370
	min_pulse_width	CK ()	0.20021	0.53467	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	0.00928	0.00897	0.01880
	SN	-0.00113	-0.06527	-0.97599
	SN	0.01951	0.01869	0.01831
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00795	0.00797	0.02587
	SN	-0.00113	-0.04572	-0.53916
	SN	0.01818	0.01772	0.02534

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	0.01033	0.00904	0.00215
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00898	0.00864	0.01716

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	0.01025	0.00899	0.00173
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00895	0.00860	0.01703

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	0.00916	0.00884	0.01881
	SN	-0.00113	-0.06552	-0.98202
	SN	0.01940	0.01856	0.01794
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00785	0.00787	0.02570
	SN	-0.00113	-0.04590	-0.54257
	SN	0.01807	0.01759	0.02503

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	-0.00309	-0.00311	-0.00310
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01013	0.00989	0.02974
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00499	0.00479	0.02433
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00314	-0.00316	-0.00316
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01008	0.00984	0.02969
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00493	0.00474	0.02427

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	0.00345	0.00341	0.00337
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01810	0.01806	0.03834
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00863	0.00879	0.02902
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00340	0.00336	0.00332
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01805	0.01801	0.03829
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00858	0.00874	0.02897

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)	-0.00483	-0.00486	-0.00485
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00428	0.00402	0.01581
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)	-0.00488	-0.00491	-0.00490
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00423	0.00397	0.01576

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)	0.00527	0.00530	0.00525
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00993	0.00993	0.02238
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)	0.00522	0.00525	0.00519
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00988	0.00987	0.02232

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)	-0.00066	-0.00021	0.02868
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00095	-0.00064	0.02817
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00322	0.00375	0.05775
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00071	-0.00027	0.02863
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00100	-0.00069	0.02812
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00317	0.00370	0.05769

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)	0.02735	0.02765	0.06236
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01290	0.01396	0.04414
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02691	0.02850	0.07882
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01488	0.01585	0.04548
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01655	0.01855	0.07421
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02730	0.02760	0.06230
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01285	0.01391	0.04409
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02686	0.02845	0.07877
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01483	0.01584	0.04543
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01650	0.01850	0.07416

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00425	0.01191	1.58268	1.58758
sky130_osu_sc_15T_hs__dff_l	0.00425	0.01191	0.78803	0.79114

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	22.88770	27.97130
sky130_osu_sc_15T_hs__dff_l	0.00000	16.90750	21.99120

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)	0.28422	1.64682	19.20410
	QN->Q (FR)	0.03186	0.77590	10.90240
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.30055	1.69884	15.40010
	QN->Q (FR)	0.05344	1.02235	12.00740

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)	0.38640	1.77018	19.55340
	QN->Q (RF)	0.03688	0.86405	12.18240
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.42360	1.93566	16.79310
	QN->Q (RF)	0.03681	0.74190	8.87970

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)	0.33545	0.94091	7.51635
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.36349	1.13450	8.04354

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)	0.24071	0.90838	8.46942
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.23433	0.79237	5.47253

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)	-0.08890	-0.09823	-0.06648
	setup	CK (R)	0.20159	0.22407	0.58478
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.08883	-0.09938	-0.06399
	setup	CK (R)	0.19971	0.22164	0.58571

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)	-0.13657	-0.32883	-1.68454
	setup	CK (R)	0.16378	0.34272	1.70502
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.13687	-0.33250	-1.68581
	setup	CK (R)	0.15978	0.34272	1.70502

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 ()	0.13813	0.53467	13.33370
	min_pulse_width	CK ()	0.20822	0.53467	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.13412	0.53467	13.33370
	min_pulse_width	CK ()	0.20422	0.53467	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 ()	0.27231	0.53467	13.33370
	min_pulse_width	CK ()	0.13212	0.53467	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.27031	0.53467	13.33370
	min_pulse_width	CK ()	0.13012	0.53467	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	0.00991	0.00950	0.01882
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00893	0.00886	0.02635

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	0.01076	0.01022	0.01264
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00963	0.00895	0.01418

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	0.01061	0.01006	0.01247
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00962	0.00894	0.01401

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	0.00982	0.00940	0.01869
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00879	0.00871	0.02590

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	-0.00230	-0.00286	-0.00293
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01014	0.00996	0.03052
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00235	-0.00291	-0.00299
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01009	0.00991	0.03048

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	0.00344	0.00348	0.00345
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01891	0.01889	0.03967
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00339	0.00343	0.00340
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01886	0.01884	0.03962

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)	-0.00065	-0.00022	0.02871
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00083	-0.00055	0.02830
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00070	-0.00027	0.02866
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00089	-0.00060	0.02825

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)	0.01284	0.01392	0.04409
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02735	0.02771	0.06310
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02745	0.02920	0.08040
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01491	0.01591	0.04551
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01279	0.01386	0.04404
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02731	0.02766	0.06305
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02741	0.02915	0.08035
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01485	0.01585	0.04546

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00411	1.53205
sky130_osu_sc_15T_hs__inv_10	0.03803	14.52244
sky130_osu_sc_15T_hs__inv_2	0.00781	3.01408
sky130_osu_sc_15T_hs__inv_3	0.01162	4.35483
sky130_osu_sc_15T_hs__inv_4	0.01536	5.86984
sky130_osu_sc_15T_hs__inv_6	0.02300	8.68591
sky130_osu_sc_15T_hs__inv_8	0.03050	11.47751
sky130_osu_sc_15T_hs__inv_l	0.00312	0.75544

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	3.32768	6.33102
sky130_osu_sc_15T_hs__inv_10	0.00000	32.25400	61.77100
sky130_osu_sc_15T_hs__inv_2	0.00000	6.45093	12.35440
sky130_osu_sc_15T_hs__inv_3	0.00000	9.77850	18.68530
sky130_osu_sc_15T_hs__inv_4	0.00000	12.90180	24.70870
sky130_osu_sc_15T_hs__inv_6	0.00000	19.35260	37.06290
sky130_osu_sc_15T_hs__inv_8	0.00000	25.80340	49.41710
sky130_osu_sc_15T_hs__inv_l	0.00000	0.33769	0.48525

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)**	0.03075	0.72837	10.12720
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.03928	0.47590	10.22500
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.02470	0.62333	10.02400
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.02689	0.58116	10.02180
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.02710	0.54772	10.02730
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.02931	0.50703	10.02970
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.03423	0.48544	10.03660
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.04821	0.90663	10.55070

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)**	0.03440	0.79403	11.07400
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.04296	0.51759	11.09080
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.02699	0.67641	10.99520
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.02884	0.63069	11.00080
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.02792	0.59680	11.01920
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.03222	0.55605	11.00410
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.03796	0.53062	10.98490
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.03457	0.68880	8.17826

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	0.00476	0.00513	0.00911
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.04101	0.04843	0.08559
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00848	0.00957	0.01730
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01298	0.01465	0.02636
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01670	0.01922	0.03455
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02482	0.02966	0.05193
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.03288	0.03904	0.06924
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00358	0.00372	0.00630

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	-0.00092	-0.00065	0.00229
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	-0.01544	-0.01061	0.01991
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00303	-0.00213	0.00369
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00399	-0.00254	0.00623
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00614	-0.00438	0.00762
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00940	-0.00639	0.01165
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	-0.01261	-0.00741	0.01594
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00061	-0.00053	0.00133

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.10888	0.10874	0.00839	0.10354

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	6.83895	6.83895

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)	-	0.01913	0.21196	1.33019
	A1->Y (RR)	-	0.02114	0.21453	1.32952
	S0->Y (RR)	(!A0 * A1)	0.06816	0.31562	1.41352
	S0->Y (FR)	(A0 * !A1)	0.03835	0.28746	1.36361

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)	-	0.01986	0.21314	1.34924
	A1->Y (FF)	-	0.01773	0.21093	1.34718
	S0->Y (FF)	(!A0 * A1)	0.07337	0.29245	0.77811
	S0->Y (RF)	(A0 * !A1)	0.03800	0.33171	2.10317

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	-	-0.00479	-0.00480	-0.00479
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00331	-0.00331	-0.00330
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00546	0.00685	0.03783
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00347	-0.00282	0.02706

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	-	0.00481	0.00481	0.00482
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00360	0.00361	0.00361
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00102	0.00183	0.03211
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01273	0.01389	0.04435

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)	-0.00114	-0.00114	-0.00114

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)	0.00125	0.00125	0.00125

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)	-0.00124	-0.00054	0.02952
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00121	-0.00051	0.02972

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)	0.00964	0.01086	0.04140
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00858	0.01004	0.04086

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00411	0.00410	0.89905
sky130_osu_sc_15T_hs__nand2_l	0.00312	0.00313	0.70827

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	3.29474	12.35400
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.32523	0.76410

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)	0.03181	0.61875	7.57081
	B->Y (FR)	0.03604	0.61645	7.49038
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.04968	0.88828	10.16950
	B->Y (FR)	0.05823	0.89510	10.15830

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)	0.05526	0.89320	10.76220
	B->Y (RF)	0.06163	0.86218	10.21600
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.05740	0.94722	10.73430
	B->Y (RF)	0.06355	0.90533	10.03650

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	0.00504	0.00549	0.01041
	B	0.00000	0.00000	0.00000
	B	0.00612	0.00647	0.01158
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00375	0.00391	0.00623
	B	0.00000	0.00000	0.00000
	B	0.00466	0.00475	0.00712

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	-0.00043	-0.00031	0.00329
	B	0.00000	0.00000	0.00000
	B	-0.00038	-0.00044	0.00282
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00043	-0.00042	0.00124
	B	0.00000	0.00000	0.00000
	B	-0.00039	-0.00044	0.00109

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)	-0.00351	-0.00353	-0.00354
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00239	-0.00240	-0.00242

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)	0.00354	0.00357	0.00355
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00242	0.00244	0.00243

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)	-0.00333	-0.00335	-0.00333
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00226	-0.00227	-0.00226

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)	0.00344	0.00342	0.00335
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00233	0.00230	0.00227

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00408	0.00437	0.79781
sky130_osu_sc_15T_hs__nor2_l	0.00303	0.00335	0.42152

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	2.88597	6.32962
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.33634	0.48524

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)	0.06848	0.84182	9.48116
	B->Y (FR)	0.05171	0.85501	9.97936
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.10032	1.05926	9.87196
	B->Y (FR)	0.08233	1.05864	10.29280

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)	0.05025	0.66190	7.73133
	B->Y (RF)	0.03693	0.64506	7.70816
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.04455	0.59339	6.09097
	B->Y (RF)	0.03652	0.58058	6.07097

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	0.00681	0.00685	0.01050
	B	0.00000	0.00000	0.00000
	B	0.00507	0.00539	0.01072
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00486	0.00483	0.00712
	B	0.00000	0.00000	0.00000
	B	0.00380	0.00376	0.00720

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	0.00098	0.00099	0.00520
	B	0.00000	0.00000	0.00000
	B	-0.00071	-0.00040	0.00367
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00057	0.00053	0.00309
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00030	0.00215

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	-0.00307	-0.00314
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00170	-0.00205	-0.00208

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)	0.00326	0.00328	0.00328
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00207	0.00209	0.00209

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)	-0.00149	-0.00149	-0.00148
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00095	-0.00095	-0.00095

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	0.00153
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00100	0.00100	0.00097

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00414	0.00422	0.00337	0.76981

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	1.78336	6.81466

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)	0.06968	0.87064	9.91217
	A1->Y (FR)	0.09041	0.86721	9.42876
	B0->Y (FR)	0.05952	0.89699	10.36050

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)	0.07443	0.84579	9.45249
	A1->Y (RF)	0.09708	0.84969	9.24101
	B0->Y (RF)	0.05873	0.87184	10.10430

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	0.00679	0.00676	0.01173
	A1	0.00000	0.00000	0.00000
	A1	0.00855	0.00854	0.01191
	B0	0.00581	0.00593	0.00862

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	0.00031	0.00025	0.00347
	A1	0.00000	0.00000	0.00000
	A1	0.00197	0.00173	0.00501
	B0	0.00271	0.00270	0.00470

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)	-0.00148	-0.00149	-0.00148
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00322	-0.00324	-0.00323
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00325	-0.00327	-0.00326

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)	0.00322	0.00324	0.00323
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00333	0.00330	0.00327

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)	-0.00244	-0.00301	-0.00308
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00318	-0.00322	-0.00320
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00321	-0.00323	-0.00322

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)	0.00321	0.00323	0.00322
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00318	0.00322	0.00320
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00328	0.00327	0.00324

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)	-0.00241	-0.00242	-0.00247

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)	0.00247	0.00250	0.00249

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00401	0.00422	0.00433	0.00423	0.79066

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	4.20567	12.36100

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)	0.09217	0.86844	9.46152
	A1->Y (FR)	0.07817	0.88033	9.96006
	B0->Y (FR)	0.05885	0.85906	9.95007
	B1->Y (FR)	0.07730	0.85210	9.45461

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)	0.13676	0.92833	9.73092
	A1->Y (RF)	0.10659	0.89263	9.65025
	B0->Y (RF)	0.09314	0.92234	10.33090
	B1->Y (RF)	0.12412	0.96112	10.43270

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	0.01114	0.01113	0.01432
	A1	0.00934	0.00924	0.01420
	B0	0.00712	0.00708	0.01196
	B1	0.00897	0.00901	0.01224

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00341	0.00316	0.00629
	A1	0.00191	0.00176	0.00482
	B0	-0.00016	0.00005	0.00377
	B1	0.00148	0.00140	0.00518

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)	-0.00250	-0.00307	-0.00314
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00248	-0.00304	-0.00311
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00319	-0.00323	-0.00321
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00322	-0.00324	-0.00322

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)	0.00327	0.00329	0.00328
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00329	0.00332	0.00331
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00319	0.00323	0.00321
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00332	0.00327	0.00325

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)	-0.00147	-0.00148	-0.00147
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00144	-0.00145	-0.00144
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00317	-0.00319	-0.00318
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00320	-0.00321	-0.00320

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)	0.00159	0.00159	0.00152
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00162	0.00162	0.00155
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00317	0.00319	0.00318
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00329	0.00325	0.00323

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)	-0.00145	-0.00147	-0.00146
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00142	-0.00144	-0.00143
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00345	-0.00347	-0.00347
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00337	-0.00340	-0.00349

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	0.00151
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00160	0.00161	0.00154
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00349	0.00354	0.00348
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00350	0.00352	0.00351

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)	-0.00246	-0.00302	-0.00308
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00244	-0.00299	-0.00306
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00353	-0.00355	-0.00353
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00345	-0.00347	-0.00355

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)	0.00322	0.00326	0.00323
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00325	0.00328	0.00326
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00354	0.00358	0.00354
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00356	0.00358	0.00357

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00444	0.00421	1.59173
sky130_osu_sc_15T_hs__or2_2	0.00444	0.00421	3.12088
sky130_osu_sc_15T_hs__or2_4	0.00444	0.00421	6.03113
sky130_osu_sc_15T_hs__or2_8	0.00445	0.00422	11.84117
sky130_osu_sc_15T_hs__or2_l	0.00343	0.00318	0.78659

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	4.71618	6.87871
sky130_osu_sc_15T_hs__or2_2	0.00000	6.38944	12.90240
sky130_osu_sc_15T_hs__or2_4	0.00000	9.88875	25.25730
sky130_osu_sc_15T_hs__or2_8	0.00000	16.88730	49.96690
sky130_osu_sc_15T_hs__or2_l	0.00000	0.60395	0.77569

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)	0.10068	0.72173	7.52405
	B->Y (RR)	0.08286	0.67371	7.37145
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.11088	0.66281	7.56262
	B->Y (RR)	0.09290	0.62085	7.42216
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.14258	0.67364	7.82448
	B->Y (RR)	0.12427	0.63872	7.69494
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.20390	0.74693	8.36955
	B->Y (RR)	0.18514	0.72139	8.25306
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.11213	0.87240	7.51915
	B->Y (RR)	0.09852	0.83274	7.36365

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)	0.14748	0.78496	7.89990
	B->Y (FF)	0.12491	0.76728	7.94753
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.17314	0.73899	7.99500
	B->Y (FF)	0.15068	0.73384	8.04691
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.24444	0.78231	8.29974
	B->Y (FF)	0.22210	0.79148	8.37810
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.39213	0.93090	8.81893
	B->Y (FF)	0.36986	0.94472	8.93934
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.19564	0.77249	5.35882
	B->Y (FF)	0.16607	0.75400	5.38005

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	0.00552	0.00569	0.02397
	B	0.00000	0.00000	0.00000
	B	0.00391	0.00444	0.02580
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00927	0.00970	0.02770
	B	0.00000	0.00000	0.00000
	B	0.00761	0.00844	0.02943
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01762	0.01821	0.03778
	B	0.00000	0.00000	0.00000
	B	0.01591	0.01719	0.03866
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03591	0.03579	0.06261
	B	0.00000	0.00000	0.00000
	B	0.03408	0.03472	0.05465
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00390	0.00387	0.01348
	B	0.00000	0.00000	0.00000
	B	0.00289	0.00302	0.01379

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	0.01107	0.01135	0.03039
	B	0.00000	0.00000	0.00000
	B	0.00903	0.01039	0.03645
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01356	0.01417	0.03270
	B	0.00000	0.00000	0.00000
	B	0.01152	0.01310	0.03829
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02073	0.02101	0.03876
	B	0.00000	0.00000	0.00000
	B	0.01877	0.01981	0.04372
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03943	0.03509	0.05147
	B	0.00000	0.00000	0.00000
	B	0.03744	0.03360	0.05580
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00824	0.00812	0.01843
	B	0.00000	0.00000	0.00000
	B	0.00685	0.00738	0.02058

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)	-0.00252	-0.00309	-0.00316
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00251	-0.00309	-0.00315
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00251	-0.00309	-0.00315
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00250	-0.00308	-0.00314
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00170	-0.00207	-0.00210

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)	0.00329	0.00328	0.00330
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00328	0.00333	0.00330
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00329	0.00333	0.00331
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00330	0.00334	0.00332
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00209	0.00212	0.00211

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)	-0.00148	-0.00149	-0.00148
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00148	-0.00149	-0.00148
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00147	-0.00149	-0.00148
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00146	-0.00148	-0.00147
sky130_osu_sc_15T_hs__or2_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__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00161	0.00162	0.00154
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00161	0.00162	0.00154
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00162	0.00162	0.00154
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00163	0.00164	0.00155
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00102	0.00103	0.00099

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00435	0.00538	0.80083
sky130_osu_sc_15T_hs__tbufi_l	0.00335	0.00428	0.42147

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	3.60215	12.66030
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.50167	0.97049

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)	0.04964	0.85065	9.95262
	OE->Y (FR)	0.05345	0.35871	4.68856
	OE->Y (RR)	0.10568	0.81086	7.49776
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.07941	1.05715	10.28750
	OE->Y (FR)	0.07320	0.35857	4.68829
	OE->Y (RR)	0.13092	0.99436	7.37246

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)	0.05443	0.85173	10.00960
	OE->Y (FF)	0.05457	0.35869	4.68856
	OE->Y (RF)	0.04796	0.81095	9.41959
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.05725	0.77900	7.93830
	OE->Y (FF)	0.07481	0.35854	4.68827
	OE->Y (RF)	0.05098	0.72473	7.15954

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	0.00502	0.00533	0.00998
	OE	0.00000	0.00000	0.00000
	OE	0.00505	0.00579	0.03317
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00363	0.00359	0.00661
	OE	0.00000	0.00000	0.00000
	OE	0.00350	0.00369	0.01842

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	-0.00051	-0.00028	0.00327
	OE	0.00000	0.00000	0.00000
	OE	0.00355	0.00428	0.03467
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00043	-0.00034	0.00176
	OE	0.00000	0.00000	0.00000
	OE	0.00221	0.00240	0.01847

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)	-0.00247	-0.00251	-0.00248
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00214	-0.00215	-0.00214
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00173	-0.00175	-0.00173
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00152	-0.00152	-0.00152

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)	0.00247	0.00251	0.00248
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00221	0.00222	0.00219
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00173	0.00175	0.00173
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00154	0.00155	0.00153

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)	0.00215	0.00299	0.03352
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00180	0.00260	0.03315
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00132	0.00161	0.01767
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00115	0.00140	0.01747

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)	0.00584	0.00699	0.03782
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00574	0.00695	0.03776
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00444	0.00484	0.02099
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00446	0.00490	0.02104

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00435	0.00693	0.80126
sky130_osu_sc_15T_hs__tnbufi_l	0.00334	0.00499	0.42220

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	5.60444	6.66740
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.60004	0.67537

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)	0.05012	0.85092	9.95613
	OE->Y (RR)	0.04149	0.35939	4.68927
	OE->Y (FR)	0.06401	0.83431	9.42562
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.08023	1.05790	10.29870
	OE->Y (RR)	0.04063	0.35936	4.68929
	OE->Y (FR)	0.09305	1.05337	9.83705

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)	0.05351	0.85156	10.01280
	OE->Y (RF)	0.04105	0.35942	4.68928
	OE->Y (FF)	0.07516	0.67729	6.30091
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.05613	0.77933	7.94530
	OE->Y (RF)	0.04018	0.35937	4.68931
	OE->Y (FF)	0.09394	0.66920	4.66843

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	0.00499	0.00529	0.00996
	OE	0.00000	0.00000	0.00000
	OE	0.01200	0.01373	0.04527
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00376	0.00371	0.00674
	OE	0.00000	0.00000	0.00000
	OE	0.00877	0.00951	0.02606

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	-0.00085	-0.00059	0.00295
	OE	0.00000	0.00000	0.00000
	OE	0.01064	0.01243	0.04181
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00061	-0.00051	0.00159
	OE	0.00000	0.00000	0.00000
	OE	0.00760	0.00839	0.02407

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)	-0.00217	-0.00221	-0.00218
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00177	-0.00178	-0.00177
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00140	-0.00142	-0.00141
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00121	-0.00121	-0.00121

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)	0.00217	0.00221	0.00218
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00193	0.00195	0.00192
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00140	0.00142	0.00141
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00123	0.00124	0.00122

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)	-0.00362	-0.00308	0.02809
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00378	-0.00304	0.02806
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00227	-0.00223	0.01410
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00231	-0.00223	0.01412

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)	0.00917	0.01101	0.04256
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00893	0.01084	0.04235
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00658	0.00741	0.02397
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00647	0.00730	0.02389

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00864	0.00774	0.81352

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	11.92870	19.03030

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	0.13003	0.84970	7.63468
	A->Y (FR)	!B	0.06247	0.86601	10.01210
	B->Y (RR)	A	0.10477	0.82734	7.70315
	B->Y (FR)	!A	0.08322	0.85531	9.52625

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	0.14685	0.80529	6.68161
	A->Y (RF)	!B	0.07214	0.83698	9.56495
	B->Y (FF)	A	0.11692	0.77733	6.66327
	B->Y (RF)	!A	0.09673	0.86606	9.58879

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	0.00503	0.00553	0.03311
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01156	0.01302	0.04857
	B	A	0.00000	0.00000	0.00000
	B	A	0.00157	0.00244	0.03330
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01277	0.01419	0.04813

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	0.01519	0.01602	0.04650
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00356	0.00417	0.03745
	B	A	0.00000	0.00000	0.00000
	B	A	0.01359	0.01513	0.04631
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00468	0.00518	0.03846

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00866	0.00779	0.80892

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	11.92860	20.19250

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	0.12188	0.84451	7.76031
	A->Y (FR)	B	0.08206	0.85815	9.60133
	B->Y (RR)	!A	0.10871	0.83671	7.77072
	B->Y (FR)	A	0.08632	0.86280	9.59058

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	0.12069	0.77808	6.56646
	A->Y (RF)	B	0.08611	0.89734	10.10370
	B->Y (FF)	!A	0.11510	0.77811	6.64617
	B->Y (RF)	A	0.09485	0.86573	9.56223

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	0.01394	0.01534	0.04932
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00208	0.00224	0.03238
	B	A	0.00000	0.00000	0.00000
	B	A	0.01417	0.01563	0.04938
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00128	0.00206	0.03279

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	0.00347	0.00397	0.03766
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01507	0.01654	0.04530
	B	A	0.00000	0.00000	0.00000
	B	A	0.00354	0.00396	0.03700
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01367	0.01540	0.04634

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.55378
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	177945.00000	355890.00000
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
	-0.00165	0.05469	0.71718

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
	3.09708	2.93122	0.85491