sky130_osu_sc_15T_hs_tt_1P89_25C.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_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.01501	0.01497	0.01166	2.23925	1.04609	2.11761
sky130_osu_sc_15T_hs__addf_l	0.01501	0.01497	0.01165	1.34382	1.04385	1.38175

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.53456	0.69316
sky130_osu_sc_15T_hs__addf_l	0.00000	0.34170	0.50029

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)	0.12061	1.49793	24.80170
	B->CO (RR)	0.11807	1.46206	24.05830
	CI->CO (RR)	0.11458	1.54249	25.57310
	CON->CO (FR)	0.02074	0.64762	10.77650
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.12653	1.37683	18.78850
	B->CO (RR)	0.12384	1.35656	18.58400
	CI->CO (RR)	0.12050	1.42221	19.60320
	CON->CO (FR)	0.02661	0.73498	10.82170

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)	0.15158	1.80576	29.63850
	B->CO (FF)	0.13297	1.72773	28.58610
	CI->CO (FF)	0.13072	1.80410	29.99280
	CON->CO (RF)	0.01931	0.54092	9.05895
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.14703	1.48953	20.18660
	B->CO (FF)	0.12875	1.43111	19.70920
	CI->CO (FF)	0.12618	1.48967	20.59060
	CON->CO (RF)	0.01949	0.50232	7.37796

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)	0.12106	0.82383	10.04740
	B->CON (FR)	0.10259	0.78709	9.94555
	CI->CON (FR)	0.10019	0.82540	10.47850
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.11445	0.81686	10.02660
	B->CON (FR)	0.09653	0.78073	9.92623
	CI->CON (FR)	0.09358	0.81850	10.45800

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)	0.07954	0.53811	6.49050
	B->CON (RF)	0.07821	0.55798	6.86886
	CI->CON (RF)	0.07352	0.58469	7.34433
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.07654	0.53410	6.47710
	B->CON (RF)	0.07540	0.55484	6.85661
	CI->CON (RF)	0.07050	0.58132	7.32998

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)	0.22522	1.61522	23.31980
	B->S (-R)	0.23746	1.60826	22.50470
	CI->S (-R)	0.20259	1.61095	23.68110
	CON->S (RR)	0.06773	0.52299	6.73815
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.21913	1.49389	18.75360
	B->S (-R)	0.23169	1.49843	18.29450
	CI->S (-R)	0.19643	1.49042	19.15060
	CON->S (RR)	0.07048	0.58781	6.73457

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)	0.19372	1.35476	18.92980
	B->S (-F)	0.18930	1.30433	18.34730
	CI->S (-F)	0.18726	1.39687	19.70790
	CON->S (FF)	0.07625	0.60426	7.54104
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.18205	1.16193	13.84160
	B->S (-F)	0.17838	1.12962	13.74170
	CI->S (-F)	0.17552	1.20484	14.65560
	CON->S (FF)	0.07204	0.56390	6.19320

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	0.00330	0.00506	0.04474
	B	0.00365	0.00522	0.04029
	CI	0.00529	0.00721	0.04722
sky130_osu_sc_15T_hs__addf_l	A	0.00245	0.00359	0.02737
	B	0.00281	0.00377	0.02456
	CI	0.00443	0.00570	0.02942

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01382	0.01638	0.07625
	B	0.01456	0.01656	0.06971
	CI	0.01155	0.01435	0.07546
sky130_osu_sc_15T_hs__addf_l	A	0.01299	0.01463	0.04911
	B	0.01329	0.01465	0.04575
	CI	0.01072	0.01265	0.04888

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01380	0.01523	0.04466
	B	0.01407	0.01536	0.04270
	CI	0.01153	0.01327	0.04488
sky130_osu_sc_15T_hs__addf_l	A	0.01296	0.01432	0.04218
	B	0.01327	0.01445	0.04042
	CI	0.01071	0.01236	0.04232

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00327	0.00444	0.02560
	B	0.00363	0.00459	0.02365
	CI	0.00527	0.00651	0.02858
sky130_osu_sc_15T_hs__addf_l	A	0.00302	0.00344	0.02009
	B	0.00280	0.00360	0.02118
	CI	0.00441	0.00551	0.02552

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01382	0.01626	0.07251
	B	0.01455	0.01646	0.06663
	CI	0.01155	0.01425	0.07175
sky130_osu_sc_15T_hs__addf_l	A	-0.00263	-0.00437	0.04747
	B	-0.00683	-0.00574	0.04359
	CI	0.00337	0.00368	0.05299

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.03023	0.03105	0.07547
	B	0.02708	0.02881	0.08763
	CI	0.02299	0.02400	0.06565
sky130_osu_sc_15T_hs__addf_l	A	0.02915	0.02989	0.07555
	B	0.02607	0.02779	0.08847
	CI	0.02194	0.02276	0.06571

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00763	0.00842	2.19545	1.12647	2.22678
sky130_osu_sc_15T_hs__addh_l	0.00774	0.00867	1.41038	1.12577	1.43440

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.59389	0.68142
sky130_osu_sc_15T_hs__addh_l	0.00000	0.35752	0.49375

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)	0.08407	0.53899	6.65121
	B->CO (RR)	0.08668	0.52949	6.69863
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.07359	0.56817	6.39624
	B->CO (RR)	0.07642	0.56039	6.39628

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)	0.06392	0.49319	5.97649
	B->CO (FF)	0.06803	0.50485	6.04589
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.06278	0.48836	5.36026
	B->CO (FF)	0.06799	0.50254	5.43785

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	0.11794	0.43582	3.33050
	A->CON (FR)	!B	0.06706	0.76628	10.33550
	B->CON (RR)	A	0.12014	0.42561	3.39191
	B->CON (FR)	!A	0.08294	0.77025	10.04510
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.09387	0.38763	3.09540
	A->CON (FR)	!B	0.06128	0.76145	10.32540
	B->CON (RR)	A	0.09638	0.37967	3.10690
	B->CON (FR)	!A	0.07710	0.76370	10.03140

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	0.09581	0.50604	4.80159
	A->CON (RF)	!B	0.03702	0.46973	6.26740
	B->CON (FF)	A	0.09423	0.52960	5.12998
	B->CON (RF)	!A	0.04398	0.45805	5.94890
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.08974	0.49634	4.88860
	A->CON (RF)	!B	0.03505	0.46645	6.26178
	B->CON (FF)	A	0.08957	0.52299	5.22165
	B->CON (RF)	!A	0.04200	0.45554	5.94364

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	0.07089	1.27322	21.52870
	A->S (FR)	B	0.13055	1.29289	19.62320
	B->S (RR)	!A	0.07821	1.23298	20.61220
	B->S (FR)	A	0.12947	1.34832	20.59780
	CON->S (FR)	-	0.02290	0.66221	10.98430
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.07396	1.20934	17.57200
	A->S (FR)	B	0.12968	1.22527	15.86040
	B->S (RR)	!A	0.08135	1.17741	16.92170
	B->S (FR)	A	0.12991	1.27537	16.57060
	CON->S (FR)	-	0.02705	0.74366	11.11540

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	0.09629	1.66763	28.16630
	A->S (RF)	B	0.14555	1.12313	16.43530
	B->S (FF)	!A	0.11211	1.67218	27.95170
	B->S (RF)	A	0.14777	1.11222	16.47940
	CON->S (RF)	-	0.01898	0.54258	9.07932
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.09046	1.40820	20.40990
	A->S (RF)	B	0.12070	0.90896	11.03140
	B->S (FF)	!A	0.10637	1.41080	20.14810
	B->S (RF)	A	0.12323	0.89935	11.02750
	CON->S (RF)	-	0.01838	0.50659	7.58345

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	0.00675	0.00731	0.02867
	B	0.00000	0.00000	0.00000
	B	0.00607	0.00644	0.03317
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00586	0.00645	0.03262
	B	0.00000	0.00000	0.00000
	B	0.00519	0.00563	0.03615

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	0.01010	0.01091	0.04013
	B	0.00000	0.00000	0.00000
	B	0.01042	0.01187	0.04303
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00931	0.01026	0.04119
	B	0.00000	0.00000	0.00000
	B	0.00979	0.01127	0.04356

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	0.00673	0.00728	0.02847
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00890	0.00959	0.02511
	B	A	0.00000	0.00000	0.00000
	B	A	0.00606	0.00643	0.03312
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01005	0.01041	0.02202
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00585	0.00644	0.03220
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00841	0.00902	0.02198
	B	A	0.00000	0.00000	0.00000
	B	A	0.00518	0.00562	0.03592
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00953	0.00970	0.01898

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	0.01010	0.01091	0.03909
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00125	0.00185	0.01092
	B	A	0.00000	0.00000	0.00000
	B	A	0.01041	0.01179	0.04139
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00224	0.00256	0.01208
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00931	0.01028	0.04121
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00052	0.00097	0.00793
	B	A	0.00000	0.00000	0.00000
	B	A	0.00979	0.01126	0.04349
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00151	0.00170	0.00937

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	0.01011	0.01094	0.04044
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00126	0.00195	0.01098
	B	A	0.00000	0.00000	0.00000
	B	A	0.01042	0.01190	0.04342
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00228	0.00268	0.01078
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00932	0.01029	0.04173
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00054	0.00094	0.00785
	B	A	0.00000	0.00000	0.00000
	B	A	0.00980	0.01129	0.04407
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00153	0.00171	0.00849

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	0.00676	0.00731	0.02937
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00890	0.00997	0.02626
	B	A	0.00000	0.00000	0.00000
	B	A	0.00607	0.00644	0.03382
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01008	0.01069	0.02459
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00586	0.00645	0.03235
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00841	0.00917	0.02128
	B	A	0.00000	0.00000	0.00000
	B	A	0.00519	0.00564	0.03587
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00954	0.00979	0.01875

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00394	0.00406	2.19063
sky130_osu_sc_15T_hs__and2_2	0.00394	0.00406	4.24449
sky130_osu_sc_15T_hs__and2_4	0.00395	0.00407	8.15846
sky130_osu_sc_15T_hs__and2_6	0.00398	0.00407	11.91778
sky130_osu_sc_15T_hs__and2_8	0.00395	0.00408	15.51078
sky130_osu_sc_15T_hs__and2_l	0.00310	0.00323	1.34186

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.28360	0.45196
sky130_osu_sc_15T_hs__and2_2	0.00000	0.45162	0.46370
sky130_osu_sc_15T_hs__and2_4	0.00000	0.78766	0.89219
sky130_osu_sc_15T_hs__and2_6	0.00000	1.12370	1.33242
sky130_osu_sc_15T_hs__and2_8	0.00000	1.45973	1.77264
sky130_osu_sc_15T_hs__and2_l	0.00000	0.04631	0.07317

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)	0.06080	0.47609	6.54603
	B->Y (RR)	0.06458	0.46859	6.29049
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.06839	0.42411	6.50648
	B->Y (RR)	0.07206	0.41338	6.25057
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.09648	0.44120	6.72577
	B->Y (RR)	0.10028	0.42492	6.47642
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.12388	0.47438	6.82817
	B->Y (RR)	0.12760	0.45320	6.58415
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.15106	0.51243	6.99191
	B->Y (RR)	0.15486	0.48785	6.74067
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.06594	0.55456	6.31157
	B->Y (RR)	0.06986	0.54317	6.07818

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)**	0.05241	0.52104	7.04059
	B->Y (FF)	0.05469	0.53043	7.11115
sky130_osu_sc_15T_hs__and2_2	**A->Y (FF)**	0.05774	0.46597	6.81299
	B->Y (FF)	0.06041	0.47443	6.89242
sky130_osu_sc_15T_hs__and2_4	**A->Y (FF)**	0.07987	0.48681	7.18736
	B->Y (FF)	0.08214	0.49217	7.26829
sky130_osu_sc_15T_hs__and2_6	**A->Y (FF)**	0.10391	0.51577	7.28501
	B->Y (FF)	0.10562	0.51889	7.35690
sky130_osu_sc_15T_hs__and2_8	**A->Y (FF)**	0.12635	0.54257	7.32001
	B->Y (FF)	0.12779	0.54675	7.38811
sky130_osu_sc_15T_hs__and2_l	**A->Y (FF)**	0.05853	0.50882	5.64235
	B->Y (FF)	0.06299	0.52323	5.74241

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	0.00443	0.00688	0.08972
	B	0.00000	0.00000	0.00000
	B	0.00449	0.00577	0.06445
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00915	0.01172	0.09637
	B	0.00000	0.00000	0.00000
	B	0.00923	0.01090	0.07088
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01996	0.02187	0.09979
	B	0.00000	0.00000	0.00000
	B	0.02004	0.02096	0.07627
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03264	0.03345	0.10780
	B	0.00000	0.00000	0.00000
	B	0.03273	0.03211	0.08459
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.04660	0.04476	0.11678
	B	0.00000	0.00000	0.00000
	B	0.04666	0.04367	0.09172
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00334	0.00526	0.05732
	B	0.00000	0.00000	0.00000
	B	0.00342	0.00418	0.04083

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	0.01176	0.01578	0.08546
	B	0.00000	0.00000	0.00000
	B	0.01307	0.01675	0.08384
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01491	0.01913	0.09575
	B	0.00000	0.00000	0.00000
	B	0.01624	0.02006	0.09323
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.02398	0.02786	0.09737
	B	0.00000	0.00000	0.00000
	B	0.02524	0.02872	0.09606
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03385	0.03692	0.10634
	B	0.00000	0.00000	0.00000
	B	0.03505	0.03793	0.10484
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.04594	0.04599	0.11519
	B	0.00000	0.00000	0.00000
	B	0.04711	0.04691	0.11305
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00926	0.01167	0.05657
	B	0.00000	0.00000	0.00000
	B	0.01038	0.01251	0.05581

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)	-0.00454	-0.00454	-0.00457
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00453	-0.00453	-0.00456
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00454	-0.00455	-0.00457
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00457	-0.00456	-0.00460
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00453	-0.00453	-0.00456
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00322	-0.00322	-0.00325

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)	0.00456	0.00467	0.00459
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00456	0.00466	0.00458
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00457	0.00467	0.00459
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00460	0.00471	0.00463
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00458	0.00468	0.00460
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00324	0.00331	0.00325

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)	-0.00435	-0.00438	-0.00436
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00434	-0.00437	-0.00436
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00435	-0.00438	-0.00436
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00434	-0.00438	-0.00435
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00434	-0.00438	-0.00435
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00307	-0.00309	-0.00307

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)	0.00446	0.00438	0.00438
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00446	0.00437	0.00438
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00447	0.00438	0.00439
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00447	0.00438	0.00439
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00448	0.00438	0.00439
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00314	0.00311	0.00308

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00374	0.00388	0.00392	1.00190

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.10992	0.22012

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)	0.06273	0.76917	9.93297
	A1->Y (FR)	0.05369	0.72923	9.54728
	B0->Y (FR)	0.04458	0.77207	10.37110

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)	0.04288	0.48368	6.12576
	A1->Y (RF)	0.03926	0.51291	6.65267
	B0->Y (RF)	0.02264	0.45533	6.12956

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	0.01037	0.01045	0.02141
	A1	0.00000	0.00000	0.00000
	A1	0.00886	0.00895	0.01964
	B0	0.00632	0.00736	0.02645

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	0.00229	0.00222	0.01141
	A1	0.00000	0.00000	0.00000
	A1	0.00234	0.00256	0.01336
	B0	-0.00116	-0.00054	0.00948

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)	-0.00333	-0.00400	-0.00400
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00403	-0.00405	-0.00404
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00403	-0.00405	-0.00404

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)	0.00397	0.00403	0.00400
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00404	0.00405	0.00406
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00414	0.00405	0.00406

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)	-0.00329	-0.00391	-0.00394
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00397	-0.00397	-0.00398
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00426	-0.00428	-0.00429

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)	0.00391	0.00391	0.00394
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00397	0.00397	0.00399
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00428	0.00428	0.00430

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)	-0.00187	-0.00191	-0.00187

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)	0.00202	0.00203	0.00191

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00374	0.00386	0.00400	0.00382	1.01722

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.12539	0.44022

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)	0.07516	0.77546	9.87502
	A1->Y (FR)	0.06817	0.76035	9.77620
	B0->Y (FR)	0.04457	0.75494	10.18290
	B1->Y (FR)	0.05169	0.77377	10.34630

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)	0.05742	0.50280	6.21174
	A1->Y (RF)	0.05384	0.53150	6.74150
	B0->Y (RF)	0.02746	0.49982	6.71122
	B1->Y (RF)	0.03114	0.47029	6.18335

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	0.01271	0.01276	0.02395
	A1	0.01121	0.01123	0.02224
	B0	0.00677	0.00775	0.02706
	B1	0.00824	0.00943	0.02858

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00479	0.00470	0.01431
	A1	0.00482	0.00504	0.01625
	B0	-0.00083	-0.00017	0.01092
	B1	-0.00075	-0.00047	0.00902

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)	-0.00336	-0.00399	-0.00400
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00404	-0.00405	-0.00404
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00403	-0.00406	-0.00404
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00403	-0.00405	-0.00404

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)	0.00398	0.00402	0.00400
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00404	0.00406	0.00406
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00414	0.00406	0.00406
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00414	0.00405	0.00406

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)	-0.00332	-0.00393	-0.00394
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00397	-0.00399	-0.00397
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00425	-0.00427	-0.00428
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00425	-0.00427	-0.00428

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)	0.00391	0.00395	0.00394
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00397	0.00401	0.00399
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00427	0.00436	0.00429
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00427	0.00436	0.00429

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)	-0.00187	-0.00192	-0.00188
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00187	-0.00188	-0.00188
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00440	-0.00443	-0.00443
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00440	-0.00443	-0.00443

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)	0.00210	0.00211	0.00193
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00187	0.00188	0.00188
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00442	0.00446	0.00444
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00442	0.00444	0.00444

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)	-0.00189	-0.00193	-0.00190
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00188	-0.00191	-0.00189
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00411	-0.00415	-0.00412
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00411	-0.00413	-0.00412

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)	0.00212	0.00212	0.00195
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00189	0.00191	0.00189
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00422	0.00416	0.00413
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00422	0.00413	0.00413

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00407	2.14975
sky130_osu_sc_15T_hs__buf_2	0.00407	4.24920
sky130_osu_sc_15T_hs__buf_4	0.00407	8.19586
sky130_osu_sc_15T_hs__buf_6	0.00090	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00408	15.70263
sky130_osu_sc_15T_hs__buf_l	0.00324	1.35605

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.23185	0.23185
sky130_osu_sc_15T_hs__buf_2	0.00000	0.34778	0.45197
sky130_osu_sc_15T_hs__buf_4	0.00000	0.57963	0.89219
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	1.04333	1.77265
sky130_osu_sc_15T_hs__buf_l	0.00000	0.03899	0.03899

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)**	0.04795	0.44538	6.18101
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.05345	0.39000	6.19102
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.07256	0.38956	6.35666
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.11065	0.44060	6.59273
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.05233	0.52047	6.03615

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)**	0.04966	0.51226	7.00335
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.05627	0.47384	7.11036
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.07772	0.48369	7.29187
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.12394	0.54257	7.45790
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.05608	0.50563	5.75967

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	0.00411	0.00644	0.07031
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00870	0.01106	0.07550
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01901	0.02170	0.08519
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.04242	0.04375	0.10323
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00325	0.00465	0.04617

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	0.01129	0.01577	0.08603
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01445	0.01893	0.08941
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.02338	0.02727	0.09762
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.04542	0.04489	0.11394
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00893	0.01154	0.05708

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
	-0.00079	-0.00080	-0.00078

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
	0.00079	0.00080	0.00078

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00384	0.00380	0.01119	1.98448	1.97848
sky130_osu_sc_15T_hs__dffr_l	0.00384	0.00380	0.01118	1.35120	1.34309

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.66582	1.09337
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.47040	0.89796

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)	0.23928	1.16466	14.69540
	QN->Q (FR)	0.02636	0.76188	12.36950
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.24177	1.34479	15.35960
	QN->Q (FR)	0.02904	0.81552	12.03930

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)	0.24205	1.15439	14.71530
	QN->Q (RF)	0.02135	0.58223	9.44898
	RN->Q (FF)	0.18215	1.21288	16.44830
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.24846	1.34221	15.37240
	QN->Q (RF)	0.02407	0.63746	9.42952
	RN->Q (FF)	0.18888	1.40001	17.10270

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)	0.21670	0.64243	6.18026
	RN->QN (FR)	0.15675	0.70023	7.91321
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.21710	0.70850	6.27232
	RN->QN (FR)	0.15736	0.76610	7.99954

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)**	0.20446	0.57590	4.92828
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.20083	0.62875	5.10854

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)	-0.05804	-0.06468	0.10356
	setup	CK (R)	0.19029	0.21979	0.49560
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.05870	-0.06303	0.10494
	setup	CK (R)	0.18981	0.21898	0.49273

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)	-0.09688	-0.27289	-3.62259
	setup	CK (R)	0.11906	0.28351	3.76788
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.09549	-0.27298	-3.59163
	setup	CK (R)	0.11906	0.28351	3.76827

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)	-0.05804	-0.06468	0.10356
	setup	CK (R)	0.19029	0.21979	0.49560
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.05870	-0.06303	0.10494
	setup	CK (R)	0.18981	0.21898	0.49273

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)	-0.09688	-0.27289	-3.62259
	setup	CK (R)	0.11906	0.28351	3.76788
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.09549	-0.27298	-3.59163
	setup	CK (R)	0.11906	0.28351	3.76827

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)	0.16211	0.19487	0.90071
	removal	CK (R)	-0.04023	-0.04918	-0.10687
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.16141	0.19424	0.89185
	removal	CK (R)	-0.04023	-0.04918	-0.10687

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)	0.16211	0.19487	0.90071
	removal	CK (R)	-0.04023	-0.04918	-0.10687
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.16141	0.19424	0.89185
	removal	CK (R)	-0.04023	-0.04918	-0.10687

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 ()	0.10784	0.44067	13.33370
	min_pulse_width	RN ()	0.10784	0.44067	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.10451	0.44067	13.33370
	min_pulse_width	RN ()	0.10451	0.44067	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 ()	0.11450	0.44067	13.33370
	min_pulse_width	CK ()	0.12448	0.44067	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.10784	0.44067	13.33370
	min_pulse_width	CK ()	0.12115	0.44067	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 ()	0.23765	0.44067	13.33370
	min_pulse_width	CK ()	0.09786	0.44067	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.23765	0.44067	13.33370
	min_pulse_width	CK ()	0.09786	0.44067	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	0.01148	0.01111	0.02854
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00993	0.01089	0.05562

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01288	0.01088	0.00724
	RN	-0.00143	-0.10271	-1.77219
	RN	0.02967	0.02847	0.02517
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01141	0.01082	0.03514
	RN	-0.00143	-0.08156	-1.20666
	RN	0.02817	0.02841	0.05350

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01287	0.01089	0.00709
	RN	-0.00143	-0.10253	-1.76676
	RN	0.02966	0.02846	0.02545
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01141	0.01081	0.03544
	RN	-0.00143	-0.08127	-1.19937
	RN	0.02816	0.02840	0.05373

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	0.01142	0.01111	0.02905
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00988	0.01087	0.05535

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	-0.00323	-0.00391	-0.00397
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01384	0.01461	0.07131
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00614	0.00703	0.06365
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00323	-0.00391	-0.00397
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01384	0.01461	0.07131
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00614	0.00703	0.06365

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	0.00396	0.00398	0.00399
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02322	0.02431	0.08248
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01071	0.01187	0.06889
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00396	0.00398	0.00399
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02322	0.02431	0.08248
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01071	0.01187	0.06889

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)	0.00429	0.00697	0.10060
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01223	0.01461	0.10974
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)	0.00429	0.00697	0.10060
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01223	0.01461	0.10974

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)	0.01063	0.01495	0.10864
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02302	0.02648	0.12188
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)	0.01063	0.01495	0.10864
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02302	0.02648	0.12187

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)	-0.00106	0.00128	0.09490
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00620	0.00786	0.10562
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00146	0.00095	0.09411
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00106	0.00128	0.09490
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00620	0.00786	0.10562
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00147	0.00095	0.09410

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)	0.01658	0.02064	0.11495
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03565	0.03861	0.15587
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02755	0.03084	0.12813
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03496	0.04223	0.19232
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01894	0.02281	0.11616
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01658	0.02064	0.11495
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03565	0.03862	0.15587
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02755	0.03084	0.12813
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03496	0.04223	0.19232
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01894	0.02281	0.11616

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00380	0.00381	0.00842	0.01145	2.24164	2.23546
sky130_osu_sc_15T_hs__dffsr_l	0.00380	0.00381	0.00841	0.01144	1.34487	1.34552

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.81471	1.10755
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.61929	0.91213

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)	0.23541	1.19023	15.95600
	QN->Q (FR)	0.02290	0.70626	11.79760
	RN->Q (RR)	0.19200	1.15828	16.03220
	SN->Q (FR)	0.17224	1.25253	17.87310
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.24474	1.34658	15.28080
	QN->Q (FR)	0.02903	0.81246	11.98080
	RN->Q (RR)	0.20149	1.31531	15.34950
	SN->Q (FR)	0.18150	1.40725	17.19410

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)	0.26718	1.20568	15.85880
	QN->Q (RF)	0.02105	0.60993	10.25010
	RN->Q (FF)	0.18861	1.24788	17.60410
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.27877	1.37389	15.32730
	QN->Q (RF)	0.02403	0.63723	9.39398
	RN->Q (FF)	0.19950	1.41531	17.06500

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)	0.24177	0.66419	6.37164
	RN->QN (FR)	0.16344	0.70695	8.11382
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.24710	0.74341	6.31639
	RN->QN (FR)	0.16789	0.78472	8.05319

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)	0.20391	0.59903	5.62625
	RN->QN (RF)	0.16085	0.56732	5.69843
	SN->QN (FF)	0.14113	0.66158	7.53506
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.20515	0.63469	5.12325
	RN->QN (RF)	0.16212	0.60366	5.19247
	SN->QN (FF)	0.14230	0.69522	7.03042

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)	-0.05727	-0.06847	0.07172
	setup	CK (R)	0.18236	0.21037	0.54584
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.06154	-0.06801	0.07245
	setup	CK (R)	0.18026	0.20917	0.55193

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)	-0.10529	-0.28542	-3.59863
	setup	CK (R)	0.13229	0.29750	3.79571
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.10229	-0.28556	-3.57587
	setup	CK (R)	0.12883	0.29750	3.79478

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)	-0.05727	-0.06847	0.07172
	setup	CK (R)	0.18236	0.21037	0.54584
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.06154	-0.06801	0.07245
	setup	CK (R)	0.18026	0.20917	0.55193

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)	-0.10529	-0.28542	-3.59863
	setup	CK (R)	0.13229	0.29750	3.79571
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.10229	-0.28556	-3.57587
	setup	CK (R)	0.12883	0.29750	3.79478

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)	0.13499	0.16808	0.85449
	removal	CK (R)	-0.01993	-0.02547	-0.04631
	hold	SN (R)	-0.13520	-0.25468	-1.05320
	setup	SN (R)	0.15934	0.29341	3.80786
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.13268	0.16629	0.85691
	removal	CK (R)	-0.01993	-0.02547	-0.04631
	hold	SN (R)	-0.13656	-0.25085	-1.01717
	setup	SN (R)	0.15777	0.29153	3.79832

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)	0.13499	0.16808	0.85449
	removal	CK (R)	-0.01993	-0.02547	-0.04631
	hold	SN (R)	-0.13520	-0.25468	-1.05320
	hold	SN (R)	-0.13616	-0.25468	-1.05320
	setup	SN (R)	0.15654	0.29142	3.49123
	setup	SN (R)	0.15934	0.29341	3.80786
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.13268	0.16629	0.85691
	removal	CK (R)	-0.01993	-0.02547	-0.04631
	hold	SN (R)	-0.13656	-0.25085	-1.02994
	hold	SN (R)	-0.13756	-0.25085	-1.01717
	setup	SN (R)	0.15777	0.28931	3.44077
	setup	SN (R)	0.15022	0.29153	3.79832

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 ()	0.12781	0.44067	13.33370
	min_pulse_width	RN ()	0.12781	0.44067	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.12781	0.44067	13.33370
	min_pulse_width	RN ()	0.12448	0.44067	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)	0.03862	0.07008	4.82895
	removal	CK (R)	-0.01827	-0.05596	-0.29640
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.03452	0.06985	4.74947
	removal	CK (R)	-0.01711	-0.05596	-0.29532

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)	0.03862	0.07008	4.82895
	removal	CK (R)	-0.01827	-0.05596	-0.29640
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.03452	0.06985	4.74947
	removal	CK (R)	-0.01711	-0.05596	-0.29532

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 ()	0.13780	0.44067	13.33370
	min_pulse_width	SN ()	0.13780	0.44067	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.13780	0.44067	13.33370
	min_pulse_width	SN ()	0.13114	0.44067	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 ()	0.10784	0.44067	13.33370
	min_pulse_width	CK ()	0.13780	0.44067	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.10451	0.44067	13.33370
	min_pulse_width	CK ()	0.13447	0.44067	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 ()	0.22766	0.44067	13.33370
	min_pulse_width	CK ()	0.11450	0.44067	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.22766	0.44067	13.33370
	min_pulse_width	CK ()	0.11450	0.44067	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	0.01438	0.01358	0.02401
	RN	0.02659	0.02469	0.01943
	SN	-0.00143	-0.11051	-2.00184
	SN	0.02503	0.02234	0.01540
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01301	0.01389	0.05871
	RN	0.02522	0.02498	0.05428
	SN	-0.00143	-0.08133	-1.20101
	SN	0.02367	0.02263	0.04977

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	0.01522	0.01454	0.02829
	RN	-0.00143	-0.11051	-2.00182
	RN	0.03116	0.03109	0.04622
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01382	0.01334	0.03800
	RN	-0.00143	-0.08133	-1.20100
	RN	0.02971	0.02987	0.05639

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	0.01520	0.01451	0.02841
	RN	-0.00143	-0.11032	-1.99603
	RN	0.03112	0.03104	0.04653
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01380	0.01334	0.03805
	RN	-0.00143	-0.08135	-1.20154
	RN	0.02969	0.02985	0.05629

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	0.01433	0.01358	0.01935
	RN	0.02654	0.02468	0.01924
	SN	-0.00143	-0.11032	-1.99617
	SN	0.02499	0.02233	0.01504
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01296	0.01386	0.05839
	RN	0.02516	0.02491	0.05343
	SN	-0.00143	-0.08135	-1.20152
	SN	0.02363	0.02258	0.04977

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	-0.00389	-0.00395	-0.00396
	(!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)	0.01786	0.01859	0.07525
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00710	0.00793	0.06414
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00705	0.00790	0.06416
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00711	0.00796	0.06419
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00389	-0.00395	-0.00396
	(!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)	0.01786	0.01859	0.07525
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00709	0.00792	0.06414
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00705	0.00790	0.06417
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00711	0.00795	0.06419

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	0.00405	0.00399	0.00396
	(!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)	0.02704	0.02797	0.08562
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01146	0.01260	0.06930
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01163	0.01270	0.06925
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01140	0.01251	0.06920
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00405	0.00399	0.00396
	(!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)	0.02702	0.02796	0.08561
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01145	0.01259	0.06929
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01162	0.01269	0.06924
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01138	0.01254	0.06919

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)	0.00372	0.00624	0.09967
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01481	0.01698	0.11270
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)	0.00372	0.00624	0.09967
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01481	0.01698	0.11271

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)	0.01146	0.01595	0.10976
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02439	0.02780	0.12394
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)	0.01144	0.01593	0.10974
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02437	0.02778	0.12392

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)	-0.00898	-0.00903	-0.00904
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00847	-0.00964	-0.00966
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00858	-0.00917	-0.00918
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00605	0.00706	0.06535
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)	-0.00899	-0.00904	-0.00904
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00845	-0.00961	-0.00964
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00857	-0.00916	-0.00918
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00606	0.00706	0.06536

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)	0.00903	0.00923	0.00908
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00963	0.00964	0.00969
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00917	0.00924	0.00922
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01885	0.01934	0.07602
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)	0.00903	0.00923	0.00907
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00960	0.00961	0.00967
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00916	0.00923	0.00921
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01883	0.01933	0.07601

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)	-0.00105	0.00128	0.09493
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00735	0.00903	0.10659
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00712	0.00883	0.10648
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00123	0.00118	0.09437
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00488	0.00921	0.17710
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00106	0.00127	0.09493
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00733	0.00901	0.10658
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00711	0.00881	0.10647
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00124	0.00118	0.09437
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00488	0.00921	0.17710

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)	0.03997	0.04296	0.15993
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01665	0.02069	0.11505
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02817	0.03160	0.12871
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02825	0.03165	0.12868
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03867	0.04542	0.19619
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01878	0.02263	0.11604
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02197	0.02913	0.19761
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03997	0.04300	0.15994
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01665	0.02069	0.11504
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02816	0.03160	0.12871
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02824	0.03178	0.12868
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03866	0.04545	0.19617
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01878	0.02263	0.11604
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02196	0.02912	0.19760

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00382	0.00658	0.01120	2.01644	1.98946
sky130_osu_sc_15T_hs__dffs_l	0.00382	0.00658	0.01120	1.34689	1.35295

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.58203	0.86843
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.38662	0.67302

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)	0.18945	1.11002	14.81970
	QN->Q (FR)	0.02632	0.76257	12.42420
	SN->Q (FR)	0.14677	1.23342	16.80340
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.19503	1.28692	15.20170
	QN->Q (FR)	0.02900	0.81113	11.96690
	SN->Q (FR)	0.15267	1.40454	17.18090

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)	0.26937	1.19602	14.95270
	QN->Q (RF)	0.02124	0.58341	9.50867
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.27483	1.37042	15.32330
	QN->Q (RF)	0.02399	0.63572	9.38687

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)	0.24343	0.67685	6.22422
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.24273	0.74100	6.33320

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)	0.15745	0.51711	4.87025
	SN->QN (FF)	0.11418	0.63982	6.85295
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.15703	0.57586	5.06857
	SN->QN (FF)	0.11442	0.69418	7.03208

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)	-0.04328	-0.04875	0.11416
	setup	CK (R)	0.14051	0.17420	0.42719
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.04326	-0.05156	0.11794
	setup	CK (R)	0.13938	0.17288	0.43194

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)	-0.09688	-0.26999	-3.69543
	setup	CK (R)	0.12581	0.28531	3.77799
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.09770	-0.27382	-3.69532
	setup	CK (R)	0.12720	0.28531	3.77839

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)	-0.04328	-0.04875	0.11416
	setup	CK (R)	0.14051	0.17420	0.42719
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.04326	-0.05156	0.11794
	setup	CK (R)	0.13938	0.17288	0.43194

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)	-0.09688	-0.26999	-3.69543
	setup	CK (R)	0.12581	0.28531	3.77799
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.09770	-0.27382	-3.69532
	setup	CK (R)	0.12720	0.28531	3.77839

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)	0.04540	0.08235	3.69307
	removal	CK (R)	-0.02581	-0.06715	-0.40283
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.04460	0.08211	3.57029
	removal	CK (R)	-0.02581	-0.06715	-0.40283

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)	0.04540	0.08235	3.69307
	removal	CK (R)	-0.02581	-0.06715	-0.40283
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.04460	0.08211	3.57029
	removal	CK (R)	-0.02581	-0.06715	-0.40283

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 ()	0.10118	0.44067	13.33370
	min_pulse_width	SN ()	0.10451	0.44067	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.10118	0.44067	13.33370
	min_pulse_width	SN ()	0.09786	0.44067	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 ()	0.08454	0.44067	13.33370
	min_pulse_width	CK ()	0.13447	0.44067	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.08121	0.44067	13.33370
	min_pulse_width	CK ()	0.13114	0.44067	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 ()	0.18772	0.44067	13.33370
	min_pulse_width	CK ()	0.11117	0.44067	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.18439	0.44067	13.33370
	min_pulse_width	CK ()	0.11117	0.44067	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	0.01143	0.01108	0.02895
	SN	-0.00143	-0.10370	-1.80073
	SN	0.02043	0.01878	0.01387
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00993	0.01094	0.05504
	SN	-0.00143	-0.08140	-1.20280
	SN	0.01893	0.01857	0.04044

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	0.01282	0.01088	0.00746
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01132	0.01082	0.03609

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	0.01281	0.01089	0.00839
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01132	0.01082	0.03615

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	0.01137	0.01113	0.02985
	SN	-0.00143	-0.10287	-1.77649
	SN	0.02039	0.01876	0.01413
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00988	0.01092	0.05554
	SN	-0.00143	-0.08162	-1.20816
	SN	0.01889	0.01853	0.03997

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	-0.00395	-0.00402	-0.00402
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01302	0.01380	0.07175
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00601	0.00691	0.06353
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00395	-0.00402	-0.00402
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01302	0.01380	0.07175
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00601	0.00691	0.06352

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	0.00411	0.00405	0.00402
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02276	0.02376	0.08163
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01085	0.01208	0.06923
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00411	0.00405	0.00402
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02276	0.02375	0.08162
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01085	0.01207	0.06923

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)	-0.00648	-0.00648	-0.00651
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00498	0.00546	0.04882
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)	-0.00648	-0.00647	-0.00651
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00498	0.00546	0.04882

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)	0.00655	0.00657	0.00653
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01288	0.01385	0.05867
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)	0.00655	0.00656	0.00653
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01287	0.01385	0.05866

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)	-0.00109	0.00125	0.09499
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00141	0.00102	0.09429
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00373	0.00829	0.17703
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00109	0.00125	0.09498
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00141	0.00102	0.09428
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00373	0.00829	0.17702

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)	0.03507	0.03809	0.15643
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01660	0.02067	0.11508
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03431	0.04129	0.19144
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01886	0.02270	0.11621
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02124	0.02862	0.19793
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03507	0.03809	0.15643
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01659	0.02067	0.11508
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03431	0.04129	0.19144
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01886	0.02270	0.11621
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02124	0.02863	0.19793

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00398	0.01108	2.25485	2.24720
sky130_osu_sc_15T_hs__dff_l	0.00398	0.01108	1.21281	1.21123

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.74467	0.92363
sky130_osu_sc_15T_hs__dff_l	0.00000	0.55180	0.73077

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)	0.15753	1.09930	15.90800
	QN->Q (FR)	0.02275	0.70544	11.79670
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.16349	1.09968	12.32990
	QN->Q (FR)	0.03371	0.87206	12.49360

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)	0.22097	1.15437	15.87080
	QN->Q (RF)	0.02097	0.61003	10.26480
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.23399	1.20957	13.00480
	QN->Q (RF)	0.02091	0.53571	7.72617

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)	0.19611	0.61198	6.33363
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.20698	0.70834	6.14644

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)	0.12917	0.50859	5.53053
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.12633	0.44234	3.33227

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)	-0.03842	-0.04476	0.10348
	setup	CK (R)	0.10444	0.15004	0.40004
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.03916	-0.04476	0.10256
	setup	CK (R)	0.10361	0.14912	0.40451

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)	-0.08287	-0.26859	-3.68986
	setup	CK (R)	0.10221	0.27978	3.76060
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.08287	-0.26859	-3.68818
	setup	CK (R)	0.10210	0.27978	3.76060

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 ()	0.07123	0.44067	13.33370
	min_pulse_width	CK ()	0.11450	0.44067	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.06790	0.44067	13.33370
	min_pulse_width	CK ()	0.11450	0.44067	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 ()	0.15444	0.44067	13.33370
	min_pulse_width	CK ()	0.08121	0.44067	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.15444	0.44067	13.33370
	min_pulse_width	CK ()	0.08121	0.44067	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	0.01209	0.01147	0.02391
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01105	0.01171	0.05473

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	0.01310	0.01249	0.02765
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01194	0.01075	0.02747

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	0.01309	0.01249	0.02767
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01194	0.01075	0.02745

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	0.01205	0.01141	0.02378
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01099	0.01163	0.05420

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	-0.00323	-0.00389	-0.00396
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01242	0.01346	0.07249
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00323	-0.00389	-0.00396
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01243	0.01346	0.07249

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	0.00394	0.00397	0.00397
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02364	0.02466	0.08353
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00394	0.00397	0.00397
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02364	0.02467	0.08354

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)	-0.00109	0.00127	0.09501
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00139	0.00106	0.09433
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00109	0.00127	0.09501
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00139	0.00105	0.09433

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)	0.01651	0.02059	0.11501
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03452	0.03768	0.15687
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03497	0.04215	0.19468
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01877	0.02265	0.11611
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01651	0.02058	0.11501
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03453	0.03769	0.15687
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03498	0.04215	0.19469
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01876	0.02265	0.11611

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00385	2.06785
sky130_osu_sc_15T_hs__inv_10	0.03535	18.80370
sky130_osu_sc_15T_hs__inv_2	0.00728	4.07245
sky130_osu_sc_15T_hs__inv_3	0.01082	5.90591
sky130_osu_sc_15T_hs__inv_4	0.01429	7.94509
sky130_osu_sc_15T_hs__inv_6	0.02139	11.67857
sky130_osu_sc_15T_hs__inv_8	0.02836	15.29877
sky130_osu_sc_15T_hs__inv_l	0.00299	1.18026

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.11593	0.22012
sky130_osu_sc_15T_hs__inv_10	0.00000	1.15925	2.20113
sky130_osu_sc_15T_hs__inv_2	0.00000	0.23185	0.44023
sky130_osu_sc_15T_hs__inv_3	0.00000	0.34778	0.66034
sky130_osu_sc_15T_hs__inv_4	0.00000	0.46370	0.88045
sky130_osu_sc_15T_hs__inv_6	0.00000	0.69555	1.32068
sky130_osu_sc_15T_hs__inv_8	0.00000	0.92740	1.76091
sky130_osu_sc_15T_hs__inv_l	0.00000	0.01950	0.03418

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)**	0.02175	0.64214	10.47270
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.03196	0.42945	10.43860
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.01775	0.55164	10.38510
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.01981	0.51813	10.46360
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.02039	0.49008	10.44050
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.02267	0.45673	10.42530
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.02723	0.43847	10.39550
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.02903	0.73980	10.54510

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)**	0.01892	0.52478	8.60139
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.02765	0.30782	8.49947
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.01541	0.44006	8.56246
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.01692	0.40686	8.65931
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.01669	0.37643	8.64894
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.02012	0.34251	8.62324
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.02417	0.32274	8.57304
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.01905	0.47577	6.77923

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	0.00589	0.00734	0.02272
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.05088	0.07231	0.21995
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.01041	0.01376	0.04372
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01600	0.02178	0.06545
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.02060	0.02750	0.08633
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.03055	0.04528	0.12974
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.04051	0.05843	0.17547
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00452	0.00530	0.01656

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	-0.00138	-0.00063	0.00801
sky130_osu_sc_15T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01918	-0.00816	0.07642
sky130_osu_sc_15T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00418	-0.00233	0.01504
sky130_osu_sc_15T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00551	-0.00292	0.02279
sky130_osu_sc_15T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00825	-0.00438	0.02958
sky130_osu_sc_15T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01268	-0.00562	0.04501
sky130_osu_sc_15T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01661	-0.00801	0.06078
sky130_osu_sc_15T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00086	-0.00023	0.00618

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.04980	0.04965	0.00786	0.04406

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.23269	0.23269

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)	-	0.01067	0.05752	0.20375
	A1->Y (RR)	-	0.01168	0.05793	0.20317
	S0->Y (RR)	(!A0 * A1)	0.03801	0.10663	-0.36888
	S0->Y (FR)	(A0 * !A1)	0.02884	0.21249	1.69349

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)	-	0.01090	0.06802	0.22035
	A1->Y (FF)	-	0.01029	0.06708	0.21932
	S0->Y (FF)	(!A0 * A1)	0.04737	0.21795	1.37837
	S0->Y (RF)	(A0 * !A1)	0.02172	0.10070	-0.06258

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	-	-0.00608	-0.00609	-0.00610
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00419	-0.00419	-0.00420
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00712	0.01165	0.10661
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00432	-0.00116	0.09278

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	-	0.00608	0.00609	0.00610
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00419	0.00419	0.00420
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00107	0.00501	0.09942
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01609	0.02018	0.11429

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)	-0.00149	-0.00149	-0.00149

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)	0.00149	0.00149	0.00149

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)	-0.00178	-0.00178	-0.00178

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)	0.00178	0.00178	0.00178

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)	-0.00165	0.00177	0.09604
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00161	0.00182	0.09624

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)	0.01220	0.01634	0.11068
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01100	0.01555	0.11028

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00384	0.00384	1.78893
sky130_osu_sc_15T_hs__nand2_l	0.00299	0.00300	1.16552

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.11558	0.44023
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.01947	0.06836

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)	0.02240	0.61523	9.67130
	B->Y (FR)	0.02595	0.60839	9.51414
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.02981	0.73862	10.49700
	B->Y (FR)	0.03588	0.74396	10.47030

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)	0.02641	0.61687	9.76617
	B->Y (RF)	0.02976	0.59266	9.28893
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.02669	0.59537	8.43086
	B->Y (RF)	0.02984	0.56286	7.77343

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	0.00627	0.00771	0.02212
	B	0.00000	0.00000	0.00000
	B	0.00778	0.00862	0.02380
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00477	0.00555	0.01520
	B	0.00000	0.00000	0.00000
	B	0.00606	0.00669	0.01662

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	-0.00099	-0.00022	0.00790
	B	0.00000	0.00000	0.00000
	B	-0.00095	-0.00071	0.00638
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00064	-0.00014	0.00538
	B	0.00000	0.00000	0.00000
	B	-0.00061	-0.00046	0.00481

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)	-0.00444	-0.00445	-0.00447
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00309	-0.00310	-0.00312

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)	0.00445	0.00456	0.00448
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00311	0.00318	0.00312

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)	-0.00417	-0.00419	-0.00418
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00288	-0.00290	-0.00288

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)	0.00428	0.00419	0.00419
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00295	0.00292	0.00289

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00382	0.00411	1.13247
sky130_osu_sc_15T_hs__nor2_l	0.00290	0.00321	0.71077

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.08536	0.22011
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.01562	0.03418

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)	0.04586	0.74030	10.11680
	B->Y (FR)	0.03419	0.74418	10.39700
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.05642	0.85093	10.20650
	B->Y (FR)	0.04593	0.86128	10.58770

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)	0.02655	0.43047	5.82839
	B->Y (RF)	0.02023	0.41973	5.80942
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.02411	0.40410	4.83708
	B->Y (RF)	0.02015	0.39557	4.82158

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	0.00850	0.00874	0.02017
	B	0.00000	0.00000	0.00000
	B	0.00631	0.00761	0.02650
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00619	0.00630	0.01509
	B	0.00000	0.00000	0.00000
	B	0.00483	0.00554	0.01852

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	0.00093	0.00131	0.01310
	B	0.00000	0.00000	0.00000
	B	-0.00106	-0.00029	0.01105
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00056	0.00079	0.00939
	B	0.00000	0.00000	0.00000
	B	-0.00062	-0.00013	0.00803

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)	-0.00326	-0.00398	-0.00399
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00222	-0.00265	-0.00264

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)	0.00397	0.00401	0.00399
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00262	0.00265	0.00264

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)	-0.00189	-0.00192	-0.00189
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00123	-0.00125	-0.00123

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)	0.00196	0.00199	0.00191
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00128	0.00129	0.00124

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00387	0.00396	0.00323	1.08151

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.05946	0.25430

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)	0.04735	0.75775	10.30710
	A1->Y (FR)	0.06226	0.76001	10.05000
	B0->Y (FR)	0.03467	0.68994	9.56995

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)	0.03653	0.49938	6.60492
	A1->Y (RF)	0.04480	0.49738	6.45694
	B0->Y (RF)	0.02848	0.54228	7.44836

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	0.00866	0.00973	0.02602
	A1	0.00000	0.00000	0.00000
	A1	0.01084	0.01095	0.02144
	B0	0.00511	0.00591	0.01900

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	0.00011	0.00032	0.00889
	A1	0.00000	0.00000	0.00000
	A1	0.00214	0.00207	0.01092
	B0	0.00079	0.00128	0.00977

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)	-0.00190	-0.00191	-0.00189
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00398	-0.00403	-0.00401
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00407	-0.00409	-0.00407

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)	0.00198	0.00199	0.00192
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00400	0.00403	0.00401
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00411	0.00409	0.00408

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)	-0.00316	-0.00389	-0.00390
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00392	-0.00400	-0.00397
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00401	-0.00403	-0.00402

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)	0.00388	0.00392	0.00391
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00395	0.00400	0.00397
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00406	0.00404	0.00403

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)	-0.00314	-0.00315	-0.00319

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)	0.00318	0.00319	0.00320

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00375	0.00396	0.00406	0.00396	1.12276

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.12721	0.44022

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)	0.06557	0.75932	10.09190
	A1->Y (FR)	0.05377	0.75886	10.37470
	B0->Y (FR)	0.03747	0.74396	10.36920
	B1->Y (FR)	0.05167	0.74717	10.09090

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)	0.06418	0.54311	6.86072
	A1->Y (RF)	0.05057	0.52537	6.80573
	B0->Y (RF)	0.04338	0.56917	7.65989
	B1->Y (RF)	0.05739	0.58946	7.76427

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	0.01408	0.01420	0.02405
	A1	0.01185	0.01237	0.02886
	B0	0.00668	0.00733	0.02524
	B1	0.00902	0.00918	0.01945

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00144	0.00138	0.01025
	A1	-0.00047	-0.00028	0.00840
	B0	-0.00048	0.00012	0.01049
	B1	0.00146	0.00166	0.01194

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)	-0.00325	-0.00397	-0.00399
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00325	-0.00397	-0.00399
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00393	-0.00399	-0.00398
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00402	-0.00405	-0.00403

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)	0.00396	0.00401	0.00399
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00396	0.00401	0.00399
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00395	0.00401	0.00398
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00406	0.00406	0.00404

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)	-0.00187	-0.00191	-0.00187
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00187	-0.00191	-0.00187
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00390	-0.00397	-0.00394
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00399	-0.00402	-0.00400

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)	0.00194	0.00197	0.00190
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00195	0.00197	0.00190
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00393	0.00397	0.00394
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00403	0.00402	0.00401

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)	-0.00186	-0.00189	-0.00186
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00186	-0.00189	-0.00186
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00430	-0.00438	-0.00434
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00431	-0.00435	-0.00440

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)	0.00193	0.00196	0.00188
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00193	0.00196	0.00188
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00434	0.00438	0.00434
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00439	0.00440	0.00441

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)	-0.00319	-0.00390	-0.00391
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00319	-0.00390	-0.00391
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00439	-0.00447	-0.00444
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00440	-0.00441	-0.00448

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)	0.00389	0.00394	0.00392
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00389	0.00394	0.00392
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00443	0.00448	0.00444
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00447	0.00458	0.00450

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00418	0.00394	2.14458
sky130_osu_sc_15T_hs__or2_2	0.00418	0.00394	4.20124
sky130_osu_sc_15T_hs__or2_4	0.00418	0.00395	8.06947
sky130_osu_sc_15T_hs__or2_8	0.00418	0.00396	15.47000
sky130_osu_sc_15T_hs__or2_l	0.00331	0.00305	1.20151

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.14920	0.24359
sky130_osu_sc_15T_hs__or2_2	0.00000	0.21303	0.46370
sky130_osu_sc_15T_hs__or2_4	0.00000	0.34069	0.90393
sky130_osu_sc_15T_hs__or2_8	0.00000	0.59601	1.78438
sky130_osu_sc_15T_hs__or2_l	0.00000	0.02777	0.04380

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)	0.05812	0.47283	6.03390
	B->Y (RR)	0.04940	0.44595	5.99280
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.06419	0.41488	6.04045
	B->Y (RR)	0.05513	0.39031	5.98184
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.08361	0.41224	6.22397
	B->Y (RR)	0.07435	0.39129	6.14668
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.12184	0.45968	6.53557
	B->Y (RR)	0.11245	0.44331	6.45555
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.06186	0.55436	5.73434
	B->Y (RR)	0.05514	0.53111	5.64241

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)	0.08661	0.57087	7.24805
	B->Y (FF)	0.07081	0.56229	7.42467
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.10134	0.53779	7.31498
	B->Y (FF)	0.08567	0.53501	7.46969
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.14211	0.56491	7.52781
	B->Y (FF)	0.12651	0.56809	7.65382
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.22750	0.65444	7.73969
	B->Y (FF)	0.21196	0.66299	7.85163
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.10250	0.54943	5.53342
	B->Y (FF)	0.08491	0.54652	5.69265

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	0.00645	0.00753	0.05329
	B	0.00000	0.00000	0.00000
	B	0.00458	0.00697	0.06586
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01109	0.01247	0.05984
	B	0.00000	0.00000	0.00000
	B	0.00914	0.01172	0.07079
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02143	0.02334	0.07194
	B	0.00000	0.00000	0.00000
	B	0.01945	0.02264	0.08129
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.04500	0.04526	0.09242
	B	0.00000	0.00000	0.00000
	B	0.04291	0.04554	0.10227
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00473	0.00536	0.03125
	B	0.00000	0.00000	0.00000
	B	0.00357	0.00484	0.03513

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.01393	0.01500	0.06032
	B	0.00000	0.00000	0.00000
	B	0.01138	0.01541	0.09042
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01737	0.01850	0.06368
	B	0.00000	0.00000	0.00000
	B	0.01478	0.01864	0.09211
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02797	0.02711	0.07160
	B	0.00000	0.00000	0.00000
	B	0.02549	0.02728	0.09717
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.05768	0.04603	0.08816
	B	0.00000	0.00000	0.00000
	B	0.05515	0.04684	0.11025
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.01067	0.01102	0.04075
	B	0.00000	0.00000	0.00000
	B	0.00890	0.01106	0.05426

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)	-0.00328	-0.00400	-0.00401
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00328	-0.00400	-0.00401
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00328	-0.00400	-0.00401
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00328	-0.00400	-0.00401
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00223	-0.00267	-0.00267

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)	0.00399	0.00403	0.00402
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00398	0.00403	0.00402
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00398	0.00403	0.00402
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00399	0.00403	0.00402
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00265	0.00268	0.00267

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)	-0.00189	-0.00191	-0.00189
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00189	-0.00192	-0.00189
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00189	-0.00192	-0.00189
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00189	-0.00192	-0.00189
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00125	-0.00127	-0.00126

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)	0.00198	0.00200	0.00192
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00198	0.00200	0.00192
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00198	0.00200	0.00192
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00198	0.00200	0.00192
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00131	0.00133	0.00128

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00409	0.00514	1.14297
sky130_osu_sc_15T_hs__tbufi_l	0.00322	0.00418	0.69857

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.12084	0.44023
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.02162	0.06836

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)	0.03297	0.74066	10.38300
	OE->Y (FR)	0.03969	0.34353	5.24791
	OE->Y (RR)	0.06455	0.55856	6.23448
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.04454	0.85418	10.46820
	OE->Y (FR)	0.04605	0.34332	5.24770
	OE->Y (RR)	0.07168	0.65444	5.98479

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)	0.02595	0.52018	7.24827
	OE->Y (FF)	0.04020	0.34354	5.24790
	OE->Y (RF)	0.02396	0.48632	6.69676
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.02656	0.49316	6.01573
	OE->Y (FF)	0.04644	0.34331	5.24771
	OE->Y (RF)	0.02486	0.44973	5.34992

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	0.00603	0.00717	0.02356
	OE	0.00000	0.00000	0.00000
	OE	0.00608	0.00931	0.09139
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00459	0.00521	0.01681
	OE	0.00000	0.00000	0.00000
	OE	0.00435	0.00617	0.05569

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	-0.00108	-0.00040	0.00935
	OE	0.00000	0.00000	0.00000
	OE	0.00399	0.00742	0.10113
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00062	-0.00022	0.00687
	OE	0.00000	0.00000	0.00000
	OE	0.00268	0.00466	0.06264

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)	-0.00316	-0.00319	-0.00315
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00278	-0.00281	-0.00279
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00226	-0.00229	-0.00226
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00201	-0.00205	-0.00201

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)	0.00316	0.00319	0.00315
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00283	0.00287	0.00281
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00226	0.00229	0.00226
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00204	0.00206	0.00202

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)	0.00243	0.00610	0.10198
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00213	0.00587	0.10164
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00157	0.00369	0.06254
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00139	0.00355	0.06232

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)	0.00720	0.01172	0.10717
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00722	0.01178	0.10726
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00562	0.00820	0.06682
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00568	0.00828	0.06690

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00408	0.00639	1.14318
sky130_osu_sc_15T_hs__tnbufi_l	0.00321	0.00471	0.70974

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.19030	0.23185
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.03141	0.03899

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)	0.03318	0.74066	10.38390
	OE->Y (RR)	0.02447	0.34402	5.24843
	OE->Y (FR)	0.04355	0.73583	10.06590
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.04481	0.85955	10.57190
	OE->Y (RR)	0.02397	0.34399	5.24838
	OE->Y (FR)	0.05393	0.84902	10.14390

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)	0.02555	0.52008	7.24910
	OE->Y (RF)	0.02420	0.34401	5.24842
	OE->Y (FF)	0.04249	0.46958	5.57798
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.02609	0.49592	6.08086
	OE->Y (RF)	0.02377	0.34399	5.24838
	OE->Y (FF)	0.04915	0.46775	4.71088

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	0.00621	0.00734	0.02373
	OE	0.00000	0.00000	0.00000
	OE	0.01511	0.02020	0.11563
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00478	0.00538	0.01680
	OE	0.00000	0.00000	0.00000
	OE	0.01125	0.01420	0.07256

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	-0.00132	-0.00063	0.00913
	OE	0.00000	0.00000	0.00000
	OE	0.01323	0.01871	0.09935
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00086	-0.00044	0.00657
	OE	0.00000	0.00000	0.00000
	OE	0.00978	0.01298	0.06405

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)	-0.00268	-0.00271	-0.00268
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00233	-0.00236	-0.00235
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00181	-0.00183	-0.00181
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00159	-0.00159	-0.00159

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)	0.00268	0.00271	0.00268
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00238	0.00241	0.00237
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00181	0.00183	0.00181
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00160	0.00162	0.00159

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)	-0.00466	-0.00108	0.09541
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00467	-0.00102	0.09546
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00298	-0.00105	0.05818
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00297	-0.00100	0.05822

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)	0.01141	0.01706	0.11348
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01127	0.01674	0.11337
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00846	0.01168	0.07090
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00836	0.01193	0.07082

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00811	0.00721	1.16302

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.39959	0.67208

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	0.07964	0.58477	6.33716
	A->Y (FR)	!B	0.04179	0.74882	10.41740
	B->Y (RR)	A	0.06316	0.57110	6.44352
	B->Y (FR)	!A	0.05754	0.74946	10.15680

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	0.07715	0.53516	5.89851
	A->Y (RF)	!B	0.03480	0.50000	6.81571
	B->Y (FF)	A	0.06575	0.52481	5.90539
	B->Y (RF)	!A	0.04509	0.51303	6.81549

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	0.00580	0.00861	0.09199
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01445	0.01948	0.13010
	B	A	0.00000	0.00000	0.00000
	B	A	0.00161	0.00534	0.10208
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01593	0.02044	0.12284

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	0.01854	0.02211	0.11608
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00389	0.00736	0.10934
	B	A	0.00000	0.00000	0.00000
	B	A	0.01669	0.02131	0.11794
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00535	0.00867	0.10964

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00813	0.00726	1.15956

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.39959	0.62882

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	0.07601	0.58294	6.52453
	A->Y (FR)	B	0.05536	0.75689	10.31850
	B->Y (RR)	!A	0.06653	0.58206	6.55367
	B->Y (FR)	A	0.05876	0.75914	10.28760

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	0.06692	0.52676	5.75620
	A->Y (RF)	B	0.03758	0.53970	7.31971
	B->Y (FF)	!A	0.06360	0.52632	5.91242
	B->Y (RF)	A	0.04465	0.51428	6.81077

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	0.01737	0.02193	0.12547
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00244	0.00465	0.09752
	B	A	0.00000	0.00000	0.00000
	B	A	0.01764	0.02224	0.12308
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00142	0.00489	0.10064

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	0.00345	0.00670	0.11011
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01889	0.02366	0.10374
	B	A	0.00000	0.00000	0.00000
	B	A	0.00354	0.00659	0.10594
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01698	0.02221	0.11747

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.70425
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	331234.00000	662468.00000
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
	-0.00203	0.08544	1.27901

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
	5.76522	5.49629	1.53169