sky130_osu_sc_15T_hs_tt_1P44_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_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.01418	0.01417	0.01102	1.35701	0.60087	1.28826
sky130_osu_sc_15T_hs__addf_l	0.01417	0.01417	0.01100	0.80886	0.60297	0.83443

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.15002	0.18907
sky130_osu_sc_15T_hs__addf_l	0.00000	0.09815	0.13720

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)	0.18356	1.92240	25.71400
	B->CO (RR)	0.17733	1.86386	24.93750
	CI->CO (RR)	0.17451	1.94779	26.22640
	CON->CO (FR)	0.03306	0.84312	11.98820
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.19337	1.77315	19.71490
	B->CO (RR)	0.18697	1.73232	19.42900
	CI->CO (RR)	0.18437	1.79871	20.26200
	CON->CO (FR)	0.04412	0.95825	12.02640

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)	0.27725	2.57056	33.88890
	B->CO (FF)	0.24941	2.47162	32.75950
	CI->CO (FF)	0.24269	2.51746	33.73060
	CON->CO (RF)	0.02533	0.61693	8.75687
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.26911	2.11022	23.09250
	B->CO (FF)	0.24193	2.03211	22.42190
	CI->CO (FF)	0.23441	2.05741	22.96370
	CON->CO (RF)	0.02582	0.58051	7.43408

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)	0.20973	1.18400	11.84010
	B->CON (FR)	0.18328	1.12379	11.51610
	CI->CON (FR)	0.17521	1.13214	11.73860
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.19902	1.17499	11.85590
	B->CON (FR)	0.17338	1.11520	11.52840
	CI->CON (FR)	0.16454	1.12309	11.75310

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)	0.10532	0.65918	6.83318
	B->CON (RF)	0.10190	0.66594	7.09593
	CI->CON (RF)	0.09630	0.68655	7.41997
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.10154	0.65615	6.84315
	B->CON (RF)	0.09832	0.66315	7.10503
	CI->CON (RF)	0.09254	0.68352	7.42957

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)	0.40026	2.43417	26.98530
	B->S (-R)	0.40611	2.42735	26.43320
	CI->S (-R)	0.36298	2.37520	26.81900
	CON->S (RR)	0.10405	0.76988	7.58240
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.38962	2.23612	21.86160
	B->S (-R)	0.39589	2.23821	21.58670
	CI->S (-R)	0.35221	2.17728	21.71710
	CON->S (RR)	0.10996	0.86487	7.65854

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)	0.30864	1.71535	17.84820
	B->S (-F)	0.30349	1.64535	17.41850
	CI->S (-F)	0.29894	1.73635	18.35100
	CON->S (FF)	0.12705	0.76953	6.88071
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.28939	1.48040	13.48240
	B->S (-F)	0.28530	1.42788	13.39040
	CI->S (-F)	0.27962	1.50216	14.02010
	CON->S (FF)	0.11509	0.73152	5.79500

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	0.00226	0.00213	0.00323
	B	0.00281	0.00280	0.00398
	CI	0.00286	0.00299	0.00450
sky130_osu_sc_15T_hs__addf_l	A	0.00183	0.00164	0.00230
	B	0.00238	0.00229	0.00298
	CI	0.00243	0.00248	0.00334

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00748	0.00764	0.01075
	B	0.00793	0.00811	0.01062
	CI	0.00698	0.00728	0.00985
sky130_osu_sc_15T_hs__addf_l	A	0.00763	0.00764	0.00883
	B	0.00751	0.00764	0.00888
	CI	0.00655	0.00681	0.00815

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00803	0.00803	0.00882
	B	0.00791	0.00806	0.00882
	CI	0.00696	0.00720	0.00812
sky130_osu_sc_15T_hs__addf_l	A	0.00763	0.00761	0.00838
	B	0.00751	0.00763	0.00838
	CI	0.00655	0.00678	0.00768

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00222	0.00208	0.00253
	B	0.00277	0.00274	0.00320
	CI	0.00285	0.00293	0.00355
sky130_osu_sc_15T_hs__addf_l	A	0.00180	0.00162	0.00205
	B	0.00235	0.00227	0.00273
	CI	0.00243	0.00246	0.00310

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00748	0.00764	0.01052
	B	0.00792	0.00811	0.01044
	CI	0.00697	0.00727	0.00970
sky130_osu_sc_15T_hs__addf_l	A	0.00764	0.00764	0.00893
	B	0.00752	0.00765	0.00898
	CI	0.00656	0.00682	0.00822

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01634	0.01643	0.01727
	B	0.01483	0.01460	0.01781
	CI	0.01339	0.01340	0.01453
sky130_osu_sc_15T_hs__addf_l	A	0.01578	0.01580	0.01662
	B	0.01428	0.01399	0.01727
	CI	0.01286	0.01283	0.01401

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00726	0.00797	1.33249	0.64496	1.34395
sky130_osu_sc_15T_hs__addh_l	0.00738	0.00822	0.84953	0.63614	0.85001

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.16103	0.18345
sky130_osu_sc_15T_hs__addh_l	0.00000	0.09837	0.13405

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)	0.13282	0.79929	7.49463
	B->CO (RR)	0.13642	0.79398	7.57257
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.11734	0.84739	7.34876
	B->CO (RR)	0.12113	0.84698	7.43206

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)	0.10522	0.66512	5.76886
	B->CO (FF)	0.11070	0.67658	5.81346
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.10265	0.65104	5.13098
	B->CO (FF)	0.11000	0.66701	5.19574

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	0.18463	0.66266	3.91625
	A->CON (FR)	!B	0.12248	1.06156	11.71660
	B->CON (RR)	A	0.18793	0.65779	3.99774
	B->CON (FR)	!A	0.14816	1.10717	11.88480
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.14693	0.59843	3.62343
	A->CON (FR)	!B	0.11243	1.04576	11.60920
	B->CON (RR)	A	0.15068	0.59730	3.71023
	B->CON (FR)	!A	0.13800	1.09183	11.77680

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	0.14917	0.70095	4.97426
	A->CON (RF)	!B	0.05048	0.56280	6.53714
	B->CON (FF)	A	0.14972	0.72362	5.18905
	B->CON (RF)	!A	0.05921	0.56031	6.32266
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.14001	0.68002	4.86643
	A->CON (RF)	!B	0.04782	0.55759	6.48579
	B->CON (FF)	A	0.14252	0.70748	5.10104
	B->CON (RF)	!A	0.05659	0.55536	6.27306

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	0.11151	1.60601	22.17750
	A->S (FR)	B	0.21149	1.72573	20.18250
	B->S (RR)	!A	0.12023	1.56838	21.40930
	B->S (FR)	A	0.21308	1.78501	20.98290
	CON->S (FR)	-	0.03553	0.85592	12.12310
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.11742	1.52924	18.18390
	A->S (FR)	B	0.21091	1.63820	16.23830
	B->S (RR)	!A	0.12615	1.50116	17.67530
	B->S (FR)	A	0.21443	1.69191	16.79890
	CON->S (FR)	-	0.04411	0.96502	12.25410

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	0.18028	2.33006	31.91950
	A->S (RF)	B	0.23226	1.52364	17.05070
	B->S (FF)	!A	0.20625	2.37782	32.14880
	B->S (RF)	A	0.23544	1.51875	17.12320
	CON->S (RF)	-	0.02485	0.61581	8.75238
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.17019	1.93346	22.73080
	A->S (RF)	B	0.19299	1.23848	11.36170
	B->S (FF)	!A	0.19576	1.98351	22.92150
	B->S (RF)	A	0.19666	1.23670	11.43740
	CON->S (RF)	-	0.02441	0.57994	7.54465

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	0.00377	0.00359	0.00417
	B	0.00000	0.00000	0.00000
	B	0.00346	0.00332	0.00378
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00332	0.00308	0.00405
	B	0.00000	0.00000	0.00000
	B	0.00300	0.00278	0.00352

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	0.00568	0.00550	0.00640
	B	0.00000	0.00000	0.00000
	B	0.00584	0.00587	0.00680
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00527	0.00505	0.00620
	B	0.00000	0.00000	0.00000
	B	0.00551	0.00550	0.00666

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	0.00377	0.00358	0.00428
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00492	0.00492	0.00531
	B	A	0.00000	0.00000	0.00000
	B	A	0.00345	0.00328	0.00390
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00548	0.00544	0.00555
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00331	0.00307	0.00401
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00468	0.00465	0.00498
	B	A	0.00000	0.00000	0.00000
	B	A	0.00300	0.00277	0.00347
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00522	0.00515	0.00521

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	0.00568	0.00551	0.00658
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00082	0.00081	0.00064
	B	A	0.00000	0.00000	0.00000
	B	A	0.00584	0.00587	0.00685
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00138	0.00130	0.00142
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00527	0.00507	0.00630
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00044	0.00041	0.00047
	B	A	0.00000	0.00000	0.00000
	B	A	0.00551	0.00550	0.00672
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00099	0.00089	0.00097

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	0.00569	0.00551	0.00652
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00083	0.00085	0.00092
	B	A	0.00000	0.00000	0.00000
	B	A	0.00584	0.00587	0.00701
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00140	0.00134	0.00140
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00528	0.00507	0.00643
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00044	0.00043	0.00040
	B	A	0.00000	0.00000	0.00000
	B	A	0.00552	0.00551	0.00686
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00100	0.00091	0.00071

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	0.00377	0.00359	0.00417
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00493	0.00497	0.00533
	B	A	0.00000	0.00000	0.00000
	B	A	0.00346	0.00327	0.00364
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00549	0.00549	0.00571
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00331	0.00307	0.00398
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00468	0.00467	0.00497
	B	A	0.00000	0.00000	0.00000
	B	A	0.00300	0.00277	0.00348
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00522	0.00516	0.00525

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00373	0.00385	1.33808
sky130_osu_sc_15T_hs__and2_2	0.00372	0.00384	2.61688
sky130_osu_sc_15T_hs__and2_4	0.00373	0.00385	5.06024
sky130_osu_sc_15T_hs__and2_6	0.00377	0.00384	7.48534
sky130_osu_sc_15T_hs__and2_8	0.00374	0.00385	9.76991
sky130_osu_sc_15T_hs__and2_l	0.00296	0.00308	0.80906

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.07633	0.12116
sky130_osu_sc_15T_hs__and2_2	0.00000	0.12106	0.12679
sky130_osu_sc_15T_hs__and2_4	0.00000	0.21053	0.23670
sky130_osu_sc_15T_hs__and2_6	0.00000	0.30000	0.35224
sky130_osu_sc_15T_hs__and2_8	0.00000	0.38946	0.46778
sky130_osu_sc_15T_hs__and2_l	0.00000	0.01321	0.02060

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)	0.09610	0.71286	7.14109
	B->Y (RR)	0.10149	0.71779	7.20700
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.10795	0.65074	7.28265
	B->Y (RR)	0.11308	0.64907	7.33621
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.15218	0.67532	7.71291
	B->Y (RR)	0.15747	0.66438	7.75424
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.19308	0.71876	8.04821
	B->Y (RR)	0.19824	0.70280	8.07249
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.23274	0.76348	8.33546
	B->Y (RR)	0.23811	0.74804	8.34073
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.10543	0.82153	7.12129
	B->Y (RR)	0.11102	0.82390	7.18346

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)**	0.08230	0.67087	6.49424
	B->Y (FF)	0.08650	0.68516	6.56424
sky130_osu_sc_15T_hs__and2_2	**A->Y (FF)**	0.09458	0.63339	6.49328
	B->Y (FF)	0.09924	0.64708	6.56283
sky130_osu_sc_15T_hs__and2_4	**A->Y (FF)**	0.13442	0.67771	7.14045
	B->Y (FF)	0.13863	0.68588	7.19579
sky130_osu_sc_15T_hs__and2_6	**A->Y (FF)**	0.17572	0.72002	7.46282
	B->Y (FF)	0.17931	0.72749	7.52928
sky130_osu_sc_15T_hs__and2_8	**A->Y (FF)**	0.21415	0.76083	7.67937
	B->Y (FF)	0.21744	0.76636	7.72878
sky130_osu_sc_15T_hs__and2_1	**A->Y (FF)**	0.09518	0.66615	5.38049
	B->Y (FF)	0.10332	0.68618	5.47809

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	0.00267	0.00234	0.00600
	B	0.00000	0.00000	0.00000
	B	0.00273	0.00227	0.00440
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00517	0.00508	0.00852
	B	0.00000	0.00000	0.00000
	B	0.00523	0.00510	0.00706
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01068	0.01091	0.01428
	B	0.00000	0.00000	0.00000
	B	0.01074	0.01094	0.01310
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01623	0.01672	0.01987
	B	0.00000	0.00000	0.00000
	B	0.01630	0.01683	0.01875
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02181	0.02240	0.02508
	B	0.00000	0.00000	0.00000
	B	0.02190	0.02262	0.02417
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00202	0.00178	0.00386
	B	0.00000	0.00000	0.00000
	B	0.00208	0.00176	0.00298

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	0.00665	0.00668	0.01059
	B	0.00000	0.00000	0.00000
	B	0.00741	0.00739	0.01099
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00822	0.00861	0.01250
	B	0.00000	0.00000	0.00000
	B	0.00900	0.00931	0.01287
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01238	0.01346	0.01723
	B	0.00000	0.00000	0.00000
	B	0.01313	0.01410	0.01758
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01654	0.01831	0.02219
	B	0.00000	0.00000	0.00000
	B	0.01738	0.01884	0.02242
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02086	0.02296	0.02718
	B	0.00000	0.00000	0.00000
	B	0.02146	0.02338	0.02717
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00527	0.00521	0.00751
	B	0.00000	0.00000	0.00000
	B	0.00591	0.00580	0.00792

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)	-0.00245	-0.00246	-0.00248
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00245	-0.00246	-0.00247
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00245	-0.00247	-0.00248
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00247	-0.00248	-0.00249
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00245	-0.00246	-0.00247
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00175	-0.00176	-0.00177

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)	0.00248	0.00253	0.00248
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00247	0.00253	0.00248
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00248	0.00253	0.00249
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00250	0.00255	0.00250
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00248	0.00253	0.00249
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00177	0.00177	0.00177

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)	-0.00234	-0.00235	-0.00235
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00234	-0.00236	-0.00235
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00234	-0.00236	-0.00235
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00234	-0.00236	-0.00235
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00234	-0.00235	-0.00235
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00166	-0.00167	-0.00167

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)	0.00241	0.00237	0.00236
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00240	0.00237	0.00236
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00240	0.00237	0.00236
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00240	0.00237	0.00236
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00240	0.00238	0.00237
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00170	0.00170	0.00168

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00352	0.00367	0.00372	0.59160

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.03069	0.05777

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)	0.10930	1.09534	11.82100
	A1->Y (FR)	0.09430	1.04435	11.47450
	B0->Y (FR)	0.08012	1.04730	11.72130

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)	0.05608	0.59716	6.61459
	A1->Y (RF)	0.05122	0.61182	6.99363
	B0->Y (RF)	0.03031	0.53516	6.36146

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	0.00558	0.00554	0.00559
	A1	0.00000	0.00000	0.00000
	A1	0.00478	0.00471	0.00474
	B0	0.00446	0.00436	0.00482

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	0.00132	0.00112	0.00119
	A1	0.00000	0.00000	0.00000
	A1	0.00134	0.00113	0.00131
	B0	-0.00052	-0.00057	-0.00043

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)	-0.00191	-0.00212	-0.00213
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00216	-0.00218	-0.00217
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00216	-0.00217	-0.00217

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)	0.00212	0.00214	0.00213
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00216	0.00218	0.00218
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00222	0.00219	0.00217

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)	-0.00189	-0.00209	-0.00209
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00212	-0.00214	-0.00213
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00229	-0.00231	-0.00231

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)	0.00209	0.00210	0.00209
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00213	0.00215	0.00214
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00230	0.00232	0.00232

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)	-0.00112	-0.00115	-0.00113

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)	0.00125	0.00125	0.00116

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00351	0.00365	0.00379	0.00360	0.60695

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.03573	0.11554

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)	0.13285	1.12041	11.89660
	A1->Y (FR)	0.12047	1.09783	11.80000
	B0->Y (FR)	0.08069	1.03602	11.66620
	B1->Y (FR)	0.09323	1.05852	11.79870

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)	0.07323	0.62036	6.73136
	A1->Y (RF)	0.06843	0.63449	7.11354
	B0->Y (RF)	0.03945	0.60162	7.07693
	B1->Y (RF)	0.04416	0.58626	6.69465

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	0.00677	0.00672	0.00676
	A1	0.00592	0.00585	0.00589
	B0	0.00471	0.00459	0.00507
	B1	0.00547	0.00536	0.00586

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00266	0.00247	0.00251
	A1	0.00268	0.00249	0.00262
	B0	-0.00032	-0.00037	-0.00017
	B1	-0.00028	-0.00036	-0.00025

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)	-0.00194	-0.00212	-0.00213
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00216	-0.00218	-0.00217
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00216	-0.00217	-0.00217
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00216	-0.00217	-0.00217

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)	0.00212	0.00215	0.00213
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00216	0.00218	0.00218
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00222	0.00219	0.00217
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00222	0.00219	0.00217

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)	-0.00192	-0.00209	-0.00209
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00212	-0.00214	-0.00213
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00227	-0.00230	-0.00230
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00227	-0.00230	-0.00230

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)	0.00208	0.00211	0.00209
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00213	0.00216	0.00214
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00230	0.00230	0.00231
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00230	0.00231	0.00231

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)	-0.00113	-0.00115	-0.00113
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00112	-0.00114	-0.00113
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00237	-0.00238	-0.00240
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00237	-0.00238	-0.00240

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)	0.00131	0.00131	0.00118
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00113	0.00114	0.00113
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00239	0.00241	0.00240
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00239	0.00241	0.00240

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)	-0.00113	-0.00116	-0.00114
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00113	-0.00114	-0.00114
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00221	-0.00222	-0.00221
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00221	-0.00222	-0.00221

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)	0.00132	0.00134	0.00119
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00114	0.00114	0.00114
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00226	0.00223	0.00222
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00226	0.00223	0.00222

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00385	1.31071
sky130_osu_sc_15T_hs__buf_2	0.00386	2.62188
sky130_osu_sc_15T_hs__buf_4	0.00385	5.06428
sky130_osu_sc_15T_hs__buf_6	0.00089	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00385	9.83683
sky130_osu_sc_15T_hs__buf_l	0.00310	0.81760

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.06339	0.06339
sky130_osu_sc_15T_hs__buf_2	0.00000	0.09509	0.12116
sky130_osu_sc_15T_hs__buf_4	0.00000	0.15848	0.23670
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	0.28527	0.46778
sky130_osu_sc_15T_hs__buf_l	0.00000	0.01153	0.01153

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)**	0.07168	0.67285	6.99913
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.07895	0.60440	7.20433
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.10701	0.60222	7.54343
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.16123	0.65991	8.07464
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.08035	0.78272	7.06841

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)**	0.07840	0.65675	6.35393
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.09209	0.63822	6.67249
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.13132	0.67250	7.11327
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.21116	0.75640	7.69741
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.09173	0.66007	5.37265

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	0.00251	0.00210	0.00509
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00501	0.00476	0.00767
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01051	0.01069	0.01310
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02150	0.02231	0.02525
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00199	0.00171	0.00346

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	0.00648	0.00645	0.01027
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00808	0.00833	0.01203
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01220	0.01312	0.01671
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02069	0.02254	0.02639
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00516	0.00505	0.00730

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
	-0.00045	-0.00045	-0.00044

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
	0.00045	0.00045	0.00044

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00361	0.00360	0.01081	1.24317	1.23313
sky130_osu_sc_15T_hs__dffr_l	0.00361	0.00360	0.01081	0.81794	0.81312

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.18598	0.29709
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.13281	0.24391

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)	0.42350	1.63043	15.34580
	QN->Q (FR)	0.04066	0.95851	13.34100
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.42408	1.83261	15.68480
	QN->Q (FR)	0.04677	1.03687	13.03050

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)	0.39352	1.64468	16.22700
	QN->Q (RF)	0.02781	0.65839	9.20976
	RN->Q (FF)	0.28659	1.68034	17.83060
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.40693	1.87891	16.59550
	QN->Q (RF)	0.03193	0.71311	9.09297
	RN->Q (FF)	0.30070	1.91392	18.18910

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)	0.35038	0.98910	7.35292
	RN->QN (FR)	0.24330	1.02384	8.95349
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.35347	1.08207	7.45404
	RN->QN (FR)	0.24671	1.11675	9.04372

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)**	0.36005	0.84526	4.80976
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.34966	0.88623	4.87679

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)	-0.07979	-0.10135	-0.41857
	setup	CK (R)	0.33172	0.35289	1.49364
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.08002	-0.10229	-0.41914
	setup	CK (R)	0.33130	0.35600	1.49904

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)	-0.16227	-0.45217	-4.22287
	setup	CK (R)	0.19532	0.46555	4.29466
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.15996	-0.45183	-4.22313
	setup	CK (R)	0.19494	0.46555	4.29441

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)	-0.07979	-0.10135	-0.41857
	setup	CK (R)	0.33172	0.35289	1.49364
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.08002	-0.10229	-0.41914
	setup	CK (R)	0.33130	0.35600	1.49904

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)	-0.16227	-0.45217	-4.22287
	setup	CK (R)	0.19532	0.46555	4.29466
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.15996	-0.45183	-4.22313
	setup	CK (R)	0.19494	0.46555	4.29441

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)	0.28804	0.31012	1.47318
	removal	CK (R)	-0.06855	-0.07997	-0.16212
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.28825	0.30991	1.47549
	removal	CK (R)	-0.06855	-0.07997	-0.16212

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)	0.28804	0.31012	1.47318
	removal	CK (R)	-0.06855	-0.07997	-0.16212
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.28825	0.30991	1.47549
	removal	CK (R)	-0.06855	-0.07997	-0.16212

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 ()	0.17528	0.47730	13.33370
	min_pulse_width	RN ()	0.17528	0.47730	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.17528	0.47730	13.33370
	min_pulse_width	RN ()	0.17169	0.47730	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 ()	0.19686	0.47730	13.33370
	min_pulse_width	CK ()	0.21124	0.47730	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.18248	0.47730	13.33370
	min_pulse_width	CK ()	0.20405	0.47730	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 ()	0.41613	0.50821	13.33370
	min_pulse_width	CK ()	0.16450	0.47730	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.41433	0.50600	13.33370
	min_pulse_width	CK ()	0.16450	0.47730	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	0.00659	0.00531	0.00000
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00578	0.00486	0.00211

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	0.00729	0.00623	0.00000
	RN	-0.00086	-0.04572	-0.64446
	RN	0.01649	0.01550	0.00634
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00647	0.00575	0.00253
	RN	-0.00086	-0.03556	-0.42402
	RN	0.01566	0.01501	0.01190

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	0.00729	0.00624	0.00000
	RN	-0.00086	-0.04550	-0.63926
	RN	0.01649	0.01551	0.00647
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00647	0.00578	0.00264
	RN	-0.00086	-0.03544	-0.42152
	RN	0.01566	0.01502	0.01197

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	0.00655	0.00527	0.00000
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00574	0.00482	0.00227

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	-0.00179	-0.00209	-0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00764	0.00721	0.00852
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00345	0.00307	0.00447
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00179	-0.00209	-0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00764	0.00721	0.00852
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00345	0.00307	0.00447

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	0.00210	0.00212	0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01260	0.01241	0.01372
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00576	0.00560	0.00698
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00210	0.00212	0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01260	0.01241	0.01372
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00576	0.00560	0.00698

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)	0.00257	0.00216	0.00560
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00698	0.00638	0.00968
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)	0.00257	0.00216	0.00560
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00698	0.00638	0.00968

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)	0.00596	0.00576	0.00988
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01275	0.01234	0.01615
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)	0.00596	0.00576	0.00988
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01275	0.01234	0.01615

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)	-0.00037	-0.00084	0.00239
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00345	0.00254	0.00576
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00066	-0.00118	0.00212
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00037	-0.00084	0.00239
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00345	0.00254	0.00576
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00066	-0.00118	0.00212

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)	0.00960	0.00942	0.01342
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01983	0.01914	0.02296
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01525	0.01491	0.01859
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01968	0.01923	0.02687
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01060	0.01036	0.01426
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00960	0.00941	0.01342
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01983	0.01915	0.02296
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01525	0.01491	0.01859
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01968	0.01923	0.02687
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01060	0.01036	0.01426

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00356	0.00360	0.00798	0.01101	1.33573	1.34411
sky130_osu_sc_15T_hs__dffsr_l	0.00356	0.00360	0.00796	0.01101	0.81973	0.81192

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.22838	0.30383
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.17520	0.25065

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)	0.40567	1.62818	15.95640
	QN->Q (FR)	0.03575	0.89488	12.67760
	RN->Q (RR)	0.32624	1.56003	15.98110
	SN->Q (FR)	0.30323	1.68011	18.07860
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.41868	1.83588	15.77190
	QN->Q (FR)	0.04678	1.03609	13.02840
	RN->Q (RR)	0.33995	1.76858	15.78880
	SN->Q (FR)	0.31623	1.88746	17.86300

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)	0.43587	1.68788	16.61530
	QN->Q (RF)	0.02749	0.67600	9.58892
	RN->Q (FF)	0.30015	1.69425	18.26160
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.45709	1.93752	16.69000
	QN->Q (RF)	0.03188	0.71306	9.09760
	RN->Q (FF)	0.32082	1.94264	18.31990

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)	0.39295	1.02586	7.44322
	RN->QN (FR)	0.25787	1.03286	9.08193
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.40255	1.13750	7.50767
	RN->QN (FR)	0.26664	1.14356	9.13481

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)	0.34867	0.85453	5.25439
	RN->QN (RF)	0.26950	0.78732	5.27729
	SN->QN (FF)	0.24649	0.90738	7.36988
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.34751	0.88900	4.93419
	RN->QN (RF)	0.26851	0.82253	4.95212
	SN->QN (FF)	0.24525	0.94144	7.02149

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)	-0.08309	-0.10949	-0.49738
	setup	CK (R)	0.30599	0.32579	1.52016
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.08616	-0.10964	-0.49813
	setup	CK (R)	0.30533	0.32293	1.51489

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)	-0.17924	-0.46924	-4.37559
	setup	CK (R)	0.22548	0.48421	4.43240
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.17925	-0.47101	-4.37220
	setup	CK (R)	0.22148	0.48421	4.43345

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)	-0.08309	-0.10949	-0.49738
	setup	CK (R)	0.30599	0.32579	1.52016
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.08616	-0.10964	-0.49813
	setup	CK (R)	0.30533	0.32293	1.51489

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)	-0.17924	-0.46924	-4.37559
	setup	CK (R)	0.22548	0.48421	4.43240
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.17925	-0.47101	-4.37220
	setup	CK (R)	0.22148	0.48421	4.43345

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)	0.23500	0.25815	1.36005
	removal	CK (R)	-0.02951	-0.03820	-0.10265
	hold	SN (R)	-0.24191	-0.44752	-2.52453
	setup	SN (R)	0.26919	0.49123	5.56918
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.23267	0.25217	1.35782
	removal	CK (R)	-0.02993	-0.03820	-0.10265
	hold	SN (R)	-0.23714	-0.43832	-2.45872
	setup	SN (R)	0.26808	0.48482	5.46573

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)	0.23500	0.25815	1.36005
	removal	CK (R)	-0.02951	-0.03820	-0.10265
	hold	SN (R)	-0.24191	-0.44752	-2.52453
	hold	SN (R)	-0.24191	-0.44752	-2.53532
	setup	SN (R)	0.26919	0.48679	5.36246
	setup	SN (R)	0.26572	0.49123	5.56918
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.23267	0.25217	1.35782
	removal	CK (R)	-0.02993	-0.03820	-0.10265
	hold	SN (R)	-0.24036	-0.43832	-2.45872
	hold	SN (R)	-0.23714	-0.44130	-2.48219
	setup	SN (R)	0.26808	0.47852	5.24987
	setup	SN (R)	0.25472	0.48482	5.46573

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 ()	0.20405	0.47730	13.33370
	min_pulse_width	RN ()	0.20764	0.47730	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.20405	0.47730	13.33370
	min_pulse_width	RN ()	0.20045	0.47730	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)	0.05227	0.08671	3.91445
	removal	CK (R)	-0.01825	-0.05963	-0.44489
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.05255	0.08827	3.75128
	removal	CK (R)	-0.01825	-0.05963	-0.44489

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)	0.05227	0.08671	3.91445
	removal	CK (R)	-0.01825	-0.05963	-0.44489
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.05255	0.08827	3.75128
	removal	CK (R)	-0.01825	-0.05963	-0.44489

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 ()	0.24263	0.51484	13.33370
	min_pulse_width	SN ()	0.24363	0.51704	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.24245	0.50600	13.33370
	min_pulse_width	SN ()	0.23196	0.50821	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 ()	0.18607	0.47730	13.33370
	min_pulse_width	CK ()	0.22562	0.47730	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.17528	0.47730	13.33370
	min_pulse_width	CK ()	0.22203	0.47730	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 ()	0.38919	0.47950	13.33370
	min_pulse_width	CK ()	0.19686	0.47730	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.38741	0.47730	13.33370
	min_pulse_width	CK ()	0.19326	0.47730	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	0.00812	0.00679	-0.00276
	RN	0.01497	0.01381	0.00103
	SN	-0.00086	-0.04773	-0.69244
	SN	0.01646	0.01531	0.00157
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00740	0.00650	0.00385
	RN	0.01424	0.01351	0.00917
	SN	-0.00086	-0.03561	-0.42495
	SN	0.01573	0.01503	0.01013

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	0.00856	0.00792	0.00276
	RN	-0.00086	-0.04773	-0.69244
	RN	0.01726	0.01659	0.01151
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00781	0.00717	0.00396
	RN	-0.00086	-0.03561	-0.42495
	RN	0.01649	0.01582	0.01282

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	0.00856	0.00792	0.00282
	RN	-0.00086	-0.04791	-0.69678
	RN	0.01725	0.01659	0.01162
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00781	0.00717	0.00413
	RN	-0.00086	-0.03541	-0.42090
	RN	0.01649	0.01581	0.01287

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	0.00808	0.00675	-0.00282
	RN	0.01493	0.01377	0.00087
	SN	-0.00086	-0.04791	-0.69674
	SN	0.01641	0.01527	0.00181
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00736	0.00646	0.00391
	RN	0.01419	0.01348	0.00938
	SN	-0.00086	-0.03541	-0.42087
	SN	0.01568	0.01499	0.01010

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	-0.00206	-0.00211	-0.00211
	(!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)	0.00977	0.00937	0.01068
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00394	0.00356	0.00490
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00391	0.00354	0.00491
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00395	0.00358	0.00494
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00206	-0.00211	-0.00211
	(!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)	0.00977	0.00937	0.01068
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00394	0.00356	0.00490
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00391	0.00354	0.00491
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00395	0.00358	0.00494

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	0.00215	0.00213	0.00211
	(!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)	0.01469	0.01448	0.01560
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00621	0.00608	0.00743
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00626	0.00612	0.00742
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00617	0.00604	0.00739
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00215	0.00213	0.00211
	(!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)	0.01468	0.01448	0.01559
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00621	0.00607	0.00742
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00625	0.00611	0.00742
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00617	0.00603	0.00738

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)	0.00246	0.00204	0.00531
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00852	0.00792	0.01102
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)	0.00246	0.00204	0.00531
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00852	0.00792	0.01102

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)	0.00649	0.00633	0.01050
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01355	0.01310	0.01696
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)	0.00648	0.00632	0.01047
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01354	0.01309	0.01695

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)	-0.00485	-0.00488	-0.00489
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00489	-0.00523	-0.00525
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00478	-0.00495	-0.00497
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00327	0.00285	0.00462
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)	-0.00485	-0.00489	-0.00489
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00488	-0.00522	-0.00523
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00477	-0.00495	-0.00497
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00328	0.00285	0.00463

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)	0.00488	0.00490	0.00491
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00524	0.00527	0.00525
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00496	0.00501	0.00499
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01022	0.01000	0.01103
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)	0.00488	0.00490	0.00491
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00522	0.00525	0.00524
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00495	0.00500	0.00498
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01021	0.01000	0.01103

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)	-0.00039	-0.00084	0.00238
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00408	0.00322	0.00641
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00400	0.00316	0.00637
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00053	-0.00104	0.00226
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00304	0.00210	0.00885
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00039	-0.00084	0.00238
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00407	0.00322	0.00641
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00399	0.00315	0.00636
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00053	-0.00104	0.00226
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00304	0.00210	0.00885

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)	0.02212	0.02149	0.02525
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00964	0.00945	0.01345
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01558	0.01524	0.01897
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01561	0.01530	0.01897
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02171	0.02118	0.02862
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01048	0.01026	0.01416
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01255	0.01219	0.02017
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02212	0.02149	0.02525
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00964	0.00945	0.01345
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01558	0.01524	0.01896
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01561	0.01530	0.01897
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02170	0.02118	0.02863
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01048	0.01026	0.01416
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01254	0.01216	0.02016

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00359	0.00631	0.01080	1.23603	1.23610
sky130_osu_sc_15T_hs__dffs_l	0.00359	0.00630	0.01079	0.80661	0.81092

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.16316	0.23688
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.10998	0.18371

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)	0.30747	1.49209	15.10310
	QN->Q (FR)	0.04070	0.95014	13.23560
	SN->Q (FR)	0.24162	1.61537	17.19900
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.31609	1.69845	15.33540
	QN->Q (FR)	0.04677	1.02786	12.88550
	SN->Q (FR)	0.24926	1.81806	17.40130

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)	0.44549	1.69922	16.14650
	QN->Q (RF)	0.02767	0.65457	9.15580
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.45631	1.92123	16.39630
	QN->Q (RF)	0.03182	0.70775	9.01021

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)	0.40008	1.04781	7.40358
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.40078	1.13433	7.47283

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)	0.25117	0.71588	4.69055
	SN->QN (FF)	0.18489	0.84034	6.78499
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.24866	0.76624	4.74545
	SN->QN (FF)	0.18106	0.88587	6.80451

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)	-0.06061	-0.08366	-0.38170
	setup	CK (R)	0.22152	0.25011	1.47181
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.06054	-0.08512	-0.38050
	setup	CK (R)	0.21807	0.24843	1.47177

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)	-0.16357	-0.45276	-4.23797
	setup	CK (R)	0.22432	0.47220	4.32509
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.16382	-0.45453	-4.23977
	setup	CK (R)	0.22321	0.47220	4.32485

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)	-0.06061	-0.08366	-0.38170
	setup	CK (R)	0.22152	0.25011	1.47181
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.06054	-0.08512	-0.38050
	setup	CK (R)	0.21807	0.24843	1.47177

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)	-0.16357	-0.45276	-4.23797
	setup	CK (R)	0.22432	0.47220	4.32509
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.16382	-0.45453	-4.23977
	setup	CK (R)	0.22321	0.47220	4.32485

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)	0.07337	0.11142	3.25316
	removal	CK (R)	-0.02945	-0.08028	-0.63395
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.07061	0.11273	3.15673
	removal	CK (R)	-0.02905	-0.07919	-0.63560

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)	0.07337	0.11142	3.25316
	removal	CK (R)	-0.02945	-0.08028	-0.63395
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.07061	0.11273	3.15673
	removal	CK (R)	-0.02905	-0.07919	-0.63560

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 ()	0.16875	0.51484	13.33370
	min_pulse_width	SN ()	0.17264	0.51484	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.16471	0.50159	13.33370
	min_pulse_width	SN ()	0.16224	0.50600	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 ()	0.13214	0.47730	13.33370
	min_pulse_width	CK ()	0.22562	0.47730	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.12495	0.47730	13.33370
	min_pulse_width	CK ()	0.21843	0.47730	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 ()	0.30112	0.47730	13.33370
	min_pulse_width	CK ()	0.19686	0.47730	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.30112	0.47730	13.33370
	min_pulse_width	CK ()	0.19686	0.47730	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	0.00662	0.00533	0.00000
	SN	-0.00086	-0.04556	-0.64076
	SN	0.01395	0.01276	0.00147
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00580	0.00487	0.00238
	SN	-0.00086	-0.03527	-0.41815
	SN	0.01312	0.01230	0.00843

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	0.00724	0.00626	0.00000
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00643	0.00576	0.00280

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	0.00724	0.00625	0.00000
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00643	0.00576	0.00279

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	0.00658	0.00531	0.00000
	SN	-0.00086	-0.04556	-0.64075
	SN	0.01391	0.01272	0.00167
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00576	0.00483	0.00249
	SN	-0.00086	-0.03538	-0.42035
	SN	0.01309	0.01226	0.00826

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	-0.00210	-0.00215	-0.00214
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00731	0.00686	0.00813
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00338	0.00299	0.00438
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00210	-0.00215	-0.00214
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00731	0.00686	0.00813
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00338	0.00299	0.00438

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	0.00218	0.00218	0.00214
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01242	0.01218	0.01343
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00588	0.00573	0.00714
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00218	0.00217	0.00214
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01241	0.01218	0.01343
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00588	0.00573	0.00714

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)	-0.00352	-0.00355	-0.00355
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00273	0.00235	0.00364
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)	-0.00352	-0.00354	-0.00355
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00273	0.00235	0.00364

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)	0.00357	0.00355	0.00356
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00715	0.00686	0.00851
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)	0.00357	0.00355	0.00356
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00715	0.00686	0.00851

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)	-0.00041	-0.00086	0.00237
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00063	-0.00116	0.00219
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00245	0.00156	0.00847
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00041	-0.00086	0.00237
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00063	-0.00116	0.00219
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00245	0.00156	0.00847

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)	0.01959	0.01890	0.02282
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00961	0.00943	0.01343
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01940	0.01883	0.02646
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01056	0.01033	0.01422
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01215	0.01182	0.01992
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01959	0.01890	0.02282
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00961	0.00943	0.01343
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01940	0.01883	0.02646
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01053	0.01033	0.01422
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01215	0.01182	0.01992

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00375	0.01074	1.36662	1.34791
sky130_osu_sc_15T_hs__dff_l	0.00375	0.01073	0.75083	0.75006

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.20766	0.25207
sky130_osu_sc_15T_hs__dff_l	0.00000	0.15580	0.20021

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)	0.25227	1.46214	16.06210
	QN->Q (FR)	0.03551	0.89853	12.81220
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.26243	1.48447	12.98270
	QN->Q (FR)	0.05368	1.09354	13.35670

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)	0.36255	1.61905	16.86210
	QN->Q (RF)	0.02740	0.67902	9.69045
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.38812	1.74770	14.70620
	QN->Q (RF)	0.02752	0.61315	7.80117

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)	0.32141	0.94475	7.35194
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.33943	1.08017	7.36173

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)	0.20214	0.67744	5.03654
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.19798	0.61840	3.44409

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)	-0.05471	-0.08286	-0.40033
	setup	CK (R)	0.16729	0.19995	1.51894
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.05664	-0.08286	-0.40176
	setup	CK (R)	0.16591	0.19800	1.51576

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)	-0.15197	-0.45010	-4.24577
	setup	CK (R)	0.18307	0.46861	4.34637
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.15118	-0.45346	-4.24784
	setup	CK (R)	0.17908	0.46861	4.34557

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 ()	0.10697	0.47730	13.33370
	min_pulse_width	CK ()	0.19686	0.47730	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.10697	0.47730	13.33370
	min_pulse_width	CK ()	0.19326	0.47730	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 ()	0.24719	0.47730	13.33370
	min_pulse_width	CK ()	0.14652	0.47730	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.24719	0.47730	13.33370
	min_pulse_width	CK ()	0.14293	0.47730	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	0.00703	0.00556	-0.00159
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00646	0.00536	0.00224

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	0.00740	0.00674	0.00159
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00678	0.00593	0.00083

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	0.00740	0.00675	0.00178
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00679	0.00593	0.00086

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	0.00699	0.00554	-0.00178
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00641	0.00532	0.00196

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	-0.00178	-0.00209	-0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00703	0.00660	0.00795
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00178	-0.00209	-0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00703	0.00660	0.00795

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	0.00209	0.00211	0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01294	0.01266	0.01399
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00209	0.00211	0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01294	0.01267	0.01400

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)	-0.00041	-0.00085	0.00238
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00061	-0.00113	0.00218
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00041	-0.00085	0.00238
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00061	-0.00113	0.00218

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)	0.00956	0.00934	0.01339
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01932	0.01869	0.02264
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01976	0.01917	0.02688
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01050	0.01026	0.01417
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00956	0.00938	0.01339
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01933	0.01869	0.02264
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01977	0.01917	0.02689
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01050	0.01026	0.01417

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00364	1.28645
sky130_osu_sc_15T_hs__inv_10	0.03325	11.96086
sky130_osu_sc_15T_hs__inv_2	0.00686	2.56946
sky130_osu_sc_15T_hs__inv_3	0.01019	3.71318
sky130_osu_sc_15T_hs__inv_4	0.01345	4.99986
sky130_osu_sc_15T_hs__inv_6	0.02014	7.38898
sky130_osu_sc_15T_hs__inv_8	0.02668	9.66255
sky130_osu_sc_15T_hs__inv_l	0.00285	0.74498

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.03170	0.05777
sky130_osu_sc_15T_hs__inv_10	0.00000	0.31696	0.57769
sky130_osu_sc_15T_hs__inv_2	0.00000	0.06339	0.11554
sky130_osu_sc_15T_hs__inv_3	0.00000	0.09509	0.17331
sky130_osu_sc_15T_hs__inv_4	0.00000	0.12679	0.23108
sky130_osu_sc_15T_hs__inv_6	0.00000	0.19018	0.34661
sky130_osu_sc_15T_hs__inv_8	0.00000	0.25357	0.46215
sky130_osu_sc_15T_hs__inv_l	0.00000	0.00576	0.00907

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)**	0.03434	0.83920	11.80620
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.04533	0.57807	11.80560
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.02688	0.72156	11.78850
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.02940	0.67893	11.80350
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.02971	0.64308	11.79450
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.03257	0.60916	11.79500
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.03881	0.58898	11.73590
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.04736	0.96886	11.92310

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)**	0.02485	0.60460	8.51357
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.03367	0.40067	8.50935
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.02000	0.52539	8.53807
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.02154	0.49475	8.59100
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.02103	0.46604	8.58852
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.02477	0.43354	8.58825
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.02960	0.41481	8.53703
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.02528	0.56523	7.12364

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	0.00334	0.00334	0.00380
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02814	0.02899	0.03403
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00589	0.00550	0.00687
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00903	0.00921	0.01064
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01160	0.01126	0.01363
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01719	0.01774	0.02071
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02264	0.02345	0.02705
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00258	0.00254	0.00283

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	-0.00061	-0.00064	-0.00047
sky130_osu_sc_15T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01117	-0.01069	-0.00761
sky130_osu_sc_15T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00207	-0.00202	-0.00162
sky130_osu_sc_15T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00271	-0.00269	-0.00197
sky130_osu_sc_15T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00425	-0.00405	-0.00314
sky130_osu_sc_15T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00647	-0.00628	-0.00467
sky130_osu_sc_15T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00881	-0.00852	-0.00616
sky130_osu_sc_15T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00038	-0.00042	-0.00032

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.18346	0.18335	0.00744	0.18014

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.06348	0.06348

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)	-	0.01754	0.32277	3.15145
	A1->Y (RR)	-	0.01998	0.32520	3.15428
	S0->Y (RR)	(!A0 * A1)	0.05673	0.31782	1.06381
	S0->Y (FR)	(A0 * !A1)	0.04259	0.45898	3.53971

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)	-	0.01843	0.28660	2.68658
	A1->Y (FF)	-	0.01672	0.28444	2.67669
	S0->Y (FF)	(!A0 * A1)	0.07759	0.43081	2.46791
	S0->Y (RF)	(A0 * !A1)	0.02771	0.32397	2.24839

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	-	-0.00352	-0.00353	-0.00352
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00246	-0.00246	-0.00247
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00412	0.00411	0.00858
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00231	-0.00273	0.00112

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	-	0.00352	0.00353	0.00352
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00246	0.00246	0.00247
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00078	0.00038	0.00437
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00903	0.00897	0.01318

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)	-0.00091	-0.00091	-0.00091

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)	0.00091	0.00091	0.00091

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)	-0.00108	-0.00108	-0.00108

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)	0.00108	0.00108	0.00108

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)	-0.00078	-0.00118	0.00276
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00076	-0.00117	0.00278

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)	0.00683	0.00668	0.01104
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00632	0.00619	0.01071

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00363	0.00362	1.27466
sky130_osu_sc_15T_hs__nand2_l	0.00285	0.00286	0.74115

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.03160	0.11554
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.00579	0.01815

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)	0.03564	0.84290	11.80410
	B->Y (FR)	0.04113	0.83727	11.64450
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.04873	0.97266	11.92240
	B->Y (FR)	0.05799	0.97579	11.90250

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)	0.03724	0.77422	10.79240
	B->Y (RF)	0.04195	0.75967	10.46440
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.03789	0.72208	8.85299
	B->Y (RF)	0.04239	0.69742	8.37933

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	0.00354	0.00354	0.00397
	B	0.00000	0.00000	0.00000
	B	0.00434	0.00430	0.00468
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00271	0.00268	0.00294
	B	0.00000	0.00000	0.00000
	B	0.00339	0.00332	0.00360

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	-0.00038	-0.00044	-0.00028
	B	0.00000	0.00000	0.00000
	B	-0.00035	-0.00042	-0.00033
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00025	-0.00030	-0.00020
	B	0.00000	0.00000	0.00000
	B	-0.00023	-0.00029	-0.00023

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)	-0.00239	-0.00240	-0.00242
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00167	-0.00168	-0.00170

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)	0.00242	0.00247	0.00242
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00170	0.00173	0.00170

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)	-0.00224	-0.00226	-0.00224
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00155	-0.00156	-0.00156

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)	0.00230	0.00226	0.00225
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00159	0.00157	0.00157

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00361	0.00390	0.63724
sky130_osu_sc_15T_hs__nor2_l	0.00275	0.00307	0.39963

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.02442	0.05777
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.00482	0.00907

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)	0.08052	1.04205	11.80430
	B->Y (FR)	0.06298	1.00224	11.63230
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.10192	1.19412	11.85280
	B->Y (FR)	0.08641	1.16710	11.82370

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)	0.03255	0.50262	5.94455
	B->Y (RF)	0.02621	0.49160	5.92618
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.03024	0.48066	5.19775
	B->Y (RF)	0.02649	0.47242	5.18287

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	0.00458	0.00453	0.00463
	B	0.00000	0.00000	0.00000
	B	0.00359	0.00342	0.00404
sky130_osu_sc_15T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00338	0.00333	0.00338
	B	0.00000	0.00000	0.00000
	B	0.00277	0.00269	0.00301

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	0.00059	0.00041	0.00062
	B	0.00000	0.00000	0.00000
	B	-0.00050	-0.00051	-0.00030
sky130_osu_sc_15T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00035	0.00025	0.00039
	B	0.00000	0.00000	0.00000
	B	-0.00028	-0.00030	-0.00018

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)	-0.00181	-0.00212	-0.00213
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00123	-0.00141	-0.00141

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)	0.00212	0.00214	0.00213
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00141	0.00142	0.00141

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)	-0.00113	-0.00116	-0.00113
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00074	-0.00075	-0.00074

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)	0.00120	0.00120	0.00116
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00079	0.00079	0.00075

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00366	0.00373	0.00308	0.62056

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.01756	0.06684

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)	0.08685	1.03433	11.63820
	A1->Y (FR)	0.10920	1.07769	11.82110
	B0->Y (FR)	0.05682	0.88509	10.45520

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)	0.05042	0.60918	6.89944
	A1->Y (RF)	0.05972	0.60666	6.78501
	B0->Y (RF)	0.04028	0.63211	7.48379

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	0.00481	0.00471	0.00518
	A1	0.00000	0.00000	0.00000
	A1	0.00583	0.00575	0.00584
	B0	0.00397	0.00388	0.00416

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	0.00021	0.00014	0.00023
	A1	0.00000	0.00000	0.00000
	A1	0.00130	0.00112	0.00120
	B0	0.00178	0.00170	0.00184

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)	-0.00114	-0.00116	-0.00114
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00210	-0.00214	-0.00214
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00218	-0.00219	-0.00218

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)	0.00121	0.00122	0.00116
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00212	0.00214	0.00214
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00220	0.00222	0.00219

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)	-0.00175	-0.00206	-0.00208
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00208	-0.00212	-0.00211
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00215	-0.00216	-0.00215

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)	0.00207	0.00210	0.00208
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00211	0.00214	0.00211
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00216	0.00218	0.00216

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)	-0.00170	-0.00171	-0.00174

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)	0.00173	0.00175	0.00174

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00352	0.00375	0.00385	0.00375	0.64622

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.03627	0.11554

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)	0.11620	1.08627	11.95320
	A1->Y (FR)	0.09779	1.04575	11.78100
	B0->Y (FR)	0.07010	1.01920	11.76240
	B1->Y (FR)	0.08990	1.05909	11.93610

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)	0.08184	0.65851	7.13569
	A1->Y (RF)	0.06635	0.63819	7.08651
	B0->Y (RF)	0.05654	0.65826	7.67031
	B1->Y (RF)	0.07264	0.68324	7.75193

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	0.00748	0.00741	0.00749
	A1	0.00642	0.00631	0.00678
	B0	0.00484	0.00476	0.00523
	B1	0.00594	0.00587	0.00594

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00206	0.00189	0.00194
	A1	0.00105	0.00097	0.00102
	B0	0.00105	0.00098	0.00113
	B1	0.00208	0.00190	0.00206

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)	-0.00180	-0.00211	-0.00213
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00180	-0.00211	-0.00213
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00208	-0.00213	-0.00212
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00216	-0.00217	-0.00216

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)	0.00212	0.00214	0.00213
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00212	0.00214	0.00213
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00211	0.00213	0.00212
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00217	0.00217	0.00217

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)	-0.00112	-0.00115	-0.00113
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00112	-0.00115	-0.00113
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00206	-0.00210	-0.00210
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00214	-0.00216	-0.00214

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)	0.00119	0.00119	0.00115
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00119	0.00119	0.00115
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00209	0.00210	0.00210
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00215	0.00216	0.00215

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)	-0.00111	-0.00114	-0.00112
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00111	-0.00112	-0.00112
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00230	-0.00233	-0.00233
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00231	-0.00233	-0.00237

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)	0.00118	0.00119	0.00114
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00118	0.00119	0.00114
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00233	0.00233	0.00233
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00237	0.00239	0.00238

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)	-0.00176	-0.00207	-0.00208
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00176	-0.00207	-0.00208
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00235	-0.00240	-0.00239
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00236	-0.00237	-0.00242

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)	0.00207	0.00209	0.00208
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00207	0.00209	0.00208
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00238	0.00240	0.00239
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00243	0.00244	0.00243

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00396	0.00373	1.30308
sky130_osu_sc_15T_hs__or2_2	0.00397	0.00373	2.59762
sky130_osu_sc_15T_hs__or2_4	0.00397	0.00373	5.01046
sky130_osu_sc_15T_hs__or2_8	0.00395	0.00373	9.63169
sky130_osu_sc_15T_hs__or2_l	0.00316	0.00291	0.75229

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.04308	0.06902
sky130_osu_sc_15T_hs__or2_2	0.00000	0.06174	0.12679
sky130_osu_sc_15T_hs__or2_4	0.00000	0.09906	0.24232
sky130_osu_sc_15T_hs__or2_8	0.00000	0.17370	0.47340
sky130_osu_sc_15T_hs__or2_l	0.00000	0.00893	0.01398

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)	0.08279	0.70678	7.06612
	B->Y (RR)	0.07331	0.67612	6.96036
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.09066	0.63298	7.25596
	B->Y (RR)	0.08078	0.60760	7.16463
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.11899	0.62641	7.59337
	B->Y (RR)	0.10894	0.60613	7.51306
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.17316	0.67781	8.09038
	B->Y (RR)	0.16284	0.66231	8.01498
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.09148	0.82843	7.12973
	B->Y (RR)	0.08404	0.80332	7.01963

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)	0.15206	0.77559	6.85638
	B->Y (FF)	0.12740	0.72559	6.50977
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.18479	0.76850	7.18290
	B->Y (FF)	0.16026	0.72864	6.83713
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.26455	0.83472	7.69517
	B->Y (FF)	0.23994	0.79975	7.34603
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.42428	1.00550	8.30945
	B->Y (FF)	0.39968	0.96412	7.99891
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.18500	0.77198	5.60029
	B->Y (FF)	0.15660	0.73100	5.31259

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	0.00373	0.00328	0.00520
	B	0.00000	0.00000	0.00000
	B	0.00269	0.00239	0.00538
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00625	0.00597	0.00799
	B	0.00000	0.00000	0.00000
	B	0.00517	0.00514	0.00808
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01176	0.01191	0.01433
	B	0.00000	0.00000	0.00000
	B	0.01067	0.01114	0.01416
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02275	0.02355	0.02597
	B	0.00000	0.00000	0.00000
	B	0.02166	0.02292	0.02634
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00277	0.00244	0.00360
	B	0.00000	0.00000	0.00000
	B	0.00211	0.00188	0.00348

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	0.00770	0.00759	0.00884
	B	0.00000	0.00000	0.00000
	B	0.00645	0.00654	0.01046
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00930	0.00960	0.01071
	B	0.00000	0.00000	0.00000
	B	0.00804	0.00846	0.01214
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01341	0.01436	0.01552
	B	0.00000	0.00000	0.00000
	B	0.01219	0.01314	0.01670
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02216	0.02357	0.02534
	B	0.00000	0.00000	0.00000
	B	0.02089	0.02234	0.02617
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00597	0.00575	0.00658
	B	0.00000	0.00000	0.00000
	B	0.00510	0.00507	0.00722

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)	-0.00181	-0.00212	-0.00214
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00183	-0.00212	-0.00214
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00182	-0.00212	-0.00214
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00182	-0.00212	-0.00214
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00125	-0.00142	-0.00143

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)	0.00213	0.00213	0.00214
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00213	0.00213	0.00214
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00213	0.00214	0.00214
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00213	0.00214	0.00214
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00142	0.00144	0.00143

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)	-0.00113	-0.00116	-0.00114
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00113	-0.00116	-0.00114
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00113	-0.00116	-0.00114
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00113	-0.00116	-0.00114
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00075	-0.00077	-0.00076

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)	0.00121	0.00123	0.00116
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00121	0.00123	0.00116
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00121	0.00123	0.00116
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00121	0.00123	0.00116
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00080	0.00081	0.00077

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00388	0.00489	0.64180
sky130_osu_sc_15T_hs__tbufi_l	0.00307	0.00401	0.39690

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.03425	0.11554
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.00687	0.01815

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)	0.05984	0.99708	11.63220
	OE->Y (FR)	0.05482	0.30623	4.28336
	OE->Y (RR)	0.10486	0.86019	7.16392
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.08309	1.15779	11.78040
	OE->Y (FR)	0.06632	0.33821	4.28317
	OE->Y (RR)	0.12010	1.00777	7.18996

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)	0.03608	0.60812	7.28469
	OE->Y (FF)	0.05604	0.30965	4.28337
	OE->Y (RF)	0.03430	0.58630	6.89607
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.03743	0.58338	6.34131
	OE->Y (FF)	0.06682	0.33747	4.28314
	OE->Y (RF)	0.03581	0.55482	5.85993

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	0.00340	0.00322	0.00380
	OE	0.00000	0.00000	0.00000
	OE	0.00334	0.00297	0.00675
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00261	0.00252	0.00282
	OE	0.00000	0.00000	0.00000
	OE	0.00241	0.00209	0.00420

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	-0.00049	-0.00052	-0.00033
	OE	0.00000	0.00000	0.00000
	OE	0.00237	0.00198	0.00608
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00028	-0.00030	-0.00019
	OE	0.00000	0.00000	0.00000
	OE	0.00159	0.00127	0.00358

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)	-0.00181	-0.00182	-0.00181
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00166	-0.00167	-0.00166
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00130	-0.00132	-0.00130
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00120	-0.00121	-0.00119

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)	0.00181	0.00182	0.00181
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00170	0.00172	0.00168
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00130	0.00132	0.00130
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00122	0.00123	0.00120

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)	0.00139	0.00103	0.00516
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00124	0.00085	0.00499
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00091	0.00059	0.00292
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00081	0.00057	0.00281

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)	0.00405	0.00377	0.00822
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00409	0.00385	0.00829
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00320	0.00294	0.00548
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00326	0.00302	0.00554

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00387	0.00600	0.64147
sky130_osu_sc_15T_hs__tnbufi_l	0.00307	0.00445	0.39705

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.05163	0.06339
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.00908	0.01153

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)	0.06067	0.99692	11.62850
	OE->Y (RR)	0.02984	0.29935	4.28385
	OE->Y (FR)	0.07510	1.03451	11.79370
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.08381	1.15773	11.78240
	OE->Y (RR)	0.02929	0.29932	4.28383
	OE->Y (FR)	0.09489	1.18524	11.80850

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)	0.03544	0.60765	7.28244
	OE->Y (RF)	0.02946	0.29933	4.28385
	OE->Y (FF)	0.06620	0.60327	5.05978
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.03660	0.58305	6.34228
	OE->Y (RF)	0.02904	0.29932	4.28379
	OE->Y (FF)	0.07873	0.61125	4.36654

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	0.00350	0.00332	0.00391
	OE	0.00000	0.00000	0.00000
	OE	0.00828	0.00833	0.01322
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00272	0.00263	0.00291
	OE	0.00000	0.00000	0.00000
	OE	0.00624	0.00619	0.00895

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	-0.00064	-0.00065	-0.00046
	OE	0.00000	0.00000	0.00000
	OE	0.00744	0.00748	0.01190
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00042	-0.00043	-0.00033
	OE	0.00000	0.00000	0.00000
	OE	0.00553	0.00547	0.00806

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)	-0.00154	-0.00155	-0.00154
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00140	-0.00141	-0.00140
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00104	-0.00106	-0.00104
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00095	-0.00096	-0.00095

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)	0.00154	0.00155	0.00154
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00143	0.00146	0.00142
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00104	0.00106	0.00104
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00097	0.00098	0.00095

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)	-0.00239	-0.00299	0.00141
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00238	-0.00289	0.00144
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00153	-0.00196	0.00042
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00152	-0.00194	0.00043

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)	0.00632	0.00638	0.01121
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00622	0.00628	0.01113
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00474	0.00467	0.00741
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00466	0.00462	0.00734

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00768	0.00677	0.66154

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.11093	0.17893

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	0.13123	0.90950	7.45118
	A->Y (FR)	!B	0.07692	1.02589	11.81410
	B->Y (RR)	A	0.10431	0.87933	7.39058
	B->Y (FR)	!A	0.09968	1.06601	11.98430

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	0.11377	0.70225	5.47495
	A->Y (RF)	!B	0.04905	0.60380	7.02017
	B->Y (FF)	A	0.10089	0.68806	5.46260
	B->Y (RF)	!A	0.05937	0.61795	7.03309

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	0.00316	0.00268	0.00625
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00817	0.00796	0.01291
	B	A	0.00000	0.00000	0.00000
	B	A	0.00120	0.00093	0.00489
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00877	0.00862	0.01328

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	0.01048	0.01012	0.01432
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00238	0.00192	0.00593
	B	A	0.00000	0.00000	0.00000
	B	A	0.00932	0.00937	0.01380
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00327	0.00273	0.00675

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00771	0.00682	0.63561

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.11093	0.16986

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	0.12649	0.88710	7.22343
	A->Y (FR)	B	0.09639	1.05391	11.81150
	B->Y (RR)	!A	0.10931	0.88030	7.22448
	B->Y (FR)	A	0.10237	1.06111	11.80620

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	0.10502	0.68678	5.32179
	A->Y (RF)	B	0.05010	0.62862	7.26896
	B->Y (FF)	!A	0.09898	0.68122	5.33132
	B->Y (RF)	A	0.05815	0.61179	6.88433

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	0.00963	0.00945	0.01411
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00162	0.00084	0.00466
	B	A	0.00000	0.00000	0.00000
	B	A	0.00972	0.00959	0.01423
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00109	0.00085	0.00477

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	0.00226	0.00164	0.00569
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01063	0.01057	0.01465
	B	A	0.00000	0.00000	0.00000
	B	A	0.00228	0.00170	0.00570
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00950	0.00958	0.01397

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.31601
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	113916.00000	227833.00000
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
	-0.00173	0.02260	0.33460

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
	1.98331	1.87978	0.42343