sky130_osu_sc_12T_hs_ss_1P60_100C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_HS__ADDFx
SKY130_OSU_SC_12T_HS__ADDHx
SKY130_OSU_SC_12T_HS__AND2x
SKY130_OSU_SC_12T_HS__AOI21
SKY130_OSU_SC_12T_HS__AOI22
SKY130_OSU_SC_12T_HS__BUFx
SKY130_OSU_SC_12T_HS__DFFRx
SKY130_OSU_SC_12T_HS__DFFSRx
SKY130_OSU_SC_12T_HS__DFFSx
SKY130_OSU_SC_12T_HS__DFFx
SKY130_OSU_SC_12T_HS__INVx
SKY130_OSU_SC_12T_HS__MUX2
SKY130_OSU_SC_12T_HS__NAND2x
SKY130_OSU_SC_12T_HS__NOR2x
SKY130_OSU_SC_12T_HS__OAI21
SKY130_OSU_SC_12T_HS__OAI22
SKY130_OSU_SC_12T_HS__OR2x
SKY130_OSU_SC_12T_HS__TBUFIx
SKY130_OSU_SC_12T_HS__TNBUFIx
SKY130_OSU_SC_12T_HS__XNOR2
SKY130_OSU_SC_12T_HS__XOR2
SKY130_OSU_SC_12T_HS_x

SKY130_OSU_SC_12T_HS__ADDFx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT			OUTPUT		
A	B	CI	CO	CON	S
0	0	0	0	1	0
0	0	1	0	1	1
0	1	0	0	1	1
0	1	1	1	0	0
1	0	0	0	1	1
1	0	1	1	0	0
1	1	0	1	0	0
1	1	1	1	0	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addf_1	31.25760
sky130_osu_sc_12T_hs__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_12T_hs__addf_1	0.01134	0.01134	0.00873	0.81272	0.36209	0.75006
sky130_osu_sc_12T_hs__addf_l	0.01134	0.01134	0.00873	0.58170	0.36272	0.74909

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.08586	0.09222
sky130_osu_sc_12T_hs__addf_l	0.00000	0.15088	0.22734

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (RR)	0.22687	2.04097	24.55830
	B->CO (RR)	0.22592	2.03488	24.58080
	CI->CO (RR)	0.21452	2.07728	25.30490
	CON->CO (FR)	0.03917	0.85674	11.46940
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.22420	1.89710	20.30430
	B->CO (RR)	0.22343	1.90014	20.54040
	CI->CO (RR)	0.21182	1.93391	21.07320
	CON->CO (FR)	0.04458	0.90831	11.13160

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (FF)	0.34932	2.70449	31.78390
	B->CO (FF)	0.31604	2.60783	30.86440
	CI->CO (FF)	0.30885	2.66940	32.08180
	CON->CO (RF)	0.02807	0.61654	8.34453
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.33684	2.40471	24.99660
	B->CO (FF)	0.30497	2.32263	24.33990
	CI->CO (FF)	0.29645	2.36993	25.31190
	CON->CO (RF)	0.02907	0.62236	7.88884

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (FR)	0.26319	1.21655	10.70380
	B->CON (FR)	0.23217	1.14199	10.58440
	CI->CON (FR)	0.22284	1.18335	11.05060
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.24993	1.20411	10.70260
	B->CON (FR)	0.21986	1.13072	10.58340
	CI->CON (FR)	0.20963	1.17092	11.04830

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (RF)	0.13667	0.70267	6.61600
	B->CON (RF)	0.13674	0.73526	7.24679
	CI->CON (RF)	0.12429	0.74033	7.43817
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.13207	0.69845	6.61764
	B->CON (RF)	0.13225	0.73124	7.24840
	CI->CON (RF)	0.11969	0.73611	7.43984

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-R)	0.50516	2.63143	26.12690
	B->S (-R)	0.52197	2.64205	25.73240
	CI->S (-R)	0.46146	2.58950	26.41250
	CON->S (RR)	0.12494	0.85847	7.88206
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.48630	2.61538	26.08490
	B->S (-R)	0.50286	2.62418	25.69210
	CI->S (-R)	0.44248	2.57321	26.37140
	CON->S (RR)	0.12499	0.85806	7.87272

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-F)	0.39205	1.79035	16.08710
	B->S (-F)	0.39158	1.75052	16.23650
	CI->S (-F)	0.37886	1.82062	16.83860
	CON->S (FF)	0.16192	0.76472	5.63793
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.38221	1.78282	16.06520
	B->S (-F)	0.38198	1.74358	16.21650
	CI->S (-F)	0.36901	1.81311	16.81760
	CON->S (FF)	0.16196	0.76445	5.63273

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00235	0.00230	0.00461
	B	0.00287	0.00295	0.00532
	CI	0.00290	0.00312	0.00579
sky130_osu_sc_12T_hs__addf_l	A	0.00211	0.00201	0.00387
	B	0.00264	0.00266	0.00440
	CI	0.00267	0.00284	0.00481

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00727	0.00757	0.01317
	B	0.00767	0.00799	0.01288
	CI	0.00613	0.00647	0.01218
sky130_osu_sc_12T_hs__addf_l	A	0.00709	0.00731	0.01107
	B	0.00748	0.00772	0.01095
	CI	0.00655	0.00690	0.01027

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00726	0.00744	0.00979
	B	0.00757	0.00770	0.00982
	CI	0.00673	0.00702	0.00919
sky130_osu_sc_12T_hs__addf_l	A	0.00709	0.00722	0.00952
	B	0.00739	0.00751	0.00955
	CI	0.00654	0.00682	0.00892

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00233	0.00222	0.00342
	B	0.00285	0.00284	0.00410
	CI	0.00289	0.00303	0.00447
sky130_osu_sc_12T_hs__addf_l	A	0.00209	0.00197	0.00321
	B	0.00261	0.00259	0.00390
	CI	0.00266	0.00279	0.00427

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00727	0.00756	0.01271
	B	0.00766	0.00798	0.01244
	CI	0.00674	0.00713	0.01173
sky130_osu_sc_12T_hs__addf_l	A	0.00710	0.00736	0.01233
	B	0.00748	0.00777	0.01208
	CI	0.00655	0.00693	0.01136

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01580	0.01586	0.01964
	B	0.01454	0.01432	0.01966
	CI	0.01303	0.01295	0.01665
sky130_osu_sc_12T_hs__addf_l	A	0.01581	0.01586	0.01964
	B	0.01456	0.01433	0.01966
	CI	0.01304	0.01295	0.01666

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	0	0
0	1	0	0	1
1	0	0	0	1
1	1	1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addh_1	18.55920
sky130_osu_sc_12T_hs__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_hs__addh_1	0.00568	0.00595	0.78966	0.80941	0.81267
sky130_osu_sc_12T_hs__addh_l	0.00555	0.00587	0.57907	0.81003	0.58901

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.04484	0.04744
sky130_osu_sc_12T_hs__addh_l	0.00000	0.20685	0.20789

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CO (RR)	0.19532	0.97940	8.44162
	B->CO (RR)	0.20031	0.96325	8.46492
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.15434	0.93171	7.69077
	B->CO (RR)	0.15821	0.91269	7.66573

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CO (FF)	0.15164	0.83660	6.82167
	B->CO (FF)	0.15878	0.85424	6.90719
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.12941	0.72022	5.32044
	B->CO (FF)	0.13572	0.73950	5.40762

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CON (RR)	0.26726	1.02307	8.49743
	B->CON (RR)	0.27132	1.00508	8.51234
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.20472	0.90715	7.84041
	B->CON (RR)	0.20766	0.88575	7.81457

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CON (FF)	0.20392	0.87754	6.95824
	B->CON (FF)	0.20048	0.88564	7.03333
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.16347	0.73433	5.76441
	B->CON (FF)	0.16182	0.74651	5.84388

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->S (FR)	0.28221	1.81570	18.48370
	B->S (FR)	0.27830	1.82459	18.59820
	CON->S (FR)	0.04167	0.86601	11.56970
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.23573	1.55195	14.09990
	B->S (FR)	0.23373	1.56389	14.19010
	CON->S (FR)	0.04509	0.91405	11.24250

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->S (RF)	0.34703	1.93836	19.72420
	B->S (RF)	0.35103	1.92081	19.74010
	CON->S (RF)	0.03455	0.73731	9.99136
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.26586	1.50759	13.42830
	B->S (RF)	0.26884	1.48682	13.39720
	CON->S (RF)	0.02848	0.62385	7.96269

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00380	0.00368	0.00486
	B	0.00000	0.00000	0.00000
	B	0.00347	0.00332	0.00434
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00322	0.00306	0.00518
	B	0.00000	0.00000	0.00000
	B	0.00289	0.00271	0.00476

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00539	0.00523	0.00668
	B	0.00000	0.00000	0.00000
	B	0.00562	0.00567	0.00720
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00484	0.00469	0.00695
	B	0.00000	0.00000	0.00000
	B	0.00507	0.00509	0.00745

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00380	0.00368	0.00487
	B	0.00000	0.00000	0.00000
	B	0.00347	0.00332	0.00434
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00322	0.00306	0.00510
	B	0.00000	0.00000	0.00000
	B	0.00289	0.00271	0.00467

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00539	0.00523	0.00671
	B	0.00000	0.00000	0.00000
	B	0.00562	0.00568	0.00724
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00484	0.00468	0.00684
	B	0.00000	0.00000	0.00000
	B	0.00507	0.00510	0.00733

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00540	0.00524	0.00671
	B	0.00000	0.00000	0.00000
	B	0.00562	0.00568	0.00718
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00485	0.00470	0.00697
	B	0.00000	0.00000	0.00000
	B	0.00507	0.00510	0.00747

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00380	0.00368	0.00488
	B	0.00000	0.00000	0.00000
	B	0.00347	0.00332	0.00444
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00322	0.00306	0.00513
	B	0.00000	0.00000	0.00000
	B	0.00290	0.00271	0.00471

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.66261	0.63178	0.19886
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.66535	0.63438	0.19961

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.66261	0.63187	0.20935
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.66537	0.63448	0.20998

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__and2_1	8.30280
sky130_osu_sc_12T_hs__and2_2	10.25640
sky130_osu_sc_12T_hs__and2_4	14.16360
sky130_osu_sc_12T_hs__and2_6	18.07080
sky130_osu_sc_12T_hs__and2_8	21.97800
sky130_osu_sc_12T_hs__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__and2_1	0.00297	0.00309	0.80153
sky130_osu_sc_12T_hs__and2_2	0.00297	0.00309	1.58052
sky130_osu_sc_12T_hs__and2_4	0.00297	0.00309	3.09117
sky130_osu_sc_12T_hs__and2_6	0.00300	0.00309	4.59026
sky130_osu_sc_12T_hs__and2_8	0.00297	0.00309	6.03470
sky130_osu_sc_12T_hs__and2_l	0.00225	0.00233	0.58531

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.03154	0.04150
sky130_osu_sc_12T_hs__and2_2	0.00000	0.04238	0.05773
sky130_osu_sc_12T_hs__and2_4	0.00000	0.06828	0.09252
sky130_osu_sc_12T_hs__and2_6	0.00000	0.09418	0.12731
sky130_osu_sc_12T_hs__and2_8	0.00000	0.12008	0.16210
sky130_osu_sc_12T_hs__and2_l	0.00000	0.19670	0.30801

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.12036	0.81385	7.68078
	B->Y (RR)	0.12712	0.80360	7.62786
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.13416	0.74125	7.77546
	B->Y (RR)	0.14083	0.72302	7.70134
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.18113	0.75611	8.13443
	B->Y (RR)	0.18786	0.72925	8.02661
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.22855	0.80401	8.43787
	B->Y (RR)	0.23502	0.77206	8.29902
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.27383	0.85638	8.68816
	B->Y (RR)	0.28056	0.82081	8.52221
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.11734	0.85647	7.58814
	B->Y (RR)	0.12364	0.84916	7.50772

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	A->Y (FF)	0.10417	0.64346	5.32199
	B->Y (FF)	0.10847	0.66118	5.40598
sky130_osu_sc_12T_hs__and2_2	A->Y (FF)	0.12266	0.63352	5.53600
	B->Y (FF)	0.12622	0.64381	5.61008
sky130_osu_sc_12T_hs__and2_4	A->Y (FF)	0.17474	0.68573	5.98463
	B->Y (FF)	0.17587	0.68949	6.03862
sky130_osu_sc_12T_hs__and2_6	A->Y (FF)	0.22949	0.74547	6.33776
	B->Y (FF)	0.22778	0.74419	6.38321
sky130_osu_sc_12T_hs__and2_8	A->Y (FF)	0.28111	0.79787	6.59905
	B->Y (FF)	0.27698	0.79627	6.62826
sky130_osu_sc_12T_hs__and2_l	A->Y (FF)	0.10162	0.62925	4.78678
	B->Y (FF)	0.11002	0.65329	4.87555

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00261	0.00240	0.00941
	B	0.00000	0.00000	0.00000
	B	0.00267	0.00232	0.00744
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00491	0.00491	0.01162
	B	0.00000	0.00000	0.00000
	B	0.00497	0.00483	0.00985
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01023	0.01053	0.01659
	B	0.00000	0.00000	0.00000
	B	0.01027	0.01050	0.01519
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01574	0.01597	0.02177
	B	0.00000	0.00000	0.00000
	B	0.01577	0.01615	0.02042
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02134	0.02150	0.02714
	B	0.00000	0.00000	0.00000
	B	0.02151	0.02104	0.02641
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00202	0.00194	0.01028
	B	0.00000	0.00000	0.00000
	B	0.00207	0.00185	0.00834

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00651	0.00666	0.01357
	B	0.00000	0.00000	0.00000
	B	0.00735	0.00745	0.01405
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00808	0.00864	0.01541
	B	0.00000	0.00000	0.00000
	B	0.00894	0.00933	0.01588
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01215	0.01332	0.01996
	B	0.00000	0.00000	0.00000
	B	0.01306	0.01399	0.02038
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01670	0.01814	0.02478
	B	0.00000	0.00000	0.00000
	B	0.01733	0.01866	0.02505
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02108	0.02265	0.02945
	B	0.00000	0.00000	0.00000
	B	0.02178	0.02310	0.02963
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00492	0.00516	0.01361
	B	0.00000	0.00000	0.00000
	B	0.00555	0.00576	0.01399

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00229	-0.00230	-0.00232
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00229	-0.00230	-0.00232
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00229	-0.00230	-0.00232
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00231	-0.00232	-0.00234
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00228	-0.00229	-0.00232
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00159	-0.00159	-0.00161

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00231	0.00236	0.00232
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00231	0.00236	0.00232
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00231	0.00234	0.00233
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00234	0.00236	0.00235
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00231	0.00234	0.00233
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00161	0.00164	0.00161

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00220	-0.00222	-0.00220
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00220	-0.00222	-0.00220
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00220	-0.00221	-0.00220
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00220	-0.00221	-0.00220
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00220	-0.00221	-0.00220
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00153	-0.00153	-0.00153

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00226	0.00222	0.00221
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00226	0.00223	0.00221
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00226	0.00225	0.00221
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00226	0.00224	0.00221
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00227	0.00224	0.00221
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00158	0.00155	0.00154

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT			OUTPUT
A0	A1	B0	Y
0	x	0	1
x	x	1	0
1	0	0	1
1	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__aoi21_l	0.00273	0.00291	0.00289	0.34878

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.01821	0.03038

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (FR)	0.13364	1.09557	10.51740
	A1->Y (FR)	0.11087	1.02129	10.07870
	B0->Y (FR)	0.10130	1.07345	10.94550

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (RF)	0.07103	0.62181	6.32463
	A1->Y (RF)	0.06609	0.65687	7.03295
	B0->Y (RF)	0.03524	0.54187	6.12051

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00550	0.00544	0.00605
	A1	0.00000	0.00000	0.00000
	A1	0.00468	0.00459	0.00518
	B0	0.00442	0.00438	0.00554

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00123	0.00101	0.00167
	A1	0.00000	0.00000	0.00000
	A1	0.00125	0.00106	0.00186
	B0	-0.00045	-0.00048	0.00036

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00166	-0.00191	-0.00191
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00194	-0.00195	-0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00194	-0.00195	-0.00194

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00189	0.00191	0.00191
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00194	0.00195	0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00200	0.00198	0.00195

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00165	-0.00192	-0.00191
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00194	-0.00196	-0.00195
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00211	-0.00212	-0.00213

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00190	0.00192	0.00191
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00194	0.00196	0.00195
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00213	0.00218	0.00214

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00091	-0.00093	-0.00091

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00100	0.00101	0.00094

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	x	0	x	1
0	x	1	0	1
x	x	1	1	0
1	0	0	x	1
1	0	1	0	1
1	1	x	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_hs__aoi22_l	0.00273	0.00290	0.00303	0.00286	0.34999

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.02353	0.03512

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (FR)	0.16872	1.14184	10.61330
	A1->Y (FR)	0.15188	1.11971	10.56320
	B0->Y (FR)	0.10627	1.08023	10.97700
	B1->Y (FR)	0.12348	1.10220	11.03750

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (RF)	0.09444	0.64743	6.36778
	A1->Y (RF)	0.08935	0.68329	7.07665
	B0->Y (RF)	0.04995	0.63692	7.02382
	B1->Y (RF)	0.05554	0.60176	6.31700

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00668	0.00660	0.00714
	A1	0.00586	0.00572	0.00630
	B0	0.00470	0.00463	0.00584
	B1	0.00553	0.00550	0.00669

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00244	0.00224	0.00288
	A1	0.00246	0.00226	0.00306
	B0	-0.00028	-0.00033	0.00050
	B1	-0.00024	-0.00034	0.00033

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00170	-0.00190	-0.00190
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00194	-0.00195	-0.00195
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00194	-0.00195	-0.00194
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00194	-0.00195	-0.00194

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00189	0.00190	0.00190
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00194	0.00195	0.00195
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00200	0.00198	0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00200	0.00198	0.00195

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00170	-0.00191	-0.00190
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00194	-0.00195	-0.00195
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00210	-0.00211	-0.00213
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00210	-0.00211	-0.00213

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00189	0.00191	0.00190
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00194	0.00198	0.00196
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00212	0.00217	0.00213
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00212	0.00217	0.00213

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00091	-0.00093	-0.00091
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00090	-0.00091	-0.00091
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00219	-0.00219	-0.00222
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00219	-0.00220	-0.00222

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00105	0.00104	0.00095
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00090	0.00091	0.00091
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00222	0.00223	0.00222
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00222	0.00223	0.00222

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00092	-0.00094	-0.00092
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00092	-0.00092	-0.00092
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00204	-0.00205	-0.00204
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00204	-0.00205	-0.00204

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00105	0.00106	0.00096
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00092	0.00092	0.00092
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00210	0.00206	0.00205
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00210	0.00206	0.00205

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__buf_1	6.34920
sky130_osu_sc_12T_hs__buf_2	8.30280
sky130_osu_sc_12T_hs__buf_4	12.21000
sky130_osu_sc_12T_hs__buf_6	16.11720
sky130_osu_sc_12T_hs__buf_8	20.02440
sky130_osu_sc_12T_hs__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__buf_1	0.00309	0.75992
sky130_osu_sc_12T_hs__buf_2	0.00309	1.54314
sky130_osu_sc_12T_hs__buf_4	0.00308	3.07047
sky130_osu_sc_12T_hs__buf_6	0.00084	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00308	6.04861
sky130_osu_sc_12T_hs__buf_l	0.00229	0.58036

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.03246	0.03246
sky130_osu_sc_12T_hs__buf_2	0.00000	0.04509	0.04868
sky130_osu_sc_12T_hs__buf_4	0.00000	0.07396	0.08347
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.13168	0.15305
sky130_osu_sc_12T_hs__buf_l	0.00000	0.16249	0.16249

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__buf_1	**A->Y (RR)**	0.08647	0.76653	7.46030
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.09020	0.67092	7.53407
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.11835	0.65763	7.87027
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.17400	0.70799	8.33433
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.08576	0.80202	7.30682

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__buf_1	**A->Y (FF)**	0.09905	0.62367	5.09656
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.11746	0.62098	5.43198
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.16977	0.67749	5.94158
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.27568	0.79365	6.60402
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.09886	0.62159	4.77709

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00253	0.00231	0.00788
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00480	0.00478	0.01018
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01002	0.01032	0.01608
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02062	0.02143	0.02667
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00197	0.00185	0.00954

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00636	0.00646	0.01317
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00790	0.00825	0.01486
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01200	0.01287	0.01928
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02083	0.02196	0.02845
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00488	0.00520	0.01378

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00054	-0.00053	-0.00051

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
	0.00054	0.00053	0.00051

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT			OUTPUT	
D	RN	CK	Q	QN
0	1	R	0	1
1	1	R	1	0
x	0	x	0	1
x	1	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffr_1	42.49080
sky130_osu_sc_12T_hs__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_hs__dffr_1	0.00285	0.00284	0.00873	0.79278	0.79143
sky130_osu_sc_12T_hs__dffr_l	0.00285	0.00284	0.00873	0.58416	0.58411

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.20642	0.32377
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.33645	0.45381

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RR)	0.48256	1.76759	15.34430
	QN->Q (FR)	0.04350	0.91953	12.22630
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.46574	1.79922	14.36040
	QN->Q (FR)	0.04705	0.95213	11.70650

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RF)	0.46444	1.81581	16.59420
	QN->Q (RF)	0.02997	0.65313	8.80947
	RN->Q (FF)	0.33809	1.77595	17.20490
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.46514	1.92507	16.14910
	QN->Q (RF)	0.03042	0.65526	8.33399
	RN->Q (FF)	0.33941	1.88512	16.75370

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->QN (RR)	0.41289	1.10998	7.86300
	RN->QN (FR)	0.28634	1.07002	8.47666
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.40932	1.16390	7.78723
	RN->QN (FR)	0.28328	1.12373	8.40305

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	**CK->QN (RF)**	0.41247	0.93154	5.03844
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.39313	0.91527	4.66590

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.10124	-0.11099	-0.18855
	setup	CK (R)	0.36691	0.37400	1.04388
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.10020	-0.11178	-0.18861
	setup	CK (R)	0.36590	0.37508	1.05346

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.19490	-0.42338	-2.96750
	setup	CK (R)	0.22507	0.43636	2.99719
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.19364	-0.42439	-2.96725
	setup	CK (R)	0.22512	0.43636	2.99719

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.10124	-0.11099	-0.18855
	setup	CK (R)	0.36691	0.37400	1.04388
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.10020	-0.11178	-0.18861
	setup	CK (R)	0.36590	0.37508	1.05346

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.19490	-0.42338	-2.96750
	setup	CK (R)	0.22507	0.43636	2.99719
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.19364	-0.42439	-2.96725
	setup	CK (R)	0.22512	0.43636	2.99719

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.30922	0.32804	1.16494
	removal	CK (R)	-0.06764	-0.07960	-0.11809
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.31091	0.33159	1.17723
	removal	CK (R)	-0.06764	-0.07960	-0.11809

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.30922	0.32804	1.16494
	removal	CK (R)	-0.06764	-0.07960	-0.11809
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.31091	0.33159	1.17723
	removal	CK (R)	-0.06764	-0.07960	-0.11809

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	min_pulse_width	RN ()	0.20609	0.46509	13.33370
	min_pulse_width	RN ()	0.20609	0.46509	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.20259	0.46509	13.33370
	min_pulse_width	RN ()	0.20259	0.46509	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_12T_hs__dffr_1	min_pulse_width	CK ()	0.22359	0.46509	13.33370
	min_pulse_width	CK ()	0.24459	0.46509	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.20959	0.46509	13.33370
	min_pulse_width	CK ()	0.23759	0.46509	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_12T_hs__dffr_1	min_pulse_width	CK ()	0.47913	0.53816	13.33370
	min_pulse_width	CK ()	0.18509	0.46509	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.48101	0.54259	13.33370
	min_pulse_width	CK ()	0.18509	0.46509	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00645	0.00565	0.00539
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00580	0.00507	0.00728

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00738	0.00670	0.00417
	RN	-0.00083	-0.03904	-0.50738
	RN	0.01671	0.01617	0.01379
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00671	0.00618	0.00654
	RN	-0.00083	-0.03250	-0.37386
	RN	0.01604	0.01564	0.01616

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00738	0.00670	0.00423
	RN	-0.00083	-0.03900	-0.50651
	RN	0.01671	0.01617	0.01384
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00671	0.00617	0.00655
	RN	-0.00083	-0.03250	-0.37383
	RN	0.01604	0.01565	0.01614

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00642	0.00564	0.00522
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00577	0.00505	0.00718

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00159	-0.00192	-0.00193
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00791	0.00748	0.01180
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00328	0.00291	0.00733
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00159	-0.00192	-0.00193
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00791	0.00749	0.01181
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00328	0.00291	0.00734

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00192	0.00193	0.00193
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01237	0.01215	0.01674
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00601	0.00583	0.01034
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00192	0.00193	0.00193
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01237	0.01215	0.01674
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00602	0.00583	0.01034

Passive power(pJ) for RN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00250	0.00217	0.00904
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00736	0.00685	0.01383
sky130_osu_sc_12T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00251	0.00217	0.00904
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00737	0.00686	0.01383

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00637	0.00631	0.01364
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01278	0.01255	0.01973
sky130_osu_sc_12T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00638	0.00631	0.01365
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01279	0.01256	0.01974

Passive power(pJ) for CK rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00045	-0.00091	0.00580
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00392	0.00312	0.00997
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00047	-0.00103	0.00575
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00045	-0.00091	0.00580
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00392	0.00312	0.00997
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00047	-0.00103	0.00576

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00982	0.00963	0.01705
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02007	0.01950	0.02684
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01521	0.01491	0.02195
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01979	0.01941	0.03291
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01073	0.01050	0.01772
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00982	0.00962	0.01705
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02008	0.01950	0.02685
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01522	0.01491	0.02195
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01980	0.01942	0.03291
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01073	0.01050	0.01772

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT				OUTPUT	
D	**RN**	**SN**	**CK**	**Q**	**QN**
0	**1**	**1**	**R**	**0**	**1**
1	**1**	**1**	**R**	**1**	**0**
x	**0**	**x**	**x**	**0**	**1**
x	**1**	**0**	**x**	**1**	**0**
x	**1**	**1**	**x**	**IQ**	**IQN**

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffsr_1	46.39800
sky130_osu_sc_12T_hs__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_hs__dffsr_1	0.00281	0.00285	0.00659	0.00893	0.81281	0.81860
sky130_osu_sc_12T_hs__dffsr_l	0.00281	0.00285	0.00659	0.00893	0.58024	0.58484

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.14080	0.15892
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.27083	0.28896

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RR)	0.51360	1.81347	15.62210
	QN->Q (FR)	0.04148	0.89610	12.00490
	RN->Q (RR)	0.41133	1.72181	15.60690
	SN->Q (FR)	0.38561	1.75486	16.45760
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.50413	1.84495	14.37200
	QN->Q (FR)	0.04697	0.95232	11.65110
	RN->Q (RR)	0.40196	1.75531	14.35480
	SN->Q (FR)	0.37611	1.78671	15.19160

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RF)	0.55809	1.91991	16.84630
	QN->Q (RF)	0.02977	0.65772	8.91672
	RN->Q (FF)	0.35818	1.80320	17.43890
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.55932	2.02483	16.16370
	QN->Q (RF)	0.03026	0.65330	8.30398
	RN->Q (FF)	0.36171	1.90981	16.74710

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RR)	0.50475	1.21363	8.03578
	RN->QN (FR)	0.30662	1.09620	8.62598
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.50140	1.26945	7.91266
	RN->QN (FR)	0.30554	1.15489	8.49599

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RF)	0.44612	0.98212	5.27235
	RN->QN (RF)	0.34407	0.89230	5.25733
	SN->QN (FF)	0.32032	0.92835	6.11056
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.43297	0.96698	4.77286
	RN->QN (RF)	0.33090	0.87806	4.75570
	SN->QN (FF)	0.30535	0.90921	5.58836

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.11884	-0.12605	-0.27240
	setup	CK (R)	0.38070	0.38390	1.09408
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.11568	-0.12631	-0.27223
	setup	CK (R)	0.38288	0.38391	1.10550

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.22995	-0.45301	-3.10519
	setup	CK (R)	0.28295	0.46540	3.12821
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.22914	-0.45370	-3.10445
	setup	CK (R)	0.28294	0.46539	3.12821

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.11884	-0.12605	-0.27240
	setup	CK (R)	0.38070	0.38390	1.09408
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.11568	-0.12631	-0.27223
	setup	CK (R)	0.38288	0.38391	1.10550

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.22995	-0.45301	-3.10519
	setup	CK (R)	0.28295	0.46540	3.12821
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.22914	-0.45370	-3.10445
	setup	CK (R)	0.28294	0.46539	3.12821

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.29357	0.30436	1.13252
	removal	CK (R)	-0.04660	-0.05639	-0.10831
	hold	SN (R)	-0.30463	-0.47393	-2.14942
	setup	SN (R)	0.33929	0.51156	4.56310
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.29388	0.30656	1.13744
	removal	CK (R)	-0.04660	-0.05639	-0.10831
	hold	SN (R)	-0.28980	-0.45881	-2.08127
	setup	SN (R)	0.33999	0.50164	4.40387

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.29357	0.30436	1.13252
	removal	CK (R)	-0.04660	-0.05639	-0.10831
	hold	SN (R)	-0.30463	-0.47393	-2.14942
	hold	SN (R)	-0.30581	-0.47711	-2.16595
	setup	SN (R)	0.33929	0.50772	4.40401
	setup	SN (R)	0.33819	0.51156	4.56310
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.29388	0.30656	1.13744
	removal	CK (R)	-0.04660	-0.05639	-0.10831
	hold	SN (R)	-0.29064	-0.45881	-2.08127
	hold	SN (R)	-0.28980	-0.46133	-2.09665
	setup	SN (R)	0.33999	0.50164	4.25722
	setup	SN (R)	0.32173	0.49998	4.40387

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	RN ()	0.23759	0.46509	13.33370
	min_pulse_width	RN ()	0.24459	0.46509	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.23759	0.46509	13.33370
	min_pulse_width	RN ()	0.24109	0.46509	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.06937	0.09432	3.06128
	removal	CK (R)	-0.02693	-0.06578	-0.40494
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.06934	0.09413	2.94514
	removal	CK (R)	-0.02693	-0.06578	-0.40494

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.06937	0.09432	3.06128
	removal	CK (R)	-0.02693	-0.06578	-0.40494
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.06934	0.09413	2.94514
	removal	CK (R)	-0.02693	-0.06578	-0.40494

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	SN ()	0.30657	0.49830	13.33370
	min_pulse_width	SN ()	0.31785	0.49830	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.30678	0.48059	13.33370
	min_pulse_width	SN ()	0.30088	0.48280	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_12T_hs__dffsr_1	min_pulse_width	CK ()	0.23759	0.46509	13.33370
	min_pulse_width	CK ()	0.27609	0.46509	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.22709	0.46509	13.33370
	min_pulse_width	CK ()	0.27259	0.46509	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_12T_hs__dffsr_1	min_pulse_width	CK ()	0.49727	0.54923	13.33370
	min_pulse_width	CK ()	0.24809	0.46509	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.49934	0.54923	13.33370
	min_pulse_width	CK ()	0.24809	0.46509	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00801	0.00727	0.00664
	RN	0.01470	0.01410	0.01084
	SN	-0.00083	-0.03963	-0.52020
	SN	0.01637	0.01571	0.01274
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00740	0.00673	0.00882
	RN	0.01407	0.01357	0.01315
	SN	-0.00083	-0.03237	-0.37135
	SN	0.01574	0.01518	0.01492

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00858	0.00811	0.00721
	RN	-0.00083	-0.03963	-0.52020
	RN	0.01750	0.01712	0.01658
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00792	0.00746	0.00783
	RN	-0.00083	-0.03237	-0.37135
	RN	0.01683	0.01646	0.01707

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00858	0.00810	0.00722
	RN	-0.00083	-0.03979	-0.52390
	RN	0.01750	0.01710	0.01651
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00792	0.00746	0.00782
	RN	-0.00083	-0.03252	-0.37430
	RN	0.01683	0.01645	0.01713

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00798	0.00724	0.00657
	RN	0.01466	0.01407	0.01090
	SN	-0.00083	-0.03979	-0.52383
	SN	0.01633	0.01566	0.01259
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00737	0.00671	0.00867
	RN	0.01404	0.01353	0.01306
	SN	-0.00083	-0.03252	-0.37426
	SN	0.01571	0.01515	0.01491

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00190	-0.00193	-0.00193
	(!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)	0.00999	0.00961	0.01387
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00365	0.00330	0.00761
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00361	0.00325	0.00759
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00365	0.00331	0.00762
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00190	-0.00193	-0.00193
	(!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)	0.01000	0.00961	0.01387
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00365	0.00330	0.00761
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00361	0.00325	0.00759
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00365	0.00331	0.00763

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00198	0.00195	0.00193
	(!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)	0.01427	0.01405	0.01836
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00650	0.00634	0.01082
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00654	0.00639	0.01083
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00647	0.00632	0.01079
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00198	0.00195	0.00193
	(!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)	0.01427	0.01405	0.01836
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00650	0.00635	0.01082
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00654	0.00639	0.01083
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00647	0.00632	0.01079

Passive power(pJ) for RN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00207	0.00170	0.00846
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00871	0.00815	0.01484
sky130_osu_sc_12T_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)	0.00207	0.00170	0.00846
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00871	0.00815	0.01484

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00691	0.00690	0.01431
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01353	0.01328	0.02049
sky130_osu_sc_12T_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)	0.00691	0.00690	0.01431
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01353	0.01328	0.02049

Passive power(pJ) for SN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	-0.00484	-0.00486	-0.00488
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00476	-0.00526	-0.00526
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00466	-0.00490	-0.00491
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00254	0.00213	0.00669
sky130_osu_sc_12T_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)	-0.00484	-0.00486	-0.00488
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00476	-0.00526	-0.00526
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00465	-0.00490	-0.00491
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00254	0.00213	0.00669

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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	0.00492	0.00490
	(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	0.00526	0.00526
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00489	0.00493	0.00492
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01084	0.01056	0.01460
sky130_osu_sc_12T_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)	0.00488	0.00492	0.00490
	(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	0.00526	0.00526
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00489	0.00493	0.00492
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01084	0.01056	0.01460

Passive power(pJ) for CK rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00050	-0.00097	0.00573
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00456	0.00382	0.01062
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00450	0.00377	0.01058
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00036	-0.00092	0.00585
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00253	0.00163	0.01469
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00050	-0.00097	0.00573
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00457	0.00382	0.01062
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00450	0.00377	0.01058
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00036	-0.00092	0.00585
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00254	0.00164	0.01469

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02239	0.02185	0.02915
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00999	0.00980	0.01720
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01551	0.01523	0.02225
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01553	0.01525	0.02230
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02176	0.02126	0.03463
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01073	0.01050	0.01772
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01334	0.01303	0.02707
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02239	0.02184	0.02915
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01000	0.00980	0.01720
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01551	0.01523	0.02225
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01553	0.01525	0.02230
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02176	0.02127	0.03463
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01073	0.01050	0.01772
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01334	0.01303	0.02707

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT			OUTPUT	
D	SN	CK	Q	QN
0	1	R	0	1
1	1	R	1	0
x	0	x	1	0
x	1	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffs_1	38.58360
sky130_osu_sc_12T_hs__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_hs__dffs_1	0.00283	0.00540	0.00885	0.79206	0.79597
sky130_osu_sc_12T_hs__dffs_l	0.00283	0.00540	0.00885	0.58265	0.58550

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.29344	0.69286
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.42348	0.82290

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RR)	0.35366	1.61321	15.16540
	QN->Q (FR)	0.04349	0.91696	12.18870
	SN->Q (FR)	0.26846	1.63318	15.85790
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.34676	1.65613	14.17550
	QN->Q (FR)	0.04702	0.94937	11.66340
	SN->Q (FR)	0.26189	1.67247	14.82920

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RF)	0.52142	1.87978	16.61820
	QN->Q (RF)	0.02986	0.65092	8.78710
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.51774	1.98063	16.15150
	QN->Q (RF)	0.03033	0.65324	8.31051

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RR)	0.46748	1.17630	7.95194
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.45971	1.22305	7.85219

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RF)	0.29073	0.78346	4.91155
	SN->QN (FF)	0.20489	0.80386	5.60348
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.28094	0.77815	4.53563
	SN->QN (FF)	0.19528	0.79524	5.18446

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.07741	-0.09125	-0.16346
	setup	CK (R)	0.25311	0.26618	0.99689
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.08070	-0.09198	-0.16281
	setup	CK (R)	0.25382	0.26729	1.00538

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.20208	-0.42514	-2.99030
	setup	CK (R)	0.25339	0.44422	3.02257
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.20026	-0.42740	-2.98980
	setup	CK (R)	0.25343	0.44422	3.02408

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.07741	-0.09125	-0.16346
	setup	CK (R)	0.25311	0.26618	0.99689
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.08070	-0.09198	-0.16281
	setup	CK (R)	0.25382	0.26729	1.00538

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.20208	-0.42514	-2.99030
	setup	CK (R)	0.25339	0.44422	3.02257
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.20026	-0.42740	-2.98980
	setup	CK (R)	0.25343	0.44422	3.02408

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	recovery	CK (R)	0.06248	0.08503	1.80363
	removal	CK (R)	-0.02447	-0.05460	-0.34771
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.06279	0.08522	1.66034
	removal	CK (R)	-0.02447	-0.05460	-0.34771

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	recovery	CK (R)	0.06248	0.08503	1.80363
	removal	CK (R)	-0.02447	-0.05460	-0.34771
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.06279	0.08522	1.66034
	removal	CK (R)	-0.02447	-0.05460	-0.34771

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	min_pulse_width	SN ()	0.18159	0.46509	13.33370
	min_pulse_width	SN ()	0.18859	0.46509	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.18159	0.46509	13.33370
	min_pulse_width	SN ()	0.17809	0.46509	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_12T_hs__dffs_1	min_pulse_width	CK ()	0.15359	0.46509	13.33370
	min_pulse_width	CK ()	0.25859	0.46509	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.14659	0.46509	13.33370
	min_pulse_width	CK ()	0.25159	0.46509	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_12T_hs__dffs_1	min_pulse_width	CK ()	0.36709	0.46509	13.33370
	min_pulse_width	CK ()	0.22009	0.46509	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.36709	0.46509	13.33370
	min_pulse_width	CK ()	0.22009	0.46509	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00647	0.00568	0.00556
	SN	-0.00083	-0.03901	-0.50692
	SN	0.01384	0.01323	0.01458
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00581	0.00511	0.00728
	SN	-0.00083	-0.03245	-0.37289
	SN	0.01317	0.01267	0.01647

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00732	0.00669	0.00437
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00666	0.00616	0.00671

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00732	0.00668	0.00432
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00666	0.00616	0.00662

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00644	0.00567	0.00538
	SN	-0.00083	-0.03913	-0.50934
	SN	0.01381	0.01321	0.01437
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00578	0.00508	0.00721
	SN	-0.00083	-0.03255	-0.37468
	SN	0.01314	0.01263	0.01638

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00192	-0.00195	-0.00196
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00771	0.00729	0.01179
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00326	0.00289	0.00728
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00192	-0.00195	-0.00196
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00771	0.00729	0.01179
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00326	0.00289	0.00728

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00201	0.00198	0.00196
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01216	0.01192	0.01642
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00603	0.00587	0.01043
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00201	0.00198	0.00196
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01216	0.01192	0.01642
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00603	0.00587	0.01043

Passive power(pJ) for SN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00351	-0.00353	-0.00354
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00246	0.00210	0.00896
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00350	-0.00353	-0.00354
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00246	0.00211	0.00896

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00358	0.00359	0.00356
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00749	0.00729	0.01538
sky130_osu_sc_12T_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	0.00359	0.00355
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00748	0.00729	0.01537

Passive power(pJ) for CK rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00045	-0.00091	0.00581
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00041	-0.00097	0.00582
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00220	0.00133	0.01455
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00045	-0.00091	0.00578
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00041	-0.00097	0.00582
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00221	0.00133	0.01455

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01995	0.01938	0.02688
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00982	0.00963	0.01705
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01947	0.01899	0.03245
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01067	0.01044	0.01766
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01267	0.01238	0.02661
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01995	0.01938	0.02688
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00982	0.00963	0.01705
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01947	0.01899	0.03245
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01067	0.01039	0.01766
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01267	0.01238	0.02661

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
D	CK	Q
0	R	0
1	R	1
x	x	IQ

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dff_1	32.23440
sky130_osu_sc_12T_hs__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_hs__dff_1	0.00298	0.00866	0.74009
sky130_osu_sc_12T_hs__dff_l	0.00298	0.00866	0.55624

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.11965	0.13160
sky130_osu_sc_12T_hs__dff_l	0.00000	0.24969	0.26163

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	CK->Q (RR)	0.30836	1.00616	7.66909
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.30137	1.05511	7.59810

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	CK->Q (RF)	0.44189	0.91704	4.82197
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.43817	0.92572	4.55998

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	hold	CK (R)	-0.07832	-0.09228	-0.18839
	setup	CK (R)	0.20996	0.22925	0.99700
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.07630	-0.09242	-0.18961
	setup	CK (R)	0.21073	0.23083	1.00721

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	hold	CK (R)	-0.19025	-0.43107	-3.03597
	setup	CK (R)	0.22215	0.44487	3.06643
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.18888	-0.43144	-3.03618
	setup	CK (R)	0.22215	0.44487	3.06649

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	min_pulse_width	CK ()	0.13959	0.46509	13.33370
	min_pulse_width	CK ()	0.23759	0.46509	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.13609	0.46509	13.33370
	min_pulse_width	CK ()	0.23409	0.46509	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_12T_hs__dff_1	min_pulse_width	CK ()	0.32509	0.46509	13.33370
	min_pulse_width	CK ()	0.17809	0.46509	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.32509	0.46509	13.33370
	min_pulse_width	CK ()	0.18159	0.46509	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01364	0.01261	0.02451
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01228	0.01123	0.02313

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01496	0.01438	0.02113
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01361	0.01298	0.01972

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00158	-0.00190	-0.00192
	!CK	0.00000	0.00000	0.00000
	!CK	0.00709	0.00664	0.01101
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00158	-0.00190	-0.00192
	!CK	0.00000	0.00000	0.00000
	!CK	0.00709	0.00664	0.01100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00190	0.00192	0.00192
	!CK	0.00000	0.00000	0.00000
	!CK	0.01260	0.01230	0.01689
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00190	0.00192	0.00192
	!CK	0.00000	0.00000	0.00000
	!CK	0.01260	0.01230	0.01689

Passive power(pJ) for CK rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00048	-0.00093	0.00577
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00042	-0.00095	0.00583
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00048	-0.00093	0.00577
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00042	-0.00096	0.00583

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00979	0.00960	0.01703
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01931	0.01874	0.02637
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01975	0.01921	0.03298
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01061	0.01038	0.01761
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00979	0.00960	0.01703
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01931	0.01872	0.02637
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01975	0.01925	0.03299
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01061	0.01038	0.01761

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__inv_1	4.39560
sky130_osu_sc_12T_hs__inv_10	21.97800
sky130_osu_sc_12T_hs__inv_2	6.34920
sky130_osu_sc_12T_hs__inv_3	8.30280
sky130_osu_sc_12T_hs__inv_4	10.25640
sky130_osu_sc_12T_hs__inv_6	14.16360
sky130_osu_sc_12T_hs__inv_8	18.07080
sky130_osu_sc_12T_hs__inv_l	4.38570

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__inv_1	0.00288	0.73678
sky130_osu_sc_12T_hs__inv_10	0.02580	7.38890
sky130_osu_sc_12T_hs__inv_2	0.00535	1.49899
sky130_osu_sc_12T_hs__inv_3	0.00793	2.21982
sky130_osu_sc_12T_hs__inv_4	0.01044	2.98550
sky130_osu_sc_12T_hs__inv_6	0.01563	4.44835
sky130_osu_sc_12T_hs__inv_8	0.02072	5.90397
sky130_osu_sc_12T_hs__inv_l	0.00225	0.53857

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.01623	0.01857
sky130_osu_sc_12T_hs__inv_10	0.00000	0.14432	0.17396
sky130_osu_sc_12T_hs__inv_2	0.00000	0.02886	0.03479
sky130_osu_sc_12T_hs__inv_3	0.00000	0.04509	0.05336
sky130_osu_sc_12T_hs__inv_4	0.00000	0.05773	0.06958
sky130_osu_sc_12T_hs__inv_6	0.00000	0.08659	0.10437
sky130_osu_sc_12T_hs__inv_8	0.00000	0.11545	0.13917
sky130_osu_sc_12T_hs__inv_l	0.00000	0.08125	0.14901

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__inv_1	**A->Y (FR)**	0.04265	0.86511	11.28650
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.04166	0.55148	11.27550
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.03056	0.72385	11.18240
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.03203	0.67074	11.23800
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.03075	0.63021	11.21600
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.03294	0.58880	11.18720
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.03688	0.56512	11.18570
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.04747	0.90433	10.89010

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__inv_1	**A->Y (RF)**	0.02806	0.59801	7.94914
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.03240	0.40020	8.15632
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.02179	0.52306	8.03101
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.02307	0.49101	8.11650
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.02228	0.46583	8.12054
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.02551	0.43471	8.13574
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02884	0.41451	8.14164
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.02922	0.60654	7.58722

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00329	0.00335	0.00422
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02685	0.02862	0.03775
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00565	0.00585	0.00514
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00869	0.00897	0.01168
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01105	0.01120	0.01515
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01636	0.01762	0.01546
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02163	0.02261	0.02053
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00257	0.00265	0.00408

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00054	-0.00056	0.00006
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00989	-0.00860	-0.00194
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00182	-0.00177	-0.00047
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00238	-0.00228	-0.00031
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00375	-0.00359	-0.00087
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00572	-0.00528	-0.00125
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00778	-0.00724	-0.00156
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00037	-0.00038	0.00017

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT			OUTPUT
A0	**A1**	**S0**	**Y**
0	**0**	**x**	**0**
0	**1**	**0**	**0**
x	**1**	**1**	**1**
1	**x**	**0**	**1**
1	**0**	**1**	**0**

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_12T_hs__mux2_1	0.16389	0.16382	0.00594	0.16364

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.03637	0.03637

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__mux2_1	A0->Y (RR)	-	0.01872	0.31726	2.96270
	A1->Y (RR)	-	0.02305	0.32214	2.96662
	S0->Y (RR)	(!A0 * A1)	0.06442	0.38872	1.87526
	S0->Y (FR)	(A0 * !A1)	0.04479	0.46416	3.32423

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__mux2_1	A0->Y (FF)	-	0.02131	0.30092	2.78360
	A1->Y (FF)	-	0.01826	0.29801	2.77770
	S0->Y (FF)	(!A0 * A1)	0.09448	0.42868	2.05690
	S0->Y (RF)	(A0 * !A1)	0.03020	0.36191	2.79557

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00323	-0.00322	-0.00323
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00215	-0.00215	-0.00215
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00419	0.00418	0.01213
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00207	-0.00243	0.00492

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00323	0.00322	0.00323
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00215	0.00215	0.00215
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00064	0.00032	0.00785
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00877	0.00871	0.01637

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00078	-0.00078	-0.00079

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00078	0.00078	0.00079

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00093	-0.00093	-0.00094

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00093	0.00093	0.00094

Passive power(pJ) for S0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00073	-0.00109	0.00640
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00071	-0.00107	0.00642

Passive power(pJ) for S0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00674	0.00669	0.01442
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00621	0.00619	0.01410

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nand2_1	6.34920
sky130_osu_sc_12T_hs__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nand2_1	0.00286	0.00287	0.74047
sky130_osu_sc_12T_hs__nand2_l	0.00220	0.00224	0.53792

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.01648	0.02294
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.08158	0.29452

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nand2_1	A->Y (FR)	0.04456	0.86987	11.34850
	B->Y (FR)	0.05058	0.84925	10.99450
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.04795	0.90587	10.89720
	B->Y (FR)	0.05664	0.91295	10.88950

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nand2_1	A->Y (RF)	0.04674	0.82588	10.67380
	B->Y (RF)	0.05243	0.79219	10.01520
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.04681	0.82155	9.86745
	B->Y (RF)	0.05214	0.79349	9.25565

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00346	0.00353	0.00429
	B	0.00000	0.00000	0.00000
	B	0.00433	0.00435	0.00466
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00259	0.00267	0.00394
	B	0.00000	0.00000	0.00000
	B	0.00324	0.00330	0.00458

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00035	-0.00039	0.00012
	B	0.00000	0.00000	0.00000
	B	-0.00033	-0.00042	0.00003
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00021	-0.00022	0.00025
	B	0.00000	0.00000	0.00000
	B	-0.00020	-0.00025	0.00015

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00220	-0.00222	-0.00224
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00154	-0.00154	-0.00156

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00223	0.00228	0.00224
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00155	0.00159	0.00156

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00208	-0.00208	-0.00208
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00146	-0.00146	-0.00146

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00213	0.00212	0.00208
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00150	0.00149	0.00147

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
x	1	0
1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nor2_1	6.34920
sky130_osu_sc_12T_hs__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nor2_1	0.00282	0.00310	0.38321
sky130_osu_sc_12T_hs__nor2_l	0.00212	0.00233	0.28316

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.01584	0.03479
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.05900	0.14900

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nor2_1	A->Y (FR)	0.09876	1.04305	10.68980
	B->Y (FR)	0.07902	1.02597	10.96350
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.10294	1.10568	10.42090
	B->Y (FR)	0.08748	1.08857	10.57230

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nor2_1	A->Y (RF)	0.03684	0.50839	5.74282
	B->Y (RF)	0.02974	0.49637	5.72326
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.03568	0.51465	5.50060
	B->Y (RF)	0.03038	0.50479	5.48408

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00454	0.00446	0.00516
	B	0.00000	0.00000	0.00000
	B	0.00355	0.00342	0.00484
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00328	0.00322	0.00414
	B	0.00000	0.00000	0.00000
	B	0.00266	0.00265	0.00469

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00054	0.00039	0.00127
	B	0.00000	0.00000	0.00000
	B	-0.00042	-0.00041	0.00044
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00041	0.00033	0.00115
	B	0.00000	0.00000	0.00000
	B	-0.00025	-0.00024	0.00055

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00158	-0.00194	-0.00193
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00101	-0.00128	-0.00130

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00192	0.00194	0.00193
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00130	0.00131	0.00131

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00091	-0.00093	-0.00092
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00063	-0.00064	-0.00063

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00096	0.00097	0.00093
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00066	0.00067	0.00064

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT			OUTPUT
A0	A1	B0	Y
0	0	x	1
x	1	0	1
x	1	1	0
1	x	0	1
1	x	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__oai21_l	0.00287	0.00297	0.00247	0.37986

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.07184	0.16290

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai21_l	A0->Y (FR)	0.11043	1.05844	10.95370
	A1->Y (FR)	0.13449	1.07931	10.68200
	B0->Y (FR)	0.06080	0.80546	8.96940

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai21_l	A0->Y (RF)	0.06286	0.63855	6.72272
	A1->Y (RF)	0.07704	0.64320	6.64779
	B0->Y (RF)	0.04944	0.67176	7.53779

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00489	0.00484	0.00599
	A1	0.00000	0.00000	0.00000
	A1	0.00593	0.00583	0.00645
	B0	0.00400	0.00406	0.00595

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00024	0.00016	0.00075
	A1	0.00000	0.00000	0.00000
	A1	0.00121	0.00101	0.00162
	B0	0.00053	0.00048	0.00121

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00092	-0.00093	-0.00092
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00193	-0.00196	-0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00201	-0.00201	-0.00200

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00097	0.00098	0.00094
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00194	0.00196	0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00203	0.00203	0.00201

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00153	-0.00189	-0.00187
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00191	-0.00194	-0.00194
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00198	-0.00198	-0.00198

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00186	0.00190	0.00187
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00193	0.00194	0.00194
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00200	0.00201	0.00198

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00160	-0.00161	-0.00165

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00165	0.00166	0.00166

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	0	x	x	1
x	1	0	0	1
x	1	x	1	0
x	1	1	x	0
1	x	0	0	1
1	x	x	1	0
1	x	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_hs__oai22_l	0.00271	0.00283	0.00300	0.00296	0.39425

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.02207	0.03575

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (FR)	0.14295	1.08200	10.73540
	A1->Y (FR)	0.12278	1.06731	11.01900
	B0->Y (FR)	0.08462	1.02565	10.98580
	B1->Y (FR)	0.10675	1.04555	10.70430

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (RF)	0.10283	0.69703	6.94388
	A1->Y (RF)	0.08302	0.67364	6.89815
	B0->Y (RF)	0.07096	0.70529	7.71531
	B1->Y (RF)	0.09179	0.72840	7.77233

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00754	0.00745	0.00806
	A1	0.00650	0.00645	0.00758
	B0	0.00477	0.00466	0.00588
	B1	0.00587	0.00578	0.00640

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00186	0.00167	0.00224
	A1	0.00097	0.00089	0.00142
	B0	0.00094	0.00089	0.00160
	B1	0.00187	0.00170	0.00241

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00156	-0.00190	-0.00189
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00156	-0.00190	-0.00189
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00185	-0.00189	-0.00189
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00192	-0.00193	-0.00192

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00189	0.00190	0.00189
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00189	0.00190	0.00189
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00188	0.00189	0.00189
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00194	0.00195	0.00193

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00089	-0.00091	-0.00090
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00089	-0.00091	-0.00090
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00185	-0.00188	-0.00187
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00191	-0.00193	-0.00192

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00094	0.00095	0.00091
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00094	0.00095	0.00091
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00186	0.00188	0.00187
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00194	0.00194	0.00192

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00090	-0.00092	-0.00091
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00091	-0.00090	-0.00091
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00214	-0.00217	-0.00216
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00214	-0.00215	-0.00221

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00095	0.00096	0.00092
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00095	0.00095	0.00092
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00216	0.00217	0.00216
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00222	0.00222	0.00222

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00154	-0.00189	-0.00188
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00154	-0.00189	-0.00188
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00218	-0.00223	-0.00222
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00216	-0.00219	-0.00225

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00188	0.00190	0.00188
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00188	0.00190	0.00188
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00221	0.00223	0.00222
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00225	0.00228	0.00226

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
x	1	1
1	x	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__or2_1	8.30280
sky130_osu_sc_12T_hs__or2_2	10.25640
sky130_osu_sc_12T_hs__or2_4	14.16360
sky130_osu_sc_12T_hs__or2_8	21.97800
sky130_osu_sc_12T_hs__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__or2_1	0.00317	0.00294	0.76130
sky130_osu_sc_12T_hs__or2_2	0.00318	0.00294	1.54714
sky130_osu_sc_12T_hs__or2_4	0.00318	0.00294	3.05485
sky130_osu_sc_12T_hs__or2_8	0.00317	0.00294	6.01011
sky130_osu_sc_12T_hs__or2_l	0.00237	0.00223	0.55390

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.03332	0.04868
sky130_osu_sc_12T_hs__or2_2	0.00000	0.04775	0.05773
sky130_osu_sc_12T_hs__or2_4	0.00000	0.07958	0.08347
sky130_osu_sc_12T_hs__or2_8	0.00000	0.14324	0.15305
sky130_osu_sc_12T_hs__or2_l	0.00000	0.10646	0.17406

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (RR)	0.09984	0.80937	7.59048
	B->Y (RR)	0.08804	0.77446	7.44138
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.10435	0.70855	7.66165
	B->Y (RR)	0.09207	0.67749	7.53006
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.13277	0.68462	7.94725
	B->Y (RR)	0.12010	0.66093	7.83872
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.18841	0.72947	8.41404
	B->Y (RR)	0.17539	0.71137	8.32199
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.09835	0.85029	7.30168
	B->Y (RR)	0.08867	0.81829	7.22124

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (FF)	0.19004	0.74238	5.46799
	B->Y (FF)	0.16047	0.71276	5.38230
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.23014	0.75380	5.82527
	B->Y (FF)	0.20099	0.73484	5.75467
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.32983	0.84869	6.34085
	B->Y (FF)	0.30060	0.83107	6.32216
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.53154	1.06843	7.06705
	B->Y (FF)	0.50238	1.04787	7.11652
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.19195	0.73705	4.99484
	B->Y (FF)	0.16584	0.70698	4.90680

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00362	0.00337	0.00787
	B	0.00000	0.00000	0.00000
	B	0.00268	0.00247	0.00775
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00592	0.00578	0.01052
	B	0.00000	0.00000	0.00000
	B	0.00494	0.00508	0.01016
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01114	0.01149	0.01618
	B	0.00000	0.00000	0.00000
	B	0.01015	0.01077	0.01620
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02178	0.02246	0.02725
	B	0.00000	0.00000	0.00000
	B	0.02081	0.02194	0.02701
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00276	0.00255	0.00719
	B	0.00000	0.00000	0.00000
	B	0.00210	0.00202	0.00828

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00761	0.00743	0.01165
	B	0.00000	0.00000	0.00000
	B	0.00634	0.00653	0.01304
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00922	0.00938	0.01344
	B	0.00000	0.00000	0.00000
	B	0.00794	0.00841	0.01466
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01357	0.01398	0.01792
	B	0.00000	0.00000	0.00000
	B	0.01225	0.01307	0.01896
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02396	0.02297	0.02728
	B	0.00000	0.00000	0.00000
	B	0.02268	0.02187	0.02806
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00566	0.00553	0.01033
	B	0.00000	0.00000	0.00000
	B	0.00478	0.00512	0.01284

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00161	-0.00197	-0.00195
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00161	-0.00197	-0.00195
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00161	-0.00197	-0.00195
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00160	-0.00197	-0.00195
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00101	-0.00130	-0.00131

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00194	0.00197	0.00195
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00194	0.00197	0.00195
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00194	0.00197	0.00195
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00194	0.00197	0.00195
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00131	0.00132	0.00132

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00092	-0.00093	-0.00092
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00092	-0.00093	-0.00092
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00092	-0.00093	-0.00092
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00092	-0.00093	-0.00092
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00062	-0.00062	-0.00062

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00098	0.00098	0.00094
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00098	0.00098	0.00094
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00098	0.00098	0.00094
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00098	0.00098	0.00094
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00065	0.00066	0.00063

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
A	OE	Y
-	0	HiZ
0	1	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tbufi_1	8.30280
sky130_osu_sc_12T_hs__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tbufi_1	0.00307	0.00398	0.39383
sky130_osu_sc_12T_hs__tbufi_l	0.00235	0.00305	0.28272

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.02597	0.03246
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.08904	0.29801

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tbufi_1	A->Y (FR)	0.07378	1.01601	10.96490
	OE->Y (FR)	0.06870	0.32043	4.68819
	OE->Y (RR)	0.12135	0.93435	7.36044
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.08445	1.08225	10.55670
	OE->Y (FR)	0.06746	0.32017	4.68813
	OE->Y (RR)	0.12439	1.00744	7.24737

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tbufi_1	A->Y (RF)	0.04594	0.65686	7.46893
	OE->Y (FF)	0.06999	0.32043	4.68817
	OE->Y (RF)	0.04129	0.61254	6.74427
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.04649	0.65202	6.93112
	OE->Y (FF)	0.06908	0.32016	4.68815
	OE->Y (RF)	0.04238	0.61162	6.26398

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00335	0.00326	0.00450
	OE	0.00000	0.00000	0.00000
	OE	0.00329	0.00301	0.01005
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00252	0.00255	0.00434
	OE	0.00000	0.00000	0.00000
	OE	0.00240	0.00228	0.01081

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00042	-0.00043	0.00032
	OE	0.00000	0.00000	0.00000
	OE	0.00211	0.00182	0.00953
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00024	-0.00024	0.00045
	OE	0.00000	0.00000	0.00000
	OE	0.00148	0.00134	0.01047

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00158	-0.00159	-0.00158
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00140	-0.00143	-0.00140
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00112	-0.00112	-0.00112
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00100	-0.00101	-0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00158	0.00159	0.00158
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00143	0.00144	0.00141
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00112	0.00112	0.00112
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00101	0.00103	0.00100

Passive power(pJ) for OE rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00126	0.00098	0.00873
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00110	0.00087	0.00855
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00090	0.00079	0.00996
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00075	0.00068	0.00979

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00402	0.00387	0.01176
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00409	0.00400	0.01185
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00306	0.00322	0.01260
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00307	0.00326	0.01266

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
A	OE	Y
0	0	1
1	0	0
-	1	HiZ

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tnbufi_1	8.30280
sky130_osu_sc_12T_hs__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tnbufi_1	0.00307	0.00463	0.39388
sky130_osu_sc_12T_hs__tnbufi_l	0.00224	0.00346	0.28629

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.02441	0.03714
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.13422	0.16249

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tnbufi_1	A->Y (FR)	0.07460	1.01598	10.96580
	OE->Y (RR)	0.03549	0.32026	4.68854
	OE->Y (FR)	0.08733	1.02515	10.66600
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.08296	1.08603	10.63900
	OE->Y (RR)	0.03576	0.31998	4.68815
	OE->Y (FR)	0.09326	1.10292	10.46900

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tnbufi_1	A->Y (RF)	0.04494	0.65647	7.46909
	OE->Y (RF)	0.03502	0.32026	4.68843
	OE->Y (FF)	0.08394	0.60936	4.53326
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.04417	0.65427	6.97667
	OE->Y (RF)	0.03537	0.31997	4.68817
	OE->Y (FF)	0.08771	0.60215	4.03799

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00348	0.00339	0.00462
	OE	0.00000	0.00000	0.00000
	OE	0.00820	0.00833	0.01663
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00258	0.00261	0.00439
	OE	0.00000	0.00000	0.00000
	OE	0.00619	0.00647	0.01621

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00058	-0.00057	0.00017
	OE	0.00000	0.00000	0.00000
	OE	0.00716	0.00731	0.01511
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00039	0.00029
	OE	0.00000	0.00000	0.00000
	OE	0.00539	0.00570	0.01498

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00131	-0.00131	-0.00131
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00115	-0.00117	-0.00115
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00088	-0.00089	-0.00088
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00078	-0.00078	-0.00077

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00131	0.00131	0.00131
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00117	0.00118	0.00116
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00088	0.00089	0.00088
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00080	0.00080	0.00078

Passive power(pJ) for OE rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00209	-0.00255	0.00530
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00210	-0.00254	0.00532
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00136	-0.00169	0.00759
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00142	-0.00168	0.00759

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00617	0.00637	0.01457
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00606	0.00627	0.01450
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00469	0.00506	0.01470
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00463	0.00501	0.01464

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xnor2_l	0.00617	0.00528	0.40493

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.05962	0.07075

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (RR)	B	0.15475	0.98679	7.59024
	A->Y (FR)	!B	0.09747	1.04619	11.09880
	B->Y (RR)	A	0.12568	0.95949	7.58139
	B->Y (FR)	!A	0.11697	1.05777	10.81180

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (FF)	B	0.14711	0.73007	4.94943
	A->Y (RF)	!B	0.06150	0.63583	6.88217
	B->Y (FF)	A	0.12689	0.71006	4.92952
	B->Y (RF)	!A	0.07571	0.65421	6.90220

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00343	0.00303	0.01004
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00833	0.00831	0.01741
	B	A	0.00000	0.00000	0.00000
	B	A	0.00146	0.00129	0.00888
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00883	0.00879	0.01740

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00997	0.00967	0.01738
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00230	0.00190	0.01003
	B	A	0.00000	0.00000	0.00000
	B	A	0.00895	0.00911	0.01703
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00296	0.00253	0.01069

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xor2_1	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xor2_1	0.00617	0.00532	0.38630

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.05962	0.06806

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (RR)	!B	0.15525	0.98900	7.55295
	A->Y (FR)	B	0.12091	1.06530	10.77410
	B->Y (RR)	!A	0.13124	0.97382	7.54836
	B->Y (FR)	A	0.12962	1.07606	10.77990

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (FF)	!B	0.13633	0.70802	4.74821
	A->Y (RF)	B	0.06665	0.68167	7.42381
	B->Y (FF)	!A	0.13067	0.70689	4.78465
	B->Y (RF)	A	0.07275	0.64405	6.71451

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00969	0.00960	0.01808
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00194	0.00126	0.00861
	B	A	0.00000	0.00000	0.00000
	B	A	0.00979	0.00978	0.01823
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00139	0.00115	0.00863

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00195	0.00140	0.00958
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01032	0.01033	0.01778
	B	A	0.00000	0.00000	0.00000
	B	A	0.00198	0.00148	0.00952
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00906	0.00927	0.01713

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60, Temp 100.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__ant	4.39560
sky130_osu_sc_12T_hs__tiehi	4.39560
sky130_osu_sc_12T_hs__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_hs__ant	0.22212
sky130_osu_sc_12T_hs__tiehi	0.00000
sky130_osu_sc_12T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__ant	0.00000	82145.40000	164291.00000
sky130_osu_sc_12T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_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_12T_hs__ant	0.00000	0.00000	0.00000
	-0.00157	0.01885	0.28721

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__ant	0.00000	0.00000	0.00000
	1.43072	1.35978	0.35206