sky130_osu_sc_12T_hs_tt_1P89_25C.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_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.01109	0.01112	0.00859	1.41826	0.62805	1.24703
sky130_osu_sc_12T_hs__addf_l	0.01109	0.01112	0.00860	0.95086	0.62785	1.24618

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.09381	0.11621
sky130_osu_sc_12T_hs__addf_l	0.00000	0.37425	0.67964

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)	0.11375	1.36707	21.44640
	B->CO (RR)	0.11029	1.35157	21.25580
	CI->CO (RR)	0.10692	1.41108	22.32820
	CON->CO (FR)	0.02104	0.65382	10.89260
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.11372	1.25559	17.00390
	B->CO (RR)	0.11049	1.25288	17.16890
	CI->CO (RR)	0.10691	1.30032	17.91360
	CON->CO (FR)	0.02499	0.69561	10.45540

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)	0.17366	1.84482	28.60230
	B->CO (FF)	0.15366	1.75921	27.42090
	CI->CO (FF)	0.15136	1.84375	29.02570
	CON->CO (RF)	0.01648	0.45699	7.62923
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.17018	1.62102	21.71040
	B->CO (FF)	0.15073	1.55038	20.93070
	CI->CO (FF)	0.14788	1.62109	22.17290
	CON->CO (RF)	0.01766	0.46513	6.99359

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)	0.14655	0.87544	10.12220
	B->CON (FR)	0.12467	0.81658	9.89816
	CI->CON (FR)	0.12432	0.87685	10.61980
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.13897	0.86804	10.11280
	B->CON (FR)	0.11794	0.81008	9.88996
	CI->CON (FR)	0.11670	0.86951	10.61080

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)	0.07060	0.44532	5.10151
	B->CON (RF)	0.06825	0.47557	5.64049
	CI->CON (RF)	0.06378	0.49251	5.98209
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.06848	0.44304	5.09785
	B->CON (RF)	0.06623	0.47349	5.63668
	CI->CON (RF)	0.06164	0.49027	5.97813

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)	0.25489	1.70300	22.73460
	B->S (-R)	0.25753	1.67930	21.98420
	CI->S (-R)	0.23061	1.69878	23.16920
	CON->S (RR)	0.06624	0.54939	6.47840
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.24577	1.69541	22.71520
	B->S (-R)	0.24847	1.67226	21.96800
	CI->S (-R)	0.22151	1.69124	23.14730
	CON->S (RR)	0.06626	0.54920	6.47473

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)	0.19326	1.15193	14.21290
	B->S (-F)	0.18903	1.12222	14.23140
	CI->S (-F)	0.18604	1.19358	15.10460
	CON->S (FF)	0.08266	0.54400	5.97068
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.18882	1.14847	14.20140
	B->S (-F)	0.18482	1.11905	14.22080
	CI->S (-F)	0.18156	1.19001	15.09320
	CON->S (FF)	0.08268	0.54386	5.96747

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	0.00270	0.00353	0.02193
	B	0.00394	0.00453	0.02048
	CI	0.00396	0.00491	0.02314
sky130_osu_sc_12T_hs__addf_l	A	0.00240	0.00308	0.01712
	B	0.00278	0.00339	0.01594
	CI	0.00367	0.00446	0.01869

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00994	0.01182	0.05194
	B	0.01035	0.01191	0.04767
	CI	0.00842	0.01041	0.05130
sky130_osu_sc_12T_hs__addf_l	A	0.00969	0.01098	0.03691
	B	0.01008	0.01114	0.03414
	CI	0.00816	0.00956	0.03658

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00992	0.01093	0.02998
	B	0.01034	0.01117	0.02820
	CI	0.00840	0.00955	0.02985
sky130_osu_sc_12T_hs__addf_l	A	0.00968	0.01059	0.02877
	B	0.01008	0.01083	0.02702
	CI	0.00816	0.00920	0.02858

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00268	0.00321	0.01363
	B	0.00306	0.00351	0.01343
	CI	0.00395	0.00458	0.01599
sky130_osu_sc_12T_hs__addf_l	A	0.00239	0.00291	0.01378
	B	0.00277	0.00322	0.01333
	CI	0.00365	0.00430	0.01598

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00993	0.01167	0.04704
	B	0.01035	0.01176	0.04320
	CI	0.00842	0.01026	0.04639
sky130_osu_sc_12T_hs__addf_l	A	0.00969	0.01125	0.04481
	B	0.01010	0.01139	0.04115
	CI	0.00816	0.00983	0.04408

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.02152	0.02173	0.05278
	B	0.01960	0.01991	0.05437
	CI	0.01627	0.01668	0.04569
sky130_osu_sc_12T_hs__addf_l	A	0.02153	0.02173	0.05278
	B	0.01962	0.01990	0.05432
	CI	0.01627	0.01669	0.04569

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	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	0.00553	0.00584	1.37308	1.40031	1.42107
sky130_osu_sc_12T_hs__addh_l	0.00540	0.00575	0.95465	1.40052	0.97762

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.09701	0.10328
sky130_osu_sc_12T_hs__addh_l	0.00000	0.66651	0.67275

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)	0.08990	0.60895	7.01837
	B->CO (RR)	0.09292	0.60203	7.08257
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.07723	0.59310	6.33932
	B->CO (RR)	0.07967	0.58391	6.34196

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)	0.07639	0.56965	6.58504
	B->CO (FF)	0.08112	0.58422	6.65091
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.06808	0.52608	5.75501
	B->CO (FF)	0.07219	0.53924	5.85473

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)	0.12704	0.62589	6.94374
	B->CON (RR)	0.12961	0.61773	7.00692
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.10360	0.55051	6.35227
	B->CON (RR)	0.10564	0.53948	6.37120

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)	0.10564	0.59190	6.66302
	B->CON (FF)	0.10392	0.59970	6.71456
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.08795	0.52684	6.23214
	B->CON (FF)	0.08674	0.53479	6.31415

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)	0.14462	1.24943	17.33110
	B->S (FR)	0.14285	1.26141	17.43260
	CON->S (FR)	0.02315	0.66302	11.04910
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.12581	1.11013	13.71430
	B->S (FR)	0.12456	1.11800	13.81690
	CON->S (FR)	0.02576	0.70528	10.67840

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)	0.16067	1.22480	16.65920
	B->S (RF)	0.16325	1.21729	16.72030
	CON->S (RF)	0.01868	0.53120	8.87412
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.13124	0.95410	11.03080
	B->S (RF)	0.13326	0.94320	11.03900
	CON->S (RF)	0.01723	0.47124	7.15521

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	0.00514	0.00517	0.01402
	B	0.00000	0.00000	0.00000
	B	0.00470	0.00461	0.01534
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00440	0.00463	0.01960
	B	0.00000	0.00000	0.00000
	B	0.00395	0.00407	0.02181

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	0.00715	0.00724	0.01844
	B	0.00000	0.00000	0.00000
	B	0.00753	0.00797	0.01974
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00645	0.00682	0.02442
	B	0.00000	0.00000	0.00000
	B	0.00682	0.00751	0.02602

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	0.00514	0.00516	0.01396
	B	0.00000	0.00000	0.00000
	B	0.00469	0.00461	0.01522
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00440	0.00465	0.01951
	B	0.00000	0.00000	0.00000
	B	0.00395	0.00408	0.02188

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	0.00715	0.00723	0.01845
	B	0.00000	0.00000	0.00000
	B	0.00754	0.00797	0.01976
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00645	0.00682	0.02468
	B	0.00000	0.00000	0.00000
	B	0.00682	0.00751	0.02630

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	0.00716	0.00725	0.01874
	B	0.00000	0.00000	0.00000
	B	0.00754	0.00798	0.02007
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00646	0.00683	0.02448
	B	0.00000	0.00000	0.00000
	B	0.00682	0.00751	0.02615

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	0.00514	0.00517	0.01418
	B	0.00000	0.00000	0.00000
	B	0.00469	0.00462	0.01548
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00439	0.00464	0.01958
	B	0.00000	0.00000	0.00000
	B	0.00395	0.00407	0.02196

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)	1.73926	1.67070	0.54933
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.74463	1.67590	0.55073

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)	1.73918	1.67134	0.58133
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.74457	1.67650	0.58251

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00291	0.00303	1.38184
sky130_osu_sc_12T_hs__and2_2	0.00291	0.00303	2.72260
sky130_osu_sc_12T_hs__and2_4	0.00291	0.00303	5.21253
sky130_osu_sc_12T_hs__and2_6	0.00294	0.00303	7.71602
sky130_osu_sc_12T_hs__and2_8	0.00291	0.00303	10.08866
sky130_osu_sc_12T_hs__and2_l	0.00224	0.00232	0.95263

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.04631	0.07317
sky130_osu_sc_12T_hs__and2_2	0.00000	0.07314	0.07798
sky130_osu_sc_12T_hs__and2_4	0.00000	0.12682	0.14153
sky130_osu_sc_12T_hs__and2_6	0.00000	0.18049	0.20989
sky130_osu_sc_12T_hs__and2_8	0.00000	0.23417	0.27825
sky130_osu_sc_12T_hs__and2_l	0.00000	0.74871	1.19748

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)	0.05927	0.49849	6.39971
	B->Y (RR)	0.06299	0.49126	6.19000
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.06603	0.43563	6.39021
	B->Y (RR)	0.06978	0.42516	6.17709
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.08975	0.43364	6.48574
	B->Y (RR)	0.09349	0.41635	6.27312
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.11435	0.45938	6.64166
	B->Y (RR)	0.11797	0.43708	6.42876
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.13850	0.49035	6.78056
	B->Y (RR)	0.14224	0.46408	6.56001
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.06146	0.55492	6.44736
	B->Y (RR)	0.06518	0.54670	6.22012

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)**	0.05523	0.46942	5.78287
	B->Y (FF)	0.05680	0.47746	5.84963
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.06318	0.44505	5.85764
	B->Y (FF)	0.06429	0.45006	5.92595
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.08824	0.46649	6.01057
	B->Y (FF)	0.08723	0.46719	6.06723
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.11544	0.50326	6.17936
	B->Y (FF)	0.11224	0.49905	6.22654
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.14105	0.53516	6.26282
	B->Y (FF)	0.13604	0.52930	6.30170
sky130_osu_sc_12T_hs__and2_l	**A->Y (FF)**	0.05551	0.46236	5.19115
	B->Y (FF)	0.06037	0.47735	5.29058

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	0.00328	0.00447	0.05644
	B	0.00000	0.00000	0.00000
	B	0.00334	0.00391	0.04105
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00637	0.00758	0.05908
	B	0.00000	0.00000	0.00000
	B	0.00642	0.00711	0.04426
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01365	0.01491	0.06458
	B	0.00000	0.00000	0.00000
	B	0.01372	0.01448	0.05108
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02192	0.02264	0.06971
	B	0.00000	0.00000	0.00000
	B	0.02198	0.02198	0.05743
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03078	0.03005	0.07543
	B	0.00000	0.00000	0.00000
	B	0.03086	0.02956	0.06337
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00260	0.00422	0.06013
	B	0.00000	0.00000	0.00000
	B	0.00266	0.00357	0.04884

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	0.00870	0.01098	0.05543
	B	0.00000	0.00000	0.00000
	B	0.00986	0.01181	0.05547
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01111	0.01349	0.05819
	B	0.00000	0.00000	0.00000
	B	0.01228	0.01453	0.05835
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01783	0.02008	0.06468
	B	0.00000	0.00000	0.00000
	B	0.01882	0.02055	0.06476
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02565	0.02675	0.07152
	B	0.00000	0.00000	0.00000
	B	0.02640	0.02752	0.07104
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03486	0.03303	0.07847
	B	0.00000	0.00000	0.00000
	B	0.03544	0.03429	0.07728
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00668	0.00920	0.05988
	B	0.00000	0.00000	0.00000
	B	0.00756	0.00995	0.05975

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)	-0.00305	-0.00306	-0.00308
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00305	-0.00306	-0.00308
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00305	-0.00306	-0.00308
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00308	-0.00309	-0.00311
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00305	-0.00306	-0.00308
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00215	-0.00215	-0.00217

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)	0.00308	0.00312	0.00309
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00308	0.00312	0.00309
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00308	0.00311	0.00309
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00311	0.00314	0.00312
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00308	0.00311	0.00309
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00217	0.00220	0.00218

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)	-0.00291	-0.00293	-0.00291
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00291	-0.00292	-0.00291
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00291	-0.00293	-0.00291
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00291	-0.00292	-0.00291
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00291	-0.00292	-0.00291
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00204	-0.00205	-0.00205

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)	0.00300	0.00295	0.00292
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00300	0.00295	0.00293
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00300	0.00295	0.00293
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00300	0.00295	0.00293
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00300	0.00295	0.00293
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00212	0.00208	0.00206

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00268	0.00285	0.00283	0.58524

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.01901	0.03418

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)	0.07381	0.80769	9.87764
	A1->Y (FR)	0.05872	0.73572	9.26779
	B0->Y (FR)	0.05563	0.81955	10.50410

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)	0.03538	0.39326	4.73893
	A1->Y (RF)	0.03245	0.42819	5.33905
	B0->Y (RF)	0.02073	0.39339	5.09710

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	0.00744	0.00744	0.01618
	A1	0.00000	0.00000	0.00000
	A1	0.00625	0.00620	0.01485
	B0	0.00454	0.00499	0.01788

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	0.00153	0.00147	0.00881
	A1	0.00000	0.00000	0.00000
	A1	0.00158	0.00164	0.00989
	B0	-0.00065	-0.00032	0.00776

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)	-0.00212	-0.00253	-0.00252
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00254	-0.00257	-0.00255
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00255	-0.00257	-0.00255

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)	0.00251	0.00254	0.00252
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00254	0.00257	0.00256
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00263	0.00257	0.00256

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)	-0.00211	-0.00254	-0.00252
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00255	-0.00257	-0.00256
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00280	-0.00281	-0.00282

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)	0.00251	0.00254	0.00252
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00255	0.00259	0.00257
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00281	0.00286	0.00283

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)	-0.00116	-0.00116	-0.00116

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)	0.00126	0.00126	0.00118

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00268	0.00285	0.00297	0.00280	0.57257

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.02278	0.06836

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)	0.09400	0.82776	9.80149
	A1->Y (FR)	0.08406	0.81288	9.74564
	B0->Y (FR)	0.05843	0.81465	10.38260
	B1->Y (FR)	0.06874	0.82915	10.45650

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)	0.04627	0.40335	4.68258
	A1->Y (RF)	0.04327	0.43810	5.27684
	B0->Y (RF)	0.02422	0.40982	5.24579
	B1->Y (RF)	0.02780	0.37798	4.65438

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	0.00902	0.00895	0.01795
	A1	0.00783	0.00751	0.01659
	B0	0.00491	0.00565	0.01942
	B1	0.00615	0.00653	0.02020

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00311	0.00303	0.01080
	A1	0.00316	0.00320	0.01172
	B0	-0.00045	0.00008	0.00821
	B1	-0.00037	-0.00022	0.00732

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)	-0.00215	-0.00252	-0.00252
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00254	-0.00257	-0.00255
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00254	-0.00256	-0.00255
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00254	-0.00257	-0.00255

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)	0.00250	0.00254	0.00252
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00254	0.00257	0.00256
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00263	0.00257	0.00256
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00263	0.00257	0.00256

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)	-0.00214	-0.00253	-0.00252
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00255	-0.00257	-0.00256
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00279	-0.00280	-0.00281
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00279	-0.00280	-0.00281

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)	0.00251	0.00253	0.00252
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00255	0.00259	0.00257
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00280	0.00285	0.00282
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00281	0.00285	0.00282

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)	-0.00115	-0.00116	-0.00115
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00114	-0.00115	-0.00115
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00292	-0.00294	-0.00294
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00292	-0.00294	-0.00294

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)	0.00130	0.00130	0.00119
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00114	0.00115	0.00115
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00293	0.00295	0.00295
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00293	0.00296	0.00295

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)	-0.00117	-0.00117	-0.00117
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00116	-0.00117	-0.00116
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00269	-0.00270	-0.00269
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00269	-0.00269	-0.00269

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)	0.00131	0.00132	0.00120
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00116	0.00117	0.00116
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00277	0.00273	0.00270
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00277	0.00269	0.00270

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00303	1.27733
sky130_osu_sc_12T_hs__buf_2	0.00303	2.60031
sky130_osu_sc_12T_hs__buf_4	0.00302	5.16074
sky130_osu_sc_12T_hs__buf_6	0.00083	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00303	10.15782
sky130_osu_sc_12T_hs__buf_l	0.00228	0.96305

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.03899	0.03899
sky130_osu_sc_12T_hs__buf_2	0.00000	0.05848	0.07317
sky130_osu_sc_12T_hs__buf_4	0.00000	0.09747	0.14153
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.17545	0.27825
sky130_osu_sc_12T_hs__buf_l	0.00000	0.59987	0.59987

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)**	0.04739	0.48028	6.01178
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.04998	0.40011	5.92480
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.06648	0.38596	6.12394
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.09970	0.42215	6.42867
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.04866	0.52581	6.17861

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)**	0.05159	0.45038	5.51510
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.05977	0.43437	5.74005
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.08458	0.46104	6.03441
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.13652	0.53061	6.35104
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.05359	0.46273	5.33465

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	0.00314	0.00418	0.03830
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00614	0.00731	0.04120
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01312	0.01473	0.05101
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02842	0.03004	0.06605
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00250	0.00403	0.05358

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	0.00834	0.01034	0.05357
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01071	0.01275	0.05619
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01729	0.01898	0.06240
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03407	0.03291	0.07466
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00653	0.00911	0.06168

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
	-0.00073	-0.00075	-0.00071

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
	0.00073	0.00075	0.00071

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00279	0.00277	0.00871	1.36755	1.35492
sky130_osu_sc_12T_hs__dffr_l	0.00279	0.00277	0.00870	0.95375	0.95820

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.42911	0.91083
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.98999	1.47171

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)	0.23960	1.11756	13.27710
	QN->Q (FR)	0.02459	0.73153	12.07700
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.23556	1.16122	12.21400
	QN->Q (FR)	0.02711	0.74870	11.25410

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)	0.24145	1.13159	13.79770
	QN->Q (RF)	0.01792	0.50257	8.30273
	RN->Q (FF)	0.18012	1.20296	15.94070
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.24402	1.22314	13.24120
	QN->Q (RF)	0.01871	0.50177	7.65874
	RN->Q (FF)	0.18296	1.29379	15.37790

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)	0.21805	0.65770	6.14341
	RN->QN (FR)	0.15663	0.72928	8.28476
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.21766	0.71283	6.13663
	RN->QN (FR)	0.15650	0.78369	8.26922

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)**	0.20362	0.52471	3.74268
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.19731	0.52531	3.35371

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)	-0.04755	-0.05639	0.09939
	setup	CK (R)	0.18398	0.20740	0.47061
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.04840	-0.05639	0.09967
	setup	CK (R)	0.18445	0.20872	0.47017

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)	-0.10340	-0.26990	-3.98692
	setup	CK (R)	0.12252	0.28089	4.03020
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.10317	-0.26971	-3.98679
	setup	CK (R)	0.12252	0.28089	4.02827

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)	-0.04755	-0.05639	0.09939
	setup	CK (R)	0.18398	0.20740	0.47061
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.04840	-0.05639	0.09967
	setup	CK (R)	0.18445	0.20872	0.47017

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)	-0.10340	-0.26990	-3.98692
	setup	CK (R)	0.12252	0.28089	4.03020
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.10317	-0.26971	-3.98679
	setup	CK (R)	0.12252	0.28089	4.02827

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)	0.16112	0.19050	0.80266
	removal	CK (R)	-0.03500	-0.04321	-0.05463
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.15920	0.18997	0.80143
	removal	CK (R)	-0.03500	-0.04321	-0.05463

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)	0.16112	0.19050	0.80266
	removal	CK (R)	-0.03500	-0.04321	-0.05463
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.15920	0.18997	0.80143
	removal	CK (R)	-0.03500	-0.04321	-0.05463

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 ()	0.10914	0.38818	13.33370
	min_pulse_width	RN ()	0.11208	0.38818	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.10914	0.38818	13.33370
	min_pulse_width	RN ()	0.10914	0.38818	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 ()	0.10914	0.38818	13.33370
	min_pulse_width	CK ()	0.12383	0.38818	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.10326	0.38818	13.33370
	min_pulse_width	CK ()	0.12089	0.38818	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 ()	0.23838	0.38818	13.33370
	min_pulse_width	CK ()	0.10033	0.38818	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.24132	0.38818	13.33370
	min_pulse_width	CK ()	0.10033	0.38818	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	0.00869	0.00792	0.02050
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00785	0.00771	0.03391

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	0.00986	0.00879	0.01445
	RN	-0.00107	-0.07318	-1.22125
	RN	0.02249	0.02188	0.02832
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00903	0.00859	0.02713
	RN	-0.00107	-0.05895	-0.85172
	RN	0.02166	0.02169	0.04076

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	0.00986	0.00880	0.01472
	RN	-0.00107	-0.07278	-1.20997
	RN	0.02249	0.02189	0.02863
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00903	0.00860	0.02691
	RN	-0.00107	-0.05912	-0.85570
	RN	0.02167	0.02169	0.04088

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	0.00865	0.00789	0.02049
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00780	0.00768	0.03345

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	-0.00207	-0.00253	-0.00255
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01093	0.01119	0.04908
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00439	0.00477	0.04222
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00206	-0.00252	-0.00255
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01094	0.01120	0.04909
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00439	0.00477	0.04222

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	0.00253	0.00256	0.00255
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01652	0.01698	0.05562
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00813	0.00863	0.04613
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00254	0.00257	0.00256
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01653	0.01699	0.05563
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00814	0.00864	0.04614

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)	0.00332	0.00446	0.06091
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01008	0.01104	0.06974
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)	0.00332	0.00447	0.06091
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01009	0.01105	0.06975

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)	0.00875	0.01058	0.06730
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01730	0.01901	0.07727
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)	0.00875	0.01058	0.06730
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01731	0.01902	0.07729

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)	-0.00070	0.00014	0.05748
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00554	0.00582	0.06502
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00072	0.00019	0.05737
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00070	0.00015	0.05748
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00554	0.00580	0.06503
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00072	0.00019	0.05738

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)	0.01308	0.01503	0.07283
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02706	0.02835	0.09730
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02024	0.02176	0.08090
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02629	0.02983	0.12435
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01420	0.01600	0.07325
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01309	0.01502	0.07283
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02707	0.02836	0.09731
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02024	0.02177	0.08091
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02630	0.02976	0.12436
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01421	0.01601	0.07326

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00276	0.00279	0.00648	0.00882	1.42074	1.42022
sky130_osu_sc_12T_hs__dffsr_l	0.00276	0.00279	0.00648	0.00882	0.94994	0.95815

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.14344	0.18846
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.70432	0.74934

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)	0.25699	1.14667	13.59140
	QN->Q (FR)	0.02305	0.70354	11.73830
	RN->Q (RR)	0.20702	1.10644	13.66000
	SN->Q (FR)	0.19382	1.20776	15.87850
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.25674	1.18841	12.20960
	QN->Q (FR)	0.02705	0.74761	11.22190
	RN->Q (RR)	0.20724	1.15005	12.27730
	SN->Q (FR)	0.19349	1.24900	14.49160

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)	0.27718	1.17491	14.08020
	QN->Q (RF)	0.01778	0.50870	8.48228
	RN->Q (FF)	0.19014	1.22191	16.22030
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.28105	1.26335	13.22820
	QN->Q (RF)	0.01860	0.50042	7.63329
	RN->Q (FF)	0.19431	1.30948	15.35970

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)	0.25350	0.69539	6.23916
	RN->QN (FR)	0.16668	0.74220	8.39182
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.25449	0.75523	6.18260
	RN->QN (FR)	0.16796	0.80205	8.31052

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)	0.22241	0.55822	3.99658
	RN->QN (RF)	0.17346	0.51974	4.06636
	SN->QN (FF)	0.15986	0.62038	6.28443
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.21900	0.55483	3.40545
	RN->QN (RF)	0.17002	0.51702	3.47278
	SN->QN (FF)	0.15634	0.61592	5.68866

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)	-0.05732	-0.06341	0.05697
	setup	CK (R)	0.19568	0.21685	0.54801
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.05652	-0.06444	0.05488
	setup	CK (R)	0.19619	0.21653	0.54912

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)	-0.11565	-0.28597	-4.02209
	setup	CK (R)	0.14224	0.29583	4.06192
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.11596	-0.28839	-4.02162
	setup	CK (R)	0.14216	0.29583	4.06192

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)	-0.05732	-0.06341	0.05697
	setup	CK (R)	0.19568	0.21685	0.54801
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.05652	-0.06444	0.05488
	setup	CK (R)	0.19619	0.21653	0.54912

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)	-0.11565	-0.28597	-4.02209
	setup	CK (R)	0.14224	0.29583	4.06192
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.11596	-0.28839	-4.02162
	setup	CK (R)	0.14216	0.29583	4.06192

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)	0.15322	0.17888	0.83084
	removal	CK (R)	-0.02604	-0.02954	-0.04906
	hold	SN (R)	-0.15255	-0.26107	-1.07678
	setup	SN (R)	0.17562	0.28940	3.16151
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.15328	0.17923	0.82644
	removal	CK (R)	-0.02790	-0.03026	-0.04898
	hold	SN (R)	-0.14578	-0.25363	-1.05313
	setup	SN (R)	0.17294	0.28339	3.04700

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)	0.15322	0.17888	0.83084
	removal	CK (R)	-0.02604	-0.02954	-0.04906
	hold	SN (R)	-0.15363	-0.26107	-1.07678
	hold	SN (R)	-0.15255	-0.26323	-1.08154
	setup	SN (R)	0.17562	0.28814	2.90322
	setup	SN (R)	0.17326	0.28940	3.16151
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.15328	0.17923	0.82644
	removal	CK (R)	-0.02790	-0.03026	-0.04898
	hold	SN (R)	-0.14578	-0.25363	-1.06298
	hold	SN (R)	-0.14863	-0.25576	-1.05313
	setup	SN (R)	0.17294	0.28339	2.76930
	setup	SN (R)	0.16581	0.28334	3.04700

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 ()	0.12970	0.38818	13.33370
	min_pulse_width	RN ()	0.13264	0.38818	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.12970	0.38818	13.33370
	min_pulse_width	RN ()	0.12970	0.38818	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)	0.03499	0.06173	3.86725
	removal	CK (R)	-0.01643	-0.04714	-0.27496
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.03077	0.06134	3.73377
	removal	CK (R)	-0.01643	-0.04714	-0.27496

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)	0.03499	0.06173	3.86725
	removal	CK (R)	-0.01643	-0.04714	-0.27496
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.03077	0.06134	3.73377
	removal	CK (R)	-0.01643	-0.04714	-0.27496

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 ()	0.15614	0.38818	13.33370
	min_pulse_width	SN ()	0.16201	0.38818	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.15614	0.38818	13.33370
	min_pulse_width	SN ()	0.15320	0.38818	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 ()	0.11501	0.38818	13.33370
	min_pulse_width	CK ()	0.14145	0.38818	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.10914	0.38818	13.33370
	min_pulse_width	CK ()	0.13851	0.38818	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 ()	0.25307	0.38818	13.33370
	min_pulse_width	CK ()	0.12089	0.38818	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.25307	0.38818	13.33370
	min_pulse_width	CK ()	0.12089	0.38818	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	0.01082	0.00994	0.02093
	RN	0.01970	0.01848	0.01896
	SN	-0.00107	-0.07488	-1.26876
	SN	0.01918	0.01742	0.01981
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01004	0.00981	0.03548
	RN	0.01891	0.01835	0.03362
	SN	-0.00107	-0.05881	-0.84832
	SN	0.01840	0.01729	0.03449

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	0.01143	0.01084	0.02293
	RN	-0.00107	-0.07488	-1.26876
	RN	0.02370	0.02348	0.03667
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01061	0.01023	0.02898
	RN	-0.00107	-0.05881	-0.84832
	RN	0.02287	0.02287	0.04248

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	0.01143	0.01084	0.02286
	RN	-0.00107	-0.07486	-1.26829
	RN	0.02370	0.02350	0.03800
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01061	0.01023	0.02872
	RN	-0.00107	-0.05912	-0.85565
	RN	0.02287	0.02288	0.04239

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	0.01078	0.00992	0.02052
	RN	0.01965	0.01845	0.01894
	SN	-0.00107	-0.07486	-1.26819
	SN	0.01914	0.01740	0.02025
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00999	0.00977	0.03502
	RN	0.01886	0.01830	0.03346
	SN	-0.00107	-0.05912	-0.85561
	SN	0.01836	0.01725	0.03458

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	-0.00252	-0.00256	-0.00256
	(!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)	0.01375	0.01400	0.05141
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00483	0.00518	0.04238
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00478	0.00515	0.04236
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00483	0.00519	0.04240
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00251	-0.00256	-0.00256
	(!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)	0.01376	0.01401	0.05141
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00483	0.00518	0.04238
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00478	0.00515	0.04237
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00483	0.00519	0.04240

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	0.00263	0.00257	0.00256
	(!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)	0.01904	0.01942	0.05730
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00879	0.00928	0.04661
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00887	0.00933	0.04661
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00875	0.00925	0.04656
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00263	0.00258	0.00256
	(!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)	0.01905	0.01942	0.05730
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00879	0.00928	0.04661
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00888	0.00933	0.04661
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00876	0.00926	0.04657

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)	0.00259	0.00365	0.05997
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01186	0.01262	0.07019
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)	0.00259	0.00366	0.05998
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01187	0.01263	0.07019

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)	0.00946	0.01139	0.06827
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01829	0.01997	0.07791
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)	0.00946	0.01140	0.06827
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01829	0.01997	0.07791

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)	-0.00647	-0.00648	-0.00651
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00617	-0.00705	-0.00702
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00611	-0.00655	-0.00653
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00320	0.00369	0.04068
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)	-0.00646	-0.00648	-0.00651
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00616	-0.00704	-0.00702
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00611	-0.00654	-0.00653
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00321	0.00372	0.04068

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)	0.00649	0.00660	0.00653
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00699	0.00708	0.00703
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00650	0.00657	0.00654
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01484	0.01485	0.05087
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)	0.00650	0.00661	0.00653
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00699	0.00709	0.00703
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00651	0.00658	0.00655
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01484	0.01485	0.05087

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)	-0.00077	0.00005	0.05737
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00645	0.00674	0.06585
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00635	0.00665	0.06577
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00057	0.00031	0.05748
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00311	0.00483	0.10779
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00077	0.00006	0.05737
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00646	0.00674	0.06585
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00636	0.00665	0.06578
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00057	0.00032	0.05749
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00312	0.00484	0.10780

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)	0.03019	0.03153	0.10003
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01333	0.01526	0.07303
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02058	0.02209	0.08119
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02065	0.02218	0.08119
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02891	0.03216	0.12672
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01421	0.01597	0.07323
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01782	0.02128	0.12458
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03019	0.03154	0.10004
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01334	0.01527	0.07304
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02059	0.02209	0.08120
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02065	0.02218	0.08120
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02891	0.03216	0.12673
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01421	0.01598	0.07323
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01783	0.02129	0.12459

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00277	0.00538	0.00868	1.36080	1.36614
sky130_osu_sc_12T_hs__dffs_l	0.00277	0.00538	0.00868	0.95351	0.95813

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.89276	2.47718
sky130_osu_sc_12T_hs__dffs_l	0.00000	1.45364	3.03806

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)	0.18224	1.04334	13.09920
	QN->Q (FR)	0.02456	0.72666	11.99090
	SN->Q (FR)	0.14465	1.15049	15.24190
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.18193	1.09492	12.11660
	QN->Q (FR)	0.02706	0.74678	11.22010
	SN->Q (FR)	0.14446	1.19880	14.23860

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)	0.26354	1.15445	13.71910
	QN->Q (RF)	0.01785	0.49878	8.25346
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.26448	1.24553	13.23980
	QN->Q (RF)	0.01865	0.50235	7.63799

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)	0.23971	0.68522	6.20511
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.23775	0.73578	6.14608

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)	0.14984	0.45675	3.68369
	SN->QN (FF)	0.11148	0.56393	5.83070
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.14693	0.46128	3.26664
	SN->QN (FF)	0.10879	0.56517	5.39771

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)	-0.03606	-0.04336	0.11017
	setup	CK (R)	0.13345	0.16274	0.41005
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.03506	-0.04306	0.11043
	setup	CK (R)	0.13255	0.16285	0.40968

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)	-0.10450	-0.27227	-4.00713
	setup	CK (R)	0.13181	0.28666	4.04318
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.10296	-0.27212	-4.00672
	setup	CK (R)	0.13181	0.28666	4.04318

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)	-0.03606	-0.04336	0.11017
	setup	CK (R)	0.13345	0.16274	0.41005
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.03506	-0.04306	0.11043
	setup	CK (R)	0.13255	0.16285	0.40968

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)	-0.10450	-0.27227	-4.00713
	setup	CK (R)	0.13181	0.28666	4.04318
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.10296	-0.27212	-4.00672
	setup	CK (R)	0.13181	0.28666	4.04318

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)	0.03316	0.05824	2.52716
	removal	CK (R)	-0.01593	-0.04714	-0.41341
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.03320	0.05802	2.42550
	removal	CK (R)	-0.01593	-0.04714	-0.41341

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)	0.03316	0.05824	2.52716
	removal	CK (R)	-0.01593	-0.04714	-0.41341
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.03320	0.05802	2.42550
	removal	CK (R)	-0.01593	-0.04714	-0.41341

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 ()	0.10033	0.38818	13.33370
	min_pulse_width	SN ()	0.10326	0.38818	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.10033	0.38818	13.33370
	min_pulse_width	SN ()	0.09739	0.38818	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 ()	0.07683	0.38818	13.33370
	min_pulse_width	CK ()	0.13264	0.38818	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.07389	0.38818	13.33370
	min_pulse_width	CK ()	0.12970	0.38818	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 ()	0.18845	0.38818	13.33370
	min_pulse_width	CK ()	0.10914	0.38818	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.18845	0.38818	13.33370
	min_pulse_width	CK ()	0.10914	0.38818	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	0.00864	0.00795	0.02156
	SN	-0.00107	-0.07297	-1.21523
	SN	0.01576	0.01578	0.04006
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00781	0.00773	0.03427
	SN	-0.00107	-0.05894	-0.85151
	SN	0.01493	0.01559	0.05265

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	0.00980	0.00881	0.01548
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00898	0.00859	0.02765

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	0.00980	0.00882	0.01533
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00897	0.00859	0.02740

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	0.00860	0.00794	0.02078
	SN	-0.00107	-0.07314	-1.21990
	SN	0.01573	0.01576	0.03923
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00777	0.00770	0.03371
	SN	-0.00107	-0.05911	-0.85558
	SN	0.01490	0.01555	0.05240

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	-0.00253	-0.00258	-0.00258
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01068	0.01102	0.05016
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00436	0.00474	0.04216
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00253	-0.00257	-0.00258
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01068	0.01103	0.05016
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00436	0.00474	0.04216

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	0.00268	0.00262	0.00262
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01632	0.01670	0.05528
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00813	0.00867	0.04628
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00269	0.00263	0.00262
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01632	0.01671	0.05528
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00814	0.00867	0.04628

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)	-0.00476	-0.00480	-0.00479
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00315	0.00378	0.05669
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)	-0.00475	-0.00479	-0.00478
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00317	0.00379	0.05670

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)	0.00483	0.00483	0.00480
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01035	0.01191	0.06621
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)	0.00483	0.00482	0.00480
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01035	0.01191	0.06621

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)	-0.00071	0.00014	0.05753
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00063	0.00028	0.05752
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00273	0.00454	0.10800
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00070	0.00014	0.05754
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00063	0.00028	0.05752
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00274	0.00455	0.10801

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)	0.02695	0.02825	0.09807
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01308	0.01503	0.07287
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02591	0.02917	0.12398
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01412	0.01592	0.07323
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01689	0.02050	0.12427
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02695	0.02825	0.09807
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01308	0.01503	0.07288
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02591	0.02917	0.12399
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01413	0.01593	0.07323
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01689	0.02051	0.12428

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

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	0.00293	0.00853	1.22710
sky130_osu_sc_12T_hs__dff_l	0.00293	0.00851	0.89333

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.12968	0.15510
sky130_osu_sc_12T_hs__dff_l	0.00000	0.69056	0.71598

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)	0.15448	0.60111	5.95502
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.15373	0.65305	5.94169

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)	0.22697	0.51575	3.43222
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.22737	0.53125	3.19506

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)	-0.03474	-0.04209	0.09744
	setup	CK (R)	0.10612	0.14145	0.37682
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.03475	-0.04209	0.09744
	setup	CK (R)	0.10620	0.14180	0.37661

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)	-0.09338	-0.27256	-4.01317
	setup	CK (R)	0.11329	0.28313	4.04292
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.09383	-0.27256	-4.01335
	setup	CK (R)	0.11326	0.28313	4.04292

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 ()	0.06508	0.38818	13.33370
	min_pulse_width	CK ()	0.12089	0.38818	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.06508	0.38818	13.33370
	min_pulse_width	CK ()	0.11795	0.38818	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 ()**	0.16201	0.38818	13.33370
	min_pulse_width	**CK ()**	0.09151	0.38818	13.33370
sky130_osu_sc_12T_hs__dff_l	**min_pulse_width**	**CK ()**	0.16201	0.38818	13.33370
	min_pulse_width	**CK ()**	0.09151	0.38818	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	0.01811	0.01969	0.10257
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01639	0.01797	0.10070

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	0.01987	0.02030	0.07949
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01823	0.01872	0.07801

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	-0.00206	-0.00251	-0.00253
	!CK	0.00000	0.00000	0.00000
	!CK	0.00953	0.00988	0.04840
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00205	-0.00251	-0.00253
	!CK	0.00000	0.00000	0.00000
	!CK	0.00953	0.00988	0.04841

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	0.00251	0.00253	0.00253
	!CK	0.00000	0.00000	0.00000
	!CK	0.01680	0.01719	0.05586
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00252	0.00253	0.00254
	!CK	0.00000	0.00000	0.00000
	!CK	0.01680	0.01720	0.05587

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)	-0.00074	0.00011	0.05752
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00065	0.00028	0.05752
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00074	0.00011	0.05753
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00064	0.00028	0.05753

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)	0.01304	0.01504	0.07285
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02580	0.02719	0.09734
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02624	0.02969	0.12552
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01403	0.01586	0.07315
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01304	0.01504	0.07286
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02581	0.02719	0.09735
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02624	0.02970	0.12552
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01403	0.01586	0.07315

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00282	1.23509
sky130_osu_sc_12T_hs__inv_10	0.02516	12.25156
sky130_osu_sc_12T_hs__inv_2	0.00523	2.54612
sky130_osu_sc_12T_hs__inv_3	0.00774	3.72049
sky130_osu_sc_12T_hs__inv_4	0.01019	5.02402
sky130_osu_sc_12T_hs__inv_6	0.01525	7.49148
sky130_osu_sc_12T_hs__inv_8	0.02021	9.93056
sky130_osu_sc_12T_hs__inv_l	0.00224	0.83703

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.01950	0.03418
sky130_osu_sc_12T_hs__inv_10	0.00000	0.19495	0.34181
sky130_osu_sc_12T_hs__inv_2	0.00000	0.03899	0.06836
sky130_osu_sc_12T_hs__inv_3	0.00000	0.05848	0.10254
sky130_osu_sc_12T_hs__inv_4	0.00000	0.07798	0.13672
sky130_osu_sc_12T_hs__inv_6	0.00000	0.11697	0.20508
sky130_osu_sc_12T_hs__inv_8	0.00000	0.15596	0.27344
sky130_osu_sc_12T_hs__inv_l	0.00000	0.29994	0.59762

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)**	0.02370	0.66379	10.70130
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.02804	0.42505	10.62390
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.01749	0.55686	10.61840
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.01894	0.51897	10.62850
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.01878	0.48843	10.59870
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.02098	0.45600	10.60970
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.02422	0.43721	10.61370
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.02719	0.68621	10.03930

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)**	0.01643	0.43550	6.97913
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.02167	0.25921	7.22408
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01308	0.37073	7.14059
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01421	0.34162	7.21756
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01400	0.31648	7.23390
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.01669	0.28976	7.26617
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.01916	0.27210	7.27156
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.01766	0.44361	6.43769

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	0.00425	0.00522	0.01590
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.03474	0.04811	0.15081
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00726	0.00906	0.03030
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01119	0.01431	0.04570
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01423	0.01831	0.06017
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02103	0.03012	0.09006
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02781	0.03888	0.12003
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00338	0.00404	0.02008

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	-0.00078	-0.00042	0.00618
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01281	-0.00606	0.05748
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00255	-0.00156	0.01131
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00331	-0.00168	0.01736
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00513	-0.00281	0.02255
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00787	-0.00424	0.03377
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01053	-0.00475	0.04516
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00055	-0.00029	0.00538

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.39835	0.39849	0.00581	0.40940

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.04034	0.04034

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)	-	0.00918	0.17404	1.83209
	A1->Y (RR)	-	0.01066	0.17588	1.82943
	S0->Y (RR)	(!A0 * A1)	0.03439	0.23183	1.28910
	S0->Y (FR)	(A0 * !A1)	0.02610	0.33627	3.59549

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)	-	0.01091	0.19951	2.15191
	A1->Y (FF)	-	0.00984	0.19752	2.14522
	S0->Y (FF)	(!A0 * A1)	0.04935	0.31979	2.85388
	S0->Y (RF)	(A0 * !A1)	0.01828	0.23192	2.07593

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	-	-0.00425	-0.00425	-0.00426
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00270	-0.00270	-0.00270
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00554	0.00803	0.06580
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00274	-0.00130	0.05609

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	-	0.00425	0.00425	0.00426
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00270	0.00270	0.00271
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00067	0.00237	0.06014
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01158	0.01382	0.07095

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)	-0.00099	-0.00099	-0.00099

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)	0.00099	0.00099	0.00099

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)	-0.00118	-0.00118	-0.00118

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)	0.00118	0.00118	0.00118

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)	-0.00105	0.00051	0.05802
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00101	0.00046	0.05807

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)	0.00889	0.01101	0.06846
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00821	0.01050	0.06828

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00280	0.00281	1.21672
sky130_osu_sc_12T_hs__nand2_l	0.00220	0.00223	0.83264

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.01947	0.06836
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.29993	1.19522

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)	0.02469	0.66066	10.63840
	B->Y (FR)	0.02807	0.63556	10.14300
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.02742	0.68714	10.01180
	B->Y (FR)	0.03323	0.68977	9.99684

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)	0.02338	0.54608	8.66885
	B->Y (RF)	0.02664	0.51396	8.02077
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.02484	0.55781	8.02573
	B->Y (RF)	0.02804	0.52588	7.37085

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	0.00450	0.00494	0.01477
	B	0.00000	0.00000	0.00000
	B	0.00578	0.00660	0.01649
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00342	0.00384	0.01757
	B	0.00000	0.00000	0.00000
	B	0.00440	0.00489	0.01884

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	-0.00053	-0.00033	0.00540
	B	0.00000	0.00000	0.00000
	B	-0.00052	-0.00042	0.00492
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00032	-0.00018	0.00468
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00023	0.00420

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)	-0.00293	-0.00295	-0.00297
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00209	-0.00209	-0.00210

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)	0.00296	0.00299	0.00298
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00210	0.00212	0.00211

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)	-0.00274	-0.00275	-0.00274
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00195	-0.00196	-0.00196

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)	0.00282	0.00277	0.00275
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00201	0.00197	0.00196

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00277	0.00303	0.67768
sky130_osu_sc_12T_hs__nor2_l	0.00211	0.00233	0.48141

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.01562	0.03418
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.19921	0.59760

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)	0.05188	0.77255	10.17710
	B->Y (FR)	0.04029	0.77736	10.52870
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.05520	0.81691	9.75585
	B->Y (FR)	0.04593	0.81633	9.99842

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)	0.02176	0.35725	4.67746
	B->Y (RF)	0.01748	0.34907	4.66125
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.02181	0.36897	4.43416
	B->Y (RF)	0.01854	0.36244	4.41991

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	0.00602	0.00608	0.01507
	B	0.00000	0.00000	0.00000
	B	0.00463	0.00512	0.01852
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00441	0.00458	0.01509
	B	0.00000	0.00000	0.00000
	B	0.00352	0.00423	0.02222

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	0.00065	0.00080	0.00959
	B	0.00000	0.00000	0.00000
	B	-0.00060	-0.00019	0.00824
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00047	0.00060	0.00829
	B	0.00000	0.00000	0.00000
	B	-0.00037	-0.00008	0.00721

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)	-0.00205	-0.00254	-0.00256
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00133	-0.00171	-0.00173

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)	0.00255	0.00257	0.00256
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00174	0.00176	0.00175

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)	-0.00116	-0.00117	-0.00116
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00081	-0.00082	-0.00082

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)	0.00121	0.00122	0.00117
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00085	0.00085	0.00083

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00281	0.00292	0.00246	0.67492

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.23364	0.63179

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)	0.05789	0.79466	10.54420
	A1->Y (FR)	0.07202	0.79484	10.19670
	B0->Y (FR)	0.03362	0.63812	8.85096

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)	0.03262	0.41726	5.33277
	A1->Y (RF)	0.03857	0.41729	5.25975
	B0->Y (RF)	0.02516	0.46187	6.22495

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	0.00657	0.00712	0.01854
	A1	0.00000	0.00000	0.00000
	A1	0.00801	0.00799	0.01608
	B0	0.00386	0.00506	0.02495

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	0.00036	0.00698
	A1	0.00000	0.00000	0.00000
	A1	0.00151	0.00142	0.00831
	B0	0.00060	0.00087	0.00826

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)	-0.00116	-0.00116	-0.00116
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00257	-0.00259	-0.00259
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00263	-0.00264	-0.00263

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)	0.00122	0.00123	0.00119
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00258	0.00259	0.00259
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00268	0.00265	0.00264

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)	-0.00197	-0.00247	-0.00247
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00253	-0.00258	-0.00257
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00259	-0.00260	-0.00260

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)	0.00245	0.00249	0.00248
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00255	0.00258	0.00257
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00264	0.00262	0.00261

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)	-0.00218	-0.00219	-0.00223

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)	0.00223	0.00226	0.00224

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00265	0.00277	0.00294	0.00290	0.70059

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.02320	0.06836

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)	0.07522	0.78295	10.10580
	A1->Y (FR)	0.06428	0.78888	10.48270
	B0->Y (FR)	0.04158	0.76686	10.46600
	B1->Y (FR)	0.05551	0.76418	10.09290

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)	0.05270	0.45061	5.52521
	A1->Y (RF)	0.04281	0.43746	5.49121
	B0->Y (RF)	0.03614	0.48226	6.39638
	B1->Y (RF)	0.04657	0.49701	6.46477

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	0.01021	0.01022	0.01798
	A1	0.00878	0.00916	0.02076
	B0	0.00486	0.00537	0.01766
	B1	0.00640	0.00642	0.01456

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00233	0.00226	0.00909
	A1	-0.00018	-0.00007	0.00663
	B0	-0.00024	0.00007	0.00776
	B1	0.00097	0.00104	0.00882

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)	-0.00202	-0.00250	-0.00250
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00202	-0.00250	-0.00250
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00245	-0.00249	-0.00249
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00252	-0.00253	-0.00252

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)	0.00249	0.00251	0.00250
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00249	0.00251	0.00250
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00249	0.00251	0.00249
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00255	0.00255	0.00253

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)	-0.00113	-0.00114	-0.00113
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00113	-0.00114	-0.00113
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00245	-0.00249	-0.00248
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00251	-0.00253	-0.00252

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)	0.00118	0.00119	0.00115
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00118	0.00119	0.00115
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00247	0.00249	0.00248
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00254	0.00254	0.00252

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)	-0.00114	-0.00115	-0.00114
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00114	-0.00115	-0.00114
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00287	-0.00292	-0.00290
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00287	-0.00288	-0.00294

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)	0.00119	0.00120	0.00116
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00119	0.00121	0.00116
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00291	0.00292	0.00290
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00293	0.00298	0.00295

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)	-0.00201	-0.00248	-0.00249
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00201	-0.00248	-0.00249
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00292	-0.00299	-0.00297
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00291	-0.00293	-0.00299

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)	0.00246	0.00250	0.00249
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00246	0.00250	0.00249
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00296	0.00300	0.00297
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00299	0.00303	0.00300

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00312	0.00288	1.27452
sky130_osu_sc_12T_hs__or2_2	0.00312	0.00288	2.59854
sky130_osu_sc_12T_hs__or2_4	0.00312	0.00288	5.12691
sky130_osu_sc_12T_hs__or2_8	0.00312	0.00289	9.98849
sky130_osu_sc_12T_hs__or2_l	0.00237	0.00222	0.89122

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.02777	0.04380
sky130_osu_sc_12T_hs__or2_2	0.00000	0.03992	0.07798
sky130_osu_sc_12T_hs__or2_4	0.00000	0.06422	0.14634
sky130_osu_sc_12T_hs__or2_8	0.00000	0.11283	0.28306
sky130_osu_sc_12T_hs__or2_l	0.00000	0.35030	0.60213

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)	0.05517	0.50468	5.95129
	B->Y (RR)	0.04841	0.48233	5.86348
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.05838	0.42362	5.90144
	B->Y (RR)	0.05124	0.40322	5.79865
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.07518	0.40554	6.08824
	B->Y (RR)	0.06778	0.38836	5.99645
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.10849	0.43762	6.36763
	B->Y (RR)	0.10092	0.42432	6.27594
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.05660	0.55450	5.85439
	B->Y (RR)	0.05103	0.53604	5.82491

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)	0.09405	0.50725	5.74501
	B->Y (FF)	0.07731	0.50451	5.90180
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.11136	0.49933	5.98903
	B->Y (FF)	0.09496	0.50200	6.13278
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.15769	0.54343	6.28933
	B->Y (FF)	0.14134	0.55165	6.42238
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.25382	0.64910	6.61474
	B->Y (FF)	0.23745	0.65831	6.74815
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.09903	0.51572	5.32142
	B->Y (FF)	0.08399	0.51099	5.47481

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	0.00457	0.00504	0.03142
	B	0.00000	0.00000	0.00000
	B	0.00339	0.00450	0.03474
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00762	0.00837	0.03482
	B	0.00000	0.00000	0.00000
	B	0.00638	0.00777	0.03825
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01468	0.01587	0.04513
	B	0.00000	0.00000	0.00000
	B	0.01337	0.01533	0.04776
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03001	0.03083	0.06146
	B	0.00000	0.00000	0.00000
	B	0.02870	0.03049	0.06446
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00351	0.00419	0.03078
	B	0.00000	0.00000	0.00000
	B	0.00272	0.00393	0.03988

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	0.01018	0.01041	0.04002
	B	0.00000	0.00000	0.00000
	B	0.00843	0.01012	0.05371
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01282	0.01307	0.04263
	B	0.00000	0.00000	0.00000
	B	0.01107	0.01265	0.05534
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02082	0.01968	0.04857
	B	0.00000	0.00000	0.00000
	B	0.01911	0.01897	0.05974
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.04396	0.03347	0.06083
	B	0.00000	0.00000	0.00000
	B	0.04220	0.03278	0.07026
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00768	0.00831	0.03897
	B	0.00000	0.00000	0.00000
	B	0.00648	0.00849	0.05474

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)	-0.00208	-0.00258	-0.00258
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00208	-0.00257	-0.00258
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00208	-0.00258	-0.00258
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00207	-0.00259	-0.00258
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00132	-0.00173	-0.00174

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)	0.00256	0.00259	0.00258
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00256	0.00260	0.00258
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00256	0.00260	0.00258
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00256	0.00260	0.00258
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00175	0.00177	0.00176

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)	-0.00116	-0.00117	-0.00117
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00116	-0.00117	-0.00117
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00116	-0.00117	-0.00117
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00116	-0.00117	-0.00116
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00079	-0.00080	-0.00080

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)	0.00122	0.00123	0.00118
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00122	0.00123	0.00118
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00122	0.00123	0.00118
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00122	0.00123	0.00118
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00084	0.00081

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00301	0.00395	0.70444
sky130_osu_sc_12T_hs__tbufi_l	0.00234	0.00308	0.48004

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.02162	0.06836
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.30112	1.19521

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)	0.03750	0.76360	10.49320
	OE->Y (FR)	0.04053	0.30996	5.24757
	OE->Y (RR)	0.06368	0.58719	6.00054
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.04451	0.81298	9.95453
	OE->Y (FR)	0.04114	0.30994	5.24753
	OE->Y (RR)	0.06783	0.65791	5.94637

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)	0.02301	0.44382	6.04940
	OE->Y (FF)	0.04096	0.30996	5.24757
	OE->Y (RF)	0.02147	0.40444	5.38341
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.02471	0.45238	5.56645
	OE->Y (FF)	0.04185	0.30993	5.24751
	OE->Y (RF)	0.02319	0.41371	4.93730

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	0.00437	0.00507	0.01656
	OE	0.00000	0.00000	0.00000
	OE	0.00428	0.00587	0.05603
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00335	0.00399	0.01960
	OE	0.00000	0.00000	0.00000
	OE	0.00315	0.00501	0.06075

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	-0.00061	-0.00026	0.00691
	OE	0.00000	0.00000	0.00000
	OE	0.00263	0.00431	0.06284
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00035	-0.00010	0.00608
	OE	0.00000	0.00000	0.00000
	OE	0.00187	0.00387	0.06480

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)	-0.00207	-0.00208	-0.00207
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00182	-0.00185	-0.00183
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00148	-0.00151	-0.00149
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00132	-0.00134	-0.00133

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)	0.00207	0.00208	0.00207
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00186	0.00187	0.00184
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00148	0.00151	0.00149
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00134	0.00135	0.00133

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)	0.00158	0.00346	0.06281
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00139	0.00324	0.06258
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00114	0.00331	0.06511
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00095	0.00311	0.06491

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)	0.00527	0.00742	0.06674
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00532	0.00788	0.06682
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00406	0.00668	0.06852
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00405	0.00673	0.06858

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00300	0.00447	0.71754
sky130_osu_sc_12T_hs__tnbufi_l	0.00224	0.00341	0.48075

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.03141	0.03899
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.49957	0.59985

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)	0.03778	0.76928	10.61490
	OE->Y (RR)	0.02212	0.31017	5.24777
	OE->Y (FR)	0.04653	0.76242	10.18920
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.04363	0.81140	9.96031
	OE->Y (RR)	0.02334	0.30995	5.24755
	OE->Y (FR)	0.05082	0.81092	9.62338

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)	0.02255	0.44658	6.12549
	OE->Y (RF)	0.02180	0.31017	5.24778
	OE->Y (FF)	0.04336	0.42292	4.73574
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.02353	0.45178	5.57118
	OE->Y (RF)	0.02311	0.30995	5.24753
	OE->Y (FF)	0.04727	0.42346	4.22692

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	0.00453	0.00525	0.01663
	OE	0.00000	0.00000	0.00000
	OE	0.01087	0.01349	0.07242
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00342	0.00416	0.01967
	OE	0.00000	0.00000	0.00000
	OE	0.00833	0.01129	0.07299

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	-0.00083	-0.00047	0.00662
	OE	0.00000	0.00000	0.00000
	OE	0.00941	0.01229	0.06385
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00058	-0.00032	0.00585
	OE	0.00000	0.00000	0.00000
	OE	0.00721	0.01038	0.06706

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)	-0.00169	-0.00170	-0.00169
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00147	-0.00151	-0.00148
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00117	-0.00118	-0.00116
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00100	-0.00102	-0.00101

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)	0.00169	0.00170	0.00169
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00150	0.00151	0.00148
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00117	0.00118	0.00116
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00103	0.00104	0.00103

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)	-0.00279	-0.00126	0.05849
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00283	-0.00122	0.05853
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00184	0.00002	0.06199
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00193	-0.00000	0.06199

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)	0.00817	0.01107	0.07079
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00807	0.01088	0.07076
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00633	0.00956	0.07151
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00627	0.00934	0.07146

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00604	0.00516	0.72920

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.06833	0.10735

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	0.08086	0.61709	6.17096
	A->Y (FR)	!B	0.04953	0.77538	10.58700
	B->Y (RR)	A	0.06544	0.60520	6.25686
	B->Y (FR)	!A	0.06216	0.77176	10.22100

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	0.07327	0.48161	5.01479
	A->Y (RF)	!B	0.03121	0.42000	5.56756
	B->Y (FF)	A	0.06462	0.47386	5.01718
	B->Y (RF)	!A	0.03810	0.42934	5.56971

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	0.00450	0.00584	0.05887
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01091	0.01402	0.08417
	B	A	0.00000	0.00000	0.00000
	B	A	0.00179	0.00366	0.06385
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01162	0.01391	0.07964

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	0.01309	0.01503	0.07332
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00295	0.00464	0.06975
	B	A	0.00000	0.00000	0.00000
	B	A	0.01189	0.01454	0.07421
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00385	0.00549	0.07005

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00605	0.00520	0.68782

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.06833	0.09967

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	0.08350	0.62793	6.25615
	A->Y (FR)	B	0.06566	0.79122	10.32470
	B->Y (RR)	!A	0.06937	0.62344	6.27329
	B->Y (FR)	A	0.07075	0.79587	10.30810

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	0.06988	0.47169	4.73877
	A->Y (RF)	B	0.03218	0.45455	5.95254
	B->Y (FF)	!A	0.06684	0.47212	4.86737
	B->Y (RF)	A	0.03719	0.42045	5.33387

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	0.01287	0.01501	0.07879
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00261	0.00330	0.06030
	B	A	0.00000	0.00000	0.00000
	B	A	0.01302	0.01524	0.07793
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00175	0.00339	0.06167

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	0.00241	0.00378	0.06714
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01373	0.01614	0.06648
	B	A	0.00000	0.00000	0.00000
	B	A	0.00246	0.00386	0.06541
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01203	0.01468	0.07247

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_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	0.43867
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	210203.00000	420406.00000
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
	-0.00169	0.04724	0.79635

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
	3.65956	3.50569	0.95718