sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_15T_HS__ADDFx
SKY130_OSU_SC_15T_HS__ADDHx
SKY130_OSU_SC_15T_HS__AND2x
SKY130_OSU_SC_15T_HS__AOI21
SKY130_OSU_SC_15T_HS__AOI22
SKY130_OSU_SC_15T_HS__BUFx
SKY130_OSU_SC_15T_HS__DFFRx
SKY130_OSU_SC_15T_HS__DFFSRx
SKY130_OSU_SC_15T_HS__DFFSx
SKY130_OSU_SC_15T_HS__DFFx
SKY130_OSU_SC_15T_HS__INVx
SKY130_OSU_SC_15T_HS__MUX2
SKY130_OSU_SC_15T_HS__NAND2x
SKY130_OSU_SC_15T_HS__NOR2x
SKY130_OSU_SC_15T_HS__OAI21
SKY130_OSU_SC_15T_HS__OAI22
SKY130_OSU_SC_15T_HS__OR2x
SKY130_OSU_SC_15T_HS__TBUFIx
SKY130_OSU_SC_15T_HS__TNBUFIx
SKY130_OSU_SC_15T_HS__XNOR2
SKY130_OSU_SC_15T_HS__XOR2
SKY130_OSU_SC_15T_HS_x

SKY130_OSU_SC_15T_HS__ADDFx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__addf_1	39.07200
sky130_osu_sc_15T_hs__addf_l	39.07200

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_15T_hs__addf_1	0.01394	0.01391	0.01083	2.53710	1.20527	2.39513
sky130_osu_sc_15T_hs__addf_l	0.01394	0.01390	0.01082	1.47547	1.20614	1.52101

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.06621	0.09028
sky130_osu_sc_15T_hs__addf_l	0.00000	0.06394	0.08801

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CO (RR)	0.09318	1.30742	23.42870
	B->CO (RR)	0.08880	1.24743	22.23820
	CI->CO (RR)	0.08824	1.33821	23.99880
	CON->CO (FR)	0.01762	0.61606	10.93770
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.09911	1.20122	17.52980
	B->CO (RR)	0.09437	1.15894	17.00290
	CI->CO (RR)	0.09415	1.23357	18.18460
	CON->CO (FR)	0.02287	0.70398	11.00040

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CO (FF)	0.11985	1.60474	28.40980
	B->CO (FF)	0.10643	1.53151	27.13380
	CI->CO (FF)	0.10252	1.59033	28.49660
	CON->CO (RF)	0.01507	0.46174	8.30723
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.11734	1.31568	19.11960
	B->CO (FF)	0.10423	1.26006	18.39520
	CI->CO (FF)	0.10001	1.30349	19.26380
	CON->CO (RF)	0.01528	0.42306	6.56452

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CON (FR)	0.10112	0.78432	10.50780
	B->CON (FR)	0.08669	0.74045	10.07680
	CI->CON (FR)	0.08379	0.77383	10.67390
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.09589	0.77955	10.50730
	B->CON (FR)	0.08191	0.73601	10.07640
	CI->CON (FR)	0.07855	0.76914	10.67360

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CON (RF)	0.05904	0.45065	5.90172
	B->CON (RF)	0.05615	0.45288	5.96688
	CI->CON (RF)	0.05409	0.48633	6.55329
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.05683	0.44845	5.90249
	B->CON (RF)	0.05413	0.45087	5.96763
	CI->CON (RF)	0.05187	0.48399	6.55411

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->S (-R)	0.17968	1.44936	22.93560
	B->S (-R)	0.18535	1.42781	22.01200
	CI->S (-R)	0.16099	1.43333	23.03150
	CON->S (RR)	0.05444	0.45324	6.48459
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.17613	1.34259	18.34040
	B->S (-R)	0.18217	1.33317	17.81490
	CI->S (-R)	0.15740	1.32790	18.47860
	CON->S (RR)	0.05744	0.51625	6.41168

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->S (-F)	0.14715	1.14686	17.63860
	B->S (-F)	0.14411	1.09613	16.85370
	CI->S (-F)	0.14180	1.17616	18.21950
	CON->S (FF)	0.06001	0.53935	7.48535
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.13910	0.96987	12.52560
	B->S (-F)	0.13412	0.92622	12.17290
	CI->S (-F)	0.13367	0.99969	13.17700
	CON->S (FF)	0.05717	0.49875	6.08188

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00275	0.00415	0.04100
	B	0.00308	0.00429	0.03607
	CI	0.00423	0.00583	0.04298
sky130_osu_sc_15T_hs__addf_l	A	0.00209	0.00303	0.02465
	B	0.00244	0.00330	0.02193
	CI	0.00293	0.00376	0.02349

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01101	0.01336	0.07353
	B	0.01153	0.01330	0.06614
	CI	0.00926	0.01186	0.07393
sky130_osu_sc_15T_hs__addf_l	A	0.01036	0.01181	0.04509
	B	0.01059	0.01180	0.04192
	CI	0.00861	0.01037	0.04593

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01100	0.01229	0.04207
	B	0.01120	0.01236	0.04032
	CI	0.00925	0.01090	0.04332
sky130_osu_sc_15T_hs__addf_l	A	0.01035	0.01159	0.03957
	B	0.01058	0.01151	0.03793
	CI	0.00860	0.01017	0.04083

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00272	0.00363	0.02315
	B	0.00307	0.00381	0.02165
	CI	0.00358	0.00442	0.02406
sky130_osu_sc_15T_hs__addf_l	A	0.00207	0.00284	0.02082
	B	0.00243	0.00306	0.01926
	CI	0.00356	0.00448	0.02402

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01101	0.01325	0.06993
	B	-0.00399	-0.00289	0.03938
	CI	0.00926	0.01176	0.07010
sky130_osu_sc_15T_hs__addf_l	A	-0.00209	-0.00325	0.04395
	B	-0.00505	-0.00389	0.04586
	CI	0.00254	0.00279	0.04826

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.02407	0.02469	0.06195
	B	0.02146	0.02303	0.08351
	CI	0.01961	0.02014	0.06194
sky130_osu_sc_15T_hs__addf_l	A	0.02320	0.02373	0.06243
	B	0.02060	0.02235	0.08507
	CI	0.01711	0.01778	0.05478

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__addh_1	23.19900
sky130_osu_sc_15T_hs__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_hs__addh_1	0.00707	0.00785	2.47179	1.31643	2.53478
sky130_osu_sc_15T_hs__addh_l	0.00718	0.00809	1.57714	1.31239	1.60160

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.07555	0.08826
sky130_osu_sc_15T_hs__addh_l	0.00000	0.07338	0.08650

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CO (RR)	0.06511	0.45030	6.13698
	B->CO (RR)	0.06738	0.44941	6.26971
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.05771	0.49230	6.03622
	B->CO (RR)	0.06003	0.49133	6.08245

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CO (FF)	0.05113	0.44731	6.04775
	B->CO (FF)	0.05468	0.45724	6.06129
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.04972	0.43943	5.36082
	B->CO (FF)	0.05408	0.45133	5.39036

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CON (RR)	B	0.09237	0.35678	2.95667
	A->CON (FR)	!B	0.05506	0.71830	10.52340
	B->CON (RR)	A	0.09445	0.35534	3.07923
	B->CON (FR)	!A	0.06817	0.73577	10.51740
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.07390	0.32087	2.77913
	A->CON (FR)	!B	0.05047	0.71570	10.49810
	B->CON (RR)	A	0.07611	0.31978	2.83470
	B->CON (FR)	!A	0.06355	0.73052	10.49200

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CON (FF)	B	0.07528	0.45108	4.90678
	A->CON (RF)	!B	0.02761	0.39317	5.66045
	B->CON (FF)	A	0.07486	0.47374	5.19380
	B->CON (RF)	!A	0.03182	0.37617	5.26877
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.07060	0.44209	4.92414
	A->CON (RF)	!B	0.02625	0.39067	5.64563
	B->CON (FF)	A	0.07136	0.46684	5.21777
	B->CON (RF)	!A	0.03044	0.37394	5.25474

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->S (RR)	!B	0.05554	1.11339	20.29910
	A->S (FR)	B	0.10372	1.14536	18.94670
	B->S (RR)	!A	0.05970	1.06492	19.23440
	B->S (FR)	A	0.10405	1.20184	19.96670
	CON->S (FR)	-	0.01970	0.63306	11.22490
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.05861	1.05862	16.51680
	A->S (FR)	B	0.10355	1.09135	15.33110
	B->S (RR)	!A	0.06280	1.02162	15.76370
	B->S (FR)	A	0.10504	1.14196	16.04890
	CON->S (FR)	-	0.02338	0.71506	11.39030

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->S (FF)	!B	0.07470	1.46583	26.64600
	A->S (RF)	B	0.11190	0.94211	15.09400
	B->S (FF)	!A	0.08785	1.48347	26.72100
	B->S (RF)	A	0.11396	0.94035	15.21030
	CON->S (RF)	-	0.01474	0.46392	8.35612
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.07085	1.23371	19.16050
	A->S (RF)	B	0.09339	0.75093	9.79019
	B->S (FF)	!A	0.08396	1.24970	19.17970
	B->S (RF)	A	0.09560	0.74932	9.83594
	CON->S (RF)	-	0.01428	0.42857	6.82533

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00547	0.00608	0.02847
	B	0.00000	0.00000	0.00000
	B	0.00497	0.00533	0.03250
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00479	0.00537	0.03030
	B	0.00000	0.00000	0.00000
	B	0.00430	0.00471	0.03385

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00805	0.00894	0.03850
	B	0.00000	0.00000	0.00000
	B	0.00835	0.00982	0.04041
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00744	0.00847	0.03864
	B	0.00000	0.00000	0.00000
	B	0.00787	0.00937	0.04003

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00547	0.00608	0.02823
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00715	0.00790	0.02212
	B	A	0.00000	0.00000	0.00000
	B	A	0.00497	0.00534	0.03240
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00800	0.00823	0.01756
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00479	0.00536	0.03026
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00675	0.00754	0.01871
	B	A	0.00000	0.00000	0.00000
	B	A	0.00429	0.00470	0.03364
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00757	0.00762	0.01431

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00805	0.00894	0.03815
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00099	0.00152	0.00928
	B	A	0.00000	0.00000	0.00000
	B	A	0.00835	0.00977	0.03924
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00181	0.00207	0.00939
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00743	0.00847	0.03859
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00044	0.00079	0.00627
	B	A	0.00000	0.00000	0.00000
	B	A	0.00787	0.00936	0.03991
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00126	0.00140	0.00674

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00805	0.00896	0.03893
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00100	0.00150	0.00848
	B	A	0.00000	0.00000	0.00000
	B	A	0.00836	0.00984	0.04087
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00182	0.00211	0.00843
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00744	0.00848	0.03866
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00045	0.00060	0.00556
	B	A	0.00000	0.00000	0.00000
	B	A	0.00787	0.00938	0.04041
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00127	0.00142	0.00642

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00548	0.00608	0.02816
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00715	0.00814	0.02237
	B	A	0.00000	0.00000	0.00000
	B	A	0.00497	0.00533	0.03351
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00801	0.00842	0.01959
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00479	0.00536	0.03054
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00675	0.00752	0.01754
	B	A	0.00000	0.00000	0.00000
	B	A	0.00430	0.00470	0.03385
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00758	0.00766	0.01379

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__and2_1	10.37850
sky130_osu_sc_15T_hs__and2_2	12.82050
sky130_osu_sc_15T_hs__and2_4	17.70450
sky130_osu_sc_15T_hs__and2_6	22.58850
sky130_osu_sc_15T_hs__and2_8	27.47250
sky130_osu_sc_15T_hs__and2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__and2_1	0.00367	0.00379	2.51319
sky130_osu_sc_15T_hs__and2_2	0.00366	0.00378	4.82975
sky130_osu_sc_15T_hs__and2_4	0.00367	0.00379	9.13935
sky130_osu_sc_15T_hs__and2_6	0.00371	0.00379	13.41448
sky130_osu_sc_15T_hs__and2_8	0.00368	0.00381	17.30538
sky130_osu_sc_15T_hs__and2_l	0.00293	0.00305	1.47789

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.03671	0.05850
sky130_osu_sc_15T_hs__and2_2	0.00000	0.05840	0.06052
sky130_osu_sc_15T_hs__and2_4	0.00000	0.10177	0.11498
sky130_osu_sc_15T_hs__and2_6	0.00000	0.14514	0.17145
sky130_osu_sc_15T_hs__and2_8	0.00000	0.18851	0.22793
sky130_osu_sc_15T_hs__and2_l	0.00000	0.03452	0.05508

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.04712	0.40022	6.19964
	B->Y (RR)	0.05031	0.39860	5.93944
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.05271	0.34567	6.09906
	B->Y (RR)	0.05578	0.34265	5.83787
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.07455	0.35089	6.21276
	B->Y (RR)	0.07771	0.34569	5.97005
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.09543	0.37577	6.33333
	B->Y (RR)	0.09854	0.36783	6.10144
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.11630	0.40518	6.43749
	B->Y (RR)	0.11948	0.39554	6.21030
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.05091	0.46607	5.72823
	B->Y (RR)	0.05418	0.46594	5.51292

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__and2_1	**A->Y (FF)**	0.04173	0.47240	7.00451
	B->Y (FF)	0.04370	0.48047	7.03924
sky130_osu_sc_15T_hs__and2_2	**A->Y (FF)**	0.04568	0.42100	6.75250
	B->Y (FF)	0.04786	0.42811	6.77459
sky130_osu_sc_15T_hs__and2_4	**A->Y (FF)**	0.06266	0.43726	7.03349
	B->Y (FF)	0.06449	0.44231	7.08152
sky130_osu_sc_15T_hs__and2_6	**A->Y (FF)**	0.08125	0.46122	7.13669
	B->Y (FF)	0.08257	0.46469	7.18709
sky130_osu_sc_15T_hs__and2_8	**A->Y (FF)**	0.09840	0.48306	7.10916
	B->Y (FF)	0.09952	0.48616	7.15804
sky130_osu_sc_15T_hs__and2_1	**A->Y (FF)**	0.04752	0.46320	5.59944
	B->Y (FF)	0.05145	0.47498	5.66037

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00350	0.00616	0.09439
	B	0.00000	0.00000	0.00000
	B	0.00355	0.00485	0.06247
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00713	0.01003	0.10188
	B	0.00000	0.00000	0.00000
	B	0.00720	0.00874	0.06670
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01537	0.01764	0.10499
	B	0.00000	0.00000	0.00000
	B	0.01542	0.01656	0.07255
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02492	0.02649	0.11092
	B	0.00000	0.00000	0.00000
	B	0.02506	0.02496	0.07997
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03536	0.03562	0.11764
	B	0.00000	0.00000	0.00000
	B	0.03541	0.03427	0.08691
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00266	0.00384	0.05181
	B	0.00000	0.00000	0.00000
	B	0.00274	0.00313	0.03269

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00945	0.01358	0.08227
	B	0.00000	0.00000	0.00000
	B	0.01055	0.01419	0.07786
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01213	0.01636	0.09410
	B	0.00000	0.00000	0.00000
	B	0.01324	0.01721	0.08809
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01976	0.02323	0.09194
	B	0.00000	0.00000	0.00000
	B	0.02080	0.02376	0.08823
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02797	0.03071	0.09929
	B	0.00000	0.00000	0.00000
	B	0.02892	0.03113	0.09536
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03822	0.03821	0.10603
	B	0.00000	0.00000	0.00000
	B	0.03900	0.03846	0.10124
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00753	0.00964	0.04909
	B	0.00000	0.00000	0.00000
	B	0.00848	0.01037	0.04734

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00355	-0.00356	-0.00357
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00354	-0.00355	-0.00356
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00355	-0.00356	-0.00357
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00357	-0.00359	-0.00360
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00355	-0.00356	-0.00357
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00253	-0.00254	-0.00255

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00356	0.00364	0.00358
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00355	0.00363	0.00357
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00356	0.00364	0.00358
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00359	0.00367	0.00361
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00356	0.00364	0.00358
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00254	0.00258	0.00256

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00337	-0.00339	-0.00338
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00337	-0.00340	-0.00338
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00337	-0.00339	-0.00338
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00337	-0.00339	-0.00338
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00338	-0.00339	-0.00338
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00239	-0.00240	-0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00346	0.00343	0.00339
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00345	0.00342	0.00339
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00346	0.00343	0.00340
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00346	0.00343	0.00340
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00346	0.00343	0.00340
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00245	0.00243	0.00241

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_hs__aoi21_l	0.00346	0.00361	0.00366	1.16629

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.01338	0.02824

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi21_l	A0->Y (FR)	0.05257	0.74562	10.51400
	A1->Y (FR)	0.04467	0.70224	10.04660
	B0->Y (FR)	0.03762	0.73855	10.69290

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi21_l	A0->Y (RF)	0.03125	0.40934	5.60618
	A1->Y (RF)	0.02810	0.41856	5.82561
	B0->Y (RF)	0.01749	0.38846	5.59442

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00820	0.00825	0.01652
	A1	0.00000	0.00000	0.00000
	A1	0.00693	0.00676	0.01520
	B0	0.00498	0.00625	0.02514

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00177	0.00173	0.00849
	A1	0.00000	0.00000	0.00000
	A1	0.00182	0.00214	0.01136
	B0	-0.00085	-0.00033	0.00729

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00267	-0.00305	-0.00306
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00310	-0.00312	-0.00311
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00310	-0.00311	-0.00311

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00305	0.00309	0.00306
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00310	0.00312	0.00312
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00318	0.00316	0.00312

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00264	-0.00303	-0.00301
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00304	-0.00307	-0.00305
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00330	-0.00332	-0.00332

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00299	0.00304	0.00301
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00305	0.00308	0.00306
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00331	0.00339	0.00333

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00145	-0.00147	-0.00145

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00156	0.00157	0.00148

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_15T_hs__aoi22_l	0.00346	0.00358	0.00372	0.00354	1.16837

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.01509	0.05648

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi22_l	A0->Y (FR)	0.06287	0.74412	10.33550
	A1->Y (FR)	0.05686	0.72942	10.21390
	B0->Y (FR)	0.03750	0.71287	10.35890
	B1->Y (FR)	0.04365	0.73354	10.54740

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi22_l	A0->Y (RF)	0.04099	0.42150	5.62773
	A1->Y (RF)	0.03799	0.43093	5.84884
	B0->Y (RF)	0.02035	0.40741	5.83000
	B1->Y (RF)	0.02351	0.39811	5.61021

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00999	0.01000	0.01877
	A1	0.00873	0.00872	0.01754
	B0	0.00535	0.00625	0.02539
	B1	0.00658	0.00780	0.02648

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00365	0.00359	0.01074
	A1	0.00369	0.00400	0.01366
	B0	-0.00057	0.00009	0.00961
	B1	-0.00051	-0.00030	0.00675

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00276	-0.00307	-0.00306
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00310	-0.00312	-0.00311
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00310	-0.00313	-0.00310
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00310	-0.00313	-0.00311

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00304	0.00308	0.00306
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00310	0.00312	0.00312
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00318	0.00316	0.00312
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00318	0.00316	0.00312

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00272	-0.00301	-0.00301
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00304	-0.00305	-0.00305
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00329	-0.00329	-0.00331
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00329	-0.00331	-0.00331

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00299	0.00301	0.00301
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00304	0.00308	0.00306
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00330	0.00338	0.00332
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00330	0.00338	0.00332

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00146	-0.00148	-0.00146
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00145	-0.00147	-0.00146
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00343	-0.00345	-0.00345
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00342	-0.00345	-0.00345

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00161	0.00162	0.00150
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00145	0.00147	0.00146
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00344	0.00351	0.00346
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00344	0.00351	0.00346

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00147	-0.00149	-0.00148
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00147	-0.00148	-0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00317	-0.00318	-0.00317
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00317	-0.00319	-0.00317

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00163	0.00163	0.00151
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00147	0.00148	0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00325	0.00321	0.00318
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00325	0.00321	0.00318

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__buf_1	7.93650
sky130_osu_sc_15T_hs__buf_2	10.37850
sky130_osu_sc_15T_hs__buf_4	15.26250
sky130_osu_sc_15T_hs__buf_6	20.14650
sky130_osu_sc_15T_hs__buf_8	25.03050
sky130_osu_sc_15T_hs__buf_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_hs__buf_1	0.00379	2.43255
sky130_osu_sc_15T_hs__buf_2	0.00379	4.83454
sky130_osu_sc_15T_hs__buf_4	0.00379	9.23851
sky130_osu_sc_15T_hs__buf_6	0.00089	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00381	17.68935
sky130_osu_sc_15T_hs__buf_l	0.00306	1.48362

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.03026	0.03026
sky130_osu_sc_15T_hs__buf_2	0.00000	0.04539	0.05850
sky130_osu_sc_15T_hs__buf_4	0.00000	0.07565	0.11498
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	0.13618	0.22793
sky130_osu_sc_15T_hs__buf_l	0.00000	0.02799	0.02799

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__buf_1	**A->Y (RR)**	0.03848	0.37565	5.76820
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.04281	0.32154	5.80859
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.05831	0.31556	5.89984
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.08899	0.35567	6.12410
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.04236	0.44379	5.45738

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__buf_1	**A->Y (FF)**	0.03945	0.46181	6.87114
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.04455	0.42926	7.02055
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.06085	0.43552	7.14940
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.09636	0.48234	7.28008
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.04547	0.45840	5.64621

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00324	0.00596	0.06982
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00677	0.00941	0.07352
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01476	0.01735	0.08358
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03267	0.03406	0.09992
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00259	0.00358	0.03819

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00905	0.01334	0.08063
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01173	0.01594	0.08369
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01924	0.02260	0.09046
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03767	0.03781	0.10321
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00725	0.00949	0.04838

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00067	-0.00068	-0.00066

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
	0.00067	0.00068	0.00066

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffr_1	53.11350
sky130_osu_sc_15T_hs__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_hs__dffr_1	0.00356	0.00353	0.01048	2.23141	2.21505
sky130_osu_sc_15T_hs__dffr_l	0.00356	0.00353	0.01046	1.48993	1.47645

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.09732	0.13327
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.09439	0.13034

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->Q (RR)	0.19043	0.98599	13.61380
	QN->Q (FR)	0.02294	0.74055	12.81550
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.19572	1.15413	14.16440
	QN->Q (FR)	0.02545	0.79184	12.41580

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->Q (RF)	0.19149	0.96008	13.35040
	QN->Q (RF)	0.01697	0.51211	8.85345
	RN->Q (FF)	0.14542	1.07465	15.84210
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.19866	1.14398	14.10120
	QN->Q (RF)	0.01948	0.56694	8.88549
	RN->Q (FF)	0.15281	1.25721	16.59010

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->QN (RR)	0.17311	0.53533	5.70444
	RN->QN (FR)	0.12700	0.64868	8.19401
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.17448	0.59880	5.75068
	RN->QN (FR)	0.12851	0.71175	8.23416

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	**CK->QN (RF)**	0.16049	0.44742	3.98907
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.16031	0.49859	4.16734

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.04225	-0.05000	0.00836
	setup	CK (R)	0.15414	0.19070	0.19276
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.04270	-0.05295	0.00746
	setup	CK (R)	0.15269	0.18664	0.19361

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.07737	-0.25954	-4.31386
	setup	CK (R)	0.09680	0.26917	4.37156
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.07739	-0.25887	-4.31544
	setup	CK (R)	0.09669	0.26917	4.37293

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.04225	-0.05000	0.00836
	setup	CK (R)	0.15414	0.19070	0.19276
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.04270	-0.05295	0.00746
	setup	CK (R)	0.15269	0.18664	0.19361

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.07737	-0.25954	-4.31386
	setup	CK (R)	0.09680	0.26917	4.37156
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.07739	-0.25887	-4.31544
	setup	CK (R)	0.09669	0.26917	4.37293

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	recovery	CK (R)	0.13286	0.16811	0.62243
	removal	CK (R)	-0.03162	-0.04236	-0.11188
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.13250	0.16689	0.62392
	removal	CK (R)	-0.03162	-0.04236	-0.11188

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	recovery	CK (R)	0.13286	0.16811	0.62243
	removal	CK (R)	-0.03162	-0.04236	-0.11188
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.13250	0.16689	0.62392
	removal	CK (R)	-0.03162	-0.04236	-0.11188

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	min_pulse_width	RN ()	0.08804	0.41138	13.33370
	min_pulse_width	RN ()	0.08804	0.41138	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.08804	0.41138	13.33370
	min_pulse_width	RN ()	0.08493	0.41138	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	min_pulse_width	CK ()	0.09115	0.41138	13.33370
	min_pulse_width	CK ()	0.10048	0.41138	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.08493	0.41138	13.33370
	min_pulse_width	CK ()	0.09737	0.41138	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	min_pulse_width	CK ()	0.19064	0.41138	13.33370
	min_pulse_width	CK ()	0.08183	0.41138	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.19064	0.41138	13.33370
	min_pulse_width	CK ()	0.08183	0.41138	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00920	0.00856	0.01886
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00798	0.00881	0.05162

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01034	0.00849	0.00516
	RN	-0.00118	-0.09350	-1.72800
	RN	0.02385	0.02258	0.01843
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00920	0.00881	0.03622
	RN	-0.00118	-0.07338	-1.15380
	RN	0.02269	0.02286	0.04929

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01033	0.00849	0.00531
	RN	-0.00118	-0.09309	-1.71532
	RN	0.02385	0.02260	0.01853
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00920	0.00882	0.03627
	RN	-0.00118	-0.07298	-1.14336
	RN	0.02269	0.02288	0.04936

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00916	0.00851	0.01816
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00794	0.00883	0.05100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00255	-0.00302	-0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01118	0.01196	0.06476
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00491	0.00581	0.05854
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00255	-0.00302	-0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01118	0.01196	0.06475
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00491	0.00581	0.05854

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00302	0.00304	0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01824	0.01918	0.07245
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00846	0.00947	0.06209
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00302	0.00304	0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01824	0.01918	0.07245
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00846	0.00947	0.06209

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00352	0.00649	0.10573
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01005	0.01272	0.11381
sky130_osu_sc_15T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00353	0.00649	0.10573
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01005	0.01272	0.11380

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00869	0.01296	0.11141
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01846	0.02189	0.12197
sky130_osu_sc_15T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00869	0.01296	0.11141
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01846	0.02189	0.12197

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00077	0.00207	0.10123
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00517	0.00714	0.11246
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00110	0.00164	0.10056
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00077	0.00206	0.10123
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00517	0.00715	0.11246
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00110	0.00164	0.10056

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01342	0.01751	0.11646
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02860	0.03163	0.16115
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02197	0.02526	0.12966
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02790	0.03535	0.19021
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01508	0.01909	0.11729
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01342	0.01748	0.11646
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02860	0.03163	0.16115
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02197	0.02526	0.12966
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02790	0.03525	0.19021
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01508	0.01910	0.11729

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffsr_1	57.99750
sky130_osu_sc_15T_hs__dffsr_l	57.99750

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_15T_hs__dffsr_1	0.00352	0.00354	0.00786	0.01074	2.54340	2.54916
sky130_osu_sc_15T_hs__dffsr_l	0.00352	0.00354	0.00785	0.01074	1.47531	1.47358

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.10007	0.13583
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.09714	0.13290

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->Q (RR)	0.18498	1.00513	14.84640
	QN->Q (FR)	0.01969	0.67900	12.11640
	RN->Q (RR)	0.15076	0.98059	14.93570
	SN->Q (FR)	0.13676	1.12994	17.57680
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.19568	1.14901	14.00620
	QN->Q (FR)	0.02544	0.78726	12.31280
	RN->Q (RR)	0.16069	1.12516	14.08530
	SN->Q (FR)	0.14724	1.27216	16.73230

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->Q (RF)	0.20708	0.99660	14.42870
	QN->Q (RF)	0.01674	0.53814	9.66479
	RN->Q (FF)	0.15091	1.10276	16.94570
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.21886	1.16150	13.96900
	QN->Q (RF)	0.01944	0.56426	8.82293
	RN->Q (FF)	0.16189	1.26653	16.48330

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->QN (RR)	0.18864	0.54530	5.90709
	RN->QN (FR)	0.13272	0.65205	8.41920
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.19451	0.62138	5.75536
	RN->QN (FR)	0.13759	0.72648	8.26339

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->QN (RF)	0.15830	0.46770	4.72414
	RN->QN (RF)	0.12492	0.44517	4.81481
	SN->QN (FF)	0.11057	0.59222	7.44736
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.16171	0.49996	4.15348
	RN->QN (RF)	0.12818	0.47791	4.24305
	SN->QN (FF)	0.11372	0.62308	6.88236

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.03950	-0.05297	-0.01007
	setup	CK (R)	0.14278	0.18168	0.22059
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.03983	-0.05297	-0.01140
	setup	CK (R)	0.14137	0.17915	0.22126

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.08282	-0.26922	-4.33663
	setup	CK (R)	0.10457	0.27980	4.38975
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.08222	-0.26917	-4.33642
	setup	CK (R)	0.10457	0.27980	4.38975

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.03950	-0.05297	-0.01007
	setup	CK (R)	0.14278	0.18168	0.22059
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.03983	-0.05297	-0.01140
	setup	CK (R)	0.14137	0.17915	0.22126

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.08282	-0.26922	-4.33663
	setup	CK (R)	0.10457	0.27980	4.38975
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.08222	-0.26917	-4.33642
	setup	CK (R)	0.10457	0.27980	4.38975

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.11268	0.14602	0.56894
	removal	CK (R)	-0.01518	-0.02125	-0.03489
	hold	SN (R)	-0.10679	-0.21250	-0.98369
	setup	SN (R)	0.12659	0.25429	2.07891
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.11087	0.14499	0.57129
	removal	CK (R)	-0.01518	-0.02125	-0.03489
	hold	SN (R)	-0.10799	-0.20896	-0.95965
	setup	SN (R)	0.12538	0.25270	2.07314

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.11268	0.14602	0.56894
	removal	CK (R)	-0.01518	-0.02125	-0.03489
	hold	SN (R)	-0.10679	-0.21250	-0.98369
	hold	SN (R)	-0.10689	-0.21250	-0.98369
	setup	SN (R)	0.12659	0.25257	1.92698
	setup	SN (R)	0.12610	0.25429	2.07891
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.11087	0.14499	0.57129
	removal	CK (R)	-0.01518	-0.02125	-0.03489
	hold	SN (R)	-0.10963	-0.20896	-0.97376
	hold	SN (R)	-0.10799	-0.21250	-0.95965
	setup	SN (R)	0.12538	0.25022	1.90596
	setup	SN (R)	0.11861	0.25270	2.07314

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	RN ()	0.10359	0.41138	13.33370
	min_pulse_width	RN ()	0.10359	0.41138	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.10359	0.41138	13.33370
	min_pulse_width	RN ()	0.10048	0.41138	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.03030	0.06001	1.90591
	removal	CK (R)	-0.01136	-0.04604	-0.21061
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.02941	0.05871	1.88157
	removal	CK (R)	-0.01395	-0.04604	-0.21061

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.03030	0.06001	1.90591
	removal	CK (R)	-0.01136	-0.04604	-0.21061
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.02941	0.05871	1.88157
	removal	CK (R)	-0.01395	-0.04604	-0.21061

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	SN ()	0.10981	0.41138	13.33370
	min_pulse_width	SN ()	0.10981	0.41138	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.10981	0.41138	13.33370
	min_pulse_width	SN ()	0.10359	0.41138	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	CK ()	0.08183	0.41138	13.33370
	min_pulse_width	CK ()	0.10670	0.41138	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.07872	0.41138	13.33370
	min_pulse_width	CK ()	0.10359	0.41138	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	CK ()	0.18131	0.41138	13.33370
	min_pulse_width	CK ()	0.09115	0.41138	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.18131	0.41138	13.33370
	min_pulse_width	CK ()	0.08804	0.41138	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01147	0.01033	0.01024
	RN	0.02135	0.01904	0.00292
	SN	-0.00118	-0.10114	-1.96961
	SN	0.02010	0.01679	-0.00900
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01042	0.01114	0.05408
	RN	0.02030	0.01993	0.04797
	SN	-0.00118	-0.07294	-1.14248
	SN	0.01906	0.01768	0.03668

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01215	0.01149	0.02489
	RN	-0.00118	-0.10114	-1.96960
	RN	0.02501	0.02477	0.03890
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01106	0.01078	0.03875
	RN	-0.00118	-0.07294	-1.14248
	RN	0.02389	0.02403	0.05254

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01214	0.01149	0.02516
	RN	-0.00118	-0.10128	-1.97398
	RN	0.02499	0.02477	0.03883
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01106	0.01078	0.03857
	RN	-0.00118	-0.07289	-1.14113
	RN	0.02354	0.02372	0.05256

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01143	0.01031	0.00892
	RN	0.02131	0.01903	0.00276
	SN	-0.00118	-0.10128	-1.97395
	SN	0.02007	0.01676	-0.00777
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01037	0.01116	0.05353
	RN	0.02026	0.01993	0.04743
	SN	-0.00118	-0.07289	-1.14111
	SN	0.01903	0.01767	0.03656

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00295	-0.00304	-0.00304
	(!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)	0.01444	0.01517	0.06810
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00561	0.00644	0.05890
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00557	0.00642	0.05887
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00562	0.00648	0.05894
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00295	-0.00304	-0.00304
	(!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)	0.01444	0.01517	0.06810
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00561	0.00644	0.05890
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00557	0.00643	0.05888
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00562	0.00648	0.05895

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00309	0.00305	0.00304
	(!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)	0.02126	0.02203	0.07540
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00912	0.01011	0.06233
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00918	0.01012	0.06227
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00906	0.01005	0.06224
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00309	0.00305	0.00304
	(!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)	0.02125	0.02202	0.07539
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00911	0.01010	0.06232
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00917	0.01011	0.06226
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00905	0.01004	0.06224

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00299	0.00598	0.10483
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01213	0.01480	0.11732
sky130_osu_sc_15T_hs__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00299	0.00598	0.10484
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01213	0.01480	0.11733

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00946	0.01386	0.11233
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01961	0.02304	0.12445
sky130_osu_sc_15T_hs__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00944	0.01385	0.11232
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01959	0.02302	0.12443

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00701	-0.00703	-0.00705
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00694	-0.00762	-0.00757
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00684	-0.00719	-0.00716
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00458	0.00567	0.06376
sky130_osu_sc_15T_hs__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00701	-0.00703	-0.00705
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00692	-0.00760	-0.00756
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00684	-0.00718	-0.00716
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00459	0.00570	0.06377

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00703	0.00718	0.00707
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00754	0.00762	0.00758
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00714	0.00725	0.00718
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01507	0.01548	0.07096
sky130_osu_sc_15T_hs__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00703	0.00718	0.00707
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00752	0.00760	0.00756
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00713	0.00725	0.00717
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01506	0.01547	0.07095

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00077	0.00206	0.10128
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00610	0.00809	0.11319
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00599	0.00799	0.11310
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00091	0.00183	0.10081
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00388	0.00902	0.18824
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00077	0.00206	0.10128
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00609	0.00808	0.11318
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00598	0.00797	0.11309
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00091	0.00183	0.10081
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00388	0.00902	0.18825

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_15T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03206	0.03514	0.16444
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01348	0.01758	0.11657
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02241	0.02597	0.12986
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02246	0.02595	0.12971
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03083	0.03787	0.19387
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01491	0.01883	0.11720
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01774	0.02512	0.20344
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03206	0.03514	0.16445
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01348	0.01758	0.11657
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02241	0.02597	0.12986
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02246	0.02595	0.12971
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03082	0.03787	0.19386
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01491	0.01883	0.11720
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01773	0.02512	0.20344

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffs_1	48.22950
sky130_osu_sc_15T_hs__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_hs__dffs_1	0.00354	0.00625	0.01052	2.26041	2.23258
sky130_osu_sc_15T_hs__dffs_l	0.00354	0.00625	0.01052	1.48217	1.48959

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.10165	0.17203
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.09872	0.16909

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->Q (RR)	0.15109	0.94206	13.69980
	QN->Q (FR)	0.02291	0.73919	12.83810
	SN->Q (FR)	0.12067	1.11830	16.43790
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.15802	1.10509	13.99750
	QN->Q (FR)	0.02541	0.78664	12.31860
	SN->Q (FR)	0.12824	1.27859	16.73050

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->Q (RF)	0.20890	0.98625	13.51200
	QN->Q (RF)	0.01688	0.51225	8.88547
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.21580	1.15945	14.01400
	QN->Q (RF)	0.01940	0.56378	8.83118

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->QN (RR)	0.19038	0.55716	5.74745
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.19129	0.61979	5.80730

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->QN (RF)	0.12384	0.40179	3.94900
	SN->QN (FF)	0.09305	0.57727	6.69339
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.12541	0.45722	4.13979
	SN->QN (FF)	0.09500	0.62988	6.87583

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.03136	-0.04250	0.02224
	setup	CK (R)	0.11159	0.15314	0.16707
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.02933	-0.04250	0.02090
	setup	CK (R)	0.11031	0.15131	0.16892

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.07660	-0.25855	-4.32951
	setup	CK (R)	0.10608	0.27127	4.38599
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.07830	-0.25855	-4.32801
	setup	CK (R)	0.10583	0.27122	4.38709

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.03136	-0.04250	0.02224
	setup	CK (R)	0.11159	0.15314	0.16707
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.02933	-0.04250	0.02090
	setup	CK (R)	0.11031	0.15131	0.16892

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.07660	-0.25855	-4.32951
	setup	CK (R)	0.10608	0.27127	4.38599
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.07830	-0.25855	-4.32801
	setup	CK (R)	0.10583	0.27122	4.38709

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	recovery	CK (R)	0.03682	0.07874	1.72018
	removal	CK (R)	-0.02107	-0.06375	-0.29313
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.03522	0.07825	1.64631
	removal	CK (R)	-0.02107	-0.06375	-0.29204

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	recovery	CK (R)	0.03682	0.07874	1.72018
	removal	CK (R)	-0.02107	-0.06375	-0.29313
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.03522	0.07825	1.64631
	removal	CK (R)	-0.02107	-0.06375	-0.29204

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	min_pulse_width	SN ()	0.08493	0.41138	13.33370
	min_pulse_width	SN ()	0.08804	0.41138	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.08493	0.41138	13.33370
	min_pulse_width	SN ()	0.08493	0.41138	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	min_pulse_width	CK ()	0.06628	0.41138	13.33370
	min_pulse_width	CK ()	0.10670	0.41138	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.06317	0.41138	13.33370
	min_pulse_width	CK ()	0.10048	0.41138	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	min_pulse_width	CK ()	0.15022	0.41138	13.33370
	min_pulse_width	CK ()	0.09115	0.41138	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.15022	0.41138	13.33370
	min_pulse_width	CK ()	0.09115	0.41138	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00916	0.00852	0.01927
	SN	-0.00118	-0.09423	-1.75046
	SN	0.01660	0.01435	-0.00897
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00798	0.00879	0.05192
	SN	-0.00118	-0.07315	-1.14779
	SN	0.01543	0.01466	0.02495

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01031	0.00854	0.00622
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00915	0.00884	0.03733

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01030	0.00855	0.00662
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00915	0.00886	0.03703

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00912	0.00856	0.01890
	SN	-0.00118	-0.09353	-1.72880
	SN	0.01657	0.01433	-0.00877
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00795	0.00885	0.05119
	SN	-0.00118	-0.07337	-1.15350
	SN	0.01540	0.01465	0.02390

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00301	-0.00309	-0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01069	0.01146	0.06530
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00480	0.00570	0.05849
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00301	-0.00309	-0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01069	0.01146	0.06530
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00480	0.00570	0.05849

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00315	0.00311	0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01802	0.01884	0.07197
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00863	0.00965	0.06239
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00315	0.00311	0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01802	0.01884	0.07197
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00863	0.00965	0.06239

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00510	-0.00514	-0.00512
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00386	0.00407	0.04105
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00509	-0.00514	-0.00512
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00386	0.00407	0.04105

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00514	0.00518	0.00513
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01043	0.01115	0.04952
sky130_osu_sc_15T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00514	0.00518	0.00513
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01042	0.01115	0.04952

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00080	0.00205	0.10135
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00105	0.00170	0.10077
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00303	0.00842	0.18845
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00080	0.00205	0.10135
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00105	0.00170	0.10077
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00303	0.00842	0.18845

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02825	0.03134	0.16169
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01344	0.01756	0.11663
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02752	0.03471	0.18990
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01501	0.01894	0.11738
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01714	0.02474	0.20388
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02825	0.03134	0.16169
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01344	0.01756	0.11663
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02752	0.03472	0.18990
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01501	0.01907	0.11738
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01714	0.02474	0.20388

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dff_1	40.29300
sky130_osu_sc_15T_hs__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_hs__dff_1	0.00370	0.01031	2.55891	2.56745
sky130_osu_sc_15T_hs__dff_l	0.00370	0.01031	1.32704	1.31938

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.09370	0.12013
sky130_osu_sc_15T_hs__dff_l	0.00000	0.09142	0.11786

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->Q (RR)	0.12275	0.93223	14.79370
	QN->Q (FR)	0.01955	0.67818	12.11050
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.12859	0.92578	11.04360
	QN->Q (FR)	0.02979	0.85241	12.97720

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->Q (RF)	0.17273	0.95798	14.44710
	QN->Q (RF)	0.01668	0.53528	9.67603
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.18496	1.01333	11.65370
	QN->Q (RF)	0.01662	0.46537	7.08977

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->QN (RR)	0.15447	0.50716	5.89146
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.16516	0.60229	5.64431

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->QN (RF)	0.09905	0.39558	4.63538
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.09732	0.32934	2.36291

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	hold	CK (R)	-0.02463	-0.03542	0.01592
	setup	CK (R)	0.08217	0.13270	0.15811
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.02539	-0.03542	0.01591
	setup	CK (R)	0.08178	0.13116	0.16150

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	hold	CK (R)	-0.06533	-0.25101	-4.29943
	setup	CK (R)	0.08218	0.26563	4.35070
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.06566	-0.25101	-4.29771
	setup	CK (R)	0.08218	0.26563	4.35017

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	min_pulse_width	CK ()	0.05384	0.41138	13.33370
	min_pulse_width	CK ()	0.08804	0.41138	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.05074	0.41138	13.33370
	min_pulse_width	CK ()	0.08804	0.41138	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	min_pulse_width	CK ()	0.12224	0.41138	13.33370
	min_pulse_width	CK ()	0.06628	0.41138	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.11913	0.41138	13.33370
	min_pulse_width	CK ()	0.06628	0.41138	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00963	0.00854	0.01029
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00884	0.00930	0.04992

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01050	0.00999	0.02512
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00962	0.00876	0.02990

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01049	0.00994	0.02493
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00962	0.00876	0.02957

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00959	0.00854	0.00942
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00879	0.00925	0.04904

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00255	-0.00301	-0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00993	0.01093	0.06622
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00255	-0.00301	-0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00993	0.01093	0.06622

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00301	0.00303	0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01865	0.01957	0.07409
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00301	0.00303	0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01866	0.01958	0.07410

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00080	0.00204	0.10136
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	0.00173	0.10079
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00080	0.00203	0.10136
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	0.00173	0.10079

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01336	0.01758	0.11667
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02755	0.03079	0.16196
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02801	0.03556	0.19389
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01493	0.01893	0.11729
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01336	0.01759	0.11667
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02756	0.03080	0.16195
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02802	0.03558	0.19390
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01493	0.01892	0.11729

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__inv_1	5.49450
sky130_osu_sc_15T_hs__inv_10	27.47250
sky130_osu_sc_15T_hs__inv_2	7.93650
sky130_osu_sc_15T_hs__inv_3	10.37850
sky130_osu_sc_15T_hs__inv_4	12.82050
sky130_osu_sc_15T_hs__inv_6	17.70450
sky130_osu_sc_15T_hs__inv_8	22.58850
sky130_osu_sc_15T_hs__inv_l	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_hs__inv_1	0.00357	2.38165
sky130_osu_sc_15T_hs__inv_10	0.03258	21.06313
sky130_osu_sc_15T_hs__inv_2	0.00672	4.68118
sky130_osu_sc_15T_hs__inv_3	0.00999	6.70173
sky130_osu_sc_15T_hs__inv_4	0.01318	8.98419
sky130_osu_sc_15T_hs__inv_6	0.01973	13.19548
sky130_osu_sc_15T_hs__inv_8	0.02614	17.36216
sky130_osu_sc_15T_hs__inv_l	0.00282	1.28478

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.01513	0.02824
sky130_osu_sc_15T_hs__inv_10	0.00000	0.15131	0.28238
sky130_osu_sc_15T_hs__inv_2	0.00000	0.03026	0.05648
sky130_osu_sc_15T_hs__inv_3	0.00000	0.04539	0.08472
sky130_osu_sc_15T_hs__inv_4	0.00000	0.06052	0.11295
sky130_osu_sc_15T_hs__inv_6	0.00000	0.09078	0.16943
sky130_osu_sc_15T_hs__inv_8	0.00000	0.12105	0.22591
sky130_osu_sc_15T_hs__inv_l	0.00000	0.01399	0.02709

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__inv_1	**A->Y (FR)**	0.01854	0.61564	10.76680
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.02912	0.41612	10.64390
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.01531	0.53112	10.67350
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.01724	0.49954	10.71050
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.01791	0.47176	10.65300
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.02016	0.44208	10.64930
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.02454	0.42618	10.65980
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.02517	0.71188	10.75350

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__inv_1	**A->Y (RF)**	0.01469	0.44861	7.95547
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.02260	0.24681	7.77887
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.01216	0.36972	7.92606
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.01347	0.33942	7.98945
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.01337	0.31017	7.95497
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.01627	0.27877	7.93668
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.01964	0.26171	7.91783
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.01485	0.39884	5.94848

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00460	0.00604	0.02065
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.03982	0.06290	0.19920
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00810	0.01128	0.04014
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01247	0.01759	0.05941
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01605	0.02428	0.07861
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02375	0.03809	0.11789
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.03155	0.04757	0.15768
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00357	0.00428	0.01404

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	-0.00101	-0.00030	0.00678
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	-0.01377	-0.00538	0.06611
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00312	-0.00134	0.01288
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00409	-0.00193	0.01976
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00616	-0.00291	0.02581
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00944	-0.00286	0.03779
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	-0.01223	-0.00482	0.05171
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00063	-0.00041	0.00366

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_15T_hs__mux2_1	0.78679	0.78777	0.00730	0.82791

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.03076	0.03076

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__mux2_1	A0->Y (RR)	-	0.00830	0.18082	2.23641
	A1->Y (RR)	-	0.00913	0.18109	2.22707
	S0->Y (RR)	(!A0 * A1)	0.02977	0.18976	1.37050
	S0->Y (FR)	(A0 * !A1)	0.02517	0.33137	4.10438

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__mux2_1	A0->Y (FF)	-	0.00864	0.20610	2.60568
	A1->Y (FF)	-	0.00830	0.20464	2.59571
	S0->Y (FF)	(!A0 * A1)	0.03901	0.32316	3.54635
	S0->Y (RF)	(A0 * !A1)	0.01715	0.21947	2.32979

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00494	-0.00495	-0.00495
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00331	-0.00332	-0.00332
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00573	0.01024	0.10985
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00333	0.00023	0.09948

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00494	0.00495	0.00495
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00331	0.00332	0.00332
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00087	0.00474	0.10457
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01279	0.01686	0.11571

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00121	-0.00120	-0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00121	0.00120	0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00145	-0.00145	-0.00145

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00145	0.00145	0.00145

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00125	0.00252	0.10165
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00122	0.00254	0.10178

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00967	0.01378	0.11274
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00884	0.01331	0.11255

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__nand2_1	7.93650
sky130_osu_sc_15T_hs__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__nand2_1	0.00357	0.00356	2.24548
sky130_osu_sc_15T_hs__nand2_l	0.00282	0.00283	1.27116

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.01503	0.05648
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.01398	0.05418

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nand2_1	A->Y (FR)	0.01905	0.60749	10.47090
	B->Y (FR)	0.02214	0.60015	10.26600
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.02582	0.71196	10.72640
	B->Y (FR)	0.03138	0.71518	10.69370

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nand2_1	A->Y (RF)	0.01969	0.53167	9.27592
	B->Y (RF)	0.02254	0.52343	9.09758
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.01949	0.47935	7.12094
	B->Y (RF)	0.02210	0.45952	6.73243

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00492	0.00636	0.01961
	B	0.00000	0.00000	0.00000
	B	0.00619	0.00735	0.02125
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00378	0.00452	0.01317
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00537	0.01438

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00069	-0.00022	0.00634
	B	0.00000	0.00000	0.00000
	B	-0.00067	-0.00048	0.00421
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00045	-0.00029	0.00336
	B	0.00000	0.00000	0.00000
	B	-0.00042	-0.00037	0.00254

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00346	-0.00349	-0.00348
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00242	-0.00244	-0.00244

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00347	0.00355	0.00349
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00243	0.00247	0.00245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00321	-0.00325	-0.00322
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00223	-0.00225	-0.00223

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00329	0.00326	0.00323
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00228	0.00226	0.00224

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__nor2_1	7.93650
sky130_osu_sc_15T_hs__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__nor2_1	0.00354	0.00383	1.32306
sky130_osu_sc_15T_hs__nor2_l	0.00272	0.00304	0.78810

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.01035	0.02824
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.01041	0.02709

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nor2_1	A->Y (FR)	0.03788	0.71375	10.61010
	B->Y (FR)	0.02835	0.69983	10.60300
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.04789	0.83143	10.76250
	B->Y (FR)	0.03935	0.82308	10.82650

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nor2_1	A->Y (RF)	0.02015	0.36118	5.25049
	B->Y (RF)	0.01565	0.35176	5.23392
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.01827	0.33297	4.14330
	B->Y (RF)	0.01562	0.32707	4.13060

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00665	0.00681	0.01570
	B	0.00000	0.00000	0.00000
	B	0.00498	0.00588	0.02451
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00484	0.00488	0.01037
	B	0.00000	0.00000	0.00000
	B	0.00384	0.00440	0.01567

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00072	0.00108	0.01120
	B	0.00000	0.00000	0.00000
	B	-0.00078	-0.00002	0.00962
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00042	0.00053	0.00587
	B	0.00000	0.00000	0.00000
	B	-0.00045	-0.00021	0.00495

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00258	-0.00304	-0.00305
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00175	-0.00201	-0.00202

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00304	0.00307	0.00305
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00201	0.00203	0.00202

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00147	-0.00148	-0.00147
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00099	-0.00100	-0.00099

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00153	0.00153	0.00149
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00103	0.00103	0.00100

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_hs__oai21_l	0.00359	0.00368	0.00304	1.25242

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.01596	0.05533

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai21_l	A0->Y (FR)	0.03932	0.71401	10.49950
	A1->Y (FR)	0.05189	0.73122	10.52640
	B0->Y (FR)	0.02968	0.67226	10.04130

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai21_l	A0->Y (RF)	0.02756	0.42364	6.04438
	A1->Y (RF)	0.03280	0.42090	5.90212
	B0->Y (RF)	0.02139	0.45519	6.68361

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00691	0.00806	0.02387
	A1	0.00000	0.00000	0.00000
	A1	0.00858	0.00864	0.01698
	B0	0.00407	0.00465	0.01531

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00017	0.00031	0.00669
	A1	0.00000	0.00000	0.00000
	A1	0.00171	0.00167	0.00816
	B0	0.00070	0.00108	0.00665

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00147	-0.00149	-0.00147
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00302	-0.00309	-0.00308
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00313	-0.00315	-0.00313

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00154	0.00154	0.00149
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00306	0.00310	0.00308
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00315	0.00315	0.00314

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00249	-0.00297	-0.00298
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00297	-0.00305	-0.00305
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00307	-0.00310	-0.00308

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00296	0.00298	0.00298
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00303	0.00305	0.00305
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00311	0.00310	0.00309

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00246	-0.00249	-0.00251

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00250	0.00255	0.00251

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__oai22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_hs__oai22_l	0.00347	0.00368	0.00379	0.00369	1.31458

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.01533	0.05648

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai22_l	A0->Y (FR)	0.05427	0.73037	10.60350
	A1->Y (FR)	0.04466	0.71504	10.59950
	B0->Y (FR)	0.03115	0.70307	10.59970
	B1->Y (FR)	0.04261	0.72010	10.60730

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai22_l	A0->Y (RF)	0.04673	0.45914	6.33070
	A1->Y (RF)	0.03727	0.44568	6.28234
	B0->Y (RF)	0.03154	0.47778	6.94439
	B1->Y (RF)	0.04135	0.49620	7.06214

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.01111	0.01118	0.01883
	A1	0.00849	0.00910	0.02667
	B0	0.00529	0.00602	0.02338
	B1	0.00709	0.00701	0.01517

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00115	0.00112	0.00759
	A1	-0.00030	-0.00014	0.00627
	B0	-0.00031	0.00032	0.00901
	B1	0.00116	0.00139	0.00997

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00257	-0.00304	-0.00305
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00257	-0.00304	-0.00305
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00298	-0.00305	-0.00306
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00308	-0.00309	-0.00309

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00303	0.00307	0.00305
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00303	0.00307	0.00305
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00304	0.00308	0.00306
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00310	0.00309	0.00310

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00145	-0.00147	-0.00145
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00145	-0.00147	-0.00145
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00296	-0.00303	-0.00302
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00306	-0.00307	-0.00307

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00151	0.00153	0.00147
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00151	0.00153	0.00147
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00301	0.00303	0.00302
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00308	0.00309	0.00308

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00144	-0.00146	-0.00144
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00144	-0.00146	-0.00144
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00331	-0.00339	-0.00338
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00336	-0.00337	-0.00342

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00149	0.00151	0.00146
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00149	0.00151	0.00146
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00339	0.00340	0.00338
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00341	0.00348	0.00343

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00251	-0.00297	-0.00299
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00252	-0.00297	-0.00299
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00338	-0.00346	-0.00346
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00343	-0.00345	-0.00349

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00297	0.00301	0.00299
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00297	0.00302	0.00299
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00346	0.00350	0.00346
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00349	0.00356	0.00350

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__or2_1	10.37850
sky130_osu_sc_15T_hs__or2_2	12.82050
sky130_osu_sc_15T_hs__or2_4	17.70450
sky130_osu_sc_15T_hs__or2_8	27.47250
sky130_osu_sc_15T_hs__or2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__or2_1	0.00390	0.00367	2.43325
sky130_osu_sc_15T_hs__or2_2	0.00391	0.00367	4.74964
sky130_osu_sc_15T_hs__or2_4	0.00390	0.00367	9.17812
sky130_osu_sc_15T_hs__or2_8	0.00391	0.00368	17.44872
sky130_osu_sc_15T_hs__or2_l	0.00313	0.00288	1.31196

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.01893	0.03228
sky130_osu_sc_15T_hs__or2_2	0.00000	0.02750	0.06052
sky130_osu_sc_15T_hs__or2_4	0.00000	0.04466	0.11700
sky130_osu_sc_15T_hs__or2_8	0.00000	0.07896	0.22995
sky130_osu_sc_15T_hs__or2_l	0.00000	0.01786	0.02888

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__or2_1	A->Y (RR)	0.04579	0.39454	5.56002
	B->Y (RR)	0.03965	0.37727	5.62318
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.05066	0.33815	5.52979
	B->Y (RR)	0.04423	0.32100	5.56328
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.06635	0.33287	5.76443
	B->Y (RR)	0.05990	0.31828	5.77594
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.09706	0.37112	6.03250
	B->Y (RR)	0.09065	0.35892	6.02130
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.04941	0.47697	5.15993
	B->Y (RR)	0.04492	0.46056	5.15622

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__or2_1	A->Y (FF)	0.06799	0.51444	7.14146
	B->Y (FF)	0.05483	0.49993	7.35306
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.07888	0.48607	7.19993
	B->Y (FF)	0.06581	0.47342	7.37114
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.10926	0.50721	7.42764
	B->Y (FF)	0.09626	0.49918	7.55778
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.17336	0.57825	7.57451
	B->Y (FF)	0.16040	0.57327	7.64283
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.08342	0.50455	5.49391
	B->Y (FF)	0.06859	0.49223	5.61869

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00499	0.00613	0.04817
	B	0.00000	0.00000	0.00000
	B	0.00362	0.00615	0.06604
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00860	0.01009	0.05336
	B	0.00000	0.00000	0.00000
	B	0.00712	0.00987	0.06949
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01656	0.01813	0.06123
	B	0.00000	0.00000	0.00000
	B	0.01510	0.01826	0.07583
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03462	0.03543	0.08401
	B	0.00000	0.00000	0.00000
	B	0.03313	0.03518	0.09693
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00370	0.00400	0.02247
	B	0.00000	0.00000	0.00000
	B	0.00285	0.00381	0.02851

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.01114	0.01194	0.05015
	B	0.00000	0.00000	0.00000
	B	0.00916	0.01306	0.09197
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01400	0.01473	0.05297
	B	0.00000	0.00000	0.00000
	B	0.01202	0.01566	0.09314
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02283	0.02206	0.05916
	B	0.00000	0.00000	0.00000
	B	0.02091	0.02250	0.09602
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.04725	0.03684	0.07249
	B	0.00000	0.00000	0.00000
	B	0.04527	0.03813	0.10394
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00855	0.00865	0.02903
	B	0.00000	0.00000	0.00000
	B	0.00724	0.00913	0.04765

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00260	-0.00308	-0.00307
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00260	-0.00308	-0.00307
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00260	-0.00308	-0.00307
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00260	-0.00308	-0.00307
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00176	-0.00205	-0.00204

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00305	0.00309	0.00307
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00305	0.00310	0.00307
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00305	0.00310	0.00307
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00305	0.00310	0.00307
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00203	0.00205	0.00204

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00147	-0.00149	-0.00147
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00147	-0.00149	-0.00147
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00147	-0.00149	-0.00147
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00147	-0.00149	-0.00147
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00101	-0.00102	-0.00101

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00153	0.00155	0.00149
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00153	0.00155	0.00149
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00153	0.00155	0.00149
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00154	0.00155	0.00149
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00105	0.00106	0.00103

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__tbufi_1	10.37850
sky130_osu_sc_15T_hs__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_hs__tbufi_1	0.00381	0.00484	1.32466
sky130_osu_sc_15T_hs__tbufi_l	0.00304	0.00400	0.77480

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.01587	0.05648
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.01438	0.05418

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tbufi_1	A->Y (FR)	0.02706	0.69351	10.52710
	OE->Y (FR)	0.03208	0.31103	5.01986
	OE->Y (RR)	0.05183	0.47755	5.87494
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.03796	0.81685	10.71450
	OE->Y (FR)	0.03799	0.31086	5.01975
	OE->Y (RR)	0.05870	0.57445	5.54312

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tbufi_1	A->Y (RF)	0.01918	0.42773	6.38637
	OE->Y (FF)	0.03232	0.31103	5.01986
	OE->Y (RF)	0.01859	0.41554	6.16094
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.01925	0.39267	4.98391
	OE->Y (FF)	0.03854	0.31085	5.01969
	OE->Y (RF)	0.01893	0.37042	4.64497

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00470	0.00545	0.02206
	OE	0.00000	0.00000	0.00000
	OE	0.00477	0.00841	0.09370
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00362	0.00411	0.01433
	OE	0.00000	0.00000	0.00000
	OE	0.00338	0.00487	0.04861

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00079	-0.00015	0.00821
	OE	0.00000	0.00000	0.00000
	OE	0.00314	0.00693	0.10476
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00046	-0.00023	0.00441
	OE	0.00000	0.00000	0.00000
	OE	0.00211	0.00372	0.05601

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00249	-0.00250	-0.00250
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00223	-0.00225	-0.00224
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00182	-0.00184	-0.00183
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00166	-0.00167	-0.00166

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00249	0.00250	0.00250
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00227	0.00230	0.00226
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00182	0.00184	0.00183
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00169	0.00170	0.00167

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00186	0.00592	0.10687
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00168	0.00601	0.10668
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00120	0.00311	0.05645
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00109	0.00289	0.05631

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00567	0.01022	0.11061
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00570	0.01034	0.11070
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00447	0.00665	0.05991
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00453	0.00675	0.05998

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__tnbufi_1	10.37850
sky130_osu_sc_15T_hs__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_hs__tnbufi_1	0.00380	0.00585	1.32456
sky130_osu_sc_15T_hs__tnbufi_l	0.00303	0.00435	0.77475

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.02461	0.03026
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.02311	0.02799

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tnbufi_1	A->Y (FR)	0.02730	0.69344	10.52630
	OE->Y (RR)	0.01917	0.31144	5.02049
	OE->Y (FR)	0.03634	0.70725	10.51560
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.03817	0.81671	10.71370
	OE->Y (RR)	0.01876	0.31142	5.02027
	OE->Y (FR)	0.04629	0.82588	10.62850

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tnbufi_1	A->Y (RF)	0.01886	0.42761	6.38600
	OE->Y (RF)	0.01900	0.31143	5.02033
	OE->Y (FF)	0.03424	0.42254	5.54325
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.01888	0.39245	4.98356
	OE->Y (RF)	0.01859	0.31141	5.02031
	OE->Y (FF)	0.03997	0.41238	4.54578

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00486	0.00560	0.02221
	OE	0.00000	0.00000	0.00000
	OE	0.01189	0.01688	0.11672
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00379	0.00427	0.01449
	OE	0.00000	0.00000	0.00000
	OE	0.00892	0.01140	0.06439

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00100	-0.00035	0.00802
	OE	0.00000	0.00000	0.00000
	OE	0.01047	0.01536	0.09560
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00067	-0.00043	0.00422
	OE	0.00000	0.00000	0.00000
	OE	0.00781	0.01066	0.05474

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00208	-0.00209	-0.00209
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00185	-0.00187	-0.00186
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00144	-0.00145	-0.00144
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00128	-0.00130	-0.00129

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00208	0.00209	0.00209
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00188	0.00190	0.00187
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00144	0.00145	0.00144
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00131	0.00132	0.00129

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00357	0.00066	0.10179
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00353	0.00065	0.10183
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00228	-0.00062	0.05312
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00225	-0.00059	0.05314

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00897	0.01450	0.11554
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00886	0.01428	0.11548
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00673	0.00949	0.06309
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00666	0.00980	0.06307

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__xnor2_l	0.00755	0.00665	1.39475

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.05027	0.08674

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xnor2_l	A->Y (RR)	B	0.06408	0.50801	6.18930
	A->Y (FR)	!B	0.03423	0.70977	10.76820
	B->Y (RR)	A	0.05041	0.49535	6.26393
	B->Y (FR)	!A	0.04801	0.72666	10.80360

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xnor2_l	A->Y (FF)	B	0.05858	0.47486	5.98773
	A->Y (RF)	!B	0.02618	0.43178	6.41843
	B->Y (FF)	A	0.05130	0.46873	5.99743
	B->Y (RF)	!A	0.03280	0.44062	6.41220

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00460	0.00789	0.09485
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01142	0.01679	0.13068
	B	A	0.00000	0.00000	0.00000
	B	A	0.00147	0.00556	0.10791
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01250	0.01683	0.12051

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01469	0.01859	0.11664
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00321	0.00694	0.11100
	B	A	0.00000	0.00000	0.00000
	B	A	0.01326	0.01803	0.11926
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00437	0.00803	0.11077

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__xor2_1	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__xor2_1	0.00758	0.00670	1.35431

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.05027	0.07293

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xor2_l	A->Y (RR)	!B	0.06136	0.49985	6.18167
	A->Y (FR)	B	0.04604	0.72901	10.82280
	B->Y (RR)	!A	0.05369	0.50082	6.22112
	B->Y (FR)	A	0.04881	0.73011	10.78140

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xor2_l	A->Y (FF)	!B	0.05295	0.46895	5.71609
	A->Y (RF)	B	0.02682	0.44462	6.48430
	B->Y (FF)	!A	0.04917	0.46574	5.89626
	B->Y (RF)	A	0.03296	0.43725	6.28548

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01375	0.01821	0.12354
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00212	0.00475	0.10210
	B	A	0.00000	0.00000	0.00000
	B	A	0.01396	0.01841	0.12031
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00130	0.00519	0.10620

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00276	0.00666	0.11328
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01514	0.01963	0.09909
	B	A	0.00000	0.00000	0.00000
	B	A	0.00283	0.00623	0.10719
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01351	0.01845	0.11843

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__ant	5.49450
sky130_osu_sc_15T_hs__tiehi	5.49450
sky130_osu_sc_15T_hs__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_hs__ant	0.76394
sky130_osu_sc_15T_hs__tiehi	0.00000
sky130_osu_sc_15T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__ant	0.00000	327149.00000	654298.00000
sky130_osu_sc_15T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__ant	0.00000	0.00000	0.00000
	-0.00150	0.07639	1.20696

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__ant	0.00000	0.00000	0.00000
	5.69393	5.43910	1.45509