sky130_osu_sc_15T_hs_tt_1P62_25C.ccs Library

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

SKY130_OSU_SC_15T_HS__ADDFx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__addf_1	39.07200
sky130_osu_sc_15T_hs__addf_l	39.07200

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_15T_hs__addf_1	0.01455	0.01454	0.01132	1.74558	0.80180	1.66669
sky130_osu_sc_15T_hs__addf_l	0.01454	0.01454	0.01134	1.05961	0.80337	1.07427

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.25322	0.32355
sky130_osu_sc_15T_hs__addf_l	0.00000	0.16354	0.23387

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)	0.14938	1.71369	25.46200
	B->CO (RR)	0.14500	1.66363	24.66570
	CI->CO (RR)	0.14191	1.74729	26.08810
	CON->CO (FR)	0.02620	0.74366	11.42900
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.15718	1.58788	19.64360
	B->CO (RR)	0.15249	1.55447	19.35350
	CI->CO (RR)	0.14970	1.62265	20.30670
	CON->CO (FR)	0.03433	0.84931	11.57820

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)	0.20492	2.16091	31.76470
	B->CO (FF)	0.18285	2.07206	30.58360
	CI->CO (FF)	0.17797	2.13090	31.81670
	CON->CO (RF)	0.02221	0.57903	8.91956
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.19911	1.79227	21.93850
	B->CO (FF)	0.17759	1.72194	21.23180
	CI->CO (FF)	0.17218	1.76281	22.03030
	CON->CO (RF)	0.02254	0.54524	7.49052

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)	0.15916	0.99939	11.07520
	B->CON (FR)	0.13678	0.93483	10.72310
	CI->CON (FR)	0.13236	0.97132	11.19110
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.15072	0.99196	11.08080
	B->CON (FR)	0.12893	0.92789	10.72830
	CI->CON (FR)	0.12391	0.96392	11.19670

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)	0.09169	0.60328	6.72795
	B->CON (RF)	0.08928	0.61474	7.04067
	CI->CON (RF)	0.08422	0.63854	7.43833
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.08833	0.60030	6.73445
	B->CON (RF)	0.08613	0.61209	7.04535
	CI->CON (RF)	0.08085	0.63564	7.44330

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)	0.30023	1.98390	25.14700
	B->S (-R)	0.30998	1.98150	24.42920
	CI->S (-R)	0.27121	1.94941	25.20290
	CON->S (RR)	0.08429	0.63962	7.10202
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.29226	1.82596	20.19190
	B->S (-R)	0.30232	1.83400	19.80510
	CI->S (-R)	0.26317	1.79214	20.27760
	CON->S (RR)	0.08841	0.71603	7.08942

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)	0.24466	1.52689	18.31700
	B->S (-F)	0.23975	1.46858	17.83050
	CI->S (-F)	0.23666	1.55738	18.94280
	CON->S (FF)	0.09822	0.68202	7.07168
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.22975	1.31180	13.52940
	B->S (-F)	0.22570	1.27008	13.44990
	CI->S (-F)	0.22165	1.34231	14.19250
	CON->S (FF)	0.09261	0.63787	5.81386

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	0.00236	0.00267	0.01020
	B	0.00364	0.00376	0.00993
	CI	0.00370	0.00412	0.01173
sky130_osu_sc_15T_hs__addf_l	A	0.00179	0.00193	0.00636
	B	0.00306	0.00304	0.00704
	CI	0.00314	0.00337	0.00794

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00973	0.01023	0.02363
	B	0.01030	0.01077	0.02238
	CI	0.00816	0.00870	0.02247
sky130_osu_sc_15T_hs__addf_l	A	0.00919	0.00949	0.01703
	B	0.00975	0.01006	0.01637
	CI	0.00762	0.00796	0.01613

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00972	0.00995	0.01571
	B	0.01000	0.01022	0.01542
	CI	0.00815	0.00845	0.01482
sky130_osu_sc_15T_hs__addf_l	A	0.00918	0.00940	0.01502
	B	0.00947	0.00967	0.01475
	CI	0.00761	0.00788	0.01413

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00234	0.00251	0.00614
	B	0.00359	0.00358	0.00692
	CI	0.00369	0.00394	0.00786
sky130_osu_sc_15T_hs__addf_l	A	0.00178	0.00189	0.00540
	B	0.00303	0.00296	0.00611
	CI	0.00312	0.00332	0.00705

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00972	0.01021	0.02289
	B	0.01029	0.01076	0.02169
	CI	0.00816	0.00868	0.02176
sky130_osu_sc_15T_hs__addf_l	A	0.00919	0.00950	0.01719
	B	0.00976	0.01007	0.01654
	CI	0.00762	0.00798	0.01622

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.02133	0.02152	0.02894
	B	0.01926	0.01942	0.03288
	CI	0.01746	0.01746	0.02526
sky130_osu_sc_15T_hs__addf_l	A	0.02062	0.02060	0.02820
	B	0.01856	0.01850	0.03259
	CI	0.01677	0.01673	0.02487

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__addh_1	23.19900
sky130_osu_sc_15T_hs__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_hs__addh_1	0.00743	0.00818	1.72252	0.85390	1.76199
sky130_osu_sc_15T_hs__addh_l	0.00755	0.00842	1.09626	0.85334	1.11084

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.27634	0.31591
sky130_osu_sc_15T_hs__addh_l	0.00000	0.16724	0.22959

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)	0.10634	0.66293	6.95211
	B->CO (RR)	0.10931	0.65392	6.99950
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.09343	0.69854	6.74908
	B->CO (RR)	0.09672	0.69404	6.78526

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)	0.08201	0.57632	5.73798
	B->CO (FF)	0.08671	0.58793	5.76320
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.08028	0.56426	5.07625
	B->CO (FF)	0.08644	0.57990	5.11429

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	0.14831	0.54101	3.47726
	A->CON (FR)	!B	0.09062	0.90647	11.04260
	B->CON (RR)	A	0.15105	0.53297	3.52725
	B->CON (FR)	!A	0.11084	0.93106	11.02390
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.11789	0.48539	3.26248
	A->CON (FR)	!B	0.08292	0.89837	11.03000
	B->CON (RR)	A	0.12104	0.48106	3.29821
	B->CON (FR)	!A	0.10306	0.92281	11.01130

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	0.11937	0.59896	4.75916
	A->CON (RF)	!B	0.04328	0.51634	6.42274
	B->CON (FF)	A	0.11877	0.62239	4.99840
	B->CON (RF)	!A	0.05116	0.51104	6.15959
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.11196	0.58277	4.75080
	A->CON (RF)	!B	0.04100	0.51317	6.41697
	B->CON (FF)	A	0.11307	0.61055	5.00247
	B->CON (RF)	!A	0.04889	0.50837	6.15372

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	0.08945	1.45369	22.30950
	A->S (FR)	B	0.16647	1.51623	20.20370
	B->S (RR)	!A	0.09741	1.41306	21.44670
	B->S (FR)	A	0.16664	1.57532	21.08450
	CON->S (FR)	-	0.02856	0.76187	11.72010
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.09372	1.37217	18.05090
	A->S (FR)	B	0.16569	1.42762	16.04980
	B->S (RR)	!A	0.10175	1.34176	17.46310
	B->S (FR)	A	0.16750	1.48097	16.66550
	CON->S (FR)	-	0.03460	0.85373	11.77280

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	0.13153	1.98631	30.42910
	A->S (RF)	B	0.18458	1.32100	16.85570
	B->S (FF)	!A	0.15180	2.01383	30.47970
	B->S (RF)	A	0.18727	1.31273	16.89780
	CON->S (RF)	-	0.02178	0.58241	9.01697
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.12381	1.65484	21.63690
	A->S (RF)	B	0.15312	1.06403	11.10600
	B->S (FF)	!A	0.14414	1.68169	21.63900
	B->S (RF)	A	0.15624	1.05800	11.14070
	CON->S (RF)	-	0.02128	0.54505	7.60238

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	0.00484	0.00491	0.00863
	B	0.00000	0.00000	0.00000
	B	0.00439	0.00419	0.00852
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00424	0.00405	0.00922
	B	0.00000	0.00000	0.00000
	B	0.00380	0.00354	0.00892

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	0.00728	0.00722	0.01285
	B	0.00000	0.00000	0.00000
	B	0.00750	0.00775	0.01350
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00674	0.00669	0.01290
	B	0.00000	0.00000	0.00000
	B	0.00707	0.00730	0.01357

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	0.00483	0.00469	0.00892
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00635	0.00646	0.00874
	B	A	0.00000	0.00000	0.00000
	B	A	0.00439	0.00419	0.00877
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00713	0.00707	0.00831
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00423	0.00404	0.00921
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00603	0.00610	0.00809
	B	A	0.00000	0.00000	0.00000
	B	A	0.00380	0.00354	0.00895
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00679	0.00668	0.00760

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	0.00729	0.00723	0.01299
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00098	0.00103	0.00204
	B	A	0.00000	0.00000	0.00000
	B	A	0.00750	0.00773	0.01349
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00170	0.00164	0.00268
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00674	0.00670	0.01309
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00048	0.00048	0.00125
	B	A	0.00000	0.00000	0.00000
	B	A	0.00707	0.00730	0.01366
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00118	0.00111	0.00166

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	0.00730	0.00723	0.01308
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00100	0.00107	0.00215
	B	A	0.00000	0.00000	0.00000
	B	A	0.00750	0.00778	0.01403
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00172	0.00170	0.00249
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00676	0.00671	0.01322
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00049	0.00048	0.00120
	B	A	0.00000	0.00000	0.00000
	B	A	0.00708	0.00731	0.01385
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00120	0.00111	0.00147

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	0.00484	0.00470	0.00881
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00635	0.00653	0.00883
	B	A	0.00000	0.00000	0.00000
	B	A	0.00440	0.00419	0.00858
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00713	0.00720	0.00887
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00424	0.00404	0.00937
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00604	0.00611	0.00800
	B	A	0.00000	0.00000	0.00000
	B	A	0.00380	0.00354	0.00910
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00679	0.00673	0.00766

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__and2_1	0.00383	0.00395	1.72005
sky130_osu_sc_15T_hs__and2_2	0.00382	0.00394	3.37458
sky130_osu_sc_15T_hs__and2_4	0.00383	0.00395	6.46687
sky130_osu_sc_15T_hs__and2_6	0.00386	0.00395	9.59068
sky130_osu_sc_15T_hs__and2_8	0.00384	0.00396	12.32495
sky130_osu_sc_15T_hs__and2_l	0.00302	0.00315	1.05555

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.13145	0.20908
sky130_osu_sc_15T_hs__and2_2	0.00000	0.20890	0.21673
sky130_osu_sc_15T_hs__and2_4	0.00000	0.36379	0.41050
sky130_osu_sc_15T_hs__and2_6	0.00000	0.51869	0.61193
sky130_osu_sc_15T_hs__and2_8	0.00000	0.67358	0.81335
sky130_osu_sc_15T_hs__and2_l	0.00000	0.02174	0.03412

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)	0.07688	0.58289	6.71929
	B->Y (RR)	0.08147	0.58331	6.63449
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.08636	0.53030	6.79612
	B->Y (RR)	0.09074	0.52508	6.71740
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.12147	0.55302	7.06536
	B->Y (RR)	0.12601	0.54018	6.99003
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.15396	0.59431	7.34394
	B->Y (RR)	0.15839	0.57588	7.26403
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.18581	0.63616	7.47783
	B->Y (RR)	0.19034	0.61444	7.39291
sky130_osu_sc_15T_hs__and2_l	A->Y (RR)	0.08389	0.67996	6.66896
	B->Y (RR)	0.08862	0.67877	6.60896

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)	0.06555	0.58970	6.65943
	B->Y (FF)	0.06872	0.60273	6.70937
sky130_osu_sc_15T_hs__and2_2	A->Y (FF)	0.07382	0.54774	6.56573
	B->Y (FF)	0.07732	0.55848	6.61127
sky130_osu_sc_15T_hs__and2_4	A->Y (FF)	0.10316	0.58052	7.04183
	B->Y (FF)	0.10627	0.58777	7.09092
sky130_osu_sc_15T_hs__and2_6	A->Y (FF)	0.13420	0.62090	7.30072
	B->Y (FF)	0.13670	0.62593	7.34342
sky130_osu_sc_15T_hs__and2_8	A->Y (FF)	0.16292	0.65346	7.34326
	B->Y (FF)	0.16514	0.65735	7.38182
sky130_osu_sc_15T_hs__and2_l	A->Y (FF)	0.07473	0.58197	5.39636
	B->Y (FF)	0.08066	0.60147	5.48401

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	0.00332	0.00323	0.02115
	B	0.00000	0.00000	0.00000
	B	0.00339	0.00293	0.01441
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00659	0.00679	0.02909
	B	0.00000	0.00000	0.00000
	B	0.00664	0.00657	0.01756
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01383	0.01420	0.02963
	B	0.00000	0.00000	0.00000
	B	0.01392	0.01413	0.02365
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02135	0.02187	0.03631
	B	0.00000	0.00000	0.00000
	B	0.02146	0.02185	0.03218
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02917	0.02940	0.04264
	B	0.00000	0.00000	0.00000
	B	0.02932	0.02943	0.03846
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00250	0.00249	0.01316
	B	0.00000	0.00000	0.00000
	B	0.00258	0.00232	0.00915

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	0.00851	0.00930	0.02560
	B	0.00000	0.00000	0.00000
	B	0.00947	0.01010	0.02557
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01059	0.01174	0.02893
	B	0.00000	0.00000	0.00000
	B	0.01158	0.01249	0.02861
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01614	0.01794	0.03393
	B	0.00000	0.00000	0.00000
	B	0.01712	0.01864	0.03378
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02182	0.02418	0.04031
	B	0.00000	0.00000	0.00000
	B	0.02291	0.02469	0.03990
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02781	0.03020	0.04622
	B	0.00000	0.00000	0.00000
	B	0.02874	0.03054	0.04566
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00673	0.00710	0.01708
	B	0.00000	0.00000	0.00000
	B	0.00755	0.00779	0.01727

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)	-0.00321	-0.00323	-0.00324
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00321	-0.00322	-0.00323
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00321	-0.00322	-0.00324
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00323	-0.00324	-0.00326
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00321	-0.00322	-0.00323
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00229	-0.00229	-0.00231

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)	0.00323	0.00330	0.00325
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00322	0.00330	0.00324
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00323	0.00331	0.00325
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00326	0.00333	0.00327
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00324	0.00331	0.00325
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00231	0.00235	0.00231

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)	-0.00308	-0.00310	-0.00308
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00308	-0.00310	-0.00308
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00308	-0.00309	-0.00308
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00308	-0.00309	-0.00308
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00307	-0.00308	-0.00308
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00218	-0.00219	-0.00218

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)	0.00315	0.00314	0.00309
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00315	0.00314	0.00309
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00316	0.00314	0.00310
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00316	0.00314	0.00310
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00316	0.00315	0.00310
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00222	0.00220	0.00219

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_hs__aoi21_l	0.00362	0.00377	0.00381	0.78500

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.05191	0.10071

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)	0.08286	0.93354	11.06550
	A1->Y (FR)	0.07119	0.88725	10.68240
	B0->Y (FR)	0.05991	0.90911	11.18700

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)	0.04926	0.54564	6.47403
	A1->Y (RF)	0.04502	0.56607	6.92097
	B0->Y (RF)	0.02674	0.50052	6.33157

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	0.00732	0.00725	0.00820
	A1	0.00000	0.00000	0.00000
	A1	0.00626	0.00617	0.00715
	B0	0.00459	0.00466	0.00748

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	0.00170	0.00143	0.00244
	A1	0.00000	0.00000	0.00000
	A1	0.00173	0.00152	0.00294
	B0	-0.00075	-0.00073	0.00047

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)	-0.00244	-0.00279	-0.00281
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00284	-0.00286	-0.00285
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00285	-0.00285	-0.00285

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)	0.00279	0.00281	0.00281
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00284	0.00286	0.00286
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00292	0.00289	0.00286

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)	-0.00241	-0.00275	-0.00277
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00280	-0.00281	-0.00280
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00300	-0.00303	-0.00303

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)	0.00275	0.00277	0.00277
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00280	0.00283	0.00281
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00302	0.00309	0.00304

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)	-0.00140	-0.00143	-0.00140

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)	0.00154	0.00156	0.00144

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_hs__aoi22_l	0.00361	0.00374	0.00389	0.00370	0.79602

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.05986	0.20142

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)	0.10002	0.94488	11.02980
	A1->Y (FR)	0.09064	0.92718	10.92610
	B0->Y (FR)	0.06000	0.89186	11.01580
	B1->Y (FR)	0.06952	0.91080	11.16450

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)	0.06518	0.56597	6.55097
	A1->Y (RF)	0.06108	0.58626	6.99972
	B0->Y (RF)	0.03356	0.55542	6.96715
	B1->Y (RF)	0.03771	0.53444	6.51880

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	0.00889	0.00882	0.00972
	A1	0.00783	0.00774	0.00863
	B0	0.00491	0.00497	0.00796
	B1	0.00707	0.00687	0.00986

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00346	0.00319	0.00419
	A1	0.00349	0.00326	0.00468
	B0	-0.00050	-0.00049	0.00100
	B1	-0.00043	-0.00053	0.00055

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)	-0.00248	-0.00279	-0.00281
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00284	-0.00286	-0.00285
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00284	-0.00287	-0.00285
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00284	-0.00286	-0.00285

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)	0.00278	0.00281	0.00281
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00285	0.00287	0.00286
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00292	0.00289	0.00286
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00292	0.00289	0.00286

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)	-0.00245	-0.00274	-0.00276
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00280	-0.00281	-0.00280
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00300	-0.00302	-0.00302
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00300	-0.00302	-0.00302

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)	0.00274	0.00277	0.00276
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00280	0.00282	0.00281
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00301	0.00308	0.00303
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00301	0.00308	0.00303

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)	-0.00140	-0.00144	-0.00141
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00140	-0.00142	-0.00141
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00311	-0.00310	-0.00314
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00311	-0.00311	-0.00314

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	0.00146
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00140	0.00142	0.00141
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00312	0.00315	0.00314
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00312	0.00315	0.00314

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)	-0.00142	-0.00145	-0.00142
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00141	-0.00142	-0.00142
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00290	-0.00292	-0.00290
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00290	-0.00292	-0.00290

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	0.00164	0.00147
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00141	0.00144	0.00142
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00298	0.00292	0.00291
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00298	0.00292	0.00291

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_hs__buf_1	0.00395	1.70162
sky130_osu_sc_15T_hs__buf_2	0.00395	3.36845
sky130_osu_sc_15T_hs__buf_4	0.00395	6.49956
sky130_osu_sc_15T_hs__buf_6	0.00090	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00396	12.48894
sky130_osu_sc_15T_hs__buf_l	0.00316	1.04953

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.10837	0.10837
sky130_osu_sc_15T_hs__buf_2	0.00000	0.16255	0.20908
sky130_osu_sc_15T_hs__buf_4	0.00000	0.27091	0.41050
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	0.48764	0.81335
sky130_osu_sc_15T_hs__buf_l	0.00000	0.01869	0.01869

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)	0.05888	0.55156	6.56481
sky130_osu_sc_15T_hs__buf_2	A->Y (RR)	0.06530	0.49032	6.63096
sky130_osu_sc_15T_hs__buf_4	A->Y (RR)	0.08860	0.49185	6.86280
sky130_osu_sc_15T_hs__buf_8	A->Y (RR)	0.13319	0.54898	7.22881
sky130_osu_sc_15T_hs__buf_l	A->Y (RR)	0.06509	0.64054	6.44185

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)	0.06234	0.57919	6.59703
sky130_osu_sc_15T_hs__buf_2	A->Y (FF)	0.07185	0.55290	6.77073
sky130_osu_sc_15T_hs__buf_4	A->Y (FF)	0.10054	0.57603	7.06745
sky130_osu_sc_15T_hs__buf_8	A->Y (FF)	0.16026	0.65094	7.41632
sky130_osu_sc_15T_hs__buf_l	A->Y (FF)	0.07187	0.57474	5.38014

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	0.00311	0.00300	0.01679
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00634	0.00711	0.01981
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01351	0.01397	0.02659
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02811	0.02910	0.04043
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00246	0.00231	0.01097

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	0.00825	0.00888	0.02513
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01035	0.01129	0.02731
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01590	0.01743	0.03306
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02773	0.02942	0.04504
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00655	0.00684	0.01681

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
	-0.00057	-0.00058	-0.00057

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
	0.00057	0.00058	0.00057

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffr_1	53.11350
sky130_osu_sc_15T_hs__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_hs__dffr_1	0.00371	0.00369	0.01101	1.58458	1.58485
sky130_osu_sc_15T_hs__dffr_l	0.00371	0.00369	0.01100	1.05465	1.04855

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.31428	0.50919
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.22287	0.41778

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)	0.31918	1.38459	15.13160
	QN->Q (FR)	0.03283	0.86151	12.95890
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.32102	1.57432	15.57120
	QN->Q (FR)	0.03696	0.92334	12.60410

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)	0.30900	1.38467	15.45830
	QN->Q (RF)	0.02445	0.62466	9.39107
	RN->Q (FF)	0.22865	1.43517	17.10640
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.31841	1.59245	15.90340
	QN->Q (RF)	0.02786	0.67898	9.28941
	RN->Q (FF)	0.23862	1.64286	17.54540

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)	0.27581	0.80287	6.71486
	RN->QN (FR)	0.19561	0.85256	8.37535
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.27730	0.87910	6.74898
	RN->QN (FR)	0.19721	0.92959	8.40347

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)**	0.27149	0.69631	4.84770
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.26520	0.74141	4.91500

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)	-0.06756	-0.08157	-0.08901
	setup	CK (R)	0.24992	0.28136	1.52467
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.06903	-0.08458	-0.09167
	setup	CK (R)	0.25261	0.28179	1.53291

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)	-0.12256	-0.35912	-1.22539
	setup	CK (R)	0.15069	0.37241	3.67506
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.12397	-0.35892	-1.07369
	setup	CK (R)	0.15069	0.37241	3.67714

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)	-0.06756	-0.08157	-0.08901
	setup	CK (R)	0.24992	0.28136	1.52467
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.06903	-0.08458	-0.09167
	setup	CK (R)	0.25261	0.28179	1.53291

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)	-0.12256	-0.35912	-1.22539
	setup	CK (R)	0.15069	0.37241	3.67506
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.12397	-0.35892	-1.07369
	setup	CK (R)	0.15069	0.37241	3.67714

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)	0.21372	0.24825	1.61113
	removal	CK (R)	-0.05141	-0.06162	-0.13977
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.21297	0.24778	1.63236
	removal	CK (R)	-0.05141	-0.06162	-0.13977

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)	0.21372	0.24825	1.61113
	removal	CK (R)	-0.05141	-0.06162	-0.13977
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.21297	0.24778	1.63236
	removal	CK (R)	-0.05141	-0.06162	-0.13977

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 ()	0.13670	0.45776	13.33370
	min_pulse_width	RN ()	0.13670	0.45776	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.13670	0.45776	13.33370
	min_pulse_width	RN ()	0.13670	0.45776	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 ()	0.15051	0.45776	13.33370
	min_pulse_width	CK ()	0.16087	0.45776	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.14015	0.45776	13.33370
	min_pulse_width	CK ()	0.15741	0.45776	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 ()	0.31277	0.45776	13.33370
	min_pulse_width	CK ()	0.12634	0.45776	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.31277	0.45776	13.33370
	min_pulse_width	CK ()	0.12634	0.45776	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	0.00835	0.00666	0.00000
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00729	0.00626	0.01010

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	0.00932	0.00756	0.00000
	RN	-0.00108	-0.06651	-1.03964
	RN	0.02130	0.01978	0.00621
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00827	0.00720	0.00625
	RN	-0.00108	-0.05210	-0.69196
	RN	0.02023	0.01941	0.01867

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	0.00931	0.00756	0.00000
	RN	-0.00108	-0.06652	-1.03981
	RN	0.02129	0.01976	0.00699
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00826	0.00721	0.00629
	RN	-0.00108	-0.05192	-0.68795
	RN	0.02023	0.01940	0.01921

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	0.00830	0.00663	0.00000
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00725	0.00623	0.01008

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	-0.00232	-0.00276	-0.00279
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00991	0.00941	0.01858
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00445	0.00401	0.01334
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00232	-0.00276	-0.00279
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00991	0.00941	0.01858
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00445	0.00401	0.01334

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	0.00277	0.00278	0.00280
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01646	0.01624	0.02575
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00756	0.00736	0.01682
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00277	0.00278	0.00280
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01646	0.01624	0.02575
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00756	0.00736	0.01682

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)	0.00321	0.00301	0.02204
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00891	0.00846	0.02736
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)	0.00321	0.00301	0.02204
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00891	0.00846	0.02736

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)	0.00767	0.00806	0.02780
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01650	0.01662	0.03608
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)	0.00767	0.00806	0.02780
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01650	0.01662	0.03608

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)	-0.00062	-0.00089	0.01782
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00448	0.00354	0.02275
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00095	-0.00120	0.01737
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00062	-0.00089	0.01782
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00448	0.00354	0.02275
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00095	-0.00120	0.01737

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)	0.01217	0.01252	0.03232
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02561	0.02520	0.04752
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01973	0.01975	0.03932
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02528	0.02573	0.05987
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01365	0.01391	0.03327
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01217	0.01251	0.03231
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02561	0.02520	0.04751
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01973	0.01975	0.03932
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02528	0.02573	0.05987
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01365	0.01391	0.03327

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffsr_1	57.99750
sky130_osu_sc_15T_hs__dffsr_l	57.99750

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_15T_hs__dffsr_1	0.00367	0.00370	0.00818	0.01126	1.75977	1.75074
sky130_osu_sc_15T_hs__dffsr_l	0.00367	0.00370	0.00817	0.01126	1.06472	1.05549

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.38562	0.51838
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.29420	0.42697

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)	0.31003	1.40516	16.21010
	QN->Q (FR)	0.02867	0.80280	12.40330
	RN->Q (RR)	0.25035	1.35699	16.21000
	SN->Q (FR)	0.22860	1.47344	18.13440
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.32124	1.58717	15.74020
	QN->Q (FR)	0.03696	0.92494	12.65590
	RN->Q (RR)	0.26192	1.53982	15.74030
	SN->Q (FR)	0.23989	1.65430	17.65520

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)	0.34172	1.43596	16.34400
	QN->Q (RF)	0.02415	0.64856	10.01470
	RN->Q (FF)	0.23800	1.46630	18.00630
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.35758	1.64396	16.09960
	QN->Q (RF)	0.02782	0.68077	9.33264
	RN->Q (FF)	0.25321	1.67457	17.75350

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)	0.30865	0.82968	6.82159
	RN->QN (FR)	0.20533	0.86125	8.48287
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.31581	0.92530	6.84185
	RN->QN (FR)	0.21168	0.95590	8.49445

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)	0.26703	0.71460	5.38554
	RN->QN (RF)	0.20775	0.66652	5.38737
	SN->QN (FF)	0.18614	0.78329	7.30939
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.26743	0.75091	4.97967
	RN->QN (RF)	0.20829	0.70344	4.97796
	SN->QN (FF)	0.18650	0.81769	6.88987

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)	-0.07042	-0.08837	-0.16153
	setup	CK (R)	0.23372	0.26626	1.45582
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.07014	-0.08726	-0.16461
	setup	CK (R)	0.23169	0.26366	1.41333

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)	-0.13491	-0.37344	-1.50396
	setup	CK (R)	0.16951	0.38721	3.74603
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.13485	-0.37546	-1.74582
	setup	CK (R)	0.16951	0.38721	3.74643

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)	-0.07042	-0.08837	-0.16153
	setup	CK (R)	0.23372	0.26626	1.45582
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.07014	-0.08726	-0.16461
	setup	CK (R)	0.23169	0.26366	1.41333

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)	-0.13491	-0.37344	-1.50396
	setup	CK (R)	0.16951	0.38721	3.74603
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.13485	-0.37546	-1.74582
	setup	CK (R)	0.16951	0.38721	3.74643

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)	0.17651	0.20761	1.30933
	removal	CK (R)	-0.02611	-0.03126	-0.07567
	hold	SN (R)	-0.18129	-0.34430	-1.53820
	setup	SN (R)	0.20595	0.39012	7.47993
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.17443	0.20505	1.29565
	removal	CK (R)	-0.02630	-0.03008	-0.07737
	hold	SN (R)	-0.18179	-0.33802	-1.49956
	setup	SN (R)	0.20580	0.38371	7.30797

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)	0.17651	0.20761	1.30933
	removal	CK (R)	-0.02611	-0.03126	-0.07567
	hold	SN (R)	-0.18129	-0.34430	-1.53820
	hold	SN (R)	-0.18269	-0.34639	-1.54786
	setup	SN (R)	0.20595	0.38612	7.47993
	setup	SN (R)	0.20475	0.39012	7.47885
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.17443	0.20505	1.29565
	removal	CK (R)	-0.02630	-0.03008	-0.07737
	hold	SN (R)	-0.18254	-0.33802	-1.49956
	hold	SN (R)	-0.18179	-0.34017	-1.50703
	setup	SN (R)	0.20580	0.37974	7.28901
	setup	SN (R)	0.19181	0.38371	7.30797

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 ()	0.16087	0.45776	13.33370
	min_pulse_width	RN ()	0.16432	0.45776	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.16087	0.45776	13.33370
	min_pulse_width	RN ()	0.15741	0.45776	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)	0.04557	0.08197	7.09819
	removal	CK (R)	-0.01838	-0.05775	-0.30345
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.04470	0.08105	6.80419
	removal	CK (R)	-0.01838	-0.05775	-0.30745

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)	0.04557	0.08197	7.09819
	removal	CK (R)	-0.01838	-0.05775	-0.30345
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.04470	0.08105	6.80419
	removal	CK (R)	-0.01838	-0.05775	-0.30745

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 ()	0.18158	0.45776	13.33370
	min_pulse_width	SN ()	0.18503	0.45776	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.18158	0.45776	13.33370
	min_pulse_width	SN ()	0.17122	0.45776	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 ()	0.14015	0.45776	13.33370
	min_pulse_width	CK ()	0.17467	0.45776	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.13670	0.45776	13.33370
	min_pulse_width	CK ()	0.17122	0.45776	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 ()	0.29896	0.45776	13.33370
	min_pulse_width	CK ()	0.15051	0.45776	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.29551	0.45776	13.33370
	min_pulse_width	CK ()	0.14706	0.45776	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	0.01039	0.00854	-0.00412
	RN	0.01920	0.01737	-0.00148
	SN	-0.00108	-0.07083	-1.15458
	SN	0.02129	0.01929	-0.00208
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00945	0.00843	0.01206
	RN	0.01825	0.01726	0.01593
	SN	-0.00108	-0.05239	-0.69856
	SN	0.02034	0.01916	0.01559

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	0.01098	0.00995	0.00412
	RN	-0.00108	-0.07083	-1.15458
	RN	0.02230	0.02133	0.01605
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01001	0.00903	0.00798
	RN	-0.00108	-0.05239	-0.69856
	RN	0.02129	0.02037	0.01981

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	0.01097	0.00995	0.00425
	RN	-0.00108	-0.07061	-1.14861
	RN	0.02228	0.02133	0.01606
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01000	0.00903	0.00811
	RN	-0.00108	-0.05212	-0.69250
	RN	0.02129	0.02038	0.01990

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	0.01034	0.00852	-0.00425
	RN	0.01915	0.01734	-0.00136
	SN	-0.00108	-0.07061	-1.14858
	SN	0.02124	0.01925	-0.00128
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00940	0.00840	0.01214
	RN	0.01820	0.01721	0.01594
	SN	-0.00108	-0.05212	-0.69247
	SN	0.02029	0.01911	0.01554

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	-0.00273	-0.00279	-0.00278
	(!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)	0.01273	0.01225	0.02134
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00510	0.00467	0.01382
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00507	0.00465	0.01384
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00512	0.00469	0.01387
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00273	-0.00279	-0.00278
	(!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)	0.01273	0.01225	0.02134
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00510	0.00467	0.01382
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00507	0.00464	0.01385
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00512	0.00469	0.01387

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	0.00283	0.00281	0.00278
	(!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)	0.01919	0.01890	0.02802
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00812	0.00798	0.01729
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00821	0.00802	0.01726
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00807	0.00791	0.01722
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00283	0.00281	0.00278
	(!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)	0.01918	0.01889	0.02801
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00811	0.00797	0.01728
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00820	0.00801	0.01725
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00806	0.00790	0.01721

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)	0.00295	0.00272	0.02147
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01084	0.01042	0.02903
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)	0.00295	0.00272	0.02148
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01084	0.01042	0.02903

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)	0.00831	0.00877	0.02861
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01750	0.01765	0.03707
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)	0.00830	0.00876	0.02859
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01749	0.01764	0.03706

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)	-0.00635	-0.00639	-0.00640
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00622	-0.00682	-0.00685
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00618	-0.00650	-0.00650
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00427	0.00390	0.01438
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)	-0.00636	-0.00639	-0.00640
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00620	-0.00680	-0.00683
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00618	-0.00650	-0.00650
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00428	0.00390	0.01439

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)	0.00639	0.00654	0.00642
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00684	0.00689	0.00687
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00648	0.00656	0.00652
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01336	0.01306	0.02203
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)	0.00639	0.00654	0.00642
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00682	0.00688	0.00685
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00648	0.00656	0.00652
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01334	0.01303	0.02202

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)	-0.00062	-0.00094	0.01781
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00528	0.00441	0.02354
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00515	0.00429	0.02349
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00078	-0.00103	0.01754
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00374	0.00332	0.03879
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00062	-0.00094	0.01781
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00527	0.00440	0.02353
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00514	0.00428	0.02348
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00078	-0.00103	0.01754
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00373	0.00332	0.03876

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)	0.02863	0.02829	0.05051
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01221	0.01256	0.03236
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02017	0.02028	0.03984
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02023	0.02029	0.03981
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02793	0.02819	0.06221
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01353	0.01379	0.03314
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01600	0.01651	0.05366
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02863	0.02829	0.05051
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01221	0.01256	0.03236
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02017	0.02027	0.03984
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02023	0.02029	0.03981
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02792	0.02819	0.06220
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01353	0.01379	0.03314
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01599	0.01650	0.05368

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dffs_1	48.22950
sky130_osu_sc_15T_hs__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_hs__dffs_1	0.00370	0.00643	0.01098	1.58348	1.58180
sky130_osu_sc_15T_hs__dffs_l	0.00370	0.00643	0.01098	1.05096	1.06207

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.27504	0.40524
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.18363	0.31383

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)	0.24213	1.29183	15.00010
	QN->Q (FR)	0.03283	0.85808	12.88950
	SN->Q (FR)	0.18883	1.42470	16.92630
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.24921	1.48902	15.40040
	QN->Q (FR)	0.03694	0.91801	12.53360
	SN->Q (FR)	0.19498	1.61573	17.30800

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)	0.34728	1.42831	15.44900
	QN->Q (RF)	0.02433	0.62226	9.35605
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.35512	1.63058	15.86090
	QN->Q (RF)	0.02777	0.67586	9.24965

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)	0.31273	0.84674	6.72110
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.31264	0.92414	6.85841

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)	0.19917	0.60700	4.73642
	SN->QN (FF)	0.14509	0.74056	6.66534
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.19797	0.66376	4.88661
	SN->QN (FF)	0.14325	0.79132	6.78827

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)	-0.05124	-0.06946	-0.07322
	setup	CK (R)	0.17597	0.21318	1.61111
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.04865	-0.06984	-0.07499
	setup	CK (R)	0.17307	0.21095	1.42227

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)	-0.12413	-0.35900	-2.12104
	setup	CK (R)	0.16820	0.37331	3.69261
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.12636	-0.35852	-2.08326
	setup	CK (R)	0.16880	0.37331	3.69244

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)	-0.05124	-0.06946	-0.07322
	setup	CK (R)	0.17597	0.21318	1.61111
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.04865	-0.06984	-0.07499
	setup	CK (R)	0.17307	0.21095	1.42227

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)	-0.12413	-0.35900	-2.12104
	setup	CK (R)	0.16820	0.37331	3.69261
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.12636	-0.35852	-2.08326
	setup	CK (R)	0.16880	0.37331	3.69244

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)	0.05748	0.09906	6.81037
	removal	CK (R)	-0.02811	-0.07500	-0.44034
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.05694	0.09864	6.44374
	removal	CK (R)	-0.02811	-0.07500	-0.44034

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)	0.05748	0.09906	6.81037
	removal	CK (R)	-0.02811	-0.07500	-0.44034
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.05694	0.09864	6.44374
	removal	CK (R)	-0.02811	-0.07500	-0.44034

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 ()	0.12979	0.45776	13.33370
	min_pulse_width	SN ()	0.13325	0.45776	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.12979	0.45776	13.33370
	min_pulse_width	SN ()	0.12634	0.45776	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 ()	0.10563	0.45776	13.33370
	min_pulse_width	CK ()	0.17467	0.45776	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.09872	0.45776	13.33370
	min_pulse_width	CK ()	0.16777	0.45776	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 ()	0.23682	0.45776	13.33370
	min_pulse_width	CK ()	0.15051	0.45776	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.23682	0.45776	13.33370
	min_pulse_width	CK ()	0.15051	0.45776	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	0.00837	0.00671	0.00000
	SN	-0.00108	-0.06648	-1.03892
	SN	0.01790	0.01615	0.00074
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00732	0.00631	0.01036
	SN	-0.00108	-0.05199	-0.68953
	SN	0.01684	0.01576	0.01361

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	0.00926	0.00759	0.00000
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00821	0.00721	0.00659

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	0.00925	0.00760	0.00000
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00821	0.00720	0.00647

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	0.00833	0.00667	0.00000
	SN	-0.00108	-0.06644	-1.03774
	SN	0.01786	0.01610	0.00030
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00728	0.00630	0.01014
	SN	-0.00108	-0.05232	-0.69679
	SN	0.01680	0.01572	0.01316

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	-0.00278	-0.00283	-0.00282
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00941	0.00889	0.01816
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00435	0.00392	0.01322
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00283	-0.00282
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00941	0.00889	0.01816
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00435	0.00392	0.01322

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	0.00288	0.00286	0.00282
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01618	0.01584	0.02527
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00768	0.00752	0.01702
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00287	0.00285	0.00282
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01618	0.01584	0.02527
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00768	0.00752	0.01702

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)	-0.00459	-0.00464	-0.00463
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00355	0.00315	0.01108
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)	-0.00459	-0.00463	-0.00462
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00355	0.00315	0.01108

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)	0.00466	0.00468	0.00464
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00925	0.00899	0.01787
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)	0.00465	0.00468	0.00464
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00924	0.00898	0.01787

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)	-0.00064	-0.00097	0.01781
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00090	-0.00117	0.01744
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00294	0.00258	0.03847
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00064	-0.00097	0.01781
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00090	-0.00117	0.01744
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00294	0.00258	0.03847

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)	0.02525	0.02488	0.04762
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01218	0.01252	0.03234
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02487	0.02516	0.05930
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01359	0.01385	0.03322
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01549	0.01608	0.05357
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02525	0.02487	0.04761
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01218	0.01252	0.03234
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02487	0.02515	0.05930
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01359	0.01385	0.03322
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01549	0.01608	0.05357

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__dff_1	40.29300
sky130_osu_sc_15T_hs__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_hs__dff_1	0.00386	0.01090	1.77227	1.75312
sky130_osu_sc_15T_hs__dff_l	0.00386	0.01088	0.96132	0.96943

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.35153	0.43122
sky130_osu_sc_15T_hs__dff_l	0.00000	0.26185	0.34154

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)	0.20004	1.27810	16.12650
	QN->Q (FR)	0.02848	0.80236	12.41560
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.20790	1.28637	12.71980
	QN->Q (FR)	0.04269	0.98365	13.03800

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)	0.28323	1.37264	16.35270
	QN->Q (RF)	0.02407	0.64837	10.03560
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.30169	1.46223	13.83860
	QN->Q (RF)	0.02410	0.57776	7.81648

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)	0.25122	0.76350	6.73837
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.26515	0.88254	6.73228

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)	0.16184	0.58552	5.21509
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.15848	0.52429	3.36117

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)	-0.04541	-0.06467	-0.08715
	setup	CK (R)	0.13106	0.17530	1.23570
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.04580	-0.06522	-0.09299
	setup	CK (R)	0.13117	0.17402	1.25507

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)	-0.11352	-0.35794	-2.71929
	setup	CK (R)	0.13638	0.36990	3.69497
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.11430	-0.35794	-2.67475
	setup	CK (R)	0.13701	0.36990	3.69888

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 ()	0.08837	0.45776	13.33370
	min_pulse_width	CK ()	0.15051	0.45776	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.08492	0.45776	13.33370
	min_pulse_width	CK ()	0.14706	0.45776	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 ()	0.19539	0.45776	13.33370
	min_pulse_width	CK ()	0.10908	0.45776	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.19539	0.45776	13.33370
	min_pulse_width	CK ()	0.10908	0.45776	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	0.00889	0.00696	-0.00304
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00815	0.00692	0.00974

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	0.00946	0.00843	0.00304
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00866	0.00730	0.00236

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	0.00946	0.00845	0.00379
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00866	0.00730	0.00231

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	0.00885	0.00695	-0.00379
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00809	0.00686	0.00917

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	-0.00231	-0.00275	-0.00278
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00901	0.00855	0.01799
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00232	-0.00275	-0.00279
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00901	0.00855	0.01799

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	0.00276	0.00277	0.00279
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01682	0.01647	0.02612
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00276	0.00277	0.00279
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01683	0.01648	0.02613

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)	-0.00064	-0.00096	0.01784
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00089	-0.00114	0.01747
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00064	-0.00096	0.01784
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00089	-0.00114	0.01747

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)	0.01211	0.01246	0.03229
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02487	0.02451	0.04759
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02533	0.02562	0.06021
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01352	0.01376	0.03316
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01211	0.01246	0.03229
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02487	0.02451	0.04759
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02533	0.02562	0.06022
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01352	0.01377	0.03316

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_hs__inv_1	0.00373	1.63791
sky130_osu_sc_15T_hs__inv_10	0.03422	15.13104
sky130_osu_sc_15T_hs__inv_2	0.00705	3.25952
sky130_osu_sc_15T_hs__inv_3	0.01048	4.68038
sky130_osu_sc_15T_hs__inv_4	0.01383	6.28684
sky130_osu_sc_15T_hs__inv_6	0.02072	9.28351
sky130_osu_sc_15T_hs__inv_8	0.02745	12.43936
sky130_osu_sc_15T_hs__inv_l	0.00292	0.93373

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.05418	0.10071
sky130_osu_sc_15T_hs__inv_10	0.00000	0.54182	1.00712
sky130_osu_sc_15T_hs__inv_2	0.00000	0.10836	0.20142
sky130_osu_sc_15T_hs__inv_3	0.00000	0.16255	0.30214
sky130_osu_sc_15T_hs__inv_4	0.00000	0.21673	0.40285
sky130_osu_sc_15T_hs__inv_6	0.00000	0.32509	0.60427
sky130_osu_sc_15T_hs__inv_8	0.00000	0.43345	0.80570
sky130_osu_sc_15T_hs__inv_l	0.00000	0.00934	0.01544

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)**	0.02731	0.73903	11.20180
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.03830	0.50679	11.19690
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.02190	0.63753	11.14890
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.02426	0.59795	11.14530
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.02477	0.56784	11.12860
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.02735	0.53569	11.13030
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.03273	0.51898	11.25020
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.03713	0.84988	11.24150

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)**	0.02177	0.56588	8.59111
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.03042	0.35533	8.56617
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.01759	0.48668	8.60411
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.01909	0.45249	8.63777
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.01874	0.42048	8.62135
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.02235	0.38884	8.61834
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.02680	0.37266	8.68565
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.02206	0.52302	6.96353

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	0.00427	0.00435	0.00645
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.03622	0.04166	0.03418
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00754	0.00808	0.00591
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01159	0.01258	0.00941
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01489	0.01665	0.02026
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02205	0.02465	0.02750
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02906	0.03247	0.04817
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00330	0.00335	0.00481

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	-0.00089	-0.00083	0.00026
sky130_osu_sc_15T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01465	-0.01309	-0.00070
sky130_osu_sc_15T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00285	-0.00258	-0.00033
sky130_osu_sc_15T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00375	-0.00345	0.00008
sky130_osu_sc_15T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00575	-0.00477	-0.00051
sky130_osu_sc_15T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00881	-0.00780	-0.00065
sky130_osu_sc_15T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01186	-0.01077	-0.00083
sky130_osu_sc_15T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00055	-0.00052	0.00027

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_15T_hs__mux2_1	0.39876	0.39888	0.00763	0.40749

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.10854	0.10854

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)	-	0.01375	0.27077	2.86396
	A1->Y (RR)	-	0.01534	0.27259	2.86479
	S0->Y (RR)	(!A0 * A1)	0.04653	0.28310	1.36973
	S0->Y (FR)	(A0 * !A1)	0.03515	0.40817	3.74622

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)	-	0.01444	0.27223	2.86094
	A1->Y (FF)	-	0.01334	0.27001	2.85293
	S0->Y (FF)	(!A0 * A1)	0.06094	0.38529	2.71817
	S0->Y (RF)	(A0 * !A1)	0.02454	0.30934	2.60609

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	-	-0.00447	-0.00447	-0.00448
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00310	-0.00309	-0.00311
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00523	0.00583	0.02665
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00305	-0.00309	0.01675

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	-	0.00447	0.00447	0.00448
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00310	0.00311	0.00311
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00088	0.00091	0.02117
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01162	0.01207	0.03237

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)	-0.00113	-0.00113	-0.00113

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)	0.00113	0.00113	0.00113

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)	-0.00134	-0.00134	-0.00134

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)	0.00134	0.00134	0.00134

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)	-0.00110	-0.00112	0.01894
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00107	-0.00114	0.01903

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)	0.00880	0.00924	0.02960
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00804	0.00862	0.02933

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__nand2_1	7.93650
sky130_osu_sc_15T_hs__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__nand2_1	0.00373	0.00372	1.51331
sky130_osu_sc_15T_hs__nand2_l	0.00292	0.00292	0.92702

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.05401	0.20142
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.00935	0.03087

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)	0.02828	0.72254	10.76520
	B->Y (FR)	0.03266	0.71654	10.60660
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.03821	0.85229	11.23000
	B->Y (FR)	0.04567	0.85708	11.20610

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)	0.03148	0.69835	10.33410
	B->Y (RF)	0.03552	0.67765	9.93706
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.03195	0.65954	8.65922
	B->Y (RF)	0.03575	0.63165	8.10777

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	0.00454	0.00427	0.00674
	B	0.00000	0.00000	0.00000
	B	0.00560	0.00521	0.00780
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00347	0.00355	0.00483
	B	0.00000	0.00000	0.00000
	B	0.00437	0.00436	0.00571

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	-0.00059	-0.00061	0.00042
	B	0.00000	0.00000	0.00000
	B	-0.00055	-0.00062	0.00010
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00038	-0.00038	0.00032
	B	0.00000	0.00000	0.00000
	B	-0.00036	-0.00042	0.00014

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)	-0.00314	-0.00314	-0.00316
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00219	-0.00220	-0.00221

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)	0.00315	0.00322	0.00317
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00221	0.00225	0.00222

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)	-0.00294	-0.00295	-0.00295
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00204	-0.00204	-0.00204

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)	0.00302	0.00301	0.00296
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00209	0.00208	0.00205

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__nor2_1	7.93650
sky130_osu_sc_15T_hs__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__nor2_1	0.00371	0.00399	0.84402
sky130_osu_sc_15T_hs__nor2_l	0.00282	0.00314	0.52735

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.04082	0.10071
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.00763	0.01544

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)	0.06074	0.88390	10.97040
	B->Y (FR)	0.04651	0.86154	10.98160
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.07599	1.01265	11.01780
	B->Y (FR)	0.06319	0.99854	11.15870

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)	0.02956	0.46663	5.86891
	B->Y (RF)	0.02309	0.45433	5.85094
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.02724	0.44225	5.00080
	B->Y (RF)	0.02319	0.43265	4.98624

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	0.00601	0.00595	0.00703
	B	0.00000	0.00000	0.00000
	B	0.00459	0.00447	0.00766
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00440	0.00432	0.00517
	B	0.00000	0.00000	0.00000
	B	0.00352	0.00338	0.00550

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	0.00073	0.00064	0.00214
	B	0.00000	0.00000	0.00000
	B	-0.00071	-0.00062	0.00091
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00044	0.00037	0.00147
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00037	0.00072

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)	-0.00234	-0.00278	-0.00280
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00159	-0.00185	-0.00186

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)	0.00279	0.00281	0.00280
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00184	0.00186	0.00186

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)	-0.00142	-0.00144	-0.00141
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00092	-0.00094	-0.00092

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)	0.00148	0.00150	0.00144
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00097	0.00098	0.00094

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_hs__oai21_l	0.00376	0.00383	0.00315	0.83079

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.02882	0.11615

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)	0.06423	0.89260	11.08010
	A1->Y (FR)	0.08248	0.91740	11.08300
	B0->Y (FR)	0.04432	0.78891	10.13030

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)	0.04308	0.55917	6.83539
	A1->Y (RF)	0.05195	0.55674	6.69924
	B0->Y (RF)	0.03399	0.59316	7.53761

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	0.00622	0.00626	0.00890
	A1	0.00000	0.00000	0.00000
	A1	0.00765	0.00754	0.00855
	B0	0.00518	0.00516	0.00699

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	0.00019	0.00010	0.00108
	A1	0.00000	0.00000	0.00000
	A1	0.00163	0.00138	0.00236
	B0	0.00224	0.00220	0.00326

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)	-0.00142	-0.00144	-0.00142
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00279	-0.00283	-0.00282
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00286	-0.00287	-0.00287

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)	0.00150	0.00151	0.00144
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00280	0.00283	0.00282
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00289	0.00290	0.00288

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)	-0.00226	-0.00271	-0.00274
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00275	-0.00279	-0.00279
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00282	-0.00283	-0.00283

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)	0.00272	0.00275	0.00274
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00277	0.00281	0.00279
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00285	0.00286	0.00284

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)	-0.00222	-0.00223	-0.00227

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)	0.00226	0.00227	0.00227

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__oai22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_hs__oai22_l	0.00362	0.00385	0.00395	0.00385	0.83942

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.06072	0.20142

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)	0.08275	0.90743	10.97400
	A1->Y (FR)	0.07255	0.89034	10.98670
	B0->Y (FR)	0.05220	0.87039	10.97650
	B1->Y (FR)	0.06798	0.89171	10.96720

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)	0.07286	0.60000	6.95074
	A1->Y (RF)	0.05818	0.58089	6.89967
	B0->Y (RF)	0.04970	0.61127	7.60552
	B1->Y (RF)	0.06492	0.63298	7.69700

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	0.00987	0.00979	0.01075
	A1	0.00840	0.00839	0.01101
	B0	0.00632	0.00638	0.00897
	B1	0.00785	0.00777	0.00874

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00266	0.00241	0.00334
	A1	0.00134	0.00122	0.00213
	B0	-0.00027	-0.00025	0.00120
	B1	0.00268	0.00252	0.00378

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)	-0.00233	-0.00278	-0.00280
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00233	-0.00278	-0.00280
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00276	-0.00281	-0.00279
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00283	-0.00284	-0.00284

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)	0.00278	0.00280	0.00280
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00278	0.00280	0.00280
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00278	0.00282	0.00279
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00285	0.00285	0.00285

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)	-0.00140	-0.00143	-0.00140
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00140	-0.00143	-0.00140
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00273	-0.00278	-0.00276
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00281	-0.00282	-0.00282

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)	0.00147	0.00149	0.00143
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00147	0.00149	0.00143
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00276	0.00278	0.00276
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00283	0.00283	0.00282

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)	-0.00138	-0.00142	-0.00139
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00138	-0.00142	-0.00139
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00303	-0.00307	-0.00306
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00304	-0.00306	-0.00311

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)	0.00146	0.00148	0.00142
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00146	0.00147	0.00142
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00306	0.00307	0.00306
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00310	0.00312	0.00312

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)	-0.00229	-0.00272	-0.00275
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00229	-0.00272	-0.00275
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00309	-0.00314	-0.00313
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00310	-0.00311	-0.00317

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)	0.00273	0.00276	0.00275
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00273	0.00276	0.00275
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00312	0.00316	0.00313
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00316	0.00318	0.00318

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__or2_1	0.00406	0.00383	1.68849
sky130_osu_sc_15T_hs__or2_2	0.00407	0.00383	3.33406
sky130_osu_sc_15T_hs__or2_4	0.00407	0.00383	6.42436
sky130_osu_sc_15T_hs__or2_8	0.00407	0.00384	12.40650
sky130_osu_sc_15T_hs__or2_l	0.00323	0.00297	0.95671

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.07174	0.11602
sky130_osu_sc_15T_hs__or2_2	0.00000	0.10265	0.21673
sky130_osu_sc_15T_hs__or2_4	0.00000	0.16449	0.41815
sky130_osu_sc_15T_hs__or2_8	0.00000	0.28815	0.82100
sky130_osu_sc_15T_hs__or2_l	0.00000	0.01392	0.02193

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)	0.06954	0.58493	6.49508
	B->Y (RR)	0.06041	0.55434	6.46261
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.07658	0.52001	6.57692
	B->Y (RR)	0.06703	0.49386	6.53618
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.10016	0.51701	6.84195
	B->Y (RR)	0.09041	0.49562	6.79227
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.14471	0.56942	7.29902
	B->Y (RR)	0.13489	0.55350	7.24920
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.07542	0.68642	6.39600
	B->Y (RR)	0.06831	0.66149	6.31861

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)	0.11458	0.66769	6.90939
	B->Y (FF)	0.09469	0.63438	6.82221
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.13658	0.65112	7.08688
	B->Y (FF)	0.11695	0.62478	6.98209
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.19269	0.69675	7.44880
	B->Y (FF)	0.17310	0.67902	7.31722
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.30750	0.81868	7.91256
	B->Y (FF)	0.28799	0.80208	7.77533
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.13792	0.65564	5.37833
	B->Y (FF)	0.11570	0.63000	5.31284

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	0.00474	0.00430	0.01366
	B	0.00000	0.00000	0.00000
	B	0.00339	0.00344	0.01686
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00801	0.00779	0.01723
	B	0.00000	0.00000	0.00000
	B	0.00659	0.00693	0.01997
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01523	0.01544	0.02461
	B	0.00000	0.00000	0.00000
	B	0.01375	0.01463	0.03623
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02983	0.03066	0.04079
	B	0.00000	0.00000	0.00000
	B	0.02844	0.02995	0.04137
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00350	0.00317	0.00891
	B	0.00000	0.00000	0.00000
	B	0.00265	0.00262	0.00971

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	0.00995	0.00983	0.01803
	B	0.00000	0.00000	0.00000
	B	0.00824	0.00896	0.02613
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01211	0.01236	0.02026
	B	0.00000	0.00000	0.00000
	B	0.01039	0.01140	0.02771
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01785	0.01860	0.02613
	B	0.00000	0.00000	0.00000
	B	0.01614	0.01746	0.03259
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03166	0.03081	0.03822
	B	0.00000	0.00000	0.00000
	B	0.02991	0.02948	0.04365
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00768	0.00738	0.01274
	B	0.00000	0.00000	0.00000
	B	0.00649	0.00678	0.01633

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)	-0.00235	-0.00280	-0.00282
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00235	-0.00280	-0.00282
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00235	-0.00280	-0.00282
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00235	-0.00280	-0.00282
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00160	-0.00187	-0.00188

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)	0.00280	0.00284	0.00282
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00280	0.00284	0.00282
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00280	0.00284	0.00282
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00280	0.00284	0.00282
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00186	0.00189	0.00188

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)	-0.00142	-0.00145	-0.00142
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00142	-0.00145	-0.00142
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00142	-0.00145	-0.00142
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00141	-0.00145	-0.00142
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00094	-0.00095	-0.00094

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)	0.00150	0.00152	0.00144
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00150	0.00152	0.00144
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00150	0.00152	0.00144
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00150	0.00152	0.00145
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00099	0.00100	0.00096

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__tbufi_1	10.37850
sky130_osu_sc_15T_hs__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_hs__tbufi_1	0.00397	0.00500	0.85221
sky130_osu_sc_15T_hs__tbufi_l	0.00314	0.00409	0.52788

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.05753	0.20143
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.01079	0.03087

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)	0.04428	0.85870	10.98950
	OE->Y (FR)	0.04601	0.31962	4.73355
	OE->Y (RR)	0.08238	0.69288	6.56833
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.06092	0.99743	11.16350
	OE->Y (FR)	0.05442	0.31959	4.73329
	OE->Y (RR)	0.09297	0.81810	6.54057

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)	0.03066	0.56091	7.25002
	OE->Y (FF)	0.04690	0.31961	4.73347
	OE->Y (RF)	0.02882	0.53762	6.79653
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.03163	0.54063	6.20541
	OE->Y (FF)	0.05547	0.31960	4.73335
	OE->Y (RF)	0.03001	0.50506	5.64894

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	0.00436	0.00424	0.00712
	OE	0.00000	0.00000	0.00000
	OE	0.00433	0.00446	0.02214
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00333	0.00316	0.00480
	OE	0.00000	0.00000	0.00000
	OE	0.00311	0.00300	0.01339

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	-0.00071	-0.00065	0.00072
	OE	0.00000	0.00000	0.00000
	OE	0.00296	0.00296	0.02321
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00039	0.00058
	OE	0.00000	0.00000	0.00000
	OE	0.00199	0.00189	0.01379

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)	-0.00230	-0.00233	-0.00231
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00207	-0.00209	-0.00208
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00165	-0.00168	-0.00165
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00150	-0.00152	-0.00150

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)	0.00230	0.00233	0.00231
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00212	0.00215	0.00210
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00165	0.00168	0.00165
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00153	0.00154	0.00151

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)	0.00176	0.00179	0.02238
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00158	0.00164	0.02215
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00115	0.00106	0.01309
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00102	0.00093	0.01293

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)	0.00521	0.00553	0.02625
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00525	0.00561	0.02633
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00409	0.00416	0.01631
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00415	0.00427	0.01638

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__tnbufi_1	10.37850
sky130_osu_sc_15T_hs__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_hs__tnbufi_1	0.00397	0.00618	0.85222
sky130_osu_sc_15T_hs__tnbufi_l	0.00313	0.00457	0.52787

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.08855	0.10837
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.01486	0.01869

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)	0.04482	0.85871	10.98950
	OE->Y (RR)	0.02700	0.31995	4.73396
	OE->Y (FR)	0.05720	0.87943	10.97310
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.06143	0.99798	11.16330
	OE->Y (RR)	0.02640	0.31994	4.73395
	OE->Y (FR)	0.07169	1.01055	11.02560

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)	0.03014	0.56070	7.24990
	OE->Y (RF)	0.02664	0.31995	4.73396
	OE->Y (FF)	0.05305	0.52294	5.19003
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.03098	0.54025	6.20516
	OE->Y (RF)	0.02625	0.31993	4.73396
	OE->Y (FF)	0.06230	0.52627	4.38405

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	0.00449	0.00437	0.00725
	OE	0.00000	0.00000	0.00000
	OE	0.01076	0.01159	0.03303
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00347	0.00333	0.00494
	OE	0.00000	0.00000	0.00000
	OE	0.00807	0.00843	0.02096

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	-0.00089	-0.00083	0.00055
	OE	0.00000	0.00000	0.00000
	OE	0.00954	0.01053	0.02893
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00057	-0.00055	0.00042
	OE	0.00000	0.00000	0.00000
	OE	0.00708	0.00755	0.01870

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)	-0.00195	-0.00199	-0.00196
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00175	-0.00177	-0.00175
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00132	-0.00134	-0.00132
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00119	-0.00121	-0.00118

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)	0.00195	0.00199	0.00196
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00179	0.00181	0.00177
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00132	0.00134	0.00132
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00121	0.00121	0.00119

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)	-0.00321	-0.00344	0.01769
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00320	-0.00338	0.01772
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00205	-0.00229	0.00995
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00204	-0.00227	0.00997

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)	0.00818	0.00913	0.03049
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00805	0.00908	0.03040
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00609	0.00655	0.01904
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00601	0.00649	0.01898

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__xnor2_l	0.00788	0.00697	0.89573

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.18829	0.30979

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	0.10240	0.73763	6.93045
	A->Y (FR)	!B	0.05673	0.88580	11.28030
	B->Y (RR)	A	0.08108	0.71511	6.93624
	B->Y (FR)	!A	0.07583	0.90889	11.27740

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	0.09372	0.61409	5.62238
	A->Y (RF)	!B	0.04151	0.55727	7.02235
	B->Y (FF)	A	0.08134	0.60162	5.61738
	B->Y (RF)	!A	0.05192	0.57136	7.03155

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	0.00412	0.00394	0.02179
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01048	0.01115	0.03433
	B	A	0.00000	0.00000	0.00000
	B	A	0.00135	0.00156	0.02207
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01139	0.01187	0.03340

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	0.01346	0.01365	0.03372
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00296	0.00283	0.02372
	B	A	0.00000	0.00000	0.00000
	B	A	0.01201	0.01287	0.03351
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00406	0.00382	0.02464

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__xor2_1	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__xor2_1	0.00790	0.00702	0.86558

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.18829	0.29215

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	0.09813	0.72215	6.81440
	A->Y (FR)	B	0.07317	0.90317	11.17680
	B->Y (RR)	!A	0.08527	0.71739	6.82683
	B->Y (FR)	A	0.07771	0.90784	11.16440

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	0.08391	0.59950	5.42396
	A->Y (RF)	B	0.04359	0.58742	7.33448
	B->Y (FF)	!A	0.07923	0.59650	5.49154
	B->Y (RF)	A	0.05122	0.56658	6.89036

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	0.01245	0.01294	0.03460
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00194	0.00127	0.02193
	B	A	0.00000	0.00000	0.00000
	B	A	0.01261	0.01316	0.03453
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00123	0.00128	0.02251

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	0.00274	0.00245	0.02381
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01365	0.01436	0.03231
	B	A	0.00000	0.00000	0.00000
	B	A	0.00277	0.00248	0.02316
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01222	0.01307	0.03365

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__ant	5.49450
sky130_osu_sc_15T_hs__tiehi	5.49450
sky130_osu_sc_15T_hs__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_hs__ant	0.46754
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	187645.00000	375291.00000
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
	-0.00188	0.04222	0.62574

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
	3.26638	3.10376	0.77026