sky130_osu_sc_15T_ls_TT_1P8_25C.ccs Library

Cell Groups
SKY130_OSU_SC_15T_LS__ADDFx
SKY130_OSU_SC_15T_LS__ADDHx
SKY130_OSU_SC_15T_LS__AND2x
SKY130_OSU_SC_15T_LS__AOI21
SKY130_OSU_SC_15T_LS__AOI22
SKY130_OSU_SC_15T_LS__BUFx
SKY130_OSU_SC_15T_LS__DFFRx
SKY130_OSU_SC_15T_LS__DFFSRx
SKY130_OSU_SC_15T_LS__DFFSx
SKY130_OSU_SC_15T_LS__DFFx
SKY130_OSU_SC_15T_LS__INVx
SKY130_OSU_SC_15T_LS__MUX2
SKY130_OSU_SC_15T_LS__NAND2x
SKY130_OSU_SC_15T_LS__NOR2x
SKY130_OSU_SC_15T_LS__OAI21
SKY130_OSU_SC_15T_LS__OAI22
SKY130_OSU_SC_15T_LS__OR2x
SKY130_OSU_SC_15T_LS__TBUFIx
SKY130_OSU_SC_15T_LS__TNBUFIx
SKY130_OSU_SC_15T_LS__XNOR2
SKY130_OSU_SC_15T_LS__XOR2
SKY130_OSU_SC_15T_LS_x

SKY130_OSU_SC_15T_LS__ADDFx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__addf_1	39.07200
sky130_osu_sc_15T_ls__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_ls__addf_1	0.01583	0.01577	0.01224	0.12254	0.04619	0.11652
sky130_osu_sc_15T_ls__addf_l	0.01583	0.01577	0.01223	0.07355	0.04725	0.07465

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00269	0.00313
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00757	0.01191

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.15450	0.46312	1.88928
	B->CO (RR)	0.14849	0.44629	1.82326
	CI->CO (RR)	0.14681	0.46164	1.91983
	CON->CO (FR)	0.03034	0.18006	0.87481
sky130_osu_sc_15T_ls__addf_l	A->CO (RR)	0.16017	0.43663	1.48661
	B->CO (RR)	0.15405	0.42353	1.45813
	CI->CO (RR)	0.15248	0.43514	1.51928
	CON->CO (FR)	0.03872	0.20398	0.87678

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.23120	0.63516	2.47855
	B->CO (FF)	0.20769	0.59755	2.37346
	CI->CO (FF)	0.20333	0.60334	2.46266
	CON->CO (RF)	0.02304	0.13081	0.63179
sky130_osu_sc_15T_ls__addf_l	A->CO (FF)	0.22306	0.54975	1.77566
	B->CO (FF)	0.20042	0.51716	1.70768
	CI->CO (FF)	0.19519	0.51836	1.76091
	CON->CO (RF)	0.02470	0.12871	0.55641

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.18029	0.33644	0.87594
	B->CON (FR)	0.15829	0.30079	0.83768
	CI->CON (FR)	0.15256	0.30437	0.86257
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.17028	0.32798	0.87557
	B->CON (FR)	0.14893	0.29380	0.83728
	CI->CON (FR)	0.14242	0.29612	0.86220

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.09055	0.18027	0.49925
	B->CON (RF)	0.08714	0.17905	0.51872
	CI->CON (RF)	0.08281	0.17916	0.53519
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.08687	0.17760	0.50055
	B->CON (RF)	0.08370	0.17640	0.51996
	CI->CON (RF)	0.07912	0.17629	0.53651

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	0.33373	0.71097	2.26972
	B->S (-R)	0.33924	0.71298	2.25403
	CI->S (-R)	0.30380	0.67630	2.24931
	CON->S (RR)	0.08803	0.22648	0.72776
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.32067	0.65131	1.84662
	B->S (-R)	0.32667	0.65591	1.84711
	CI->S (-R)	0.29065	0.61716	1.82753
	CON->S (RR)	0.09065	0.23919	0.71009

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-F)	0.25695	0.53387	1.60935
	B->S (-F)	0.26529	0.52433	1.56978
	CI->S (-F)	0.24880	0.53031	1.63595
	CON->S (FF)	0.10877	0.24750	0.73682
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.23904	0.47441	1.26399
	B->S (-F)	0.24800	0.46723	1.24004
	CI->S (-F)	0.23084	0.47105	1.29481
	CON->S (FF)	0.10196	0.23708	0.66906

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00366	0.00353	0.00358
	B	0.00476	0.00477	0.00486
	CI	0.00500	0.00513	0.00534
sky130_osu_sc_15T_ls__addf_l	A	0.00280	0.00263	0.00255
	B	0.00390	0.00381	0.00377
	CI	0.00415	0.00422	0.00424

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01382	0.01387	0.01408
	B	0.01356	0.01378	0.01402
	CI	0.01191	0.01226	0.01255
sky130_osu_sc_15T_ls__addf_l	A	0.01300	0.01302	0.01303
	B	0.01273	0.01288	0.01295
	CI	0.01106	0.01133	0.01150

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01378	0.01377	0.01378
	B	0.01354	0.01363	0.01364
	CI	0.01187	0.01207	0.01218
sky130_osu_sc_15T_ls__addf_l	A	0.01298	0.01296	0.01294
	B	0.01272	0.01280	0.01280
	CI	0.01105	0.01125	0.01134

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00360	0.00347	0.00335
	B	0.00470	0.00464	0.00447
	CI	0.00499	0.00506	0.00506
sky130_osu_sc_15T_ls__addf_l	A	0.00275	0.00259	0.00243
	B	0.00386	0.00376	0.00355
	CI	0.00413	0.00417	0.00415

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01382	0.01386	0.01405
	B	0.01355	0.01377	0.01398
	CI	0.01190	0.01225	0.01251
sky130_osu_sc_15T_ls__addf_l	A	0.01301	0.01303	0.01305
	B	0.01274	0.01289	0.01298
	CI	0.01106	0.01133	0.01152

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.02894	0.02913	0.02912
	B	0.02567	0.02526	0.02523
	CI	0.02338	0.02333	0.02334
sky130_osu_sc_15T_ls__addf_l	A	0.02774	0.02776	0.02766
	B	0.02451	0.02395	0.02397
	CI	0.02224	0.02211	0.02207

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__addh_1	23.19900
sky130_osu_sc_15T_ls__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_ls__addh_1	0.00775	0.00854	0.11922	0.05585	0.12214
sky130_osu_sc_15T_ls__addh_l	0.00775	0.00854	0.07644	0.05556	0.07741

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00251	0.00290
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00856	0.01166

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CO (RR)	0.10598	0.24398	0.74825
	B->CO (RR)	0.10943	0.24262	0.74401
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.11029	0.25900	0.73970
	B->CO (RR)	0.11377	0.25787	0.73780

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CO (FF)	0.09452	0.22389	0.71179
	B->CO (FF)	0.10095	0.23184	0.72739
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.08950	0.20968	0.61274
	B->CO (FF)	0.09560	0.21718	0.62844

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CON (RR)	B	0.14945	0.24309	0.51093
	A->CON (FR)	!B	0.09902	0.25637	0.85822
	B->CON (RR)	A	0.15287	0.24114	0.50664
	B->CON (FR)	!A	0.12079	0.28071	0.86909
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.13732	0.23055	0.48997
	A->CON (FR)	!B	0.08976	0.24653	0.84623
	B->CON (RR)	A	0.14077	0.22888	0.48749
	B->CON (FR)	!A	0.11156	0.27084	0.85708

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CON (FF)	B	0.14023	0.25689	0.65002
	A->CON (RF)	!B	0.05371	0.15459	0.54211
	B->CON (FF)	A	0.13921	0.26098	0.67352
	B->CON (RF)	!A	0.06478	0.16229	0.53928
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.13047	0.24628	0.62943
	A->CON (RF)	!B	0.05028	0.15075	0.53657
	B->CON (FF)	A	0.12937	0.25042	0.65334
	B->CON (RF)	!A	0.06140	0.15942	0.53401

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (RR)	!B	0.10986	0.41535	1.84153
	A->S (FR)	B	0.19706	0.51242	1.92546
	B->S (RR)	!A	0.12100	0.41582	1.79030
	B->S (FR)	A	0.19673	0.52485	1.99786
	CON->S (FR)	-	0.03292	0.18390	0.89137
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.11189	0.38893	1.48578
	A->S (FR)	B	0.19288	0.48056	1.56091
	B->S (RR)	!A	0.12320	0.39183	1.45571
	B->S (FR)	A	0.19232	0.49056	1.61258
	CON->S (FR)	-	0.03896	0.20545	0.89357

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (FF)	!B	0.14241	0.51171	2.24989
	A->S (RF)	B	0.18660	0.42652	1.45965
	B->S (FF)	!A	0.16425	0.53624	2.26403
	B->S (RF)	A	0.19002	0.42468	1.45371
	CON->S (RF)	-	0.02175	0.12757	0.61825
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.13424	0.44151	1.67020
	A->S (RF)	B	0.17531	0.38041	1.09964
	B->S (FF)	!A	0.15622	0.46582	1.68255
	B->S (RF)	A	0.17875	0.37872	1.09570
	CON->S (RF)	-	0.02337	0.12818	0.56410

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00612	0.00594	0.00587
	B	0.00000	0.00000	0.00000
	B	0.00552	0.00533	0.00517
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00530	0.00507	0.00500
	B	0.00000	0.00000	0.00000
	B	0.00471	0.00447	0.00430

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00930	0.00904	0.00883
	B	0.00000	0.00000	0.00000
	B	0.00971	0.00977	0.00966
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00852	0.00822	0.00801
	B	0.00000	0.00000	0.00000
	B	0.00892	0.00890	0.00879

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00611	0.00594	0.00585
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00826	0.00821	0.00824
	B	A	0.00000	0.00000	0.00000
	B	A	0.00552	0.00530	0.00518
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00925	0.00920	0.00918
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00530	0.00506	0.00497
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00770	0.00764	0.00764
	B	A	0.00000	0.00000	0.00000
	B	A	0.00470	0.00445	0.00429
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00869	0.00862	0.00858

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00930	0.00907	0.00900
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00124	0.00120	0.00116
	B	A	0.00000	0.00000	0.00000
	B	A	0.00971	0.00974	0.00980
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00209	0.00198	0.00192
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00852	0.00824	0.00816
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00049	0.00045	0.00038
	B	A	0.00000	0.00000	0.00000
	B	A	0.00892	0.00889	0.00894
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00136	0.00124	0.00115

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00931	0.00905	0.00898
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00126	0.00126	0.00131
	B	A	0.00000	0.00000	0.00000
	B	A	0.00971	0.00978	0.00989
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00211	0.00204	0.00204
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00852	0.00824	0.00817
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00050	0.00046	0.00045
	B	A	0.00000	0.00000	0.00000
	B	A	0.00893	0.00891	0.00898
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00137	0.00126	0.00121

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00612	0.00594	0.00586
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00826	0.00830	0.00840
	B	A	0.00000	0.00000	0.00000
	B	A	0.00552	0.00533	0.00517
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00927	0.00928	0.00935
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00530	0.00507	0.00498
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00769	0.00767	0.00770
	B	A	0.00000	0.00000	0.00000
	B	A	0.00471	0.00447	0.00430
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00870	0.00866	0.00865

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__and2_1	10.37850
sky130_osu_sc_15T_ls__and2_2	12.82050
sky130_osu_sc_15T_ls__and2_4	17.70450
sky130_osu_sc_15T_ls__and2_6	22.58850
sky130_osu_sc_15T_ls__and2_8	27.47250
sky130_osu_sc_15T_ls__and2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__and2_1	0.00417	0.00427	0.12106
sky130_osu_sc_15T_ls__and2_2	0.00417	0.00427	0.23931
sky130_osu_sc_15T_ls__and2_4	0.00417	0.00427	0.45282
sky130_osu_sc_15T_ls__and2_6	0.00258	0.00260	1.80000
sky130_osu_sc_15T_ls__and2_8	0.00415	0.00427	0.86289
sky130_osu_sc_15T_ls__and2_l	0.00316	0.00327	0.07344

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00118	0.00180
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00182	0.00205
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00311	0.00335
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00568	0.00645
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00722	0.01145

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__and2_1	A->Y (RR)	0.08110	0.21035	0.68403
	B->Y (RR)	0.08593	0.21117	0.68828
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.09275	0.21450	0.73859
	B->Y (RR)	0.09752	0.21404	0.73636
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.12742	0.24743	0.82834
	B->Y (RR)	0.13216	0.24759	0.81622
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.19406	0.31927	0.97266
	B->Y (RR)	0.19884	0.32045	0.95045
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.09173	0.23415	0.67780
	B->Y (RR)	0.09670	0.23445	0.68102

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__and2_1	A->Y (FF)	0.07256	0.19537	0.64259
	B->Y (FF)	0.07722	0.20081	0.66008
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.08480	0.20285	0.69562
	B->Y (FF)	0.08984	0.20859	0.70950
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.11876	0.23705	0.77557
	B->Y (FF)	0.12331	0.24178	0.78497
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.18863	0.31214	0.89860
	B->Y (FF)	0.19215	0.31574	0.90418
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.08267	0.20669	0.61584
	B->Y (FF)	0.08966	0.21427	0.63613

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00456	0.00414	0.00431
	B	0.00000	0.00000	0.00000
	B	0.00465	0.00415	0.00406
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00891	0.00885	0.00903
	B	0.00000	0.00000	0.00000
	B	0.00899	0.00888	0.00885
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01848	0.01894	0.01937
	B	0.00000	0.00000	0.00000
	B	0.01859	0.01898	0.01930
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03802	0.03846	0.04009
	B	0.00000	0.00000	0.00000
	B	0.03824	0.03855	0.04008
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00329	0.00297	0.00312
	B	0.00000	0.00000	0.00000
	B	0.00337	0.00296	0.00292

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.01141	0.01129	0.01170
	B	0.00000	0.00000	0.00000
	B	0.01283	0.01260	0.01291
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01444	0.01498	0.01542
	B	0.00000	0.00000	0.00000
	B	0.01590	0.01620	0.01657
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02208	0.02326	0.02438
	B	0.00000	0.00000	0.00000
	B	0.02353	0.02439	0.02527
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03770	0.03916	0.04235
	B	0.00000	0.00000	0.00000
	B	0.03909	0.04016	0.04262
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00867	0.00852	0.00875
	B	0.00000	0.00000	0.00000
	B	0.00967	0.00943	0.00961

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00424	-0.00426	-0.00424
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00424	-0.00426	-0.00424
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00424	-0.00426	-0.00424
sky130_osu_sc_15T_ls__and2_6	B	0.00000	0.00000	0.00000
	B	-0.00044	-0.00044	-0.00044
	!B	0.00000	0.00000	0.00000
	!B	-0.00037	-0.00037	-0.00037
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00424	-0.00426	-0.00424
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00301	-0.00301	-0.00301

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00424	0.00426	0.00424
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00424	0.00426	0.00424
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00424	0.00426	0.00424
sky130_osu_sc_15T_ls__and2_6	B	0.00000	0.00000	0.00000
	B	0.00044	0.00044	0.00044
	!B	0.00000	0.00000	0.00000
	!B	0.00037	0.00037	0.00037
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00424	0.00426	0.00424
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00301	0.00301	0.00302

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00401	-0.00402	-0.00401
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00401	-0.00402	-0.00401
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00401	-0.00402	-0.00401
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	-0.00044	-0.00044	-0.00044
	!A	0.00000	0.00000	0.00000
	!A	-0.00037	-0.00037	-0.00037
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00400	-0.00402	-0.00400
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00286	-0.00286	-0.00285

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00401	0.00403	0.00401
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00402	0.00403	0.00401
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00402	0.00403	0.00401
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.00044	0.00044	0.00044
	!A	0.00000	0.00000	0.00000
	!A	0.00037	0.00037	0.00037
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00402	0.00403	0.00400
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00286	0.00286	0.00285

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__aoi21_l	0.00391	0.00408	0.00398	0.05291

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00062	0.00078

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi21_l	A0->Y (FR)	0.09501	0.26516	0.86595
	A1->Y (FR)	0.07940	0.24129	0.82341
	B0->Y (FR)	0.07017	0.23553	0.85509

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi21_l	A0->Y (RF)	0.04894	0.14193	0.47868
	A1->Y (RF)	0.04451	0.14162	0.50532
	B0->Y (RF)	0.02947	0.12252	0.47173

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.01005	0.00993	0.00989
	A1	0.00000	0.00000	0.00000
	A1	0.00850	0.00835	0.00828
	B0	0.00781	0.00760	0.00761

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00165	0.00134	0.00117
	A1	0.00000	0.00000	0.00000
	A1	0.00169	0.00138	0.00122
	B0	-0.00091	-0.00094	-0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00350	-0.00364	-0.00364
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00372	-0.00373	-0.00372
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00372	-0.00374	-0.00372

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00365	0.00365	0.00364
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00372	0.00374	0.00372
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00373	0.00374	0.00372

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00345	-0.00358	-0.00359
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00367	-0.00366	-0.00366
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00399	-0.00401	-0.00399

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00360	0.00361	0.00359
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00367	0.00369	0.00366
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00399	0.00401	0.00399

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00166	-0.00167	-0.00166

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00170	0.00171	0.00168

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_l	0.00390	0.00405	0.00423	0.00403	0.05295

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00074	0.00155

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (FR)	0.11669	0.28637	0.88107
	A1->Y (FR)	0.10390	0.27056	0.86004
	B0->Y (FR)	0.07195	0.23272	0.83859
	B1->Y (FR)	0.08510	0.24882	0.86218

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (RF)	0.06473	0.15843	0.49769
	A1->Y (RF)	0.06021	0.15641	0.52472
	B0->Y (RF)	0.03371	0.12872	0.48921
	B1->Y (RF)	0.03820	0.12911	0.46298

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.01231	0.01218	0.01215
	A1	0.01078	0.01060	0.01056
	B0	0.00839	0.00812	0.00809
	B1	0.00984	0.00962	0.00961

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00366	0.00338	0.00316
	A1	0.00370	0.00341	0.00319
	B0	-0.00055	-0.00056	-0.00065
	B1	-0.00049	-0.00058	-0.00066

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00351	-0.00363	-0.00364
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00373	-0.00373	-0.00372
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00372	-0.00374	-0.00372
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00372	-0.00374	-0.00372

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00365	0.00365	0.00364
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00373	0.00374	0.00372
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00373	0.00374	0.00372
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00373	0.00374	0.00372

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00345	-0.00358	-0.00358
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00366	-0.00366	-0.00366
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00398	-0.00400	-0.00398
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00398	-0.00400	-0.00398

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00358	0.00360	0.00358
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00367	0.00367	0.00366
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00398	0.00400	0.00398
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00398	0.00400	0.00398

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00167	-0.00168	-0.00167
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00167	-0.00167	-0.00166
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00413	-0.00414	-0.00411
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00413	-0.00414	-0.00411

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00172	0.00173	0.00170
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00167	0.00167	0.00166
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00413	0.00414	0.00411
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00413	0.00414	0.00411

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00168	-0.00169	-0.00168
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00168	-0.00168	-0.00168
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00380	-0.00380	-0.00378
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00380	-0.00380	-0.00378

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00175	0.00174	0.00171
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00168	0.00168	0.00168
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00380	0.00381	0.00378
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00380	0.00381	0.00378

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__buf_1	7.93650
sky130_osu_sc_15T_ls__buf_2	10.37850
sky130_osu_sc_15T_ls__buf_4	15.26250
sky130_osu_sc_15T_ls__buf_6	20.14650
sky130_osu_sc_15T_ls__buf_8	25.03050
sky130_osu_sc_15T_ls__buf_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__buf_1	0.00426	0.11861
sky130_osu_sc_15T_ls__buf_2	0.00430	0.23618
sky130_osu_sc_15T_ls__buf_4	0.00429	0.45485
sky130_osu_sc_15T_ls__buf_6	0.00092	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00429	0.87893
sky130_osu_sc_15T_ls__buf_l	0.00329	0.07380

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00103	0.00103
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00154	0.00180
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00257	0.00335
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00462	0.00645
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00591	0.00591

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__buf_1	**A->Y (RR)**	0.06205	0.18806	0.64511
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.07035	0.18752	0.69300
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.09502	0.20991	0.77248
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.14245	0.26028	0.89539
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.07134	0.21077	0.64080

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__buf_1	**A->Y (FF)**	0.06848	0.18918	0.62513
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.08239	0.20128	0.70139
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.11682	0.23665	0.79337
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.18684	0.31256	0.92451
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.07933	0.20206	0.60817

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00425	0.00373	0.00393
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00859	0.00828	0.00840
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01816	0.01854	0.01873
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03731	0.03835	0.03945
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00317	0.00275	0.00293

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.01100	0.01078	0.01119
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01412	0.01441	0.01477
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02177	0.02265	0.02354
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03751	0.03860	0.04109
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00842	0.00817	0.00843

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00070	-0.00071	-0.00071

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
	0.00070	0.00071	0.00071

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__dffr_1	53.11350
sky130_osu_sc_15T_ls__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_ls__dffr_1	0.00403	0.00403	0.01181	0.11043	0.10678
sky130_osu_sc_15T_ls__dffr_l	0.00403	0.00403	0.01181	0.07320	0.07022

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00938	0.01394
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.01426	0.01882

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RR)	0.35260	0.60077	1.50630
	QN->Q (FR)	0.03779	0.20820	0.97958
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.34165	0.60095	1.42738
	QN->Q (FR)	0.04262	0.22090	0.95049

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RF)	0.32413	0.56288	1.51642
	QN->Q (RF)	0.02591	0.14321	0.67496
	RN->Q (FF)	0.23707	0.49909	1.58595
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.33107	0.58866	1.47171
	QN->Q (RF)	0.02646	0.13976	0.60957
	RN->Q (FF)	0.24459	0.52561	1.54083

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->QN (RR)	0.28854	0.42043	0.87783
	RN->QN (FR)	0.20139	0.35606	0.94794
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.29177	0.43526	0.87582
	RN->QN (FR)	0.20498	0.37156	0.94583

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	**CK->QN (RF)**	0.29846	0.41723	0.73219
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.28079	0.39636	0.66967

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_ls__dffr_1	hold	CK (R)	-0.07384	-0.07657	-0.11192
	setup	CK (R)	0.27662	0.27052	0.37089
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.07650	-0.07657	-0.11230
	setup	CK (R)	0.27687	0.27161	0.37261

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.13293	-0.19694	-0.61735
	setup	CK (R)	0.15977	0.20932	0.63213
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.13490	-0.19363	-0.61507
	setup	CK (R)	0.15979	0.20927	0.63215

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.07384	-0.07657	-0.11192
	setup	CK (R)	0.27662	0.27052	0.37089
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.07650	-0.07657	-0.11230
	setup	CK (R)	0.27687	0.27161	0.37261

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.13293	-0.19694	-0.61735
	setup	CK (R)	0.15977	0.20932	0.63213
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.13490	-0.19363	-0.61507
	setup	CK (R)	0.15979	0.20927	0.63215

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.23981	0.23523	0.32718
	removal	CK (R)	-0.05618	-0.06436	-0.06771
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.23918	0.23647	0.32961
	removal	CK (R)	-0.05618	-0.06436	-0.06771

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.23981	0.23523	0.32718
	removal	CK (R)	-0.05618	-0.06436	-0.06771
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.23918	0.23647	0.32961
	removal	CK (R)	-0.05618	-0.06436	-0.06771

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	RN ()	0.13955	0.17997	0.97290
	min_pulse_width	RN ()	0.13955	0.17997	0.97290
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.13709	0.17668	0.97290
	min_pulse_width	RN ()	0.13709	0.17668	0.97290

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	CK ()	0.16431	0.17668	0.97290
	min_pulse_width	CK ()	0.16548	0.15365	0.97290
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.15057	0.16681	0.97290
	min_pulse_width	CK ()	0.15983	0.15036	0.97290

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	CK ()	0.34968	0.35764	0.97290
	min_pulse_width	CK ()	0.12977	0.17339	0.97290
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.35022	0.36093	0.97290
	min_pulse_width	CK ()	0.12977	0.17339	0.97290

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01065	0.00985	0.00785
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00931	0.00856	0.00752

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01260	0.01193	0.01009
	RN	-0.00145	-0.01722	-0.08945
	RN	0.02901	0.02855	0.02660
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01125	0.01071	0.00986
	RN	-0.00145	-0.01346	-0.05930
	RN	0.02764	0.02731	0.02638

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01260	0.01194	0.01016
	RN	-0.00145	-0.01688	-0.08649
	RN	0.02901	0.02855	0.02667
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01125	0.01072	0.00991
	RN	-0.00145	-0.01313	-0.05688
	RN	0.02764	0.02731	0.02644

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01061	0.00982	0.00780
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00928	0.00852	0.00744

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00338	-0.00360	-0.00361
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01319	0.01272	0.01225
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00560	0.00516	0.00488
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00338	-0.00360	-0.00361
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01319	0.01272	0.01225
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00560	0.00516	0.00488

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00361	0.00364	0.00361
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02201	0.02177	0.02147
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01055	0.01031	0.01020
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00361	0.00364	0.00361
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02202	0.02177	0.02147
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01055	0.01031	0.01020

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00401	0.00347	0.00349
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01204	0.01134	0.01109
sky130_osu_sc_15T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00401	0.00347	0.00349
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01204	0.01133	0.01108

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01038	0.00999	0.01031
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02181	0.02131	0.02132
sky130_osu_sc_15T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01038	0.00999	0.01031
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02181	0.02131	0.02131

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00099	-0.00158	-0.00163
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00652	0.00551	0.00493
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00131	-0.00195	-0.00194
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00099	-0.00158	-0.00163
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00652	0.00551	0.00493
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00131	-0.00195	-0.00194

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01583	0.01537	0.01563
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03428	0.03357	0.03130
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02601	0.02553	0.02536
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03342	0.03241	0.03276
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01810	0.01770	0.01787
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01583	0.01537	0.01563
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03428	0.03357	0.03130
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02601	0.02553	0.02536
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03342	0.03241	0.03276
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01810	0.01770	0.01787

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__dffsr_1	57.99750
sky130_osu_sc_15T_ls__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_ls__dffsr_1	0.00399	0.00404	0.00869	0.01204	0.12239	0.11843
sky130_osu_sc_15T_ls__dffsr_l	0.00399	0.00404	0.00869	0.01204	0.07351	0.07036

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00442	0.00563
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00930	0.01051

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RR)	0.34063	0.59132	1.56938
	QN->Q (FR)	0.03323	0.19323	0.94037
	RN->Q (RR)	0.27460	0.53017	1.51782
	SN->Q (FR)	0.25510	0.52381	1.65344
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.34063	0.59841	1.43739
	QN->Q (FR)	0.04264	0.22101	0.95150
	RN->Q (RR)	0.27516	0.53841	1.38699
	SN->Q (FR)	0.25579	0.53210	1.51907

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RF)	0.37062	0.61654	1.62708
	QN->Q (RF)	0.02564	0.14757	0.71490
	RN->Q (FF)	0.24758	0.51254	1.66581
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.38341	0.64496	1.53358
	QN->Q (RF)	0.02641	0.13970	0.61021
	RN->Q (FF)	0.26039	0.54190	1.57260

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RR)	0.33507	0.46973	0.94037
	RN->QN (FR)	0.21262	0.36574	0.97953
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.34347	0.49042	0.93401
	RN->QN (FR)	0.22076	0.38728	0.97335

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RF)	0.29201	0.41222	0.76265
	RN->QN (RF)	0.22639	0.35087	0.71126
	SN->QN (FF)	0.20696	0.34452	0.84727
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.28274	0.39625	0.67797
	RN->QN (RF)	0.21759	0.33543	0.62781
	SN->QN (FF)	0.19830	0.32918	0.76030

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_ls__dffsr_1	hold	CK (R)	-0.07351	-0.07500	-0.11838
	setup	CK (R)	0.26068	0.25142	0.35110
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.07690	-0.07500	-0.11783
	setup	CK (R)	0.25704	0.25134	0.35095

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.15610	-0.21254	-0.64906
	setup	CK (R)	0.19040	0.22929	0.66219
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15309	-0.21312	-0.65090
	setup	CK (R)	0.19078	0.22929	0.66185

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.07351	-0.07500	-0.11838
	setup	CK (R)	0.26068	0.25142	0.35110
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.07690	-0.07500	-0.11783
	setup	CK (R)	0.25704	0.25134	0.35095

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.15610	-0.21254	-0.64906
	setup	CK (R)	0.19040	0.22929	0.66219
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15309	-0.21312	-0.65090
	setup	CK (R)	0.19078	0.22929	0.66185

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.19834	0.19618	0.28573
	removal	CK (R)	-0.02689	-0.02851	-0.03452
	hold	SN (R)	-0.20094	-0.23606	-0.52576
	setup	SN (R)	0.22663	0.26000	0.64936
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.19911	0.19610	0.28190
	removal	CK (R)	-0.02689	-0.02851	-0.03452
	hold	SN (R)	-0.19274	-0.22808	-0.51071
	setup	SN (R)	0.22626	0.26000	0.63470

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.19834	0.19618	0.28573
	removal	CK (R)	-0.02689	-0.02851	-0.03452
	hold	SN (R)	-0.20308	-0.23606	-0.52576
	hold	SN (R)	-0.20094	-0.23872	-0.52984
	setup	SN (R)	0.22663	0.26000	0.64536
	setup	SN (R)	0.22434	0.26000	0.64936
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.19911	0.19610	0.28190
	removal	CK (R)	-0.02689	-0.02851	-0.03452
	hold	SN (R)	-0.19274	-0.22808	-0.51108
	hold	SN (R)	-0.19287	-0.22860	-0.51071
	setup	SN (R)	0.22626	0.26000	0.62623
	setup	SN (R)	0.21381	0.24708	0.63470

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	RN ()	0.16308	0.19313	0.97290
	min_pulse_width	RN ()	0.16581	0.19642	0.97290
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.16308	0.19313	0.97290
	min_pulse_width	RN ()	0.16035	0.19313	0.97290

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.04477	0.05105	0.12487
	removal	CK (R)	-0.01741	-0.03103	-0.09431
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.04447	0.05148	0.12244
	removal	CK (R)	-0.01741	-0.03103	-0.09676

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.04477	0.05105	0.12487
	removal	CK (R)	-0.01741	-0.03103	-0.09431
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.04447	0.05148	0.12244
	removal	CK (R)	-0.01741	-0.03103	-0.09676

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	SN ()	0.20312	0.24577	0.97290
	min_pulse_width	SN ()	0.20580	0.24906	0.97290
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.20312	0.24577	0.97290
	min_pulse_width	SN ()	0.19170	0.23590	0.97290

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	CK ()	0.15136	0.16023	0.97290
	min_pulse_width	CK ()	0.18610	0.17668	0.97290
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.14519	0.15365	0.97290
	min_pulse_width	CK ()	0.18517	0.17339	0.97290

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	CK ()	0.33110	0.34119	0.97290
	min_pulse_width	CK ()	0.16308	0.19313	0.97290
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.33110	0.34119	0.97290
	min_pulse_width	CK ()	0.16308	0.19313	0.97290

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01345	0.01268	0.01032
	RN	0.02518	0.02466	0.02226
	SN	-0.00145	-0.01832	-0.09913
	SN	0.02807	0.02760	0.02501
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01225	0.01157	0.01051
	RN	0.02396	0.02354	0.02244
	SN	-0.00145	-0.01349	-0.05954
	SN	0.02686	0.02647	0.02515

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01443	0.01401	0.01283
	RN	-0.00145	-0.01832	-0.09913
	RN	0.03016	0.02988	0.02845
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01317	0.01270	0.01190
	RN	-0.00145	-0.01349	-0.05954
	RN	0.02887	0.02854	0.02754

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01443	0.01401	0.01290
	RN	-0.00145	-0.01796	-0.09593
	RN	0.03016	0.02988	0.02849
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01318	0.01270	0.01196
	RN	-0.00145	-0.01314	-0.05699
	RN	0.02887	0.02854	0.02754

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01341	0.01265	0.01031
	RN	0.02514	0.02464	0.02227
	SN	-0.00145	-0.01796	-0.09589
	SN	0.02804	0.02757	0.02503
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01221	0.01154	0.01039
	RN	0.02392	0.02350	0.02236
	SN	-0.00145	-0.01314	-0.05696
	SN	0.02682	0.02643	0.02511

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00345	-0.00361	-0.00361
	(!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)	0.01719	0.01675	0.01631
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00643	0.00601	0.00574
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00641	0.00600	0.00572
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00648	0.00607	0.00579
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00345	-0.00361	-0.00361
	(!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)	0.01719	0.01675	0.01631
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00643	0.00601	0.00574
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00641	0.00600	0.00572
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00648	0.00607	0.00579

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00362	0.00364	0.00361
	(!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)	0.02505	0.02482	0.02431
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01133	0.01112	0.01101
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01135	0.01114	0.01102
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01128	0.01107	0.01095
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00362	0.00364	0.00361
	(!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)	0.02504	0.02480	0.02430
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01132	0.01111	0.01099
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01134	0.01113	0.01101
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01126	0.01105	0.01094

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__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)	0.00315	0.00262	0.00260
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01439	0.01368	0.01336
sky130_osu_sc_15T_ls__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)	0.00315	0.00262	0.00260
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01439	0.01369	0.01337

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__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)	0.01136	0.01097	0.01128
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02328	0.02272	0.02261
sky130_osu_sc_15T_ls__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)	0.01134	0.01096	0.01126
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02327	0.02271	0.02260

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__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)	-0.00841	-0.00845	-0.00840
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00877	-0.00886	-0.00882
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00840	-0.00843	-0.00841
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00485	0.00439	0.00409
sky130_osu_sc_15T_ls__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)	-0.00841	-0.00845	-0.00840
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00875	-0.00884	-0.00880
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00839	-0.00842	-0.00840
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00486	0.00440	0.00410

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__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)	0.00841	0.00846	0.00840
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00885	0.00887	0.00882
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00843	0.00846	0.00841
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01808	0.01774	0.01748
sky130_osu_sc_15T_ls__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)	0.00841	0.00846	0.00840
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00883	0.00885	0.00880
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00842	0.00845	0.00840
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01807	0.01773	0.01747

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00099	-0.00157	-0.00163
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00751	0.00656	0.00602
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00744	0.00649	0.00594
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00111	-0.00174	-0.00173
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00455	0.00334	0.00324
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00099	-0.00157	-0.00163
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00749	0.00655	0.00600
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00742	0.00648	0.00593
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00111	-0.00175	-0.00173
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00455	0.00334	0.00324

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_15T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03841	0.03772	0.03582
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01589	0.01543	0.01568
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02660	0.02616	0.02594
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02668	0.02623	0.02605
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03638	0.03535	0.03535
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01795	0.01755	0.01771
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02145	0.02053	0.02106
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03841	0.03773	0.03582
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01589	0.01543	0.01569
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02660	0.02616	0.02594
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02668	0.02623	0.02605
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03637	0.03534	0.03535
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01794	0.01755	0.01771
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02144	0.02052	0.02105

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__dffs_1	48.22950
sky130_osu_sc_15T_ls__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_ls__dffs_1	0.00401	0.00703	0.01183	0.11109	0.10689
sky130_osu_sc_15T_ls__dffs_l	0.00401	0.00703	0.01183	0.07364	0.07026

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.01065	0.02481
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.01553	0.02969

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RR)	0.26627	0.50271	1.40977
	QN->Q (FR)	0.03780	0.20704	0.98026
	SN->Q (FR)	0.21396	0.47684	1.57423
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.26356	0.51315	1.34197
	QN->Q (FR)	0.04259	0.22083	0.95086
	SN->Q (FR)	0.21186	0.48800	1.50194

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RF)	0.35852	0.60206	1.55987
	QN->Q (RF)	0.02577	0.14268	0.67438
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.36361	0.62485	1.51258
	QN->Q (RF)	0.02636	0.13925	0.60957

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RR)	0.32182	0.45849	0.91621
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.32347	0.47029	0.91117

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RF)	0.21769	0.32552	0.63237
	SN->QN (FF)	0.16519	0.29886	0.79966
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.20820	0.31395	0.58204
	SN->QN (FF)	0.15583	0.28757	0.74307

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_ls__dffs_1	hold	CK (R)	-0.05483	-0.06067	-0.09686
	setup	CK (R)	0.19388	0.19034	0.29977
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.05687	-0.05881	-0.09595
	setup	CK (R)	0.19522	0.19053	0.30061

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.13571	-0.19770	-0.62145
	setup	CK (R)	0.17535	0.21474	0.63427
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.13594	-0.19595	-0.61933
	setup	CK (R)	0.17726	0.21474	0.63413

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.05483	-0.06067	-0.09686
	setup	CK (R)	0.19388	0.19034	0.29977
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.05687	-0.05881	-0.09595
	setup	CK (R)	0.19522	0.19053	0.30061

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.13571	-0.19770	-0.62145
	setup	CK (R)	0.17535	0.21474	0.63427
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.13594	-0.19595	-0.61933
	setup	CK (R)	0.17726	0.21474	0.63413

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	recovery	CK (R)	0.04497	0.05155	0.10690
	removal	CK (R)	-0.01855	-0.02775	-0.07639
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.04471	0.05146	0.10570
	removal	CK (R)	-0.01855	-0.02775	-0.07639

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	recovery	CK (R)	0.04497	0.05155	0.10690
	removal	CK (R)	-0.01855	-0.02775	-0.07639
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.04471	0.05146	0.10570
	removal	CK (R)	-0.01855	-0.02775	-0.07639

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	SN ()	0.15031	0.21945	0.97290
	min_pulse_width	SN ()	0.15659	0.21945	0.97290
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.14981	0.20958	0.97290
	min_pulse_width	SN ()	0.14682	0.20958	0.97290

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	CK ()	0.11376	0.14049	0.97290
	min_pulse_width	CK ()	0.17533	0.16352	0.97290
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.10862	0.13390	0.97290
	min_pulse_width	CK ()	0.16968	0.16023	0.97290

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	CK ()	0.26647	0.27867	0.97290
	min_pulse_width	CK ()	0.14713	0.17997	0.97290
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.26647	0.27867	0.97290
	min_pulse_width	CK ()	0.14713	0.17997	0.97290

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01064	0.00986	0.00783
	SN	-0.00145	-0.01728	-0.08998
	SN	0.02359	0.02310	0.02077
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00929	0.00855	0.00752
	SN	-0.00145	-0.01351	-0.05965
	SN	0.02223	0.02179	0.02048

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01253	0.01191	0.01012
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01119	0.01068	0.00988

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01253	0.01191	0.01021
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01119	0.01068	0.00993

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01061	0.00983	0.00776
	SN	-0.00145	-0.01689	-0.08654
	SN	0.02355	0.02308	0.02077
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00926	0.00852	0.00737
	SN	-0.00145	-0.01313	-0.05688
	SN	0.02219	0.02174	0.02041

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00350	-0.00366	-0.00367
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01268	0.01220	0.01178
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00548	0.00505	0.00477
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00350	-0.00366	-0.00367
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01268	0.01220	0.01178
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00548	0.00505	0.00477

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00367	0.00369	0.00367
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02181	0.02156	0.02123
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01081	0.01057	0.01045
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00367	0.00369	0.00367
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02181	0.02156	0.02123
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01081	0.01057	0.01045

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00607	-0.00607	-0.00607
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00458	0.00418	0.00411
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00607	-0.00607	-0.00607
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00458	0.00418	0.00411

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00607	0.00611	0.00607
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01237	0.01195	0.01192
sky130_osu_sc_15T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00607	0.00611	0.00607
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01237	0.01195	0.01192

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00102	-0.00160	-0.00166
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00126	-0.00190	-0.00189
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00355	0.00231	0.00227
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00102	-0.00160	-0.00166
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00126	-0.00190	-0.00189
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00355	0.00231	0.00227

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03385	0.03313	0.03249
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01585	0.01539	0.01565
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03307	0.03199	0.03227
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01803	0.01763	0.01780
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02082	0.01990	0.02049
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03384	0.03313	0.03249
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01585	0.01539	0.01565
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03307	0.03199	0.03227
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01803	0.01763	0.01780
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02082	0.01990	0.02049

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__dff_1	40.29300
sky130_osu_sc_15T_ls__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_ls__dff_1	0.00417	0.01174	0.12364	0.11868
sky130_osu_sc_15T_ls__dff_l	0.00417	0.01173	0.06752	0.06400

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00384	0.00418
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00872	0.00906

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RR)	0.21738	0.45342	1.43493
	QN->Q (FR)	0.03301	0.19345	0.94301
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.22589	0.46628	1.25458
	QN->Q (FR)	0.04760	0.23668	0.98750

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RF)	0.30993	0.55240	1.56914
	QN->Q (RF)	0.02553	0.14786	0.71701
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.32821	0.58454	1.43177
	QN->Q (RF)	0.02646	0.13615	0.58395

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RR)	0.27543	0.40537	0.87325
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.28836	0.43318	0.86284

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RF)	0.17430	0.27916	0.61958
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.17086	0.26737	0.51872

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_ls__dff_1	hold	CK (R)	-0.04985	-0.05273	-0.09177
	setup	CK (R)	0.14506	0.14023	0.25959
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.05009	-0.05452	-0.09396
	setup	CK (R)	0.14595	0.13903	0.25863

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	hold	CK (R)	-0.13115	-0.19511	-0.62553
	setup	CK (R)	0.15541	0.21124	0.64104
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.12890	-0.19723	-0.62831
	setup	CK (R)	0.15546	0.21114	0.64207

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	min_pulse_width	CK ()	0.09201	0.13062	0.97290
	min_pulse_width	CK ()	0.16311	0.15365	0.97290
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.08850	0.13062	0.97290
	min_pulse_width	CK ()	0.15746	0.15036	0.97290

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	min_pulse_width	CK ()	0.21629	0.22603	0.97290
	min_pulse_width	CK ()	0.12250	0.17339	0.97290
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.21629	0.22603	0.97290
	min_pulse_width	CK ()	0.12250	0.17339	0.97290

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01127	0.01034	0.00800
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01008	0.00927	0.00831

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01275	0.01231	0.01115
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01148	0.01088	0.00980

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01275	0.01231	0.01122
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01148	0.01089	0.00985

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01123	0.01031	0.00802
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01003	0.00924	0.00821

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00337	-0.00359	-0.00360
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01179	0.01137	0.01108
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00337	-0.00359	-0.00360
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01180	0.01137	0.01109

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00360	0.00363	0.00360
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02253	0.02221	0.02192
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00360	0.00363	0.00360
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02254	0.02222	0.02192

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00102	-0.00159	-0.00165
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00125	-0.00188	-0.00186
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00102	-0.00159	-0.00165
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00125	-0.00188	-0.00186

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01576	0.01530	0.01556
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03298	0.03229	0.03183
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03357	0.03250	0.03276
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01793	0.01754	0.01770
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01576	0.01530	0.01556
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03299	0.03230	0.03184
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03358	0.03250	0.03277
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01793	0.01754	0.01770

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__inv_1	5.49450
sky130_osu_sc_15T_ls__inv_10	27.47250
sky130_osu_sc_15T_ls__inv_2	7.93650
sky130_osu_sc_15T_ls__inv_3	10.37850
sky130_osu_sc_15T_ls__inv_4	12.82050
sky130_osu_sc_15T_ls__inv_6	17.70450
sky130_osu_sc_15T_ls__inv_8	22.58850
sky130_osu_sc_15T_ls__inv_l	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__inv_1	0.00408	0.11655
sky130_osu_sc_15T_ls__inv_10	0.03757	1.08539
sky130_osu_sc_15T_ls__inv_2	0.00774	0.23208
sky130_osu_sc_15T_ls__inv_3	0.01152	0.33511
sky130_osu_sc_15T_ls__inv_4	0.01522	0.45943
sky130_osu_sc_15T_ls__inv_6	0.02279	0.66290
sky130_osu_sc_15T_ls__inv_8	0.03020	0.87762
sky130_osu_sc_15T_ls__inv_l	0.00305	0.06593

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00051	0.00078
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00513	0.00774
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00103	0.00155
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00154	0.00233
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00205	0.00310
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00308	0.00465
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00411	0.00620
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00295	0.00555

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__inv_1	**A->Y (FR)**	0.03173	0.18079	0.86534
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.04443	0.14432	0.88773
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.02555	0.15599	0.86029
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.02814	0.14997	0.86616
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.02867	0.14495	0.87513
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.03241	0.14033	0.86796
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.03800	0.14095	0.87571
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.04172	0.20633	0.86054

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__inv_1	**A->Y (RF)**	0.02275	0.12892	0.61571
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.03380	0.10342	0.63470
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.01882	0.11209	0.61591
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02064	0.10808	0.62471
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02063	0.10350	0.63052
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.02522	0.10075	0.62727
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.02950	0.10119	0.63222
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.02423	0.12360	0.52309

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00574	0.00570	0.00579
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.04871	0.04994	0.05182
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01017	0.01027	0.01052
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01560	0.01565	0.01617
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02002	0.02019	0.02091
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02962	0.03003	0.03128
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03917	0.03988	0.04157
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00429	0.00420	0.00424

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00119	-0.00123	-0.00118
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01934	-0.01928	-0.01614
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00370	-0.00357	-0.00339
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00496	-0.00488	-0.00440
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00758	-0.00733	-0.00660
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01157	-0.01132	-0.00984
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01564	-0.01536	-0.01304
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00075	-0.00080	-0.00081

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_15T_ls__mux2_1	0.02792	0.02778	0.00833	0.02228

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00147	0.00229

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__mux2_1	A0->Y (RR)	-	0.01590	0.07016	0.22779
	A1->Y (RR)	-	0.01782	0.07219	0.22949
	S0->Y (RR)	(!A0 * A1)	0.05016	0.11241	0.22745
	S0->Y (FR)	(A0 * !A1)	0.04057	0.12704	0.38482

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__mux2_1	A0->Y (FF)	-	0.01601	0.06794	0.21413
	A1->Y (FF)	-	0.01486	0.06629	0.21250
	S0->Y (FF)	(!A0 * A1)	0.07008	0.14660	0.36983
	S0->Y (RF)	(A0 * !A1)	0.02600	0.08535	0.23784

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00581	-0.00581	-0.00583
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00394	-0.00394	-0.00395
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00696	0.00658	0.00701
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00390	-0.00446	-0.00436

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00582	0.00581	0.00583
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00394	0.00394	0.00395
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00106	0.00054	0.00070
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01545	0.01502	0.01539

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00145	-0.00144	-0.00144

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00145	0.00144	0.00144

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00173	-0.00172	-0.00173

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00173	0.00172	0.00173

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00146	-0.00201	-0.00181
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00140	-0.00197	-0.00182

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01178	0.01142	0.01172
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01063	0.01027	0.01067

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__nand2_1	7.93650
sky130_osu_sc_15T_ls__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nand2_1	0.00408	0.00406	0.11556
sky130_osu_sc_15T_ls__nand2_l	0.00305	0.00305	0.06521

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00053	0.00155
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00297	0.01109

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nand2_1	A->Y (FR)	0.03311	0.18252	0.86713
	B->Y (FR)	0.03914	0.18609	0.86033
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.04322	0.20768	0.85923
	B->Y (FR)	0.05176	0.21564	0.86562

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nand2_1	A->Y (RF)	0.03273	0.16320	0.77191
	B->Y (RF)	0.03728	0.16480	0.74952
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.03510	0.15876	0.64848
	B->Y (RF)	0.03913	0.15843	0.62032

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00612	0.00607	0.00615
	B	0.00000	0.00000	0.00000
	B	0.00768	0.00750	0.00760
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00452	0.00443	0.00445
	B	0.00000	0.00000	0.00000
	B	0.00562	0.00550	0.00552

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00074	-0.00082	-0.00081
	B	0.00000	0.00000	0.00000
	B	-0.00069	-0.00080	-0.00080
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00049	-0.00058	-0.00060
	B	0.00000	0.00000	0.00000
	B	-0.00047	-0.00057	-0.00059

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00416	-0.00417	-0.00416
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00289	-0.00290	-0.00289

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00416	0.00417	0.00416
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00289	0.00290	0.00290

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00385	-0.00386	-0.00385
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00268	-0.00269	-0.00268

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00385	0.00387	0.00385
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00269	0.00269	0.00268

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__nor2_1	7.93650
sky130_osu_sc_15T_ls__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nor2_1	0.00403	0.00434	0.06062
sky130_osu_sc_15T_ls__nor2_l	0.00294	0.00327	0.03724

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00054	0.00078
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00302	0.00555

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nor2_1	A->Y (FR)	0.06911	0.23662	0.86317
	B->Y (FR)	0.05338	0.21782	0.85694
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.08368	0.26663	0.85904
	B->Y (FR)	0.06965	0.25007	0.86198

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nor2_1	A->Y (RF)	0.03070	0.11747	0.44852
	B->Y (RF)	0.02420	0.10884	0.43599
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.03040	0.11385	0.39433
	B->Y (RF)	0.02554	0.10702	0.38306

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00827	0.00815	0.00814
	B	0.00000	0.00000	0.00000
	B	0.00626	0.00610	0.00615
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00583	0.00572	0.00569
	B	0.00000	0.00000	0.00000
	B	0.00460	0.00445	0.00446

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00063	0.00036	0.00026
	B	0.00000	0.00000	0.00000
	B	-0.00093	-0.00095	-0.00104
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00038	0.00022	0.00016
	B	0.00000	0.00000	0.00000
	B	-0.00055	-0.00058	-0.00065

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00341	-0.00363	-0.00364
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00230	-0.00243	-0.00244

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00364	0.00365	0.00365
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00243	0.00244	0.00245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00167	-0.00168	-0.00167
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00114	-0.00114	-0.00114

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00170	0.00170	0.00169
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00116	0.00116	0.00115

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__oai21_l	0.00408	0.00415	0.00346	0.05654

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00245	0.00632

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai21_l	A0->Y (FR)	0.07533	0.23820	0.85858
	A1->Y (FR)	0.09524	0.26123	0.86985
	B0->Y (FR)	0.05063	0.19838	0.77267

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai21_l	A0->Y (RF)	0.04517	0.14281	0.50383
	A1->Y (RF)	0.05350	0.15001	0.50741
	B0->Y (RF)	0.03521	0.13985	0.54418

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00848	0.00827	0.00826
	A1	0.00000	0.00000	0.00000
	A1	0.01051	0.01035	0.01029
	B0	0.00709	0.00691	0.00690

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00021	0.00007	-0.00004
	A1	0.00000	0.00000	0.00000
	A1	0.00176	0.00147	0.00134
	B0	0.00255	0.00244	0.00235

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00168	-0.00168	-0.00169
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00347	-0.00364	-0.00367
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00374	-0.00376	-0.00374

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00172	0.00171	0.00170
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00366	0.00367	0.00367
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00374	0.00376	0.00374

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00332	-0.00355	-0.00355
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00347	-0.00362	-0.00362
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00370	-0.00371	-0.00370

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00356	0.00358	0.00355
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00363	0.00365	0.00362
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00370	0.00371	0.00370

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00301	-0.00302	-0.00301

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00301	0.00302	0.00301

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__oai22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_l	0.00393	0.00418	0.00430	0.00418	0.05593

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_l	0.00000	0.00082	0.00155

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai22_l	A0->Y (FR)	0.10368	0.26650	0.86093
	A1->Y (FR)	0.08763	0.24640	0.85362
	B0->Y (FR)	0.05979	0.21859	0.82566
	B1->Y (FR)	0.07715	0.23894	0.83322

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai22_l	A0->Y (RF)	0.07615	0.17751	0.54175
	A1->Y (RF)	0.06118	0.16130	0.52211
	B0->Y (RF)	0.05182	0.15689	0.56197
	B1->Y (RF)	0.06744	0.17428	0.58493

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.01368	0.01352	0.01346
	A1	0.01161	0.01138	0.01136
	B0	0.00870	0.00851	0.00851
	B1	0.01084	0.01067	0.01060

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00287	0.00260	0.00245
	A1	0.00149	0.00134	0.00115
	B0	0.00148	0.00136	0.00118
	B1	0.00290	0.00263	0.00247

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00340	-0.00363	-0.00364
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00340	-0.00363	-0.00364
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00348	-0.00363	-0.00364
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00371	-0.00372	-0.00371

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00364	0.00365	0.00365
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00364	0.00365	0.00365
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00364	0.00366	0.00366
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00371	0.00373	0.00371

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00166	-0.00167	-0.00166
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00166	-0.00167	-0.00166
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00342	-0.00358	-0.00357
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00368	-0.00369	-0.00368

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00169	0.00169	0.00168
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00169	0.00169	0.00168
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00360	0.00362	0.00357
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00368	0.00369	0.00368

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00164	-0.00165	-0.00164
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00164	-0.00166	-0.00164
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00384	-0.00400	-0.00399
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00409	-0.00410	-0.00409

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00167	0.00168	0.00166
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00167	0.00168	0.00166
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00402	0.00403	0.00399
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00410	0.00410	0.00409

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00334	-0.00356	-0.00357
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00334	-0.00356	-0.00357
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00395	-0.00411	-0.00411
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00417	-0.00418	-0.00417

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00356	0.00359	0.00358
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00356	0.00359	0.00358
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00410	0.00413	0.00413
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00417	0.00419	0.00417

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__or2_1	10.37850
sky130_osu_sc_15T_ls__or2_2	12.82050
sky130_osu_sc_15T_ls__or2_4	17.70450
sky130_osu_sc_15T_ls__or2_8	27.47250
sky130_osu_sc_15T_ls__or2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__or2_1	0.00437	0.00417	0.11864
sky130_osu_sc_15T_ls__or2_2	0.00436	0.00417	0.23582
sky130_osu_sc_15T_ls__or2_4	0.00436	0.00417	0.45262
sky130_osu_sc_15T_ls__or2_8	0.00437	0.00418	0.85828
sky130_osu_sc_15T_ls__or2_l	0.00334	0.00311	0.06747

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00093	0.00128
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00131	0.00205
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00207	0.00360
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00360	0.00670
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00468	0.00627

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (RR)	0.07459	0.20616	0.68686
	B->Y (RR)	0.06594	0.19440	0.65495
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.08174	0.20184	0.72690
	B->Y (RR)	0.07262	0.19157	0.69887
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.10673	0.22261	0.80014
	B->Y (RR)	0.09745	0.21358	0.77866
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.15406	0.27161	0.90957
	B->Y (RR)	0.14475	0.26287	0.89348
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.08305	0.22964	0.67111
	B->Y (RR)	0.07515	0.21878	0.64273

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (FF)	0.12793	0.25737	0.73351
	B->Y (FF)	0.10661	0.23428	0.70540
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.15491	0.28315	0.79926
	B->Y (FF)	0.13372	0.25951	0.78211
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.21983	0.35264	0.91402
	B->Y (FF)	0.19871	0.32869	0.90663
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.35067	0.49429	1.10558
	B->Y (FF)	0.32954	0.47003	1.09805
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.14985	0.27448	0.67770
	B->Y (FF)	0.12587	0.25056	0.66101

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00601	0.00542	0.00519
	B	0.00000	0.00000	0.00000
	B	0.00460	0.00431	0.00439
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01041	0.01016	0.00990
	B	0.00000	0.00000	0.00000
	B	0.00893	0.00906	0.00921
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01999	0.02022	0.02026
	B	0.00000	0.00000	0.00000
	B	0.01847	0.01928	0.01987
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03929	0.04012	0.04106
	B	0.00000	0.00000	0.00000
	B	0.03776	0.03917	0.04118
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00435	0.00396	0.00389
	B	0.00000	0.00000	0.00000
	B	0.00344	0.00321	0.00330

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.01357	0.01337	0.01333
	B	0.00000	0.00000	0.00000
	B	0.01119	0.01117	0.01152
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01662	0.01693	0.01702
	B	0.00000	0.00000	0.00000
	B	0.01427	0.01461	0.01510
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02463	0.02502	0.02575
	B	0.00000	0.00000	0.00000
	B	0.02205	0.02255	0.02370
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04185	0.04087	0.04312
	B	0.00000	0.00000	0.00000
	B	0.03928	0.03830	0.04091
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00999	0.00965	0.00959
	B	0.00000	0.00000	0.00000
	B	0.00838	0.00824	0.00846

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00344	-0.00365	-0.00365
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00344	-0.00365	-0.00365
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00344	-0.00365	-0.00365
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00344	-0.00365	-0.00365
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00232	-0.00246	-0.00246

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00365	0.00368	0.00365
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00365	0.00368	0.00365
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00365	0.00368	0.00365
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00365	0.00368	0.00365
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00246	0.00247	0.00246

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00168	-0.00168	-0.00169
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00169	-0.00168	-0.00169
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00169	-0.00168	-0.00169
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00169	-0.00168	-0.00169
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00117	-0.00117	-0.00117

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00172	0.00171	0.00170
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00172	0.00171	0.00170
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00172	0.00171	0.00170
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00172	0.00171	0.00170
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00119	0.00119	0.00117

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__tbufi_1	10.37850
sky130_osu_sc_15T_ls__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tbufi_1	0.00433	0.00554	0.06063
sky130_osu_sc_15T_ls__tbufi_l	0.00327	0.00424	0.03693

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00064	0.00155
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00313	0.01109

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (FR)	0.05063	0.21455	0.85085
	OE->Y (FR)	0.05326	0.11526	0.37265
	OE->Y (RR)	0.08892	0.23234	0.64544
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.06709	0.24704	0.85614
	OE->Y (FR)	0.06184	0.12471	0.37262
	OE->Y (RR)	0.10164	0.25998	0.63592

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (RF)	0.03175	0.13261	0.53159
	OE->Y (FF)	0.05391	0.11678	0.37266
	OE->Y (RF)	0.03072	0.12954	0.50098
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.03464	0.13204	0.47082
	OE->Y (FF)	0.06285	0.12546	0.37260
	OE->Y (RF)	0.03274	0.12691	0.43747

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00587	0.00572	0.00575
	OE	0.00000	0.00000	0.00000
	OE	0.00591	0.00536	0.00565
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00434	0.00418	0.00417
	OE	0.00000	0.00000	0.00000
	OE	0.00413	0.00373	0.00397

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00094	-0.00096	-0.00104
	OE	0.00000	0.00000	0.00000
	OE	0.00381	0.00326	0.00352
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00055	-0.00060	-0.00067
	OE	0.00000	0.00000	0.00000
	OE	0.00257	0.00216	0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00283	-0.00285	-0.00283
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00250	-0.00250	-0.00249
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00207	-0.00207	-0.00206
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00185	-0.00185	-0.00184

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00283	0.00285	0.00283
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00253	0.00253	0.00252
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00207	0.00207	0.00206
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00187	0.00187	0.00186

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00223	0.00168	0.00193
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00200	0.00146	0.00171
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00148	0.00108	0.00130
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00129	0.00089	0.00112

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00669	0.00620	0.00657
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00696	0.00649	0.00683
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00514	0.00478	0.00502
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00533	0.00498	0.00520

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__tnbufi_1	10.37850
sky130_osu_sc_15T_ls__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tnbufi_1	0.00432	0.00663	0.06138
sky130_osu_sc_15T_ls__tnbufi_l	0.00327	0.00478	0.03748

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00081	0.00103
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00485	0.00591

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tnbufi_1	A->Y (FR)	0.05114	0.21553	0.85699
	OE->Y (RR)	0.02912	0.07570	0.37300
	OE->Y (FR)	0.06439	0.23320	0.86167
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.06756	0.24831	0.86333
	OE->Y (RR)	0.02874	0.07564	0.37296
	OE->Y (FR)	0.07924	0.26436	0.85995

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tnbufi_1	A->Y (RF)	0.03124	0.13360	0.53503
	OE->Y (RF)	0.02887	0.07566	0.37298
	OE->Y (FF)	0.05937	0.17222	0.51131
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.03401	0.13297	0.47447
	OE->Y (RF)	0.02859	0.07561	0.37295
	OE->Y (FF)	0.06830	0.18147	0.48703

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00603	0.00589	0.00591
	OE	0.00000	0.00000	0.00000
	OE	0.01469	0.01450	0.01509
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00451	0.00435	0.00434
	OE	0.00000	0.00000	0.00000
	OE	0.01057	0.01038	0.01077

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00116	-0.00121	-0.00125
	OE	0.00000	0.00000	0.00000
	OE	0.01284	0.01264	0.01319
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00077	-0.00082	-0.00087
	OE	0.00000	0.00000	0.00000
	OE	0.00918	0.00899	0.00937

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00240	-0.00241	-0.00240
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00210	-0.00210	-0.00209
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00166	-0.00166	-0.00166
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00146	-0.00146	-0.00145

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00240	0.00241	0.00240
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00212	0.00214	0.00212
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00166	0.00166	0.00166
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00148	0.00148	0.00147

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00444	-0.00525	-0.00500
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00421	-0.00502	-0.00489
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00290	-0.00344	-0.00323
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00274	-0.00331	-0.00315

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01103	0.01084	0.01139
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01084	0.01064	0.01120
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00792	0.00775	0.00811
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00779	0.00762	0.00797

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xnor2_l	0.00858	0.00765	0.05965

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00174	0.00258

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xnor2_l	A->Y (RR)	B	0.11252	0.25749	0.67521
	A->Y (FR)	!B	0.06835	0.23074	0.85731
	B->Y (RR)	A	0.09010	0.23596	0.65157
	B->Y (FR)	!A	0.08951	0.25433	0.86739

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xnor2_l	A->Y (FF)	B	0.10245	0.22020	0.58988
	A->Y (RF)	!B	0.04412	0.14022	0.50675
	B->Y (FF)	A	0.08982	0.20809	0.57814
	B->Y (RF)	!A	0.05433	0.15180	0.52131

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00600	0.00538	0.00554
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01441	0.01382	0.01419
	B	A	0.00000	0.00000	0.00000
	B	A	0.00224	0.00175	0.00195
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01576	0.01529	0.01570

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01732	0.01659	0.01674
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00394	0.00325	0.00338
	B	A	0.00000	0.00000	0.00000
	B	A	0.01610	0.01590	0.01633
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00461	0.00380	0.00388

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
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_ls__xor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xor2_l	0.00857	0.00769	0.05872

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00174	0.00205

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xor2_l	A->Y (RR)	!B	0.11206	0.25267	0.66570
	A->Y (FR)	B	0.08336	0.24736	0.85928
	B->Y (RR)	!A	0.09488	0.24090	0.65638
	B->Y (FR)	A	0.09159	0.25644	0.86848

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xor2_l	A->Y (FF)	!B	0.09287	0.21125	0.57972
	A->Y (RF)	B	0.04491	0.14846	0.54308
	B->Y (FF)	!A	0.08737	0.20621	0.57479
	B->Y (RF)	A	0.05370	0.15221	0.51908

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01704	0.01653	0.01697
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00308	0.00190	0.00183
	B	A	0.00000	0.00000	0.00000
	B	A	0.01738	0.01694	0.01739
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00198	0.00149	0.00166

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00288	0.00196	0.00198
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01829	0.01802	0.01841
	B	A	0.00000	0.00000	0.00000
	B	A	0.00292	0.00203	0.00209
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01638	0.01625	0.01670

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__tiehi	5.49450
sky130_osu_sc_15T_ls__tielo	5.49450

Pin Capacitance Information

Cell Name	Max Cap(pf)
	Y
sky130_osu_sc_15T_ls__tiehi	0.31483
sky130_osu_sc_15T_ls__tielo	0.53018

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__tielo	0.00000	0.00000	0.00000