sky130_osu_sc_15T_ls_tt_1P50_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_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.01506	0.01505	0.01170	1.07703	0.48838	1.05641
sky130_osu_sc_15T_ls__addf_l	0.01503	0.01505	0.01169	0.67008	0.48852	0.67182

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00081	0.00086
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00126	0.00153

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)	0.21982	2.05731	24.17040
	B->CO (RR)	0.20110	1.98563	23.47180
	CI->CO (RR)	0.20894	2.06887	24.51790
	CON->CO (FR)	0.04522	0.98733	12.64270
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.22784	1.93810	19.40840
	B->CO (RR)	0.21795	1.88530	19.07790
	CI->CO (RR)	0.21714	1.95105	19.79970
	CON->CO (FR)	0.05865	1.12180	12.79620

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)	0.38258	3.00103	34.41380
	B->CO (FF)	0.34801	2.88867	33.33380
	CI->CO (FF)	0.34053	2.94522	34.39010
	CON->CO (RF)	0.02905	0.64589	8.33700
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.36720	2.51851	24.45410
	B->CO (FF)	0.33425	2.42797	23.78260
	CI->CO (FF)	0.32525	2.46253	24.44580
	CON->CO (RF)	0.03103	0.63902	7.53890

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)	0.28620	1.42310	12.62580
	B->CON (FR)	0.25456	1.35372	12.30040
	CI->CON (FR)	0.24389	1.36732	12.63250
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.27121	1.40825	12.61340
	B->CON (FR)	0.24032	1.33947	12.28810
	CI->CON (FR)	0.22918	1.35244	12.62020

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)	0.11610	0.70634	6.81049
	B->CON (RF)	0.11061	0.70278	6.95215
	CI->CON (RF)	0.10544	0.72128	7.22326
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.11149	0.70183	6.80626
	B->CON (RF)	0.10627	0.69860	6.94806
	CI->CON (RF)	0.10081	0.71711	7.21885

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)	0.53996	3.00159	29.08170
	B->S (-R)	0.53644	2.96643	28.66260
	CI->S (-R)	0.49470	2.93871	29.03380
	CON->S (RR)	0.12650	0.92677	8.27739
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.51915	2.71303	23.22890
	B->S (-R)	0.51643	2.69043	23.00040
	CI->S (-R)	0.47385	2.65009	23.19150
	CON->S (RR)	0.13136	1.01739	8.08998

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)	0.38382	1.86563	17.07080
	B->S (-F)	0.40439	1.82314	16.73030
	CI->S (-F)	0.37227	1.87250	17.41060
	CON->S (FF)	0.16953	0.87102	7.04258
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.35519	1.62778	13.26720
	B->S (-F)	0.35530	1.56681	13.13950
	CI->S (-F)	0.34387	1.63668	13.63480
	CON->S (FF)	0.15150	0.85549	6.37506

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	0.00266	0.00253	0.00259
	B	0.00329	0.00328	0.00339
	CI	0.00339	0.00347	0.00361
sky130_osu_sc_15T_ls__addf_l	A	0.00209	0.00190	0.00191
	B	0.00272	0.00263	0.00268
	CI	0.00282	0.00283	0.00289

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00923	0.00922	0.00958
	B	0.00905	0.00918	0.00952
	CI	0.00796	0.00820	0.00855
sky130_osu_sc_15T_ls__addf_l	A	0.00868	0.00865	0.00881
	B	0.00850	0.00859	0.00874
	CI	0.00741	0.00762	0.00778

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00922	0.00918	0.00928
	B	0.00904	0.00912	0.00920
	CI	0.00795	0.00817	0.00826
sky130_osu_sc_15T_ls__addf_l	A	0.00868	0.00861	0.00871
	B	0.00850	0.00855	0.00863
	CI	0.00740	0.00761	0.00769

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00263	0.00252	0.00242
	B	0.00326	0.00324	0.00316
	CI	0.00338	0.00345	0.00344
sky130_osu_sc_15T_ls__addf_l	A	0.00207	0.00190	0.00182
	B	0.00269	0.00262	0.00253
	CI	0.00281	0.00282	0.00281

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00923	0.00922	0.00956
	B	0.00905	0.00918	0.00952
	CI	0.00796	0.00820	0.00854
sky130_osu_sc_15T_ls__addf_l	A	0.00868	0.00865	0.00880
	B	0.00851	0.00860	0.00876
	CI	0.00741	0.00762	0.00781

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01907	0.01924	0.01920
	B	0.01717	0.01679	0.01722
	CI	0.01553	0.01555	0.01553
sky130_osu_sc_15T_ls__addf_l	A	0.01826	0.01827	0.01822
	B	0.01639	0.01585	0.01637
	CI	0.01475	0.01467	0.01467

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00742	0.00815	1.07016	0.52122	1.07111
sky130_osu_sc_15T_ls__addh_l	0.00742	0.00816	0.69100	0.52016	0.69157

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00065	0.00071
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00118	0.00136

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)	0.15452	0.94745	8.15361
	B->CO (RR)	0.15893	0.94845	8.29865
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.16138	1.05125	8.16314
	B->CO (RR)	0.16579	1.05399	8.31264

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)	0.14353	0.83295	7.05567
	B->CO (FF)	0.15210	0.84761	7.13482
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.13538	0.78499	6.02254
	B->CO (FF)	0.14339	0.80000	6.10740

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	0.21651	0.79665	4.51107
	A->CON (FR)	!B	0.16365	1.26848	12.58200
	B->CON (RR)	A	0.22084	0.79693	4.64730
	B->CON (FR)	!A	0.19615	1.31478	12.62360
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.19923	0.77291	4.41343
	A->CON (FR)	!B	0.14940	1.25277	12.55190
	B->CON (RR)	A	0.20367	0.77370	4.55845
	B->CON (FR)	!A	0.18180	1.29879	12.59350

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	0.20414	0.90083	6.37589
	A->CON (RF)	!B	0.07051	0.68515	7.30660
	B->CON (FF)	A	0.20560	0.92595	6.61438
	B->CON (RF)	!A	0.08373	0.68574	7.13587
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.18993	0.87895	6.26148
	A->CON (RF)	!B	0.06607	0.67815	7.29425
	B->CON (FF)	A	0.19132	0.90480	6.50507
	B->CON (RF)	!A	0.07938	0.68212	7.12318

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	0.16025	1.97534	24.02270
	A->S (FR)	B	0.29465	2.16932	22.79850
	B->S (RR)	!A	0.17322	1.93882	23.31750
	B->S (FR)	A	0.29738	2.23374	23.58860
	CON->S (FR)	-	0.04806	1.00171	12.78780
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.16349	1.86391	19.72020
	A->S (FR)	B	0.28843	2.04571	18.46640
	B->S (RR)	!A	0.17683	1.83848	19.25180
	B->S (FR)	A	0.29079	2.09938	19.02400
	CON->S (FR)	-	0.05833	1.12235	12.89590

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	0.24321	2.69371	32.51560
	A->S (RF)	B	0.27665	1.72197	16.91080
	B->S (FF)	!A	0.27540	2.74415	32.59620
	B->S (RF)	A	0.28109	1.72202	17.04880
	CON->S (RF)	-	0.02751	0.63405	8.19770
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.22759	2.28260	23.90760
	A->S (RF)	B	0.25895	1.49389	12.09940
	B->S (FF)	!A	0.25963	2.32941	23.96380
	B->S (RF)	A	0.26347	1.49465	12.25260
	CON->S (RF)	-	0.02943	0.63608	7.57686

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	0.00417	0.00397	0.00384
	B	0.00000	0.00000	0.00000
	B	0.00382	0.00361	0.00336
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00362	0.00338	0.00344
	B	0.00000	0.00000	0.00000
	B	0.00328	0.00303	0.00292

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	0.00633	0.00609	0.00589
	B	0.00000	0.00000	0.00000
	B	0.00658	0.00658	0.00640
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00579	0.00553	0.00541
	B	0.00000	0.00000	0.00000
	B	0.00604	0.00599	0.00591

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	0.00417	0.00396	0.00406
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00554	0.00553	0.00552
	B	A	0.00000	0.00000	0.00000
	B	A	0.00382	0.00362	0.00361
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00615	0.00610	0.00607
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00362	0.00337	0.00353
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00516	0.00514	0.00513
	B	A	0.00000	0.00000	0.00000
	B	A	0.00327	0.00302	0.00302
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00577	0.00570	0.00567

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	0.00633	0.00611	0.00599
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00095	0.00094	0.00078
	B	A	0.00000	0.00000	0.00000
	B	A	0.00657	0.00657	0.00650
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00157	0.00148	0.00119
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00579	0.00554	0.00556
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00046	0.00043	0.00027
	B	A	0.00000	0.00000	0.00000
	B	A	0.00604	0.00600	0.00600
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00107	0.00098	0.00085

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	0.00634	0.00609	0.00607
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00096	0.00097	0.00093
	B	A	0.00000	0.00000	0.00000
	B	A	0.00658	0.00659	0.00664
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00158	0.00151	0.00144
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00580	0.00554	0.00554
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00047	0.00044	0.00041
	B	A	0.00000	0.00000	0.00000
	B	A	0.00604	0.00600	0.00605
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00108	0.00099	0.00093

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	0.00417	0.00396	0.00386
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00554	0.00557	0.00556
	B	A	0.00000	0.00000	0.00000
	B	A	0.00382	0.00361	0.00346
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00615	0.00615	0.00611
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00362	0.00338	0.00341
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00516	0.00514	0.00515
	B	A	0.00000	0.00000	0.00000
	B	A	0.00328	0.00302	0.00292
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00576	0.00573	0.00570

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00398	0.00408	1.07781
sky130_osu_sc_15T_ls__and2_2	0.00398	0.00408	2.14671
sky130_osu_sc_15T_ls__and2_4	0.00398	0.00408	4.12273
sky130_osu_sc_15T_ls__and2_6	0.00401	0.00407	6.10577
sky130_osu_sc_15T_ls__and2_8	0.00398	0.00408	7.91304
sky130_osu_sc_15T_ls__and2_l	0.00304	0.00315	0.66791

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00027	0.00038
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00040	0.00055
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00064	0.00087
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00089	0.00119
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00114	0.00152
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00080	0.00122

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)	0.11819	0.86806	7.77193
	B->Y (RR)	0.12453	0.88020	7.94806
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.13483	0.79781	8.10112
	B->Y (RR)	0.14119	0.80210	8.24713
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.18598	0.80840	8.55455
	B->Y (RR)	0.19224	0.80184	8.65631
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.23637	0.84996	8.94644
	B->Y (RR)	0.24222	0.83939	9.02471
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.28533	0.90127	9.20938
	B->Y (RR)	0.29177	0.88615	9.25629
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.13315	0.98727	7.66804
	B->Y (RR)	0.13971	0.99725	7.82942

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)	0.10817	0.75415	6.54525
	B->Y (FF)	0.11544	0.77437	6.67159
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.12967	0.74642	6.89846
	B->Y (FF)	0.13738	0.76036	6.99392
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.18600	0.78906	7.35405
	B->Y (FF)	0.19310	0.79924	7.43620
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.24454	0.84564	7.73710
	B->Y (FF)	0.25078	0.85401	7.78738
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.29965	0.89856	7.95096
	B->Y (FF)	0.30534	0.90914	7.99583
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.12377	0.78766	6.12484
	B->Y (FF)	0.13441	0.81100	6.25921

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	0.00325	0.00286	0.00347
	B	0.00000	0.00000	0.00000
	B	0.00331	0.00288	0.00309
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00615	0.00600	0.00655
	B	0.00000	0.00000	0.00000
	B	0.00620	0.00613	0.00623
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01251	0.01284	0.01344
	B	0.00000	0.00000	0.00000
	B	0.01257	0.01297	0.01326
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01887	0.01965	0.02076
	B	0.00000	0.00000	0.00000
	B	0.01889	0.01974	0.02065
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02518	0.02621	0.02803
	B	0.00000	0.00000	0.00000
	B	0.02526	0.02637	0.02788
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00234	0.00203	0.00260
	B	0.00000	0.00000	0.00000
	B	0.00240	0.00206	0.00230

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	0.00775	0.00758	0.00822
	B	0.00000	0.00000	0.00000
	B	0.00873	0.00856	0.00908
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00978	0.01008	0.01069
	B	0.00000	0.00000	0.00000
	B	0.01078	0.01099	0.01153
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01476	0.01591	0.01668
	B	0.00000	0.00000	0.00000
	B	0.01576	0.01678	0.01744
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01981	0.02182	0.02286
	B	0.00000	0.00000	0.00000
	B	0.02076	0.02256	0.02346
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02463	0.02739	0.02887
	B	0.00000	0.00000	0.00000
	B	0.02573	0.02811	0.02934
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00591	0.00574	0.00622
	B	0.00000	0.00000	0.00000
	B	0.00662	0.00641	0.00684

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)	-0.00276	-0.00278	-0.00278
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00276	-0.00278	-0.00278
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00276	-0.00278	-0.00278
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00277	-0.00279	-0.00280
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00275	-0.00277	-0.00278
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00197	-0.00198	-0.00199

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)	0.00279	0.00281	0.00279
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00279	0.00281	0.00279
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00279	0.00280	0.00279
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00281	0.00281	0.00281
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00279	0.00279	0.00279
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00199	0.00200	0.00199

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)	-0.00261	-0.00263	-0.00262
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00262	-0.00262	-0.00262
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00262	-0.00263	-0.00262
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00261	-0.00262	-0.00262
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00261	-0.00262	-0.00262
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00188	-0.00188	-0.00188

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)	0.00263	0.00264	0.00263
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00263	0.00264	0.00263
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00263	0.00263	0.00263
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00263	0.00262	0.00263
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00263	0.00263	0.00263
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00190	0.00191	0.00189

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00372	0.00390	0.00380	0.48235

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00020	0.00040

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)	0.15043	1.30164	12.57930
	A1->Y (FR)	0.12679	1.23699	12.22710
	B0->Y (FR)	0.11376	1.25053	12.59120

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)	0.06178	0.63484	6.56113
	A1->Y (RF)	0.05598	0.64443	6.85349
	B0->Y (RF)	0.03646	0.58863	6.47505

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	0.00656	0.00649	0.00647
	A1	0.00000	0.00000	0.00000
	A1	0.00554	0.00543	0.00542
	B0	0.00526	0.00511	0.00513

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	0.00126	0.00105	0.00096
	A1	0.00000	0.00000	0.00000
	A1	0.00128	0.00104	0.00098
	B0	-0.00051	-0.00054	-0.00058

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)	-0.00227	-0.00238	-0.00236
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00242	-0.00243	-0.00242
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00242	-0.00243	-0.00242

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)	0.00236	0.00239	0.00236
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00242	0.00248	0.00243
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00244	0.00248	0.00243

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)	-0.00223	-0.00233	-0.00233
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00237	-0.00238	-0.00238
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00257	-0.00261	-0.00261

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)	0.00232	0.00233	0.00233
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00238	0.00240	0.00239
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00261	0.00262	0.00262

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)	-0.00119	-0.00120	-0.00119

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)	0.00133	0.00133	0.00123

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00371	0.00387	0.00404	0.00383	0.49403

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00023	0.00033

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)	0.18629	1.34109	12.67150
	A1->Y (FR)	0.16615	1.30877	12.56700
	B0->Y (FR)	0.11804	1.24123	12.54250
	B1->Y (FR)	0.13816	1.27540	12.67780

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)	0.07985	0.65882	6.66238
	A1->Y (RF)	0.07397	0.66917	6.95735
	B0->Y (RF)	0.04479	0.63364	6.91566
	B1->Y (RF)	0.05042	0.62379	6.62264

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	0.00807	0.00798	0.00796
	A1	0.00707	0.00692	0.00689
	B0	0.00565	0.00545	0.00546
	B1	0.00662	0.00646	0.00648

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00263	0.00243	0.00231
	A1	0.00265	0.00243	0.00233
	B0	-0.00025	-0.00028	-0.00032
	B1	-0.00022	-0.00025	-0.00032

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)	-0.00228	-0.00237	-0.00236
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00242	-0.00244	-0.00242
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00241	-0.00243	-0.00242
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00242	-0.00242	-0.00242

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)	0.00236	0.00237	0.00236
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00242	0.00245	0.00243
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00244	0.00248	0.00243
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00244	0.00248	0.00243

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)	-0.00224	-0.00231	-0.00232
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00237	-0.00238	-0.00238
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00257	-0.00260	-0.00260
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00257	-0.00260	-0.00260

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)	0.00232	0.00231	0.00232
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00238	0.00242	0.00239
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00260	0.00262	0.00261
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00260	0.00261	0.00261

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)	-0.00119	-0.00121	-0.00120
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00119	-0.00120	-0.00119
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00266	-0.00268	-0.00270
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00267	-0.00269	-0.00270

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)	0.00139	0.00139	0.00125
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00119	0.00121	0.00119
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00270	0.00272	0.00271
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00270	0.00272	0.00271

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)	-0.00120	-0.00121	-0.00121
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00120	-0.00121	-0.00120
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00247	-0.00247	-0.00247
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00247	-0.00247	-0.00247

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)	0.00140	0.00141	0.00126
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00120	0.00121	0.00120
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00248	0.00248	0.00248
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00248	0.00248	0.00248

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00407	1.05837
sky130_osu_sc_15T_ls__buf_2	0.00411	2.10681
sky130_osu_sc_15T_ls__buf_4	0.00411	4.11514
sky130_osu_sc_15T_ls__buf_6	0.00092	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00411	8.00520
sky130_osu_sc_15T_ls__buf_l	0.00317	0.66284

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00027	0.00027
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00041	0.00044
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00068	0.00076
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00123	0.00141
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00073	0.00073

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)**	0.08736	0.82483	7.64690
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.09755	0.74266	7.90231
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.13162	0.73481	8.39330
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.19819	0.78913	9.00883
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.10128	0.93675	7.49919

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)**	0.10229	0.74029	6.41454
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.12594	0.74723	6.96546
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.18290	0.79445	7.56025
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.29687	0.90859	8.23943
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.11921	0.77708	6.04078

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	0.00304	0.00253	0.00315
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00594	0.00558	0.00617
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01236	0.01251	0.01289
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02498	0.02576	0.02691
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00227	0.00187	0.00235

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	0.00755	0.00732	0.00794
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00962	0.00978	0.01034
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01462	0.01559	0.01628
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02469	0.02707	0.02829
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00580	0.00558	0.00605

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
	-0.00049	-0.00049	-0.00049

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
	0.00049	0.00049	0.00049

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00383	0.00384	0.01141	1.00928	1.00700
sky130_osu_sc_15T_ls__dffr_l	0.00383	0.00384	0.01141	0.66439	0.66527

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00180	0.00206
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00225	0.00251

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)	0.56616	1.90413	15.11310
	QN->Q (FR)	0.05476	1.09888	13.95110
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.54532	1.98839	14.22980
	QN->Q (FR)	0.06342	1.19256	13.57900

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)	0.49156	1.93563	16.79490
	QN->Q (RF)	0.03253	0.69816	8.92548
	RN->Q (FF)	0.35074	1.96089	18.90170
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.50436	2.09624	16.10920
	QN->Q (RF)	0.03317	0.68499	8.11620
	RN->Q (FF)	0.36412	2.12372	18.20810

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)	0.43571	1.21436	8.24231
	RN->QN (FR)	0.29454	1.23867	10.34280
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.44203	1.32037	8.30126
	RN->QN (FR)	0.30126	1.34532	10.38950

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)**	0.47938	1.01609	4.66940
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.44860	0.98350	4.18525

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)	-0.09623	-0.12899	-0.63557
	setup	CK (R)	0.44226	0.45548	1.81465
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.09672	-0.12854	-0.63419
	setup	CK (R)	0.44447	0.45815	1.83034

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)	-0.21015	-0.56749	-5.85860
	setup	CK (R)	0.25061	0.58556	5.90819
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.21169	-0.56666	-5.85577
	setup	CK (R)	0.25061	0.58556	5.90807

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)	-0.09623	-0.12899	-0.63557
	setup	CK (R)	0.44226	0.45548	1.81465
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.09672	-0.12854	-0.63419
	setup	CK (R)	0.44447	0.45815	1.83034

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)	-0.21015	-0.56749	-5.85860
	setup	CK (R)	0.25061	0.58556	5.90819
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.21169	-0.56666	-5.85577
	setup	CK (R)	0.25061	0.58556	5.90807

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)	0.38582	0.40025	1.65808
	removal	CK (R)	-0.08325	-0.09620	-0.16138
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.38792	0.40353	1.66440
	removal	CK (R)	-0.08325	-0.09620	-0.16138

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)	0.38582	0.40025	1.65808
	removal	CK (R)	-0.08325	-0.09620	-0.16138
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.38792	0.40353	1.66440
	removal	CK (R)	-0.08325	-0.09620	-0.16138

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 ()	0.21149	0.54020	13.33370
	min_pulse_width	RN ()	0.20946	0.54020	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.20866	0.53801	13.33370
	min_pulse_width	RN ()	0.20664	0.53801	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	CK ()	0.25963	0.51392	13.33370
	min_pulse_width	CK ()	0.25963	0.51392	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.23651	0.51392	13.33370
	min_pulse_width	CK ()	0.25577	0.51392	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	CK ()	0.55617	0.64096	13.33370
	min_pulse_width	CK ()	0.20184	0.51392	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.55751	0.64534	13.33370
	min_pulse_width	CK ()	0.20184	0.51392	13.33370

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	0.00746	0.00611	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00657	0.00546	0.00022

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	0.00860	0.00762	0.00000
	RN	-0.00103	-0.04554	-0.56772
	RN	0.01946	0.01856	0.01050
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00768	0.00699	0.00358
	RN	-0.00103	-0.03543	-0.37372
	RN	0.01853	0.01792	0.01425

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	0.00861	0.00764	0.00000
	RN	-0.00103	-0.04547	-0.56644
	RN	0.01946	0.01857	0.01056
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00768	0.00700	0.00356
	RN	-0.00103	-0.03546	-0.37422
	RN	0.01853	0.01792	0.01425

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	0.00744	0.00609	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00654	0.00542	0.00013

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	-0.00215	-0.00235	-0.00235
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00892	0.00845	0.00841
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00385	0.00343	0.00345
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00215	-0.00235	-0.00235
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00892	0.00845	0.00841
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00385	0.00343	0.00345

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	0.00233	0.00235	0.00235
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01454	0.01430	0.01415
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00694	0.00676	0.00674
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00233	0.00235	0.00235
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01454	0.01430	0.01415
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00694	0.00676	0.00674

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)	0.00287	0.00236	0.00275
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00825	0.00752	0.00775
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)	0.00287	0.00236	0.00275
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00825	0.00752	0.00775

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)	0.00704	0.00670	0.00728
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01459	0.01410	0.01434
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)	0.00703	0.00670	0.00728
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01459	0.01410	0.01434

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)	-0.00039	-0.00101	-0.00067
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00445	0.00341	0.00347
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00070	-0.00130	-0.00097
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00039	-0.00101	-0.00067
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00445	0.00341	0.00347
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00070	-0.00130	-0.00097

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)	0.01099	0.01066	0.01107
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02308	0.02228	0.02201
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01749	0.01705	0.01709
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02268	0.02191	0.02282
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01220	0.01186	0.01228
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01099	0.01066	0.01107
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02308	0.02229	0.02201
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01749	0.01705	0.01709
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02268	0.02191	0.02282
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01220	0.01186	0.01228

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00378	0.00384	0.00843	0.01167	1.07570	1.08348
sky130_osu_sc_15T_ls__dffsr_l	0.00378	0.00384	0.00842	0.01167	0.66371	0.66431

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00138	0.00173
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00184	0.00218

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)	0.53533	1.88283	15.60280
	QN->Q (FR)	0.04875	1.04282	13.35060
	RN->Q (RR)	0.43152	1.79208	15.69400
	SN->Q (FR)	0.40839	1.91546	18.34870
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.53239	1.97956	14.29360
	QN->Q (FR)	0.06348	1.19044	13.55410
	RN->Q (RR)	0.42916	1.89372	14.37760
	SN->Q (FR)	0.40559	2.01415	16.98480

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)	0.56255	2.00347	17.12860
	QN->Q (RF)	0.03221	0.71434	9.21681
	RN->Q (FF)	0.36850	1.97307	19.27290
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.58325	2.18252	16.18520
	QN->Q (RF)	0.03311	0.68409	8.10639
	RN->Q (FF)	0.39027	2.15266	18.32460

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)	0.50689	1.27828	8.34232
	RN->QN (FR)	0.31389	1.24887	10.48420
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.51947	1.40461	8.39328
	RN->QN (FR)	0.32705	1.37600	10.51730

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)	0.45779	1.00841	5.02415
	RN->QN (RF)	0.35431	0.91945	5.10752
	SN->QN (FF)	0.33129	1.04290	7.75746
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.44097	0.97897	4.26297
	RN->QN (RF)	0.33794	0.89407	4.34268
	SN->QN (FF)	0.31480	1.01444	6.95521

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)	-0.10249	-0.13679	-0.72480
	setup	CK (R)	0.40470	0.41101	1.81691
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.10414	-0.13432	-0.72824
	setup	CK (R)	0.40077	0.41122	1.81973

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)	-0.24599	-0.59519	-6.09657
	setup	CK (R)	0.30104	0.60986	6.13622
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.24578	-0.59594	-6.09685
	setup	CK (R)	0.30104	0.60986	6.13212

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)	-0.10249	-0.13679	-0.72480
	setup	CK (R)	0.40470	0.41101	1.81691
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.10414	-0.13432	-0.72824
	setup	CK (R)	0.40077	0.41122	1.81973

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)	-0.24599	-0.59519	-6.09657
	setup	CK (R)	0.30104	0.60986	6.13622
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.24578	-0.59594	-6.09685
	setup	CK (R)	0.30104	0.60986	6.13212

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)	0.31614	0.32948	1.55904
	removal	CK (R)	-0.04038	-0.04562	-0.10534
	hold	SN (R)	-0.32901	-0.57395	-3.94519
	setup	SN (R)	0.35397	0.62232	6.08406
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.31667	0.32933	1.56190
	removal	CK (R)	-0.03752	-0.04562	-0.10638
	hold	SN (R)	-0.31374	-0.55841	-3.84353
	setup	SN (R)	0.35192	0.60503	5.96711

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)	0.31614	0.32948	1.55904
	removal	CK (R)	-0.04038	-0.04562	-0.10534
	hold	SN (R)	-0.32901	-0.57395	-3.94519
	hold	SN (R)	-0.32956	-0.57654	-3.95452
	setup	SN (R)	0.35397	0.61798	5.96582
	setup	SN (R)	0.35085	0.62232	6.08406
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.31667	0.32933	1.56190
	removal	CK (R)	-0.03752	-0.04562	-0.10638
	hold	SN (R)	-0.31479	-0.55841	-3.84353
	hold	SN (R)	-0.31374	-0.55997	-3.85539
	setup	SN (R)	0.35192	0.60126	5.79782
	setup	SN (R)	0.33390	0.60503	5.96711

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 ()	0.23944	0.56430	13.33370
	min_pulse_width	RN ()	0.24581	0.56430	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.24068	0.56211	13.33370
	min_pulse_width	RN ()	0.23856	0.56211	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.06139	0.09479	2.75264
	removal	CK (R)	-0.01864	-0.06440	-0.58014
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.05864	0.09426	2.60110
	removal	CK (R)	-0.02051	-0.06652	-0.58095

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)	0.06139	0.09479	2.75264
	removal	CK (R)	-0.01864	-0.06440	-0.58014
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.05864	0.09426	2.60110
	removal	CK (R)	-0.02051	-0.06652	-0.58095

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 ()	0.32541	0.64972	13.33370
	min_pulse_width	SN ()	0.32894	0.65192	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.32648	0.63220	13.33370
	min_pulse_width	SN ()	0.31079	0.63439	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	CK ()	0.24036	0.51392	13.33370
	min_pulse_width	CK ()	0.29045	0.51392	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.22881	0.51392	13.33370
	min_pulse_width	CK ()	0.28660	0.51392	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	CK ()	0.51759	0.60154	13.33370
	min_pulse_width	CK ()	0.25716	0.53363	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.51677	0.60592	13.33370
	min_pulse_width	CK ()	0.25515	0.53363	13.33370

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	0.00924	0.00784	-0.00364
	RN	0.01716	0.01598	0.00386
	SN	-0.00103	-0.04731	-0.60508
	SN	0.01883	0.01774	0.00544
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00843	0.00736	0.00220
	RN	0.01634	0.01551	0.00984
	SN	-0.00103	-0.03541	-0.37334
	SN	0.01801	0.01726	0.01138

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	0.00986	0.00926	0.00455
	RN	-0.00103	-0.04731	-0.60508
	RN	0.02026	0.01960	0.01466
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00902	0.00840	0.00505
	RN	-0.00103	-0.03541	-0.37334
	RN	0.01939	0.01872	0.01515

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	0.00987	0.00927	0.00448
	RN	-0.00103	-0.04751	-0.60945
	RN	0.02026	0.01960	0.01462
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00902	0.00841	0.00525
	RN	-0.00103	-0.03543	-0.37368
	RN	0.01940	0.01872	0.01514

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	0.00921	0.00781	-0.00401
	RN	0.01714	0.01595	0.00360
	SN	-0.00103	-0.04751	-0.60941
	SN	0.01881	0.01771	0.00536
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00840	0.00734	0.00209
	RN	0.01631	0.01548	0.00967
	SN	-0.00103	-0.03543	-0.37365
	SN	0.01798	0.01723	0.01134

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	-0.00226	-0.00235	-0.00235
	(!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)	0.01149	0.01106	0.01102
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00435	0.00396	0.00397
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00434	0.00394	0.00395
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00439	0.00401	0.00401
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00226	-0.00235	-0.00235
	(!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)	0.01149	0.01106	0.01102
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00435	0.00396	0.00397
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00434	0.00394	0.00395
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00439	0.00401	0.00401

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	0.00235	0.00235	0.00235
	(!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)	0.01665	0.01640	0.01612
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00746	0.00729	0.00728
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00748	0.00731	0.00731
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00742	0.00725	0.00725
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00235	0.00235	0.00235
	(!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)	0.01664	0.01639	0.01611
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00745	0.00728	0.00727
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00747	0.00730	0.00730
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00741	0.00724	0.00724

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)	0.00262	0.00211	0.00241
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01004	0.00928	0.00942
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)	0.00262	0.00212	0.00241
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01004	0.00928	0.00942

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)	0.00770	0.00738	0.00797
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01559	0.01498	0.01521
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)	0.00769	0.00737	0.00796
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01558	0.01497	0.01520

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)	-0.00545	-0.00551	-0.00552
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00572	-0.00583	-0.00581
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00548	-0.00550	-0.00553
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00338	0.00291	0.00297
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)	-0.00545	-0.00551	-0.00552
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00571	-0.00582	-0.00580
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00547	-0.00549	-0.00553
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00339	0.00292	0.00297

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)	0.00552	0.00554	0.00553
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00580	0.00583	0.00581
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00550	0.00550	0.00553
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01191	0.01162	0.01163
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)	0.00552	0.00554	0.00553
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00579	0.00582	0.00580
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00549	0.00549	0.00553
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01190	0.01161	0.01163

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)	-0.00040	-0.00102	-0.00068
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00512	0.00415	0.00419
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00506	0.00410	0.00412
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00053	-0.00115	-0.00082
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00339	0.00222	0.00300
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00040	-0.00102	-0.00068
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00511	0.00414	0.00418
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00505	0.00409	0.00412
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00053	-0.00115	-0.00082
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00339	0.00222	0.00300

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)	0.02577	0.02502	0.02478
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01104	0.01066	0.01112
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01782	0.01744	0.01744
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01789	0.01753	0.01752
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02473	0.02393	0.02461
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01209	0.01175	0.01219
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01469	0.01404	0.01500
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02577	0.02503	0.02478
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01103	0.01066	0.01112
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01782	0.01744	0.01744
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01789	0.01753	0.01749
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02473	0.02392	0.02461
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01209	0.01175	0.01219
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01468	0.01404	0.01498

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00381	0.00679	0.01145	1.01206	1.01878
sky130_osu_sc_15T_ls__dffs_l	0.00381	0.00679	0.01145	0.66180	0.66522

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00168	0.00290
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00214	0.00335

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)	0.39777	1.71166	14.94780
	QN->Q (FR)	0.05485	1.10620	13.91990
	SN->Q (FR)	0.32442	1.83859	17.75950
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.39278	1.81189	14.00640
	QN->Q (FR)	0.06342	1.17683	13.51360
	SN->Q (FR)	0.31767	1.93623	16.75130

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)	0.54555	1.99368	16.85520
	QN->Q (RF)	0.03235	0.69684	8.91031
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.55461	2.14522	16.07510
	QN->Q (RF)	0.03304	0.68205	8.08394

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)	0.48742	1.27458	8.36202
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.49073	1.37223	8.33772

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)	0.32210	0.83114	4.54260
	SN->QN (FF)	0.24763	0.95931	7.34866
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.30672	0.81639	4.03055
	SN->QN (FF)	0.23061	0.94157	6.76711

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)	-0.07642	-0.11050	-0.61203
	setup	CK (R)	0.28708	0.31167	1.77937
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.07574	-0.10989	-0.61116
	setup	CK (R)	0.28888	0.30888	1.78376

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)	-0.21853	-0.57212	-5.90545
	setup	CK (R)	0.27983	0.58959	5.95391
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.21774	-0.57233	-5.90235
	setup	CK (R)	0.27983	0.58959	5.95374

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)	-0.07642	-0.11050	-0.61203
	setup	CK (R)	0.28708	0.31167	1.77937
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.07574	-0.10989	-0.61116
	setup	CK (R)	0.28888	0.30888	1.78376

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)	-0.21853	-0.57212	-5.90545
	setup	CK (R)	0.27983	0.58959	5.95391
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.21774	-0.57233	-5.90235
	setup	CK (R)	0.27983	0.58959	5.95374

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)	0.06574	0.09413	1.94545
	removal	CK (R)	-0.01876	-0.05525	-0.35023
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.06485	0.09413	1.82504
	removal	CK (R)	-0.01876	-0.05525	-0.35023

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)	0.06574	0.09413	1.94545
	removal	CK (R)	-0.01876	-0.05525	-0.35023
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.06485	0.09413	1.82504
	removal	CK (R)	-0.01876	-0.05525	-0.35023

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 ()	0.23153	0.64096	13.33370
	min_pulse_width	SN ()	0.23802	0.63877	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.22483	0.62125	13.33370
	min_pulse_width	SN ()	0.22086	0.62344	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	CK ()	0.15945	0.51392	13.33370
	min_pulse_width	CK ()	0.27504	0.51392	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.15175	0.51392	13.33370
	min_pulse_width	CK ()	0.26733	0.51392	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	CK ()	0.40179	0.54239	13.33370
	min_pulse_width	CK ()	0.23651	0.51392	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.40179	0.54239	13.33370
	min_pulse_width	CK ()	0.23651	0.51392	13.33370

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	0.00747	0.00604	0.00000
	SN	-0.00103	-0.04561	-0.56929
	SN	0.01609	0.01488	0.00395
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00656	0.00539	0.00045
	SN	-0.00103	-0.03535	-0.37226
	SN	0.01517	0.01424	0.00838

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	0.00857	0.00765	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00766	0.00700	0.00369

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	0.00857	0.00765	0.00004
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00766	0.00700	0.00367

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	0.00745	0.00602	-0.00004
	SN	-0.00103	-0.04579	-0.57302
	SN	0.01607	0.01485	0.00399
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00653	0.00539	0.00022
	SN	-0.00103	-0.03546	-0.37416
	SN	0.01515	0.01421	0.00858

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	-0.00230	-0.00239	-0.00239
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00869	0.00821	0.00809
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00377	0.00335	0.00337
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00230	-0.00239	-0.00239
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00869	0.00821	0.00809
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00377	0.00335	0.00337

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	0.00239	0.00239	0.00239
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01442	0.01416	0.01399
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00711	0.00693	0.00694
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00239	0.00239	0.00239
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01442	0.01416	0.01399
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00711	0.00693	0.00694

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)	-0.00400	-0.00400	-0.00402
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00303	0.00263	0.00291
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)	-0.00400	-0.00400	-0.00402
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00303	0.00263	0.00291

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)	0.00403	0.00407	0.00403
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00834	0.00797	0.00826
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)	0.00403	0.00407	0.00403
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00834	0.00797	0.00826

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)	-0.00041	-0.00104	-0.00069
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00066	-0.00127	-0.00093
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00281	0.00158	0.00242
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00041	-0.00104	-0.00069
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00066	-0.00127	-0.00093
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00281	0.00158	0.00242

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)	0.02290	0.02214	0.02184
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01101	0.01067	0.01108
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02246	0.02158	0.02249
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01215	0.01182	0.01223
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01428	0.01364	0.01466
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02290	0.02211	0.02184
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01101	0.01067	0.01108
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02246	0.02159	0.02249
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01215	0.01182	0.01223
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01428	0.01364	0.01466

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00397	0.01136	1.07940	1.09066
sky130_osu_sc_15T_ls__dff_l	0.00397	0.01136	0.62464	0.62716

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00111	0.00122
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00156	0.00167

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)	0.32255	1.64035	15.35370
	QN->Q (FR)	0.04841	1.04016	13.34590
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.33373	1.74850	13.65840
	QN->Q (FR)	0.06993	1.24903	14.02660

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)	0.47461	1.90816	17.04330
	QN->Q (RF)	0.03208	0.71333	9.21376
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.50416	2.10659	15.82710
	QN->Q (RF)	0.03313	0.67105	7.88406

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)	0.42097	1.18578	8.26499
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.44025	1.33707	8.31771

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)	0.25525	0.76981	4.76719
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.24901	0.74327	3.81776

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)	-0.06884	-0.10622	-0.63774
	setup	CK (R)	0.21154	0.23873	1.76071
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.07042	-0.10755	-0.63676
	setup	CK (R)	0.21077	0.24118	1.76293

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)	-0.21074	-0.57362	-5.98582
	setup	CK (R)	0.25259	0.59524	6.04481
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.21153	-0.57537	-5.98907
	setup	CK (R)	0.24936	0.59524	6.04458

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 ()	0.13248	0.51392	13.33370
	min_pulse_width	CK ()	0.25963	0.51392	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.12863	0.51392	13.33370
	min_pulse_width	CK ()	0.25192	0.51392	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	**min_pulse_width**	**CK ()**	0.32528	0.52049	13.33370
	min_pulse_width	**CK ()**	0.20184	0.51392	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.32394	0.51830	13.33370
	min_pulse_width	**CK ()**	0.20184	0.51392	13.33370

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	0.00790	0.00631	-0.00346
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00710	0.00591	0.00116

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	0.00871	0.00809	0.00346
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00786	0.00704	0.00215

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	0.00871	0.00809	0.00339
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00787	0.00704	0.00204

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	0.00787	0.00629	-0.00339
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00706	0.00588	0.00105

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	-0.00215	-0.00234	-0.00234
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00815	0.00773	0.00765
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00215	-0.00234	-0.00234
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00815	0.00773	0.00765

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	0.00232	0.00235	0.00234
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01495	0.01462	0.01446
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00232	0.00235	0.00234
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01496	0.01462	0.01447

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)	-0.00041	-0.00102	-0.00069
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00065	-0.00125	-0.00091
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00041	-0.00102	-0.00069
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00065	-0.00125	-0.00091

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)	0.01094	0.01059	0.01103
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02235	0.02161	0.02139
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02283	0.02194	0.02282
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01208	0.01169	0.01217
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01094	0.01059	0.01103
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02236	0.02162	0.02139
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02283	0.02194	0.02282
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01208	0.01169	0.01217

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00389	1.04632
sky130_osu_sc_15T_ls__inv_10	0.03584	9.76972
sky130_osu_sc_15T_ls__inv_2	0.00736	2.09660
sky130_osu_sc_15T_ls__inv_3	0.01095	3.01727
sky130_osu_sc_15T_ls__inv_4	0.01445	4.06557
sky130_osu_sc_15T_ls__inv_6	0.02165	5.98420
sky130_osu_sc_15T_ls__inv_8	0.02875	8.00391
sky130_osu_sc_15T_ls__inv_l	0.00293	0.61386

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00014	0.00016
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00136	0.00162
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00027	0.00032
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00041	0.00049
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00055	0.00065
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00082	0.00097
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00109	0.00130
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00036	0.00049

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)**	0.04690	0.99086	12.59030
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.05907	0.68083	12.56720
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.03650	0.85286	12.57920
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.03937	0.79815	12.57950
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.03935	0.75627	12.57700
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.04374	0.71354	12.51000
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.05078	0.69437	12.62240
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.06251	1.12499	12.58940

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)**	0.02871	0.63989	8.23887
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.04012	0.44951	8.27687
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.02354	0.56575	8.27090
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02549	0.53710	8.32084
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02523	0.50998	8.31230
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.03003	0.47991	8.30676
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.03496	0.46231	8.34168
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.03051	0.62117	7.22831

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	0.00389	0.00384	0.00132
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03291	0.03343	0.01227
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00688	0.00688	0.00189
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01056	0.01053	0.01078
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01353	0.01290	0.01392
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02005	0.02012	0.00527
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02652	0.02676	0.02147
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00292	0.00284	0.00139

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	-0.00065	-0.00071	-0.00069
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01219	-0.01179	-0.01009
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00219	-0.00222	-0.00189
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00289	-0.00294	-0.00268
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00455	-0.00453	-0.00410
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00693	-0.00690	-0.00527
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00950	-0.00934	-0.00808
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00042	-0.00048	-0.00047

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.05827	0.05811	0.00795	0.05217

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00037	0.00037

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)	-	0.02454	0.36924	3.26464
	A1->Y (RR)	-	0.02814	0.37147	3.26731
	S0->Y (RR)	(!A0 * A1)	0.07082	0.34282	0.91689
	S0->Y (FR)	(A0 * !A1)	0.05685	0.51060	3.67636

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)	-	0.02375	0.29616	2.38473
	A1->Y (FF)	-	0.02139	0.29315	2.38481
	S0->Y (FF)	(!A0 * A1)	0.10554	0.50406	3.00910
	S0->Y (RF)	(A0 * !A1)	0.03230	0.30456	1.69628

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	-	-0.00401	-0.00400	-0.00402
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00275	-0.00275	-0.00276
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00480	0.00446	0.00517
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00252	-0.00310	-0.00257

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	-	0.00401	0.00400	0.00402
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00275	0.00275	0.00276
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00090	0.00033	0.00089
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01040	0.01004	0.01064

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)	-0.00104	-0.00103	-0.00104

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)	0.00104	0.00103	0.00104

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)	-0.00123	-0.00123	-0.00123

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)	0.00123	0.00123	0.00123

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)	-0.00084	-0.00139	-0.00085
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00081	-0.00138	-0.00086

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)	0.00792	0.00759	0.00819
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00729	0.00697	0.00765

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00389	0.00386	1.04264
sky130_osu_sc_15T_ls__nand2_l	0.00293	0.00293	0.61572

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00015	0.00022
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00037	0.00099

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)	0.04934	0.99465	12.62300
	B->Y (FR)	0.05794	0.99329	12.46920
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.06477	1.13486	12.64560
	B->Y (FR)	0.07669	1.14466	12.62980

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)	0.04367	0.81315	10.28310
	B->Y (RF)	0.04957	0.80583	10.03870
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.04649	0.79394	8.91374
	B->Y (RF)	0.05175	0.78274	8.60823

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	0.00414	0.00407	0.00165
	B	0.00000	0.00000	0.00000
	B	0.00516	0.00506	0.00227
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00307	0.00300	0.00164
	B	0.00000	0.00000	0.00000
	B	0.00380	0.00372	0.00232

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	-0.00034	-0.00042	-0.00042
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00039	-0.00040
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00026	-0.00032	-0.00032
	B	0.00000	0.00000	0.00000
	B	-0.00023	-0.00029	-0.00031

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)	-0.00270	-0.00271	-0.00272
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00188	-0.00190	-0.00191

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)	0.00271	0.00273	0.00273
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00191	0.00192	0.00191

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)	-0.00250	-0.00252	-0.00251
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00176	-0.00176	-0.00176

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)	0.00252	0.00252	0.00251
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00177	0.00177	0.00177

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00384	0.00415	0.51720
sky130_osu_sc_15T_ls__nor2_l	0.00282	0.00315	0.32176

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00015	0.00032
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00038	0.00049

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)	0.11089	1.23350	12.55200
	B->Y (FR)	0.08908	1.19855	12.51390
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.13568	1.39260	12.42130
	B->Y (FR)	0.11669	1.36531	12.51970

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)	0.03676	0.54480	5.99712
	B->Y (RF)	0.03034	0.53343	5.97734
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.03668	0.53249	5.35382
	B->Y (RF)	0.03194	0.52321	5.33705

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	0.00539	0.00532	0.00531
	B	0.00000	0.00000	0.00000
	B	0.00425	0.00413	0.00416
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00383	0.00376	0.00375
	B	0.00000	0.00000	0.00000
	B	0.00314	0.00303	0.00304

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	0.00053	0.00033	0.00030
	B	0.00000	0.00000	0.00000
	B	-0.00052	-0.00057	-0.00061
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00033	0.00020	0.00019
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00035	-0.00038

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)	-0.00216	-0.00236	-0.00236
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00147	-0.00160	-0.00159

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)	0.00234	0.00236	0.00236
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00159	0.00160	0.00159

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)	-0.00120	-0.00121	-0.00120
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00081	-0.00082	-0.00082

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00127	0.00127	0.00123
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00086	0.00086	0.00083

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00389	0.00395	0.00333	0.50738

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00033	0.00061

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)	0.12441	1.23998	12.56660
	A1->Y (FR)	0.15203	1.28437	12.61600
	B0->Y (FR)	0.07661	1.03298	11.09070

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)	0.05919	0.66125	6.91966
	A1->Y (RF)	0.06827	0.65739	6.82263
	B0->Y (RF)	0.04703	0.67644	7.40715

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	0.00572	0.00557	0.00558
	A1	0.00000	0.00000	0.00000
	A1	0.00690	0.00679	0.00676
	B0	0.00465	0.00451	0.00453

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	0.00026	0.00019	0.00013
	A1	0.00000	0.00000	0.00000
	A1	0.00133	0.00114	0.00108
	B0	0.00185	0.00176	0.00172

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)	-0.00120	-0.00123	-0.00121
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00229	-0.00239	-0.00237
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00243	-0.00244	-0.00244

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)	0.00128	0.00128	0.00123
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00237	0.00239	0.00237
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00243	0.00245	0.00244

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)	-0.00211	-0.00231	-0.00230
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00227	-0.00237	-0.00235
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00240	-0.00241	-0.00240

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)	0.00229	0.00232	0.00230
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00234	0.00238	0.00235
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00240	0.00243	0.00241

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)	-0.00194	-0.00195	-0.00198

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)	0.00198	0.00200	0.00199

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_1	0.00373	0.00398	0.00411	0.00399	0.51666

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00024	0.00034

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)	0.16662	1.29395	12.61980
	A1->Y (FR)	0.14349	1.25427	12.57450
	B0->Y (FR)	0.09859	1.20673	12.53390
	B1->Y (FR)	0.12280	1.24629	12.57320

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)	0.09338	0.70987	7.05848
	A1->Y (RF)	0.07699	0.68794	7.01076
	B0->Y (RF)	0.06495	0.70108	7.49672
	B1->Y (RF)	0.08215	0.72601	7.57673

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	0.00890	0.00880	0.00877
	A1	0.00769	0.00753	0.00753
	B0	0.00570	0.00556	0.00557
	B1	0.00695	0.00685	0.00681

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00207	0.00190	0.00181
	A1	0.00109	0.00101	0.00091
	B0	0.00109	0.00100	0.00092
	B1	0.00210	0.00189	0.00183

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)	-0.00216	-0.00236	-0.00235
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00216	-0.00236	-0.00235
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00227	-0.00237	-0.00236
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00241	-0.00242	-0.00241

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)	0.00234	0.00236	0.00235
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00234	0.00236	0.00235
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00235	0.00238	0.00236
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00241	0.00242	0.00242

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)	-0.00119	-0.00120	-0.00119
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00119	-0.00120	-0.00119
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00225	-0.00233	-0.00233
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00239	-0.00241	-0.00239

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)	0.00126	0.00126	0.00122
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00126	0.00126	0.00122
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00232	0.00233	0.00233
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00239	0.00241	0.00240

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)	-0.00118	-0.00119	-0.00118
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00118	-0.00119	-0.00118
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00254	-0.00262	-0.00262
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00260	-0.00261	-0.00267

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)	0.00125	0.00126	0.00121
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00125	0.00126	0.00121
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00262	0.00262	0.00262
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00268	0.00270	0.00269

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)	-0.00212	-0.00232	-0.00231
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00212	-0.00232	-0.00231
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00260	-0.00270	-0.00269
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00266	-0.00268	-0.00273

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)	0.00230	0.00232	0.00231
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00230	0.00232	0.00231
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00268	0.00271	0.00269
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00273	0.00275	0.00274

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00420	0.00398	1.05993
sky130_osu_sc_15T_ls__or2_2	0.00420	0.00398	2.11761
sky130_osu_sc_15T_ls__or2_4	0.00420	0.00398	4.10070
sky130_osu_sc_15T_ls__or2_8	0.00419	0.00399	7.92712
sky130_osu_sc_15T_ls__or2_l	0.00323	0.00299	0.61840

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00030	0.00044
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00045	0.00055
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00075	0.00077
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00135	0.00141
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00068	0.00096

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)	0.10143	0.86516	7.87916
	B->Y (RR)	0.09228	0.83649	7.69699
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.11003	0.77622	8.11183
	B->Y (RR)	0.10022	0.74935	7.96860
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.14444	0.75937	8.51518
	B->Y (RR)	0.13437	0.73921	8.40663
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.21083	0.80909	9.09720
	B->Y (RR)	0.20059	0.79556	9.02088
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.11459	0.98818	7.66317
	B->Y (RR)	0.10624	0.96101	7.50586

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)	0.20681	0.88874	7.18551
	B->Y (FF)	0.17595	0.84331	6.77611
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.25641	0.90102	7.57452
	B->Y (FF)	0.22540	0.86063	7.21801
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.37144	1.00798	8.15224
	B->Y (FF)	0.34046	0.96569	7.87365
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.59900	1.25571	8.85527
	B->Y (FF)	0.56869	1.20664	8.68594
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.24202	0.90734	6.33707
	B->Y (FF)	0.20763	0.86935	6.03546

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	0.00421	0.00365	0.00396
	B	0.00000	0.00000	0.00000
	B	0.00322	0.00278	0.00337
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00714	0.00682	0.00707
	B	0.00000	0.00000	0.00000
	B	0.00611	0.00596	0.00655
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01356	0.01371	0.01409
	B	0.00000	0.00000	0.00000
	B	0.01251	0.01299	0.01351
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02624	0.02724	0.02839
	B	0.00000	0.00000	0.00000
	B	0.02514	0.02670	0.02824
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00305	0.00267	0.00302
	B	0.00000	0.00000	0.00000
	B	0.00239	0.00209	0.00255

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	0.00906	0.00894	0.00895
	B	0.00000	0.00000	0.00000
	B	0.00765	0.00758	0.00819
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01106	0.01140	0.01144
	B	0.00000	0.00000	0.00000
	B	0.00965	0.01000	0.01060
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01602	0.01723	0.01745
	B	0.00000	0.00000	0.00000
	B	0.01466	0.01573	0.01651
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02628	0.02822	0.02949
	B	0.00000	0.00000	0.00000
	B	0.02451	0.02671	0.02836
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00673	0.00650	0.00655
	B	0.00000	0.00000	0.00000
	B	0.00575	0.00564	0.00611

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)	-0.00219	-0.00238	-0.00237
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00219	-0.00238	-0.00237
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00219	-0.00238	-0.00237
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00219	-0.00238	-0.00237
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00149	-0.00160	-0.00161

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)	0.00236	0.00239	0.00237
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00236	0.00238	0.00237
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00236	0.00238	0.00237
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00236	0.00238	0.00237
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00160	0.00160	0.00161

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)	-0.00120	-0.00123	-0.00121
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00120	-0.00123	-0.00121
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00120	-0.00123	-0.00121
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00120	-0.00123	-0.00121
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00084	-0.00085	-0.00083

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)	0.00129	0.00128	0.00123
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00129	0.00129	0.00123
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00129	0.00129	0.00123
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00129	0.00129	0.00123
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00088	0.00088	0.00085

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00413	0.00531	0.52840
sky130_osu_sc_15T_ls__tbufi_l	0.00315	0.00409	0.32974

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00022	0.00027
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00047	0.00099

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)	0.08409	1.19699	12.62270
	OE->Y (FR)	0.07283	0.41459	4.44542
	OE->Y (RR)	0.13436	1.05965	7.91190
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.11206	1.37604	12.70320
	OE->Y (FR)	0.08580	0.43765	4.44523
	OE->Y (RR)	0.15555	1.22038	7.79812

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)	0.04209	0.65141	7.23376
	OE->Y (FF)	0.07458	0.41660	4.44541
	OE->Y (RF)	0.04127	0.63579	6.93676
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.04569	0.64655	6.50742
	OE->Y (FF)	0.08690	0.44110	4.44527
	OE->Y (RF)	0.04376	0.62688	6.19341

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	0.00396	0.00384	0.00385
	OE	0.00000	0.00000	0.00000
	OE	0.00391	0.00339	0.00402
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00295	0.00283	0.00282
	OE	0.00000	0.00000	0.00000
	OE	0.00276	0.00238	0.00295

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	-0.00052	-0.00057	-0.00062
	OE	0.00000	0.00000	0.00000
	OE	0.00269	0.00218	0.00277
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00031	-0.00035	-0.00039
	OE	0.00000	0.00000	0.00000
	OE	0.00182	0.00143	0.00199

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)	-0.00195	-0.00196	-0.00196
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00176	-0.00178	-0.00177
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00142	-0.00143	-0.00143
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00131	-0.00131	-0.00131

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)	0.00195	0.00196	0.00196
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00182	0.00183	0.00180
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00142	0.00143	0.00143
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00134	0.00134	0.00132

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)	0.00154	0.00101	0.00161
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00137	0.00089	0.00144
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00103	0.00068	0.00119
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00091	0.00054	0.00107

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)	0.00455	0.00413	0.00477
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00473	0.00429	0.00488
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00352	0.00320	0.00371
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00366	0.00333	0.00380

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00413	0.00630	0.51749
sky130_osu_sc_15T_ls__tnbufi_l	0.00315	0.00458	0.32153

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00020	0.00033
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00056	0.00073

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)	0.08506	1.18734	12.46790
	OE->Y (RR)	0.03459	0.32996	4.44592
	OE->Y (FR)	0.10161	1.22031	12.50360
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.11291	1.36167	12.51780
	OE->Y (RR)	0.03441	0.32991	4.44585
	OE->Y (FR)	0.12583	1.38440	12.41230

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)	0.04133	0.64707	7.16054
	OE->Y (RF)	0.03446	0.32992	4.44587
	OE->Y (FF)	0.08738	0.71130	5.44327
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.04473	0.64131	6.42622
	OE->Y (RF)	0.03426	0.32991	4.44586
	OE->Y (FF)	0.10083	0.73379	5.03200

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	0.00408	0.00396	0.00397
	OE	0.00000	0.00000	0.00000
	OE	0.00972	0.00952	0.01033
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00307	0.00294	0.00294
	OE	0.00000	0.00000	0.00000
	OE	0.00704	0.00685	0.00752

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	-0.00067	-0.00072	-0.00076
	OE	0.00000	0.00000	0.00000
	OE	0.00865	0.00843	0.00919
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00046	-0.00049	-0.00053
	OE	0.00000	0.00000	0.00000
	OE	0.00621	0.00603	0.00664

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)	-0.00165	-0.00167	-0.00166
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00149	-0.00150	-0.00149
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00114	-0.00115	-0.00115
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00103	-0.00104	-0.00104

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)	0.00165	0.00167	0.00166
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00153	0.00154	0.00152
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00114	0.00115	0.00115
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00107	0.00106	0.00105

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)	-0.00273	-0.00343	-0.00283
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00262	-0.00336	-0.00280
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00179	-0.00230	-0.00173
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00171	-0.00224	-0.00170

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)	0.00735	0.00715	0.00793
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00722	0.00698	0.00780
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00533	0.00514	0.00575
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00523	0.00503	0.00567

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00819	0.00725	0.52609

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00054	0.00066

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	0.17195	1.10880	8.02594
	A->Y (FR)	!B	0.11384	1.22552	12.57960
	B->Y (RR)	A	0.13949	1.07285	7.95460
	B->Y (FR)	!A	0.14185	1.26316	12.61140

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	0.14405	0.80932	5.89334
	A->Y (RF)	!B	0.05873	0.64853	6.92623
	B->Y (FF)	A	0.13044	0.79605	5.88130
	B->Y (RF)	!A	0.06875	0.66233	6.94106

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	0.00396	0.00336	0.00388
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00981	0.00930	0.00999
	B	A	0.00000	0.00000	0.00000
	B	A	0.00175	0.00125	0.00182
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01050	0.01013	0.01083

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	0.01184	0.01125	0.01172
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00282	0.00221	0.00271
	B	A	0.00000	0.00000	0.00000
	B	A	0.01081	0.01064	0.01128
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00348	0.00280	0.00329

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00820	0.00730	0.52264

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00054	0.00061

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	0.17310	1.10481	8.02928
	A->Y (FR)	B	0.13218	1.25600	12.65670
	B->Y (RR)	!A	0.14551	1.08533	8.01752
	B->Y (FR)	A	0.14495	1.27203	12.66480

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	0.13706	0.80419	5.90784
	A->Y (RF)	B	0.05734	0.67298	7.22082
	B->Y (FF)	!A	0.12845	0.79441	5.87241
	B->Y (RF)	A	0.06713	0.66274	6.92658

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	0.01135	0.01094	0.01163
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00232	0.00132	0.00177
	B	A	0.00000	0.00000	0.00000
	B	A	0.01158	0.01123	0.01193
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00158	0.00107	0.00164

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	0.00233	0.00155	0.00200
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01232	0.01204	0.01265
	B	A	0.00000	0.00000	0.00000
	B	A	0.00234	0.00163	0.00211
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01102	0.01089	0.01155

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__ant	5.49450
sky130_osu_sc_15T_ls__tiehi	5.49450
sky130_osu_sc_15T_ls__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_ls__ant	0.20850
sky130_osu_sc_15T_ls__tiehi	0.00000
sky130_osu_sc_15T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__ant	0.00000	93958.90000	187918.00000
sky130_osu_sc_15T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	-0.00210	0.01645	0.23911

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	1.63620	1.54262	0.31373