sky130_osu_sc_15T_ls_ss_1P60_100C.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_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.01638	0.01631	0.01264	1.07130	0.49154	1.02694
sky130_osu_sc_15T_ls__addf_l	0.01637	0.01631	0.01262	0.62811	0.49399	0.63060

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.01960	0.02412
sky130_osu_sc_15T_ls__addf_l	0.00000	0.01689	0.02241

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)	0.28651	2.43547	27.34210
	B->CO (RR)	0.28241	2.39197	26.88410
	CI->CO (RR)	0.27264	2.46015	27.87950
	CON->CO (FR)	0.04990	1.00475	12.29170
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.29934	2.24318	20.85680
	B->CO (RR)	0.29531	2.21830	20.80250
	CI->CO (RR)	0.28548	2.26882	21.42390
	CON->CO (FR)	0.06643	1.15340	12.36030

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)	0.41864	3.14293	34.62610
	B->CO (FF)	0.38414	3.02478	33.80600
	CI->CO (FF)	0.37226	3.09851	34.84320
	CON->CO (RF)	0.03753	0.75725	9.27720
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.41677	2.70055	24.46360
	B->CO (FF)	0.38273	2.59950	24.04760
	CI->CO (FF)	0.37033	2.65608	24.69980
	CON->CO (RF)	0.04458	0.80829	8.88513

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)	0.30368	1.41234	11.75110
	B->CON (FR)	0.27260	1.34496	11.68110
	CI->CON (FR)	0.25695	1.36799	11.99910
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.28594	1.39693	11.76890
	B->CON (FR)	0.25564	1.33045	11.69870
	CI->CON (FR)	0.23934	1.35287	12.01830

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)	0.16764	0.87272	7.70159
	B->CON (RF)	0.16656	0.88864	8.07522
	CI->CON (RF)	0.15370	0.90008	8.30197
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.16024	0.86678	7.71512
	B->CON (RF)	0.15944	0.88304	8.08745
	CI->CON (RF)	0.14628	0.89413	8.31122

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)	0.60275	3.05099	27.85570
	B->S (-R)	0.62735	3.07270	27.60930
	CI->S (-R)	0.55276	2.99766	28.04910
	CON->S (RR)	0.15522	0.98981	8.24644
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.57934	2.75151	21.85030
	B->S (-R)	0.60406	2.78014	21.79740
	CI->S (-R)	0.52903	2.69958	22.05920
	CON->S (RR)	0.16278	1.09626	8.12570

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)	0.48197	2.23758	19.23240
	B->S (-F)	0.48305	2.16688	18.99860
	CI->S (-F)	0.46705	2.25495	19.75820
	CON->S (FF)	0.18926	0.96380	7.03498
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.46015	1.99074	14.97420
	B->S (-F)	0.45846	1.93630	15.04250
	CI->S (-F)	0.44470	2.00949	15.52710
	CON->S (FF)	0.18799	0.99826	6.70346

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	0.00315	0.00300	0.00386
	B	0.00404	0.00405	0.00498
	CI	0.00419	0.00435	0.00549
sky130_osu_sc_15T_ls__addf_l	A	0.00241	0.00216	0.00258
	B	0.00330	0.00318	0.00364
	CI	0.00344	0.00349	0.00405

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01162	0.01170	0.01334
	B	0.01140	0.01165	0.01335
	CI	0.01002	0.01040	0.01212
sky130_osu_sc_15T_ls__addf_l	A	0.01090	0.01090	0.01169
	B	0.01068	0.01084	0.01160
	CI	0.00929	0.00960	0.01046

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01159	0.01161	0.01219
	B	0.01138	0.01157	0.01211
	CI	0.01000	0.01032	0.01097
sky130_osu_sc_15T_ls__addf_l	A	0.01089	0.01086	0.01140
	B	0.01068	0.01079	0.01131
	CI	0.00928	0.00958	0.01017

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00312	0.00295	0.00328
	B	0.00401	0.00397	0.00429
	CI	0.00418	0.00430	0.00476
sky130_osu_sc_15T_ls__addf_l	A	0.00238	0.00214	0.00242
	B	0.00328	0.00317	0.00345
	CI	0.00344	0.00348	0.00389

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01161	0.01170	0.01325
	B	0.01140	0.01165	0.01323
	CI	0.01002	0.01040	0.01206
sky130_osu_sc_15T_ls__addf_l	A	0.01090	0.01090	0.01174
	B	0.01069	0.01084	0.01166
	CI	0.00929	0.00960	0.01046

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.02404	0.02431	0.02488
	B	0.02160	0.02121	0.02335
	CI	0.01960	0.01972	0.02044
sky130_osu_sc_15T_ls__addf_l	A	0.02303	0.02301	0.02365
	B	0.02063	0.02009	0.02229
	CI	0.01861	0.01856	0.01943

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00806	0.00881	1.05653	0.51809	1.05657
sky130_osu_sc_15T_ls__addh_l	0.00806	0.00881	0.63775	0.51861	0.64545

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.02137	0.02435
sky130_osu_sc_15T_ls__addh_l	0.00000	0.01905	0.02164

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)	0.19829	1.04551	8.39267
	B->CO (RR)	0.20409	1.03212	8.45023
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.20897	1.15379	8.22628
	B->CO (RR)	0.21479	1.14294	8.28599

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)	0.16751	0.90598	7.04221
	B->CO (FF)	0.17689	0.92406	7.12448
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.16504	0.88411	6.04436
	B->CO (FF)	0.17420	0.90176	6.12819

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	0.27219	0.89410	4.75049
	A->CON (FR)	!B	0.17378	1.26633	11.90700
	B->CON (RR)	A	0.27785	0.87976	4.80041
	B->CON (FR)	!A	0.20994	1.30022	11.71350
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.24819	0.86344	4.66071
	A->CON (FR)	!B	0.15703	1.24942	11.89680
	B->CON (RR)	A	0.25413	0.85161	4.71475
	B->CON (FR)	!A	0.19313	1.28339	11.69760

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	0.25463	1.03186	6.53255
	A->CON (RF)	!B	0.10027	0.84331	8.35539
	B->CON (FF)	A	0.25034	1.05602	6.77127
	B->CON (RF)	!A	0.12396	0.85761	8.23366
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.23524	1.00203	6.40114
	A->CON (RF)	!B	0.09316	0.83944	8.35192
	B->CON (FF)	A	0.23068	1.02635	6.64449
	B->CON (RF)	!A	0.11688	0.85073	8.23040

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	0.20398	2.33456	27.16760
	A->S (FR)	B	0.35985	2.50103	25.15480
	B->S (RR)	!A	0.22858	2.31274	26.55280
	B->S (FR)	A	0.35562	2.55927	25.86560
	CON->S (FR)	-	0.05272	1.01482	12.34480
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.21007	2.15999	21.35860
	A->S (FR)	B	0.35429	2.31034	19.28140
	B->S (RR)	!A	0.23515	2.14909	20.97200
	B->S (FR)	A	0.34960	2.35744	19.77930
	CON->S (FR)	-	0.06594	1.15428	12.45970

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	0.26980	2.83646	32.87890
	A->S (RF)	B	0.34718	1.95295	18.32710
	B->S (FF)	!A	0.30590	2.87761	32.72580
	B->S (RF)	A	0.35283	1.93795	18.38580
	CON->S (RF)	-	0.03587	0.74080	9.09030
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.26385	2.47059	24.20360
	A->S (RF)	B	0.33106	1.75027	13.40900
	B->S (FF)	!A	0.29998	2.50704	24.02600
	B->S (RF)	A	0.33674	1.73783	13.46700
	CON->S (RF)	-	0.04262	0.80551	8.92843

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	0.00510	0.00488	0.00533
	B	0.00000	0.00000	0.00000
	B	0.00460	0.00437	0.00456
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00440	0.00411	0.00478
	B	0.00000	0.00000	0.00000
	B	0.00389	0.00360	0.00397

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	0.00786	0.00759	0.00808
	B	0.00000	0.00000	0.00000
	B	0.00814	0.00821	0.00875
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00717	0.00686	0.00745
	B	0.00000	0.00000	0.00000
	B	0.00745	0.00743	0.00808

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	0.00510	0.00487	0.00569
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00684	0.00685	0.00706
	B	A	0.00000	0.00000	0.00000
	B	A	0.00460	0.00437	0.00481
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00771	0.00768	0.00776
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00439	0.00411	0.00483
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00637	0.00635	0.00648
	B	A	0.00000	0.00000	0.00000
	B	A	0.00389	0.00360	0.00410
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00723	0.00718	0.00721

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	0.00786	0.00762	0.00793
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00122	0.00121	0.00119
	B	A	0.00000	0.00000	0.00000
	B	A	0.00814	0.00819	0.00896
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00188	0.00177	0.00184
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00717	0.00687	0.00754
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00058	0.00055	0.00053
	B	A	0.00000	0.00000	0.00000
	B	A	0.00745	0.00744	0.00818
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00124	0.00111	0.00114

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	0.00787	0.00760	0.00828
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00124	0.00127	0.00139
	B	A	0.00000	0.00000	0.00000
	B	A	0.00814	0.00821	0.00899
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00190	0.00180	0.00192
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00717	0.00687	0.00753
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00058	0.00056	0.00064
	B	A	0.00000	0.00000	0.00000
	B	A	0.00746	0.00744	0.00818
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00125	0.00111	0.00116

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	0.00510	0.00488	0.00543
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00685	0.00693	0.00720
	B	A	0.00000	0.00000	0.00000
	B	A	0.00460	0.00437	0.00465
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00772	0.00777	0.00797
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00439	0.00410	0.00486
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00637	0.00637	0.00653
	B	A	0.00000	0.00000	0.00000
	B	A	0.00389	0.00360	0.00409
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00724	0.00721	0.00726

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00432	0.00443	1.04998
sky130_osu_sc_15T_ls__and2_2	0.00432	0.00443	2.08196
sky130_osu_sc_15T_ls__and2_4	0.00432	0.00443	4.05430
sky130_osu_sc_15T_ls__and2_6	0.00436	0.00443	5.96720
sky130_osu_sc_15T_ls__and2_8	0.00433	0.00444	7.77016
sky130_osu_sc_15T_ls__and2_l	0.00320	0.00331	0.62827

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00842	0.01013
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00648	0.00738
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00933	0.01275
sky130_osu_sc_15T_ls__and2_6	0.00000	0.01218	0.01812
sky130_osu_sc_15T_ls__and2_8	0.00000	0.01504	0.02349
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00636	0.00745

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)	0.15121	0.94621	7.93076
	B->Y (RR)	0.15964	0.94561	8.01368
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.17406	0.88529	8.22361
	B->Y (RR)	0.18254	0.87452	8.28117
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.23999	0.91955	8.76815
	B->Y (RR)	0.24839	0.89845	8.76587
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.30473	0.98273	9.14369
	B->Y (RR)	0.31310	0.95507	9.10174
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.36781	1.05019	9.45427
	B->Y (RR)	0.37615	1.02191	9.37679
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.19177	1.13594	8.19774
	B->Y (RR)	0.20164	1.13060	8.28616

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)	0.12682	0.81245	6.45474
	B->Y (FF)	0.13485	0.83420	6.60717
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.15011	0.79697	6.81679
	B->Y (FF)	0.15852	0.81385	6.90776
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.21370	0.84863	7.31204
	B->Y (FF)	0.22173	0.86051	7.41396
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.27965	0.91427	7.70556
	B->Y (FF)	0.28708	0.92379	7.76588
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.34197	0.97704	7.95514
	B->Y (FF)	0.34897	0.98661	8.00600
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.15433	0.91369	6.45042
	B->Y (FF)	0.16538	0.94059	6.59429

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	0.00399	0.00355	0.00619
	B	0.00000	0.00000	0.00000
	B	0.00407	0.00351	0.00511
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00766	0.00753	0.00995
	B	0.00000	0.00000	0.00000
	B	0.00774	0.00756	0.00897
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01575	0.01617	0.01875
	B	0.00000	0.00000	0.00000
	B	0.01585	0.01639	0.01793
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02395	0.02476	0.02731
	B	0.00000	0.00000	0.00000
	B	0.02396	0.02499	0.02706
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03208	0.03316	0.03663
	B	0.00000	0.00000	0.00000
	B	0.03225	0.03335	0.03610
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00285	0.00251	0.00387
	B	0.00000	0.00000	0.00000
	B	0.00292	0.00250	0.00327

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	0.00957	0.00954	0.01216
	B	0.00000	0.00000	0.00000
	B	0.01077	0.01070	0.01309
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01196	0.01254	0.01511
	B	0.00000	0.00000	0.00000
	B	0.01319	0.01366	0.01601
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01789	0.01961	0.02227
	B	0.00000	0.00000	0.00000
	B	0.01919	0.02060	0.02310
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02420	0.02666	0.02980
	B	0.00000	0.00000	0.00000
	B	0.02520	0.02756	0.03046
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03011	0.03345	0.03715
	B	0.00000	0.00000	0.00000
	B	0.03119	0.03420	0.03758
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00714	0.00699	0.00827
	B	0.00000	0.00000	0.00000
	B	0.00795	0.00780	0.00895

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)	-0.00352	-0.00355	-0.00355
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00352	-0.00355	-0.00355
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00352	-0.00355	-0.00355
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00354	-0.00357	-0.00358
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00352	-0.00354	-0.00355
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00245	-0.00247	-0.00247

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)	0.00356	0.00358	0.00357
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00356	0.00358	0.00357
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00356	0.00358	0.00357
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00357	0.00360	0.00359
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00354	0.00358	0.00357
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00247	0.00249	0.00248

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)	-0.00338	-0.00339	-0.00338
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00338	-0.00340	-0.00338
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00338	-0.00340	-0.00338
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00338	-0.00340	-0.00338
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00338	-0.00339	-0.00338
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00235	-0.00237	-0.00236

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)	0.00341	0.00344	0.00339
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00340	0.00344	0.00339
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00341	0.00344	0.00339
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00341	0.00344	0.00339
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00341	0.00344	0.00339
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00237	0.00240	0.00236

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00407	0.00424	0.00411	0.49010

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00553	0.01077

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)	0.15985	1.28449	11.73950
	A1->Y (FR)	0.13626	1.22467	11.43890
	B0->Y (FR)	0.11881	1.24427	11.99120

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)	0.09240	0.78008	7.44900
	A1->Y (RF)	0.08494	0.80429	7.98601
	B0->Y (RF)	0.05391	0.75822	7.96398

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	0.00840	0.00833	0.00834
	A1	0.00000	0.00000	0.00000
	A1	0.00714	0.00705	0.00706
	B0	0.00658	0.00645	0.00658

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	0.00164	0.00132	0.00136
	A1	0.00000	0.00000	0.00000
	A1	0.00166	0.00134	0.00146
	B0	-0.00077	-0.00088	-0.00083

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)	-0.00292	-0.00307	-0.00308
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00315	-0.00317	-0.00315
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00315	-0.00317	-0.00315

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)	0.00306	0.00307	0.00308
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00315	0.00318	0.00316
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00318	0.00320	0.00316

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)	-0.00289	-0.00302	-0.00303
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00310	-0.00312	-0.00311
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00332	-0.00333	-0.00335

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)	0.00302	0.00302	0.00303
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00310	0.00313	0.00312
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00335	0.00338	0.00337

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)	-0.00145	-0.00147	-0.00146

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)	0.00160	0.00161	0.00150

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_1	0.00407	0.00422	0.00439	0.00419	0.49640

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_1	0.00000	0.00599	0.01208

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)	0.19746	1.32287	11.76830
	A1->Y (FR)	0.17707	1.29142	11.67820
	B0->Y (FR)	0.12339	1.23296	11.89390
	B1->Y (FR)	0.14396	1.26618	12.01590

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)	0.12308	0.81706	7.53611
	A1->Y (RF)	0.11552	0.84174	8.07098
	B0->Y (RF)	0.06357	0.78042	8.00873
	B1->Y (RF)	0.07102	0.75594	7.47203

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	0.01029	0.01020	0.01023
	A1	0.00904	0.00891	0.00888
	B0	0.00708	0.00689	0.00712
	B1	0.00827	0.00811	0.00835

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00345	0.00314	0.00313
	A1	0.00346	0.00315	0.00324
	B0	-0.00045	-0.00056	-0.00042
	B1	-0.00039	-0.00054	-0.00048

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)	-0.00294	-0.00309	-0.00307
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00315	-0.00317	-0.00316
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00315	-0.00317	-0.00315
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00315	-0.00317	-0.00315

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)	0.00306	0.00309	0.00307
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00315	0.00318	0.00316
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00318	0.00320	0.00316
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00318	0.00320	0.00316

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)	-0.00290	-0.00302	-0.00303
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00310	-0.00311	-0.00311
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00330	-0.00331	-0.00335
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00330	-0.00331	-0.00335

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)	0.00302	0.00302	0.00303
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00310	0.00312	0.00311
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00335	0.00338	0.00336
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00335	0.00338	0.00336

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)	-0.00146	-0.00148	-0.00146
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00145	-0.00146	-0.00146
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00343	-0.00344	-0.00346
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00341	-0.00344	-0.00346

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)	0.00167	0.00168	0.00152
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00145	0.00146	0.00146
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00345	0.00351	0.00347
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00345	0.00351	0.00347

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)	-0.00147	-0.00149	-0.00148
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00147	-0.00148	-0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00320	-0.00323	-0.00321
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00320	-0.00323	-0.00321

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)	0.00168	0.00169	0.00153
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00147	0.00148	0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00324	0.00324	0.00322
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00324	0.00324	0.00322

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00442	1.03874
sky130_osu_sc_15T_ls__buf_2	0.00446	2.07891
sky130_osu_sc_15T_ls__buf_4	0.00445	4.05271
sky130_osu_sc_15T_ls__buf_6	0.00093	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00446	7.87377
sky130_osu_sc_15T_ls__buf_l	0.00334	0.62774

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00917	0.00917
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00828	0.01037
sky130_osu_sc_15T_ls__buf_4	0.00000	0.01197	0.01573
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.01935	0.02647
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00646	0.00646

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)**	0.10562	0.88444	7.78296
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.11843	0.80722	8.08254
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.15922	0.81299	8.52568
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.23841	0.88607	9.15952
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.13201	1.05716	8.00454

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)**	0.12033	0.79736	6.35805
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.14579	0.79957	6.95349
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.21002	0.85356	7.54302
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.33892	0.98349	8.27310
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.14879	0.90435	6.39948

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	0.00377	0.00318	0.00580
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00744	0.00710	0.00945
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01554	0.01587	0.01809
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03162	0.03281	0.03625
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00278	0.00230	0.00370

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	0.00930	0.00919	0.01176
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01174	0.01215	0.01466
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01772	0.01918	0.02170
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02985	0.03292	0.03627
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00700	0.00681	0.00806

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
	-0.00056	-0.00057	-0.00057

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
	0.00056	0.00057	0.00057

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00418	0.00419	0.01218	1.00255	0.99523
sky130_osu_sc_15T_ls__dffr_l	0.00418	0.00419	0.01217	0.62321	0.62267

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.03627	0.04122
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.03355	0.03850

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)	0.67555	2.19562	16.77270
	QN->Q (FR)	0.05908	1.10837	13.29960
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.67662	2.41179	16.56760
	QN->Q (FR)	0.07100	1.21865	13.00630

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)	0.60003	2.20236	18.15950
	QN->Q (RF)	0.04132	0.80487	9.73420
	RN->Q (FF)	0.43795	2.15039	19.30620
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.62670	2.48280	18.03280
	QN->Q (RF)	0.04695	0.85064	9.34320
	RN->Q (FF)	0.46490	2.43314	19.17280

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)	0.53009	1.35571	8.43174
	RN->QN (FR)	0.36651	1.30542	9.57721
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.53895	1.47421	8.43401
	RN->QN (FR)	0.37628	1.42433	9.57140

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)**	0.58015	1.22672	5.71456
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.56124	1.24162	5.46300

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)	-0.14781	-0.16101	-0.47620
	setup	CK (R)	0.53220	0.52470	1.62224
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.14856	-0.16207	-0.47828
	setup	CK (R)	0.53139	0.52491	1.62784

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)	-0.24528	-0.56880	-4.21215
	setup	CK (R)	0.29336	0.58870	4.25231
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.24258	-0.56892	-4.21492
	setup	CK (R)	0.29260	0.58870	4.25394

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)	-0.14781	-0.16101	-0.47620
	setup	CK (R)	0.53220	0.52470	1.62224
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.14856	-0.16207	-0.47828
	setup	CK (R)	0.53139	0.52491	1.62784

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)	-0.24528	-0.56880	-4.21215
	setup	CK (R)	0.29336	0.58870	4.25231
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.24258	-0.56892	-4.21492
	setup	CK (R)	0.29260	0.58870	4.25394

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)	0.44747	0.45569	1.55866
	removal	CK (R)	-0.11547	-0.12461	-0.19575
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.44567	0.45647	1.55958
	removal	CK (R)	-0.11147	-0.12461	-0.19575

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)	0.44747	0.45569	1.55866
	removal	CK (R)	-0.11547	-0.12461	-0.19575
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.44567	0.45647	1.55958
	removal	CK (R)	-0.11147	-0.12461	-0.19575

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 ()	0.26460	0.55908	13.33370
	min_pulse_width	RN ()	0.26251	0.55908	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.26251	0.55908	13.33370
	min_pulse_width	RN ()	0.26042	0.55908	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 ()	0.32308	0.55908	13.33370
	min_pulse_width	CK ()	0.32099	0.55908	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.29592	0.55908	13.33370
	min_pulse_width	CK ()	0.31263	0.55908	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 ()	0.65782	0.71738	13.33370
	min_pulse_width	CK ()	0.24580	0.55908	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.65512	0.71738	13.33370
	min_pulse_width	CK ()	0.24371	0.55908	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	0.00903	0.00772	0.00051
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00787	0.00683	0.00549

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	0.01069	0.00955	0.00101
	RN	-0.00125	-0.05292	-0.64163
	RN	0.02410	0.02308	0.01432
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00951	0.00873	0.00612
	RN	-0.00125	-0.03979	-0.39886
	RN	0.02291	0.02225	0.01937

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	0.01069	0.00955	0.00112
	RN	-0.00125	-0.05269	-0.63695
	RN	0.02410	0.02309	0.01443
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00951	0.00873	0.00612
	RN	-0.00125	-0.03977	-0.39851
	RN	0.02291	0.02225	0.01939

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	0.00900	0.00770	0.00038
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00784	0.00680	0.00525

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	-0.00276	-0.00305	-0.00305
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01080	0.01016	0.01128
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00475	0.00417	0.00535
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00276	-0.00305	-0.00305
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01080	0.01016	0.01128
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00475	0.00417	0.00535

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	0.00304	0.00308	0.00305
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01848	0.01817	0.01909
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00879	0.00855	0.00966
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00304	0.00308	0.00305
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01848	0.01818	0.01909
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00879	0.00855	0.00966

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)	0.00339	0.00279	0.00506
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00983	0.00898	0.01111
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)	0.00339	0.00280	0.00506
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00983	0.00898	0.01111

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)	0.00850	0.00816	0.01080
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01805	0.01738	0.01966
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)	0.00850	0.00816	0.01080
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01804	0.01738	0.01966

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)	-0.00063	-0.00138	0.00084
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00533	0.00417	0.00607
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00095	-0.00175	0.00052
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00063	-0.00138	0.00084
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00533	0.00416	0.00607
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00095	-0.00175	0.00052

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)	0.01335	0.01296	0.01546
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02847	0.02754	0.02921
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02181	0.02125	0.02316
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02816	0.02727	0.03217
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01524	0.01485	0.01716
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01335	0.01295	0.01546
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02847	0.02754	0.02921
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02181	0.02125	0.02316
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02816	0.02727	0.03217
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01524	0.01484	0.01716

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00414	0.00419	0.00914	0.01250	1.07208	1.06243
sky130_osu_sc_15T_ls__dffsr_l	0.00414	0.00419	0.00913	0.01250	0.62108	0.62237

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.04070	0.05431
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.03799	0.05159

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)	0.62018	2.15461	17.43430
	QN->Q (FR)	0.05326	1.05120	12.91250
	RN->Q (RR)	0.49549	2.04803	17.46560
	SN->Q (FR)	0.45813	2.09523	18.98910
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.64035	2.37336	16.54240
	QN->Q (FR)	0.07100	1.21473	12.93590
	RN->Q (RR)	0.51637	2.26481	16.56440
	SN->Q (FR)	0.47820	2.31495	18.05690

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)	0.67847	2.29548	18.73260
	QN->Q (RF)	0.04089	0.82277	10.09490
	RN->Q (FF)	0.46044	2.18811	19.92670
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.71459	2.57752	18.07640
	QN->Q (RF)	0.04685	0.84940	9.32236
	RN->Q (FF)	0.49752	2.47152	19.26260

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)	0.60861	1.43397	8.56915
	RN->QN (FR)	0.39133	1.32947	9.75972
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.62512	1.57156	8.53475
	RN->QN (FR)	0.40840	1.46594	9.71837

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)	0.53485	1.18912	6.04067
	RN->QN (RF)	0.41039	1.08373	6.06776
	SN->QN (FF)	0.37330	1.13108	7.58894
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.53099	1.20912	5.49798
	RN->QN (RF)	0.40665	1.10187	5.52203
	SN->QN (FF)	0.36919	1.15169	7.01206

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)	-0.14697	-0.16357	-0.56045
	setup	CK (R)	0.46583	0.46121	1.61593
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.14864	-0.16525	-0.56065
	setup	CK (R)	0.46247	0.45545	1.60992

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)	-0.27691	-0.59599	-4.38307
	setup	CK (R)	0.34849	0.61417	4.41918
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.27789	-0.59890	-4.38470
	setup	CK (R)	0.34607	0.61417	4.41708

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)	-0.14697	-0.16357	-0.56045
	setup	CK (R)	0.46583	0.46121	1.61593
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.14864	-0.16525	-0.56065
	setup	CK (R)	0.46247	0.45545	1.60992

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)	-0.27691	-0.59599	-4.38307
	setup	CK (R)	0.34849	0.61417	4.41918
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.27789	-0.59890	-4.38470
	setup	CK (R)	0.34607	0.61417	4.41708

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)	0.34225	0.35680	1.44140
	removal	CK (R)	-0.04544	-0.05340	-0.11024
	hold	SN (R)	-0.36664	-0.61120	-3.12918
	setup	SN (R)	0.40035	0.66320	5.33324
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.34307	0.35056	1.43983
	removal	CK (R)	-0.04544	-0.05340	-0.11024
	hold	SN (R)	-0.35769	-0.60259	-3.05461
	setup	SN (R)	0.39911	0.65618	5.24945

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)	0.34225	0.35680	1.44140
	removal	CK (R)	-0.04544	-0.05340	-0.11024
	hold	SN (R)	-0.36758	-0.61120	-3.12918
	hold	SN (R)	-0.36664	-0.61407	-3.14835
	setup	SN (R)	0.40035	0.65823	5.22704
	setup	SN (R)	0.39725	0.66320	5.33324
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.34307	0.35056	1.43983
	removal	CK (R)	-0.04544	-0.05340	-0.11024
	hold	SN (R)	-0.36265	-0.60259	-3.05461
	hold	SN (R)	-0.35769	-0.60408	-3.07501
	setup	SN (R)	0.39911	0.64714	5.08896
	setup	SN (R)	0.37843	0.65618	5.24945

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 ()	0.30444	0.56342	13.33370
	min_pulse_width	RN ()	0.31076	0.56342	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.30332	0.56125	13.33370
	min_pulse_width	RN ()	0.30122	0.56125	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)	0.09064	0.12387	3.09443
	removal	CK (R)	-0.03526	-0.08743	-0.59254
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.08466	0.12187	2.89629
	removal	CK (R)	-0.03526	-0.08743	-0.59254

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)	0.09064	0.12387	3.09443
	removal	CK (R)	-0.03526	-0.08743	-0.59254
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.08466	0.12187	2.89629
	removal	CK (R)	-0.03526	-0.08743	-0.59254

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 ()	0.35928	0.65016	13.33370
	min_pulse_width	SN ()	0.36290	0.65232	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.35829	0.63931	13.33370
	min_pulse_width	SN ()	0.34613	0.64365	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 ()	0.28339	0.55908	13.33370
	min_pulse_width	CK ()	0.33770	0.55908	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.27086	0.55908	13.33370
	min_pulse_width	CK ()	0.33143	0.55908	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 ()	0.59101	0.65232	13.33370
	min_pulse_width	CK ()	0.30637	0.55908	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.58905	0.65016	13.33370
	min_pulse_width	CK ()	0.30428	0.55908	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	0.01140	0.01004	0.00155
	RN	0.02119	0.02008	0.01011
	SN	-0.00125	-0.05510	-0.68613
	SN	0.02347	0.02244	0.01215
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01034	0.00933	0.00794
	RN	0.02011	0.01937	0.01647
	SN	-0.00125	-0.03971	-0.39749
	SN	0.02240	0.02173	0.01826

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	0.01234	0.01166	0.00698
	RN	-0.00125	-0.05510	-0.68613
	RN	0.02502	0.02427	0.01940
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01125	0.01056	0.00802
	RN	-0.00125	-0.03971	-0.39749
	RN	0.02390	0.02314	0.02043

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	0.01234	0.01166	0.00705
	RN	-0.00125	-0.05480	-0.67995
	RN	0.02502	0.02427	0.01940
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01125	0.01056	0.00801
	RN	-0.00125	-0.03976	-0.39831
	RN	0.02390	0.02314	0.02036

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	0.01137	0.01002	0.00170
	RN	0.02116	0.02007	0.01020
	SN	-0.00125	-0.05480	-0.67989
	SN	0.02343	0.02242	0.01219
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01031	0.00930	0.00772
	RN	0.02008	0.01933	0.01621
	SN	-0.00125	-0.03976	-0.39826
	SN	0.02236	0.02170	0.01823

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	-0.00296	-0.00306	-0.00305
	(!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)	0.01420	0.01360	0.01470
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00552	0.00496	0.00612
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00548	0.00493	0.00608
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00556	0.00500	0.00616
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00296	-0.00306	-0.00305
	(!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)	0.01421	0.01360	0.01470
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00552	0.00496	0.00612
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00548	0.00492	0.00608
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00556	0.00500	0.00616

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	0.00307	0.00306	0.00305
	(!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)	0.02121	0.02090	0.02165
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00943	0.00924	0.01027
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00944	0.00926	0.01027
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00938	0.00920	0.01020
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00307	0.00306	0.00305
	(!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)	0.02121	0.02089	0.02165
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00942	0.00923	0.01026
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00944	0.00925	0.01026
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00937	0.00919	0.01019

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)	0.00302	0.00237	0.00455
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01206	0.01116	0.01317
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)	0.00302	0.00237	0.00456
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01206	0.01117	0.01317

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)	0.00929	0.00897	0.01163
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01928	0.01854	0.02072
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)	0.00928	0.00896	0.01162
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01927	0.01852	0.02071

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)	-0.00699	-0.00704	-0.00705
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00724	-0.00744	-0.00741
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00702	-0.00713	-0.00709
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00447	0.00390	0.00527
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)	-0.00700	-0.00697	-0.00705
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00722	-0.00743	-0.00740
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00701	-0.00712	-0.00709
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00448	0.00391	0.00528

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)	0.00704	0.00712	0.00707
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00740	0.00745	0.00741
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00705	0.00713	0.00709
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01480	0.01442	0.01530
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)	0.00704	0.00712	0.00708
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00739	0.00743	0.00740
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00705	0.00713	0.00709
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01479	0.01444	0.01529

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)	-0.00063	-0.00138	0.00084
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00613	0.00505	0.00696
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00607	0.00499	0.00689
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00079	-0.00158	0.00068
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00413	0.00263	0.00715
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00063	-0.00138	0.00084
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00612	0.00505	0.00695
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00606	0.00499	0.00688
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00079	-0.00158	0.00068
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00413	0.00263	0.00715

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)	0.03200	0.03110	0.03275
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01340	0.01295	0.01551
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02238	0.02189	0.02376
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02243	0.02198	0.02383
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03088	0.02984	0.03455
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01511	0.01472	0.01703
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01801	0.01721	0.02226
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03200	0.03110	0.03275
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01340	0.01295	0.01551
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02238	0.02189	0.02376
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02243	0.02198	0.02383
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03087	0.02984	0.03454
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01511	0.01472	0.01703
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01800	0.01720	0.02225

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00416	0.00712	0.01228	0.99362	1.00206
sky130_osu_sc_15T_ls__dffs_l	0.00416	0.00712	0.01228	0.62008	0.62274

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.02817	0.03362
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.02546	0.03091

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)	0.48437	1.96353	16.40550
	QN->Q (FR)	0.05912	1.10264	13.18130
	SN->Q (FR)	0.37687	2.02516	18.32670
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.49849	2.20354	16.28750
	QN->Q (FR)	0.07102	1.21250	12.94250
	SN->Q (FR)	0.38920	2.26180	18.14160

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)	0.70241	2.30981	18.08720
	QN->Q (RF)	0.04112	0.80130	9.66484
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.72418	2.58547	18.02910
	QN->Q (RF)	0.04677	0.84751	9.30406

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)	0.62767	1.47497	8.57638
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.63233	1.58025	8.52752

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)	0.40011	1.01073	5.53958
	SN->QN (FF)	0.29199	1.07396	7.46759
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.39382	1.04349	5.28126
	SN->QN (FF)	0.28346	1.10274	7.13081

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)	-0.11645	-0.13495	-0.45265
	setup	CK (R)	0.35044	0.36000	1.51928
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.11511	-0.13602	-0.45321
	setup	CK (R)	0.35100	0.35699	1.51958

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)	-0.25410	-0.57548	-4.23665
	setup	CK (R)	0.35446	0.59460	4.27979
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.25615	-0.57401	-4.23795
	setup	CK (R)	0.35388	0.59454	4.27949

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)	-0.11645	-0.13495	-0.45265
	setup	CK (R)	0.35044	0.36000	1.51928
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.11511	-0.13602	-0.45321
	setup	CK (R)	0.35100	0.35699	1.51958

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)	-0.25410	-0.57548	-4.23665
	setup	CK (R)	0.35446	0.59460	4.27979
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.25615	-0.57401	-4.23795
	setup	CK (R)	0.35388	0.59454	4.27949

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)	0.12208	0.15993	2.26746
	removal	CK (R)	-0.04941	-0.11248	-0.74513
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.12188	0.15894	2.13792
	removal	CK (R)	-0.04941	-0.11248	-0.74513

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)	0.12208	0.15993	2.26746
	removal	CK (R)	-0.04941	-0.11248	-0.74513
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.12188	0.15894	2.13792
	removal	CK (R)	-0.04941	-0.11248	-0.74513

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 ()	0.25882	0.66967	13.33370
	min_pulse_width	SN ()	0.26467	0.67184	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.25418	0.65016	13.33370
	min_pulse_width	SN ()	0.25410	0.65666	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 ()	0.21030	0.55908	13.33370
	min_pulse_width	CK ()	0.34605	0.55908	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.19985	0.55908	13.33370
	min_pulse_width	CK ()	0.33561	0.55908	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 ()	0.47796	0.57209	13.33370
	min_pulse_width	CK ()	0.31681	0.55908	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.47617	0.56992	13.33370
	min_pulse_width	CK ()	0.31472	0.55908	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	0.00905	0.00771	0.00069
	SN	-0.00125	-0.05264	-0.63592
	SN	0.01961	0.01849	0.00961
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00788	0.00681	0.00549
	SN	-0.00125	-0.03967	-0.39685
	SN	0.01843	0.01762	0.01437

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	0.01062	0.00955	0.00136
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00945	0.00872	0.00624

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	0.01062	0.00955	0.00131
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00945	0.00872	0.00623

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	0.00902	0.00768	0.00055
	SN	-0.00125	-0.05291	-0.64125
	SN	0.01958	0.01848	0.00954
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00785	0.00680	0.00539
	SN	-0.00125	-0.03977	-0.39850
	SN	0.01840	0.01758	0.01428

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	-0.00301	-0.00310	-0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01042	0.00977	0.01079
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00466	0.00408	0.00528
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00301	-0.00310	-0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01042	0.00977	0.01079
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00466	0.00408	0.00528

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	0.00312	0.00310	0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01820	0.01788	0.01874
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00899	0.00876	0.00985
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00312	0.00310	0.00309
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01820	0.01788	0.01874
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00899	0.00876	0.00985

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)	-0.00497	-0.00500	-0.00500
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00396	0.00346	0.00440
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)	-0.00497	-0.00499	-0.00500
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00396	0.00346	0.00440

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)	0.00502	0.00507	0.00501
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01007	0.00961	0.01058
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)	0.00502	0.00507	0.00501
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01007	0.00961	0.01058

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)	-0.00065	-0.00140	0.00081
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00091	-0.00171	0.00056
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00323	0.00172	0.00639
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00065	-0.00140	0.00081
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00091	-0.00171	0.00056
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00323	0.00172	0.00639

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)	0.02812	0.02718	0.02887
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01337	0.01292	0.01548
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02779	0.02676	0.03167
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01518	0.01481	0.01711
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01748	0.01675	0.02187
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02812	0.02718	0.02887
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01337	0.01297	0.01548
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02779	0.02676	0.03167
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01518	0.01481	0.01711
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01747	0.01675	0.02187

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00432	0.01216	1.07598	1.07194
sky130_osu_sc_15T_ls__dff_l	0.00432	0.01216	0.59003	0.58725

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.03280	0.03776
sky130_osu_sc_15T_ls__dff_l	0.00000	0.03009	0.03505

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)	0.39578	1.89673	17.18990
	QN->Q (FR)	0.05298	1.05181	12.91210
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.42557	2.11739	15.85020
	QN->Q (FR)	0.07720	1.27348	13.36850

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)	0.55619	2.15988	18.62180
	QN->Q (RF)	0.04074	0.82207	10.09700
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.60105	2.45904	17.67830
	QN->Q (RF)	0.04690	0.83436	9.08844

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)	0.48967	1.30411	8.47379
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.51243	1.45802	8.36108

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)	0.32009	0.93494	5.79794
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.32230	0.95076	4.98967

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)	-0.10385	-0.13058	-0.46818
	setup	CK (R)	0.26485	0.28009	1.50734
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.10462	-0.13072	-0.46899
	setup	CK (R)	0.26496	0.27442	1.50058

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)	-0.23396	-0.57540	-4.28843
	setup	CK (R)	0.27365	0.59435	4.32401
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.23448	-0.57442	-4.28781
	setup	CK (R)	0.27323	0.59435	4.32351

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 ()	0.17479	0.55908	13.33370
	min_pulse_width	CK ()	0.30219	0.55908	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.16852	0.55908	13.33370
	min_pulse_width	CK ()	0.29384	0.55908	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 ()**	0.38991	0.55908	13.33370
	min_pulse_width	**CK ()**	0.22283	0.55908	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.38782	0.55908	13.33370
	min_pulse_width	**CK ()**	0.22074	0.55908	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	0.00965	0.00811	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00859	0.00745	0.00619

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	0.01086	0.01014	0.00558
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00976	0.00881	0.00447

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	0.01086	0.01015	0.00561
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00976	0.00882	0.00454

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	0.00962	0.00809	-0.00020
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00856	0.00742	0.00614

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	-0.00275	-0.00307	-0.00304
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01000	0.00936	0.01043
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00275	-0.00307	-0.00304
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01001	0.00937	0.01044

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	0.00303	0.00308	0.00304
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01889	0.01850	0.01942
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00303	0.00308	0.00304
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01890	0.01851	0.01942

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)	-0.00065	-0.00139	0.00083
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00090	-0.00168	0.00059
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00065	-0.00139	0.00083
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00090	-0.00169	0.00059

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)	0.01330	0.01290	0.01542
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02770	0.02682	0.02850
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02829	0.02723	0.03216
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01510	0.01477	0.01707
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01330	0.01290	0.01542
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02770	0.02682	0.02851
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02830	0.02724	0.03217
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01510	0.01477	0.01707

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00424	1.03183
sky130_osu_sc_15T_ls__inv_10	0.03933	9.75529
sky130_osu_sc_15T_ls__inv_2	0.00805	2.06082
sky130_osu_sc_15T_ls__inv_3	0.01199	3.00546
sky130_osu_sc_15T_ls__inv_4	0.01585	4.03743
sky130_osu_sc_15T_ls__inv_6	0.02374	5.95775
sky130_osu_sc_15T_ls__inv_8	0.03154	7.88267
sky130_osu_sc_15T_ls__inv_l	0.00310	0.58573

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00458	0.00500
sky130_osu_sc_15T_ls__inv_10	0.00000	0.01846	0.02684
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00369	0.00537
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00828	0.00954
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00738	0.01074
sky130_osu_sc_15T_ls__inv_6	0.00000	0.01107	0.01610
sky130_osu_sc_15T_ls__inv_8	0.00000	0.01477	0.02147
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00323	0.00414

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)**	0.05168	1.00416	12.16750
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.06102	0.67989	12.15610
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.03998	0.85959	12.13530
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.04281	0.80009	12.15720
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.04243	0.76199	12.14700
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.04640	0.71583	12.11410
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.05309	0.69291	12.11850
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.07014	1.16079	12.22130

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)**	0.03723	0.74690	9.11405
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.04840	0.51962	9.15685
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.02992	0.65429	9.12918
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.03204	0.62256	9.21174
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.03141	0.59084	9.20000
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.03696	0.55558	9.18855
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.04254	0.53487	9.18805
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.04400	0.78782	8.59440

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	0.00492	0.00488	0.00517
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.04185	0.04301	0.04631
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00871	0.00877	0.00943
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01338	0.01266	0.01445
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01715	0.01739	0.01871
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02543	0.02516	0.02801
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03368	0.03436	0.03718
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00362	0.00356	0.00367

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	-0.00091	-0.00097	-0.00083
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01635	-0.01579	-0.01217
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00296	-0.00293	-0.00255
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00394	-0.00393	-0.00325
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00610	-0.00607	-0.00497
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00936	-0.00920	-0.00740
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01281	-0.01230	-0.00982
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00056	-0.00063	-0.00057

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.18482	0.18471	0.00865	0.18182

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.01418	0.01563

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)	-	0.02889	0.43933	4.04982
	A1->Y (RR)	-	0.03325	0.44295	4.05485
	S0->Y (RR)	(!A0 * A1)	0.08739	0.47368	1.88182
	S0->Y (FR)	(A0 * !A1)	0.06180	0.58506	4.19211

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)	-	0.02874	0.40165	3.56330
	A1->Y (FF)	-	0.02546	0.39811	3.55639
	S0->Y (FF)	(!A0 * A1)	0.11906	0.55739	2.79850
	S0->Y (RF)	(A0 * !A1)	0.04129	0.46150	3.23781

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	-	-0.00488	-0.00488	-0.00488
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00343	-0.00343	-0.00343
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00586	0.00555	0.00849
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00327	-0.00394	-0.00137

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	-	0.00488	0.00488	0.00489
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00343	0.00343	0.00343
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00105	0.00043	0.00308
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01299	0.01265	0.01535

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)	-0.00125	-0.00125	-0.00125

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)	0.00125	0.00125	0.00125

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)	-0.00150	-0.00150	-0.00150

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)	0.00150	0.00150	0.00150

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)	-0.00113	-0.00177	0.00087
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00109	-0.00178	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)	0.00990	0.00960	0.01231
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00895	0.00869	0.01156

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00424	0.00421	0.92116
sky130_osu_sc_15T_ls__nand2_l	0.00310	0.00309	0.55820

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00362	0.00513
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00268	0.00331

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)	0.05436	0.96981	11.45410
	B->Y (FR)	0.06352	0.97243	11.34810
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.07270	1.14389	11.91840
	B->Y (FR)	0.08490	1.15661	11.90990

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)	0.06110	0.97687	11.38900
	B->Y (RF)	0.06889	0.95268	10.91540
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.07734	1.11671	11.39460
	B->Y (RF)	0.08515	1.09125	10.88810

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	0.00524	0.00495	0.00543
	B	0.00000	0.00000	0.00000
	B	0.00649	0.00639	0.00661
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00379	0.00374	0.00385
	B	0.00000	0.00000	0.00000
	B	0.00464	0.00456	0.00467

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	-0.00055	-0.00067	-0.00052
	B	0.00000	0.00000	0.00000
	B	-0.00050	-0.00065	-0.00057
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00036	-0.00044	-0.00038
	B	0.00000	0.00000	0.00000
	B	-0.00033	-0.00042	-0.00041

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)	-0.00346	-0.00348	-0.00349
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00236	-0.00237	-0.00238

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)	0.00349	0.00351	0.00350
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00238	0.00240	0.00238

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)	-0.00325	-0.00327	-0.00325
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00222	-0.00223	-0.00222

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)	0.00328	0.00329	0.00326
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00224	0.00225	0.00223

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00419	0.00450	0.52216
sky130_osu_sc_15T_ls__nor2_l	0.00299	0.00332	0.30328

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00526	0.00576
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00374	0.00431

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)	0.11983	1.21982	11.73740
	B->Y (FR)	0.09436	1.19558	11.93760
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.15302	1.41719	11.68080
	B->Y (FR)	0.13066	1.40200	11.99950

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)	0.04985	0.63876	6.69331
	B->Y (RF)	0.03954	0.62359	6.66897
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.05529	0.67195	6.45686
	B->Y (RF)	0.04627	0.65777	6.43453

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	0.00695	0.00686	0.00690
	B	0.00000	0.00000	0.00000
	B	0.00534	0.00520	0.00548
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00481	0.00475	0.00473
	B	0.00000	0.00000	0.00000
	B	0.00386	0.00375	0.00386

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	0.00068	0.00041	0.00056
	B	0.00000	0.00000	0.00000
	B	-0.00072	-0.00077	-0.00064
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00043	0.00027	0.00034
	B	0.00000	0.00000	0.00000
	B	-0.00042	-0.00045	-0.00042

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)	-0.00279	-0.00308	-0.00307
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00187	-0.00203	-0.00202

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)	0.00306	0.00309	0.00307
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00200	0.00203	0.00202

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)	-0.00146	-0.00147	-0.00147
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00098	-0.00099	-0.00098

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)	0.00154	0.00155	0.00150
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00104	0.00104	0.00100

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00424	0.00430	0.00352	0.51297

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00669	0.00990

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)	0.13099	1.24066	11.98030
	A1->Y (FR)	0.16221	1.27126	11.79330
	B0->Y (FR)	0.08701	1.09065	11.07660

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)	0.08197	0.80385	7.84859
	A1->Y (RF)	0.10009	0.80630	7.72617
	B0->Y (RF)	0.06436	0.82627	8.48625

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	0.00718	0.00703	0.00726
	A1	0.00000	0.00000	0.00000
	A1	0.00885	0.00873	0.00879
	B0	0.00595	0.00581	0.00594

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	0.00024	0.00010	0.00014
	A1	0.00000	0.00000	0.00000
	A1	0.00165	0.00135	0.00140
	B0	0.00234	0.00224	0.00231

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)	-0.00146	-0.00148	-0.00147
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00300	-0.00309	-0.00307
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00316	-0.00317	-0.00317

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)	0.00156	0.00156	0.00150
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00305	0.00309	0.00307
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00318	0.00320	0.00318

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)	-0.00270	-0.00303	-0.00300
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00297	-0.00308	-0.00306
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00313	-0.00315	-0.00313

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)	0.00300	0.00304	0.00300
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00305	0.00309	0.00306
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00313	0.00317	0.00314

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)	-0.00240	-0.00242	-0.00246

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)	0.00246	0.00249	0.00248

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__oai22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_l	0.00409	0.00434	0.00446	0.00434	0.52592

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_l	0.00000	0.00485	0.01102

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)	0.17816	1.28671	11.85920
	A1->Y (FR)	0.15152	1.25957	12.06140
	B0->Y (FR)	0.10479	1.21156	12.01830
	B1->Y (FR)	0.13201	1.23732	11.81740

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)	0.13859	0.88142	8.06495
	A1->Y (RF)	0.11140	0.84777	7.99667
	B0->Y (RF)	0.09504	0.86790	8.63117
	B1->Y (RF)	0.12322	0.90484	8.71622

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	0.01150	0.01140	0.01143
	A1	0.00982	0.00964	0.00989
	B0	0.00731	0.00719	0.00746
	B1	0.00907	0.00897	0.00900

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00270	0.00243	0.00242
	A1	0.00140	0.00125	0.00123
	B0	0.00139	0.00128	0.00134
	B1	0.00272	0.00243	0.00254

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)	-0.00278	-0.00308	-0.00306
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00278	-0.00308	-0.00306
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00299	-0.00308	-0.00306
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00313	-0.00316	-0.00314

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)	0.00306	0.00309	0.00306
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00306	0.00309	0.00306
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00306	0.00308	0.00306
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00315	0.00317	0.00315

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)	-0.00144	-0.00146	-0.00145
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00145	-0.00146	-0.00145
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00295	-0.00303	-0.00302
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00312	-0.00313	-0.00312

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)	0.00154	0.00154	0.00148
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00153	0.00154	0.00148
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00302	0.00303	0.00302
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00313	0.00315	0.00313

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)	-0.00143	-0.00145	-0.00144
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00145	-0.00146	-0.00144
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00327	-0.00334	-0.00334
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00334	-0.00335	-0.00343

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)	0.00152	0.00153	0.00147
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00152	0.00154	0.00147
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00334	0.00334	0.00334
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00343	0.00347	0.00345

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)	-0.00274	-0.00303	-0.00301
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00274	-0.00303	-0.00301
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00335	-0.00343	-0.00343
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00340	-0.00342	-0.00349

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)	0.00301	0.00305	0.00301
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00301	0.00303	0.00301
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00342	0.00343	0.00343
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00351	0.00353	0.00351

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00455	0.00433	1.03539
sky130_osu_sc_15T_ls__or2_2	0.00455	0.00433	2.07926
sky130_osu_sc_15T_ls__or2_4	0.00455	0.00433	4.02175
sky130_osu_sc_15T_ls__or2_8	0.00454	0.00433	7.81229
sky130_osu_sc_15T_ls__or2_l	0.00339	0.00315	0.58451

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00970	0.01037
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00986	0.01138
sky130_osu_sc_15T_ls__or2_4	0.00000	0.01439	0.01674
sky130_osu_sc_15T_ls__or2_8	0.00000	0.02344	0.02748
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00658	0.00688

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)	0.12579	0.93944	8.01007
	B->Y (RR)	0.11116	0.89498	7.79047
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.13698	0.85435	8.28568
	B->Y (RR)	0.12164	0.81536	8.10244
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.17810	0.84481	8.65897
	B->Y (RR)	0.16240	0.81836	8.51569
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.25711	0.91212	9.28556
	B->Y (RR)	0.24116	0.89204	9.16990
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.15260	1.11561	8.12960
	B->Y (RR)	0.13699	1.07288	7.90856

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)	0.23345	0.95281	6.99908
	B->Y (FF)	0.19865	0.91322	6.76761
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.28565	0.95977	7.40679
	B->Y (FF)	0.25111	0.93058	7.22060
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.41063	1.07226	7.99902
	B->Y (FF)	0.37602	1.04220	7.89230
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.65885	1.34281	8.78272
	B->Y (FF)	0.62417	1.31059	8.79954
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.29275	1.04597	6.53820
	B->Y (FF)	0.25305	1.01366	6.37997

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	0.00533	0.00469	0.00658
	B	0.00000	0.00000	0.00000
	B	0.00399	0.00347	0.00601
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00904	0.00873	0.01047
	B	0.00000	0.00000	0.00000
	B	0.00766	0.00754	0.00992
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01716	0.01749	0.01933
	B	0.00000	0.00000	0.00000
	B	0.01576	0.01644	0.01879
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03330	0.03467	0.03752
	B	0.00000	0.00000	0.00000
	B	0.03183	0.03363	0.03724
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00381	0.00338	0.00440
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00256	0.00386

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	0.01132	0.01126	0.01224
	B	0.00000	0.00000	0.00000
	B	0.00939	0.00945	0.01203
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01371	0.01427	0.01517
	B	0.00000	0.00000	0.00000
	B	0.01180	0.01239	0.01484
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01980	0.02124	0.02240
	B	0.00000	0.00000	0.00000
	B	0.01774	0.01930	0.02188
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03266	0.03442	0.03701
	B	0.00000	0.00000	0.00000
	B	0.03054	0.03242	0.03619
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00821	0.00797	0.00844
	B	0.00000	0.00000	0.00000
	B	0.00691	0.00686	0.00807

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)	-0.00280	-0.00310	-0.00308
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00280	-0.00310	-0.00308
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00280	-0.00310	-0.00308
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00280	-0.00310	-0.00308
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00190	-0.00203	-0.00204

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)	0.00308	0.00312	0.00308
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00308	0.00312	0.00308
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00308	0.00312	0.00308
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00308	0.00312	0.00308
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00204	0.00203	0.00204

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)	-0.00146	-0.00148	-0.00147
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00146	-0.00148	-0.00147
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00146	-0.00148	-0.00147
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00146	-0.00148	-0.00147
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00101	-0.00101	-0.00100

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)	0.00156	0.00156	0.00150
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00156	0.00157	0.00150
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00156	0.00157	0.00150
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00156	0.00157	0.00150
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00106	0.00106	0.00102

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00448	0.00568	0.52451
sky130_osu_sc_15T_ls__tbufi_l	0.00332	0.00424	0.30444

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00859	0.01000
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00581	0.00828

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)	0.08948	1.18937	11.92780
	OE->Y (FR)	0.08356	0.38586	4.68854
	OE->Y (RR)	0.15515	1.10140	7.87133
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.12544	1.40023	12.02970
	OE->Y (FR)	0.10005	0.42569	4.68832
	OE->Y (RR)	0.19121	1.32834	8.03146

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)	0.05924	0.79827	8.30235
	OE->Y (FF)	0.08515	0.38781	4.68854
	OE->Y (RF)	0.05505	0.76353	7.77863
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.07632	0.88567	8.16274
	OE->Y (FF)	0.10129	0.42796	4.68831
	OE->Y (RF)	0.06879	0.84891	7.59248

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	0.00501	0.00490	0.00514
	OE	0.00000	0.00000	0.00000
	OE	0.00507	0.00445	0.00719
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00365	0.00354	0.00363
	OE	0.00000	0.00000	0.00000
	OE	0.00348	0.00301	0.00446

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	-0.00073	-0.00078	-0.00065
	OE	0.00000	0.00000	0.00000
	OE	0.00336	0.00276	0.00551
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00041	-0.00045	-0.00043
	OE	0.00000	0.00000	0.00000
	OE	0.00225	0.00176	0.00323

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)	-0.00240	-0.00242	-0.00241
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00213	-0.00214	-0.00212
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00172	-0.00174	-0.00172
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00155	-0.00155	-0.00154

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)	0.00240	0.00242	0.00241
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00218	0.00220	0.00216
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00172	0.00174	0.00172
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00158	0.00158	0.00156

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)	0.00196	0.00141	0.00411
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00173	0.00114	0.00387
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00129	0.00082	0.00227
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00113	0.00067	0.00212

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)	0.00573	0.00530	0.00810
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00594	0.00551	0.00823
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00432	0.00394	0.00530
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00450	0.00409	0.00543

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00447	0.00698	0.52478
sky130_osu_sc_15T_ls__tnbufi_l	0.00331	0.00493	0.30429

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00887	0.00968
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00642	0.00743

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)	0.09057	1.18969	11.93150
	OE->Y (RR)	0.04550	0.37168	4.68910
	OE->Y (FR)	0.10961	1.20879	11.72790
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.12676	1.39999	12.02610
	OE->Y (RR)	0.05020	0.37160	4.68902
	OE->Y (FR)	0.14119	1.40986	11.70470

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)	0.05824	0.79812	8.30409
	OE->Y (RF)	0.04475	0.37166	4.68911
	OE->Y (FF)	0.10501	0.79265	5.67864
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.07488	0.88513	8.16049
	OE->Y (RF)	0.04941	0.37159	4.68902
	OE->Y (FF)	0.13322	0.91615	5.65177

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	0.00515	0.00503	0.00527
	OE	0.00000	0.00000	0.00000
	OE	0.01236	0.01222	0.01540
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00379	0.00368	0.00377
	OE	0.00000	0.00000	0.00000
	OE	0.00873	0.00853	0.01011

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	-0.00091	-0.00094	-0.00082
	OE	0.00000	0.00000	0.00000
	OE	0.01082	0.01073	0.01368
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00059	-0.00061	-0.00059
	OE	0.00000	0.00000	0.00000
	OE	0.00761	0.00745	0.00892

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)	-0.00205	-0.00207	-0.00206
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00181	-0.00182	-0.00180
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00139	-0.00141	-0.00140
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00124	-0.00124	-0.00123

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)	0.00205	0.00207	0.00206
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00185	0.00186	0.00184
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00139	0.00141	0.00140
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00126	0.00126	0.00124

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)	-0.00362	-0.00448	-0.00164
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00348	-0.00440	-0.00158
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00233	-0.00295	-0.00144
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00221	-0.00287	-0.00140

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)	0.00927	0.00913	0.01228
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00908	0.00890	0.01210
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00655	0.00640	0.00790
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00642	0.00623	0.00779

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00889	0.00795	0.53653

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.01451	0.01660

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	0.19660	1.16989	8.17505
	A->Y (FR)	!B	0.12167	1.23223	12.09360
	B->Y (RR)	A	0.15867	1.12824	8.11643
	B->Y (FR)	!A	0.15183	1.25752	11.88800

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	0.18589	0.93573	6.20460
	A->Y (RF)	!B	0.08119	0.79036	7.88787
	B->Y (FF)	A	0.15994	0.90864	6.18141
	B->Y (RF)	!A	0.10049	0.81565	7.91613

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	0.00510	0.00441	0.00692
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01235	0.01192	0.01504
	B	A	0.00000	0.00000	0.00000
	B	A	0.00195	0.00140	0.00410
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01345	0.01310	0.01615

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	0.01481	0.01418	0.01676
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00340	0.00263	0.00535
	B	A	0.00000	0.00000	0.00000
	B	A	0.01351	0.01350	0.01633
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00414	0.00326	0.00597

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.00890	0.00800	0.52030

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.01451	0.01743

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	0.19387	1.14909	7.99659
	A->Y (FR)	B	0.14198	1.23626	11.73730
	B->Y (RR)	!A	0.16478	1.13093	7.98333
	B->Y (FR)	A	0.15595	1.25356	11.74980

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	0.16677	0.90728	6.06264
	A->Y (RF)	B	0.08644	0.83514	8.30829
	B->Y (FF)	!A	0.15782	0.90133	6.06401
	B->Y (RF)	A	0.09800	0.80903	7.79255

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	0.01431	0.01389	0.01694
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00274	0.00159	0.00414
	B	A	0.00000	0.00000	0.00000
	B	A	0.01470	0.01434	0.01737
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00173	0.00117	0.00391

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	0.00277	0.00178	0.00459
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01528	0.01511	0.01781
	B	A	0.00000	0.00000	0.00000
	B	A	0.00280	0.00188	0.00459
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01377	0.01379	0.01665

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_ss_1P60_100C.ccs
Cell Library: Process , Voltage 1.60,
Temp 100.00

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	0.24109
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	102579.00000	205158.00000
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
	-0.00249	0.02325	0.31164

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
	1.78640	1.68080	0.39383