sky130_osu_sc_15T_ls_tt_1P20_25C.ccs Library

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

SKY130_OSU_SC_15T_LS__ADDFx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__addf_1	39.07200
sky130_osu_sc_15T_ls__addf_l	39.07200

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_15T_ls__addf_1	0.01397	0.01401	0.01102	0.41710	0.16796	0.40788
sky130_osu_sc_15T_ls__addf_l	0.01397	0.01401	0.01104	0.26536	0.16895	0.26996

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00041	0.00043
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00046	0.00048

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)	0.42117	2.70221	21.96560
	B->CO (RR)	0.40130	2.63662	21.56100
	CI->CO (RR)	0.40288	2.68608	22.04910
	CON->CO (FR)	0.10277	1.40761	13.55250
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.43976	2.61113	18.54230
	B->CO (RR)	0.42057	2.55793	18.30230
	CI->CO (RR)	0.42146	2.59516	18.65630
	CON->CO (FR)	0.13564	1.59398	13.65430

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)	1.04363	5.15561	39.02910
	B->CO (FF)	0.97107	5.00929	38.29450
	CI->CO (FF)	0.94346	4.99659	38.60390
	CON->CO (RF)	0.04437	0.74650	7.78608
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.99559	4.31098	27.98810
	B->CO (FF)	0.92523	4.18554	27.50370
	CI->CO (FF)	0.89529	4.15266	27.57220
	CON->CO (RF)	0.04705	0.73520	7.18651

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)	0.73779	2.36992	14.00370
	B->CON (FR)	0.67394	2.27160	13.76590
	CI->CON (FR)	0.63756	2.21120	13.60120
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.70215	2.33766	14.00540
	B->CON (FR)	0.63987	2.24036	13.76770
	CI->CON (FR)	0.60185	2.17886	13.60710

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)	0.18710	0.87848	6.77666
	B->CON (RF)	0.17628	0.85428	6.75521
	CI->CON (RF)	0.16871	0.86472	6.87269
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.17957	0.87207	6.78024
	B->CON (RF)	0.16913	0.85150	6.75927
	CI->CON (RF)	0.16118	0.85625	6.87690

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)	1.40386	5.51631	36.27260
	B->S (-R)	1.36114	5.42790	35.94500
	CI->S (-R)	1.29664	5.34124	35.80690
	CON->S (RR)	0.25056	1.46063	10.16610
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	1.35212	4.98006	29.28030
	B->S (-R)	1.31033	4.91126	29.05510
	CI->S (-R)	1.24437	4.80838	28.81130
	CON->S (RR)	0.26650	1.61686	10.18670

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)	0.85540	2.61227	16.00910
	B->S (-F)	0.93330	2.59594	15.75870
	CI->S (-F)	0.83604	2.58911	16.07310
	CON->S (FF)	0.41449	1.26106	8.21263
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.78513	2.31057	13.03310
	B->S (-F)	0.86490	2.30381	12.88520
	CI->S (-F)	0.76590	2.28603	13.13720
	CON->S (FF)	0.37747	1.21553	7.76551

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	0.00169	0.00167	0.00160
	B	0.00198	0.00201	0.00198
	CI	0.00206	0.00210	0.00206
sky130_osu_sc_15T_ls__addf_l	A	0.00134	0.00129	0.00122
	B	0.00164	0.00163	0.00157
	CI	0.00171	0.00172	0.00168

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00551	0.00550	0.00548
	B	0.00541	0.00544	0.00540
	CI	0.00477	0.00488	0.00484
sky130_osu_sc_15T_ls__addf_l	A	0.00518	0.00515	0.00511
	B	0.00508	0.00509	0.00503
	CI	0.00443	0.00453	0.00447

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00551	0.00549	0.00546
	B	0.00541	0.00543	0.00539
	CI	0.00477	0.00484	0.00481
sky130_osu_sc_15T_ls__addf_l	A	0.00518	0.00516	0.00512
	B	0.00508	0.00509	0.00504
	CI	0.00443	0.00451	0.00447

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00167	0.00164	0.00154
	B	0.00196	0.00199	0.00185
	CI	0.00205	0.00209	0.00203
sky130_osu_sc_15T_ls__addf_l	A	0.00132	0.00127	0.00115
	B	0.00161	0.00160	0.00147
	CI	0.00170	0.00172	0.00164

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00551	0.00550	0.00548
	B	0.00542	0.00545	0.00542
	CI	0.00477	0.00488	0.00484
sky130_osu_sc_15T_ls__addf_l	A	0.00518	0.00516	0.00511
	B	0.00509	0.00510	0.00506
	CI	0.00444	0.00453	0.00448

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01122	0.01126	0.01120
	B	0.01023	0.01010	0.00997
	CI	0.00913	0.00917	0.00912
sky130_osu_sc_15T_ls__addf_l	A	0.01071	0.01069	0.01060
	B	0.00974	0.00956	0.00941
	CI	0.00864	0.00863	0.00856

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__addh_1	23.19900
sky130_osu_sc_15T_ls__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_ls__addh_1	0.00694	0.00761	0.41500	0.17652	0.41634
sky130_osu_sc_15T_ls__addh_l	0.00694	0.00761	0.27243	0.17709	0.27471

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00031	0.00033
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00036	0.00038

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)	0.30990	1.50825	10.20280
	B->CO (RR)	0.31615	1.51279	10.42730
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.32848	1.66606	10.22810
	B->CO (RR)	0.33478	1.67255	10.46170

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)	0.33747	1.14424	8.16308
	B->CO (FF)	0.35470	1.16850	8.24088
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.31500	1.09052	7.49101
	B->CO (FF)	0.33150	1.11084	7.57587

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	0.44290	1.29326	6.23271
	A->CON (FR)	!B	0.45058	2.01633	13.53860
	B->CON (RR)	A	0.44921	1.29714	6.45040
	B->CON (FR)	!A	0.52556	2.14758	13.91470
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.40925	1.25752	6.13440
	A->CON (FR)	!B	0.41480	1.98255	13.52380
	B->CON (RR)	A	0.41573	1.26289	6.35767
	B->CON (FR)	!A	0.48973	2.11272	13.90110

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	0.44773	1.25067	7.75599
	A->CON (RF)	!B	0.11757	0.81454	6.87344
	B->CON (FF)	A	0.45896	1.27883	7.90018
	B->CON (RF)	!A	0.13591	0.82575	6.81426
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.41675	1.22253	7.65328
	A->CON (RF)	!B	0.11020	0.80716	6.87102
	B->CON (FF)	A	0.42714	1.24701	7.80388
	B->CON (RF)	!A	0.12860	0.81888	6.81189

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	0.31954	2.56063	21.72540
	A->S (FR)	B	0.65413	2.97853	22.29810
	B->S (RR)	!A	0.33817	2.53985	21.35290
	B->S (FR)	A	0.66674	3.04114	22.76920
	CON->S (FR)	-	0.10599	1.42134	13.64750
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.33013	2.48113	18.69730
	A->S (FR)	B	0.64110	2.88429	19.21700
	B->S (RR)	!A	0.34950	2.47152	18.46710
	B->S (FR)	A	0.65274	2.93179	19.55830
	CON->S (FR)	-	0.13314	1.60022	13.81520

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	0.69937	4.56487	37.24330
	A->S (RF)	B	0.59975	2.70369	18.72880
	B->S (FF)	!A	0.77436	4.71988	37.66750
	B->S (RF)	A	0.60610	2.70674	18.94900
	CON->S (RF)	-	0.04234	0.73687	7.71483
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.64909	3.80693	27.35250
	A->S (RF)	B	0.55897	2.33396	13.89510
	B->S (FF)	!A	0.72406	3.96546	27.75110
	B->S (RF)	A	0.56558	2.33872	14.11690
	CON->S (RF)	-	0.04480	0.73305	7.22951

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	0.00256	0.00248	0.00237
	B	0.00000	0.00000	0.00000
	B	0.00240	0.00232	0.00222
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00223	0.00213	0.00203
	B	0.00000	0.00000	0.00000
	B	0.00206	0.00197	0.00188

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	0.00388	0.00379	0.00355
	B	0.00000	0.00000	0.00000
	B	0.00402	0.00403	0.00380
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00355	0.00346	0.00324
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00368	0.00349

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	0.00256	0.00247	0.00238
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00338	0.00336	0.00334
	B	A	0.00000	0.00000	0.00000
	B	A	0.00239	0.00232	0.00221
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00368	0.00364	0.00362
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00222	0.00212	0.00203
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00314	0.00311	0.00309
	B	A	0.00000	0.00000	0.00000
	B	A	0.00206	0.00196	0.00187
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00344	0.00339	0.00337

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	0.00388	0.00380	0.00371
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00066	0.00066	0.00061
	B	A	0.00000	0.00000	0.00000
	B	A	0.00402	0.00403	0.00396
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00102	0.00099	0.00094
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00355	0.00346	0.00333
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00036	0.00036	0.00030
	B	A	0.00000	0.00000	0.00000
	B	A	0.00369	0.00368	0.00358
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00073	0.00069	0.00063

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	0.00388	0.00380	0.00372
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00066	0.00068	0.00066
	B	A	0.00000	0.00000	0.00000
	B	A	0.00402	0.00403	0.00397
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00103	0.00100	0.00098
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00356	0.00346	0.00339
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00037	0.00038	0.00034
	B	A	0.00000	0.00000	0.00000
	B	A	0.00370	0.00369	0.00364
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00074	0.00070	0.00067

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	0.00256	0.00248	0.00239
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00338	0.00340	0.00337
	B	A	0.00000	0.00000	0.00000
	B	A	0.00240	0.00232	0.00222
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00367	0.00366	0.00366
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00222	0.00212	0.00202
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00314	0.00314	0.00310
	B	A	0.00000	0.00000	0.00000
	B	A	0.00206	0.00196	0.00187
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00343	0.00340	0.00338

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__and2_1	10.37850
sky130_osu_sc_15T_ls__and2_2	12.82050
sky130_osu_sc_15T_ls__and2_4	17.70450
sky130_osu_sc_15T_ls__and2_6	22.58850
sky130_osu_sc_15T_ls__and2_8	27.47250
sky130_osu_sc_15T_ls__and2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__and2_1	0.00371	0.00380	0.41775
sky130_osu_sc_15T_ls__and2_2	0.00371	0.00380	0.82980
sky130_osu_sc_15T_ls__and2_4	0.00371	0.00380	1.61817
sky130_osu_sc_15T_ls__and2_6	0.00374	0.00380	2.40441
sky130_osu_sc_15T_ls__and2_8	0.00371	0.00380	3.15608
sky130_osu_sc_15T_ls__and2_l	0.00287	0.00297	0.26674

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00013	0.00017
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00018	0.00026
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00028	0.00046
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00038	0.00065
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00048	0.00085
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00017	0.00023

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)	0.23882	1.40716	9.76365
	B->Y (RR)	0.24886	1.42208	10.04890
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.26656	1.28251	10.11750
	B->Y (RR)	0.27648	1.29028	10.35680
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.36700	1.28080	10.69770
	B->Y (RR)	0.37690	1.28589	10.86590
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.46860	1.34275	11.14130
	B->Y (RR)	0.47819	1.35047	11.27110
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.56681	1.42607	11.51210
	B->Y (RR)	0.57691	1.43550	11.59340
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.26904	1.57607	9.63134
	B->Y (RR)	0.27935	1.59097	9.92519

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)	0.24653	1.03332	7.64396
	B->Y (FF)	0.26553	1.05366	7.76777
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.30898	1.06250	8.03931
	B->Y (FF)	0.32849	1.08415	8.14095
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.45498	1.20251	8.62653
	B->Y (FF)	0.47448	1.22331	8.69528
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.60381	1.36337	9.06440
	B->Y (FF)	0.62178	1.38217	9.11817
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.74528	1.51784	9.38145
	B->Y (FF)	0.76300	1.53864	9.42255
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.28023	1.06973	7.36843
	B->Y (FF)	0.30594	1.09675	7.51515

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	0.00209	0.00192	0.00181
	B	0.00000	0.00000	0.00000
	B	0.00212	0.00197	0.00185
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00382	0.00379	0.00369
	B	0.00000	0.00000	0.00000
	B	0.00386	0.00387	0.00376
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00770	0.00783	0.00790
	B	0.00000	0.00000	0.00000
	B	0.00774	0.00796	0.00805
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01156	0.01195	0.01213
	B	0.00000	0.00000	0.00000
	B	0.01159	0.01207	0.01219
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01537	0.01601	0.01625
	B	0.00000	0.00000	0.00000
	B	0.01541	0.01615	0.01631
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00150	0.00138	0.00130
	B	0.00000	0.00000	0.00000
	B	0.00155	0.00142	0.00145

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	0.00478	0.00467	0.00459
	B	0.00000	0.00000	0.00000
	B	0.00535	0.00525	0.00517
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00606	0.00618	0.00609
	B	0.00000	0.00000	0.00000
	B	0.00664	0.00676	0.00667
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00919	0.00977	0.00974
	B	0.00000	0.00000	0.00000
	B	0.00977	0.01033	0.01029
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01239	0.01337	0.01348
	B	0.00000	0.00000	0.00000
	B	0.01294	0.01390	0.01400
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01542	0.01676	0.01707
	B	0.00000	0.00000	0.00000
	B	0.01599	0.01730	0.01757
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00367	0.00356	0.00350
	B	0.00000	0.00000	0.00000
	B	0.00409	0.00398	0.00391

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)	-0.00161	-0.00161	-0.00163
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00161	-0.00161	-0.00163
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00161	-0.00162	-0.00163
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00162	-0.00163	-0.00164
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00161	-0.00162	-0.00163
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00116	-0.00117	-0.00118

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)	0.00163	0.00165	0.00163
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00163	0.00165	0.00163
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00163	0.00164	0.00163
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00164	0.00165	0.00165
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00163	0.00164	0.00163
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00117	0.00120	0.00118

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)	-0.00152	-0.00153	-0.00152
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00152	-0.00153	-0.00152
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00152	-0.00153	-0.00152
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00152	-0.00153	-0.00152
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00152	-0.00153	-0.00152
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00111	-0.00111	-0.00111

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)	0.00152	0.00153	0.00153
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00153	0.00155	0.00153
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00153	0.00155	0.00153
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00153	0.00155	0.00153
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00153	0.00155	0.00153
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00111	0.00111	0.00111

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__aoi21_l	0.00343	0.00362	0.00355	0.17282

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00011	0.00024

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)	0.38443	2.05798	13.96080
	A1->Y (FR)	0.33050	1.96363	13.70610
	B0->Y (FR)	0.30133	1.90900	13.57380

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)	0.09527	0.78134	6.66553
	A1->Y (RF)	0.08631	0.77276	6.70600
	B0->Y (RF)	0.05447	0.68237	6.23908

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	0.00379	0.00374	0.00373
	A1	0.00000	0.00000	0.00000
	A1	0.00320	0.00313	0.00311
	B0	0.00315	0.00307	0.00303

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	0.00071	0.00062	0.00053
	A1	0.00000	0.00000	0.00000
	A1	0.00071	0.00062	0.00053
	B0	-0.00025	-0.00026	-0.00032

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)	-0.00132	-0.00137	-0.00135
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00139	-0.00140	-0.00140
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00139	-0.00140	-0.00140

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)	0.00135	0.00137	0.00135
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00140	0.00143	0.00140
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00140	0.00142	0.00140

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)	-0.00130	-0.00134	-0.00133
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00137	-0.00137	-0.00137
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00149	-0.00150	-0.00152

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)	0.00133	0.00135	0.00133
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00137	0.00137	0.00138
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00151	0.00153	0.00152

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)	-0.00079	-0.00079	-0.00079

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)	0.00090	0.00090	0.00082

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_l	0.00342	0.00360	0.00377	0.00356	0.17436

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00012	0.00020

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)	0.48209	2.15634	14.06920
	A1->Y (FR)	0.43278	2.09192	13.96680
	B0->Y (FR)	0.31815	1.90981	13.52490
	B1->Y (FR)	0.36631	1.97398	13.64060

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)	0.11833	0.80903	6.72062
	A1->Y (RF)	0.10926	0.79850	6.76580
	B0->Y (RF)	0.07612	0.75686	6.69843
	B1->Y (RF)	0.08447	0.76431	6.65783

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	0.00467	0.00462	0.00459
	A1	0.00409	0.00401	0.00398
	B0	0.00340	0.00329	0.00324
	B1	0.00394	0.00386	0.00382

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00147	0.00139	0.00128
	A1	0.00147	0.00139	0.00128
	B0	-0.00007	-0.00008	-0.00014
	B1	-0.00007	-0.00007	-0.00013

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)	-0.00132	-0.00137	-0.00135
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00140	-0.00141	-0.00140
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00139	-0.00140	-0.00140
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00139	-0.00140	-0.00140

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)	0.00135	0.00137	0.00135
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00140	0.00143	0.00140
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00140	0.00142	0.00140
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00140	0.00142	0.00140

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)	-0.00130	-0.00134	-0.00133
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00137	-0.00138	-0.00137
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00149	-0.00150	-0.00151
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00149	-0.00150	-0.00151

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)	0.00133	0.00135	0.00133
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00137	0.00138	0.00137
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00151	0.00153	0.00152
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00151	0.00153	0.00152

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)	-0.00080	-0.00080	-0.00079
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00079	-0.00080	-0.00079
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00155	-0.00157	-0.00157
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00155	-0.00157	-0.00157

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)	0.00094	0.00094	0.00083
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00079	0.00080	0.00079
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00157	0.00160	0.00158
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00157	0.00160	0.00158

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)	-0.00080	-0.00081	-0.00080
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00079	-0.00080	-0.00080
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00143	-0.00143	-0.00143
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00143	-0.00143	-0.00143

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)	0.00094	0.00095	0.00084
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00079	0.00080	0.00080
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00143	0.00145	0.00143
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00143	0.00145	0.00143

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__buf_1	0.00380	0.41010
sky130_osu_sc_15T_ls__buf_2	0.00384	0.82391
sky130_osu_sc_15T_ls__buf_4	0.00383	1.61934
sky130_osu_sc_15T_ls__buf_6	0.00091	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00384	3.18488
sky130_osu_sc_15T_ls__buf_l	0.00300	0.26831

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00013	0.00013
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00020	0.00023
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00033	0.00043
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00060	0.00081
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00019	0.00019

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)	0.17251	1.33409	9.55383
sky130_osu_sc_15T_ls__buf_2	A->Y (RR)	0.18091	1.19435	9.94435
sky130_osu_sc_15T_ls__buf_4	A->Y (RR)	0.24002	1.15442	10.48120
sky130_osu_sc_15T_ls__buf_8	A->Y (RR)	0.36058	1.20817	11.19950
sky130_osu_sc_15T_ls__buf_l	A->Y (RR)	0.20382	1.50791	9.53811

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)	0.23321	1.01441	7.52577
sky130_osu_sc_15T_ls__buf_2	A->Y (FF)	0.29899	1.05752	8.07376
sky130_osu_sc_15T_ls__buf_4	A->Y (FF)	0.44685	1.19912	8.72882
sky130_osu_sc_15T_ls__buf_8	A->Y (FF)	0.73890	1.51926	9.52723
sky130_osu_sc_15T_ls__buf_l	A->Y (FF)	0.27054	1.05819	7.31414

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	0.00196	0.00173	0.00161
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00370	0.00357	0.00400
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00761	0.00771	0.00769
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01531	0.01578	0.01604
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00147	0.00128	0.00119

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	0.00469	0.00455	0.00448
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00599	0.00607	0.00598
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00915	0.00968	0.00963
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01542	0.01670	0.01698
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00364	0.00350	0.00344

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
	-0.00032	-0.00032	-0.00031

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
	0.00032	0.00032	0.00031

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffr_1	53.11350
sky130_osu_sc_15T_ls__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_ls__dffr_1	0.00353	0.00357	0.01100	0.39962	0.39807
sky130_osu_sc_15T_ls__dffr_l	0.00353	0.00357	0.01099	0.26834	0.26623

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00074	0.00098
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00079	0.00103

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)	1.42591	3.21695	15.69540
	QN->Q (FR)	0.11775	1.51483	14.33910
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	1.35916	3.28635	15.13210
	QN->Q (FR)	0.14155	1.66541	14.23340

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)	1.15002	3.26812	19.06880
	QN->Q (RF)	0.04932	0.78739	8.19850
	RN->Q (FF)	0.77834	3.03550	21.40770
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	1.18732	3.51869	18.61650
	QN->Q (RF)	0.05000	0.77478	7.61626
	RN->Q (FF)	0.81765	3.28787	20.94230

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)	1.01342	2.20885	10.75190
	RN->QN (FR)	0.63983	1.97624	13.09450
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	1.03402	2.37401	10.88090
	RN->QN (FR)	0.66225	2.14199	13.21590

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)**	1.21412	1.95257	6.02216
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	1.12626	1.85069	5.61328

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)	-0.17661	-0.21297	-1.18587
	setup	CK (R)	1.10469	1.10089	2.17417
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.17758	-0.21298	-1.18489
	setup	CK (R)	1.11279	1.10347	2.21156

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)	-0.55624	-1.01349	-10.48380
	setup	CK (R)	0.63675	1.07569	10.60600
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.55263	-1.01384	-10.48330
	setup	CK (R)	0.63911	1.07569	10.60570

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)	-0.17661	-0.21297	-1.18587
	setup	CK (R)	1.10469	1.10089	2.17417
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.17758	-0.21298	-1.18489
	setup	CK (R)	1.11279	1.10347	2.21156

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)	-0.55624	-1.01349	-10.48380
	setup	CK (R)	0.63675	1.07569	10.60600
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.55263	-1.01384	-10.48330
	setup	CK (R)	0.63911	1.07569	10.60570

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)	1.00918	1.00456	1.81510
	removal	CK (R)	-0.17747	-0.20646	-0.18117
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	1.01272	1.01083	1.83241
	removal	CK (R)	-0.17532	-0.20372	-0.18483

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)	1.00918	1.00456	1.81510
	removal	CK (R)	-0.17747	-0.20646	-0.18117
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	1.01272	1.01083	1.83241
	removal	CK (R)	-0.17532	-0.20372	-0.18483

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 ()	0.48454	0.88730	13.33370
	min_pulse_width	RN ()	0.48118	0.88730	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.48225	0.88300	13.33370
	min_pulse_width	RN ()	0.47891	0.88300	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 ()	0.64814	0.75622	13.33370
	min_pulse_width	CK ()	0.64438	0.61870	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.58661	0.70895	13.33370
	min_pulse_width	CK ()	0.62940	0.61441	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 ()	1.40297	1.45886	13.33370
	min_pulse_width	CK ()	0.52348	0.90878	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	1.40917	1.46531	13.33370
	min_pulse_width	CK ()	0.52348	0.90878	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	0.00471	0.00438	0.00257
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00416	0.00384	0.00277

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	0.00528	0.00508	0.00420
	RN	-0.00068	-0.01689	-0.14386
	RN	0.01172	0.01158	0.01055
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00471	0.00453	0.00406
	RN	-0.00068	-0.01330	-0.09660
	RN	0.01114	0.01103	0.01040

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	0.00529	0.00508	0.00421
	RN	-0.00068	-0.01685	-0.14330
	RN	0.01172	0.01158	0.01056
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00472	0.00454	0.00406
	RN	-0.00068	-0.01324	-0.09584
	RN	0.01115	0.01104	0.01040

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	0.00469	0.00435	0.00237
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00414	0.00382	0.00264

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	-0.00129	-0.00135	-0.00134
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00536	0.00519	0.00500
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00229	0.00215	0.00199
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00129	-0.00135	-0.00134
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00536	0.00519	0.00500
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00229	0.00215	0.00199

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	0.00133	0.00135	0.00134
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00851	0.00841	0.00824
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00405	0.00394	0.00391
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00133	0.00135	0.00134
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00851	0.00841	0.00824
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00405	0.00394	0.00391

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)	0.00185	0.00165	0.00150
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00514	0.00483	0.00460
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)	0.00185	0.00165	0.00150
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00514	0.00483	0.00459

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)	0.00432	0.00414	0.00410
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00881	0.00858	0.00837
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)	0.00432	0.00414	0.00410
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00881	0.00858	0.00837

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)	-0.00016	-0.00039	-0.00059
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00266	0.00230	0.00189
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00033	-0.00058	-0.00076
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00016	-0.00039	-0.00059
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00266	0.00230	0.00189
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00033	-0.00058	-0.00076

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)	0.00691	0.00666	0.00655
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01398	0.01373	0.01319
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01056	0.01045	0.01018
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01382	0.01343	0.01310
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00744	0.00721	0.00711
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00691	0.00666	0.00655
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01398	0.01373	0.01319
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01056	0.01045	0.01018
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01383	0.01343	0.01310
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00744	0.00721	0.00711

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffsr_1	57.99750
sky130_osu_sc_15T_ls__dffsr_l	57.99750

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_15T_ls__dffsr_1	0.00349	0.00358	0.00787	0.01125	0.41745	0.41828
sky130_osu_sc_15T_ls__dffsr_l	0.00349	0.00358	0.00786	0.01126	0.26330	0.26702

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00072	0.00095
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00077	0.00100

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)	1.31528	3.10036	15.95680
	QN->Q (FR)	0.10780	1.45215	13.97890
	RN->Q (RR)	1.07370	2.87968	15.89580
	SN->Q (FR)	1.06408	2.98921	18.94860
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	1.29450	3.19985	15.00690
	QN->Q (FR)	0.14174	1.65323	14.08120
	RN->Q (RR)	1.05234	2.98093	14.95290
	SN->Q (FR)	1.04352	3.09086	17.96120

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)	1.31041	3.43011	19.38820
	QN->Q (RF)	0.04882	0.79577	8.32414
	RN->Q (FF)	0.82462	3.06860	21.69840
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	1.36157	3.68521	18.53060
	QN->Q (RF)	0.04990	0.77078	7.56531
	RN->Q (FF)	0.88068	3.32706	20.82770

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)	1.17447	2.37132	10.95750
	RN->QN (FR)	0.69107	2.01267	13.27200
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	1.20486	2.56042	11.09300
	RN->QN (FR)	0.72522	2.20536	13.40350

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)	1.12820	1.86424	6.19547
	RN->QN (RF)	0.88475	1.64937	6.14333
	SN->QN (FF)	0.87505	1.75882	9.18433
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	1.07741	1.79446	5.71414
	RN->QN (RF)	0.83362	1.58030	5.66156
	SN->QN (FF)	0.82475	1.69031	8.66782

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)	-0.19608	-0.22710	-1.31250
	setup	CK (R)	0.99992	0.98770	2.04166
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.19746	-0.22951	-1.31151
	setup	CK (R)	0.99841	0.98835	2.04794

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)	-0.65130	-1.09631	-10.80530
	setup	CK (R)	0.76362	1.15210	10.88450
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.65172	-1.09640	-10.80470
	setup	CK (R)	0.75735	1.14811	10.88390

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)	-0.19608	-0.22710	-1.31250
	setup	CK (R)	0.99992	0.98770	2.04166
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.19746	-0.22951	-1.31151
	setup	CK (R)	0.99841	0.98835	2.04794

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)	-0.65130	-1.09631	-10.80530
	setup	CK (R)	0.76362	1.15210	10.88450
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.65172	-1.09640	-10.80470
	setup	CK (R)	0.75735	1.14811	10.88390

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)	0.82447	0.82182	1.56609
	removal	CK (R)	-0.08909	-0.10341	-0.13571
	hold	SN (R)	-0.85856	-1.17362	-8.61857
	setup	SN (R)	0.89663	1.24442	9.94934
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.82885	0.82348	1.58026
	removal	CK (R)	-0.09053	-0.10596	-0.13407
	hold	SN (R)	-0.81143	-1.12422	-8.48114
	setup	SN (R)	0.89413	1.20725	9.83357

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)	0.82447	0.82182	1.56609
	removal	CK (R)	-0.08909	-0.10341	-0.13571
	hold	SN (R)	-0.86585	-1.17362	-8.61857
	hold	SN (R)	-0.85856	-1.17556	-8.63201
	setup	SN (R)	0.89663	1.23126	9.91004
	setup	SN (R)	0.88816	1.24442	9.94934
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.82885	0.82348	1.58026
	removal	CK (R)	-0.09053	-0.10596	-0.13407
	hold	SN (R)	-0.82314	-1.12422	-8.48114
	hold	SN (R)	-0.81143	-1.12631	-8.50194
	setup	SN (R)	0.89413	1.20725	9.78910
	setup	SN (R)	0.83475	1.19015	9.83357

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 ()	0.54966	0.93027	13.33370
	min_pulse_width	RN ()	0.56376	0.93027	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.56563	0.92168	13.33370
	min_pulse_width	RN ()	0.55993	0.92383	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)	0.09323	0.11969	0.91500
	removal	CK (R)	-0.02021	-0.05892	-0.68170
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.09022	0.11645	0.90740
	removal	CK (R)	-0.01798	-0.05919	-0.68471

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)	0.09323	0.11969	0.91500
	removal	CK (R)	-0.02021	-0.05892	-0.68170
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.09022	0.11645	0.90740
	removal	CK (R)	-0.01798	-0.05919	-0.68471

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 ()	0.87836	1.27192	13.33370
	min_pulse_width	SN ()	0.87886	1.27622	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.86324	1.22250	13.33370
	min_pulse_width	SN ()	0.82735	1.22465	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 ()	0.58262	0.68532	13.33370
	min_pulse_width	CK ()	0.72523	0.65953	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.54812	0.66812	13.33370
	min_pulse_width	CK ()	0.71251	0.65308	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 ()	1.29868	1.34498	13.33370
	min_pulse_width	CK ()	0.65822	0.98829	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	1.30126	1.34498	13.33370
	min_pulse_width	CK ()	0.65306	0.98614	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	0.00568	0.00535	0.00337
	RN	0.01051	0.01025	0.00827
	SN	-0.00068	-0.01734	-0.15028
	SN	0.01130	0.01109	0.00927
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00518	0.00490	0.00385
	RN	0.01001	0.00979	0.00876
	SN	-0.00068	-0.01315	-0.09479
	SN	0.01080	0.01063	0.00966

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	0.00600	0.00587	0.00531
	RN	-0.00068	-0.01734	-0.15028
	RN	0.01223	0.01214	0.01143
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00548	0.00534	0.00487
	RN	-0.00068	-0.01315	-0.09479
	RN	0.01171	0.01160	0.01097

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	0.00601	0.00588	0.00532
	RN	-0.00068	-0.01736	-0.15058
	RN	0.01223	0.01214	0.01142
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00549	0.00535	0.00487
	RN	-0.00068	-0.01326	-0.09613
	RN	0.01171	0.01160	0.01098

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	0.00565	0.00532	0.00318
	RN	0.01048	0.01022	0.00817
	SN	-0.00068	-0.01736	-0.15057
	SN	0.01127	0.01107	0.00908
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00515	0.00486	0.00366
	RN	0.00998	0.00976	0.00859
	SN	-0.00068	-0.01326	-0.09612
	SN	0.01077	0.01060	0.00949

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	-0.00130	-0.00135	-0.00134
	(!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)	0.00677	0.00662	0.00645
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00256	0.00243	0.00227
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00256	0.00242	0.00226
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00259	0.00245	0.00229
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00130	-0.00135	-0.00134
	(!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)	0.00677	0.00662	0.00645
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00256	0.00243	0.00227
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00256	0.00242	0.00226
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00259	0.00245	0.00229

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	0.00134	0.00135	0.00134
	(!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)	0.00970	0.00960	0.00936
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00437	0.00426	0.00424
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00438	0.00429	0.00425
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00434	0.00425	0.00421
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00134	0.00135	0.00134
	(!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)	0.00970	0.00960	0.00936
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00436	0.00426	0.00423
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00438	0.00428	0.00424
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00434	0.00424	0.00421

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)	0.00186	0.00167	0.00144
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00628	0.00598	0.00565
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)	0.00186	0.00167	0.00144
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00628	0.00598	0.00566

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)	0.00475	0.00457	0.00452
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00943	0.00918	0.00893
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)	0.00474	0.00456	0.00452
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00942	0.00918	0.00891

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)	-0.00318	-0.00321	-0.00323
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00338	-0.00341	-0.00341
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00321	-0.00324	-0.00323
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00190	0.00174	0.00147
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)	-0.00318	-0.00318	-0.00323
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00337	-0.00340	-0.00340
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00320	-0.00324	-0.00323
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00190	0.00174	0.00148

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)	0.00322	0.00326	0.00324
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00341	0.00343	0.00341
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00322	0.00326	0.00323
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00702	0.00686	0.00687
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)	0.00322	0.00326	0.00324
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00340	0.00342	0.00340
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00322	0.00326	0.00323
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00701	0.00686	0.00687

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)	-0.00017	-0.00040	-0.00059
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00308	0.00276	0.00234
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00304	0.00272	0.00231
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00024	-0.00048	-0.00067
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00223	0.00180	0.00145
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00017	-0.00040	-0.00059
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00307	0.00275	0.00234
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00303	0.00272	0.00230
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00024	-0.00048	-0.00067
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00223	0.00180	0.00145

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)	0.01549	0.01525	0.01472
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00696	0.00674	0.00658
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01072	0.01061	0.01038
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01073	0.01066	0.01040
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01501	0.01457	0.01413
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00737	0.00714	0.00704
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00914	0.00868	0.00854
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01549	0.01525	0.01472
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00696	0.00674	0.00658
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01072	0.01061	0.01038
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01073	0.01066	0.01040
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01501	0.01456	0.01412
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00737	0.00714	0.00704
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00914	0.00868	0.00854

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffs_1	48.22950
sky130_osu_sc_15T_ls__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_ls__dffs_1	0.00351	0.00646	0.01095	0.39516	0.39940
sky130_osu_sc_15T_ls__dffs_l	0.00351	0.00645	0.01094	0.26708	0.26707

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00060	0.00073
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00065	0.00078

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)	0.87575	2.60238	14.99670
	QN->Q (FR)	0.11807	1.50522	14.22060
	SN->Q (FR)	0.74131	2.61241	18.14550
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.85963	2.73584	14.57240
	QN->Q (FR)	0.14166	1.66140	14.17610
	SN->Q (FR)	0.72471	2.74827	17.65670

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)	1.25863	3.36471	18.98490
	QN->Q (RF)	0.04904	0.78639	8.15435
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	1.28650	3.61383	18.63160
	QN->Q (RF)	0.04979	0.77196	7.59223

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)	1.11768	2.31926	10.87190
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	1.13033	2.47516	10.99530

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)	0.70234	1.37938	5.48897
	SN->QN (FF)	0.56278	1.39466	8.63880
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.66205	1.33192	5.13980
	SN->QN (FF)	0.52241	1.34811	8.21740

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)	-0.13972	-0.17902	-1.12900
	setup	CK (R)	0.62813	0.61504	1.82298
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.13675	-0.17839	-1.12982
	setup	CK (R)	0.62807	0.61705	1.82883

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)	-0.57885	-1.03511	-10.57270
	setup	CK (R)	0.71398	1.10044	10.69260
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.57688	-1.03524	-10.57310
	setup	CK (R)	0.71247	1.10033	10.69270

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)	-0.13972	-0.17902	-1.12900
	setup	CK (R)	0.62813	0.61504	1.82298
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.13675	-0.17839	-1.12982
	setup	CK (R)	0.62807	0.61705	1.82883

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)	-0.57885	-1.03511	-10.57270
	setup	CK (R)	0.71398	1.10044	10.69260
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.57688	-1.03524	-10.57310
	setup	CK (R)	0.71247	1.10033	10.69270

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)	0.11048	0.12852	0.73340
	removal	CK (R)	-0.02676	-0.05436	-0.41128
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.10873	0.12800	0.71907
	removal	CK (R)	-0.02676	-0.05436	-0.41128

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)	0.11048	0.12852	0.73340
	removal	CK (R)	-0.02676	-0.05436	-0.41128
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.10873	0.12800	0.71907
	removal	CK (R)	-0.02676	-0.05436	-0.41128

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 ()	0.54305	1.07854	13.33370
	min_pulse_width	SN ()	0.55524	1.07424	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.52362	1.02697	13.33370
	min_pulse_width	SN ()	0.51399	1.03126	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 ()	0.30115	0.60581	13.33370
	min_pulse_width	CK ()	0.68065	0.63375	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.28568	0.60151	13.33370
	min_pulse_width	CK ()	0.65933	0.62515	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 ()	0.92191	0.97754	13.33370
	min_pulse_width	CK ()	0.61155	0.93887	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.92393	0.97969	13.33370
	min_pulse_width	CK ()	0.60799	0.93887	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	0.00471	0.00435	0.00253
	SN	-0.00068	-0.01678	-0.14226
	SN	0.00985	0.00962	0.00784
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00415	0.00381	0.00278
	SN	-0.00068	-0.01326	-0.09615
	SN	0.00928	0.00909	0.00801

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	0.00528	0.00509	0.00425
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00472	0.00455	0.00408

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	0.00528	0.00510	0.00424
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00472	0.00456	0.00408

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	0.00468	0.00432	0.00235
	SN	-0.00068	-0.01689	-0.14377
	SN	0.00982	0.00959	0.00763
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00412	0.00378	0.00259
	SN	-0.00068	-0.01326	-0.09614
	SN	0.00925	0.00906	0.00783

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	-0.00132	-0.00138	-0.00137
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00528	0.00511	0.00486
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00225	0.00210	0.00194
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00132	-0.00138	-0.00137
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00528	0.00511	0.00486
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00225	0.00210	0.00194

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	0.00136	0.00138	0.00137
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00850	0.00840	0.00827
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00416	0.00404	0.00401
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00136	0.00138	0.00137
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00850	0.00840	0.00827
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00416	0.00404	0.00401

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)	-0.00237	-0.00238	-0.00238
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00180	0.00165	0.00151
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)	-0.00237	-0.00238	-0.00238
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00180	0.00165	0.00151

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)	0.00239	0.00240	0.00239
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00507	0.00487	0.00479
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)	0.00239	0.00240	0.00239
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00507	0.00487	0.00479

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)	-0.00018	-0.00041	-0.00061
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00031	-0.00056	-0.00074
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00194	0.00145	0.00112
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00018	-0.00041	-0.00061
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00031	-0.00056	-0.00074
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00194	0.00145	0.00112

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)	0.01393	0.01368	0.01314
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00692	0.00667	0.00656
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01377	0.01333	0.01301
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00741	0.00717	0.00708
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00887	0.00844	0.00828
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01393	0.01368	0.01314
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00692	0.00667	0.00656
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01377	0.01333	0.01301
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00741	0.00717	0.00708
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00887	0.00843	0.00828

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dff_1	40.29300
sky130_osu_sc_15T_ls__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_ls__dff_1	0.00368	0.01088	0.41785	0.42023
sky130_osu_sc_15T_ls__dff_l	0.00368	0.01087	0.25688	0.25590

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00056	0.00064
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00061	0.00069

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)	0.70277	2.42680	15.24420
	QN->Q (FR)	0.10720	1.45366	13.96770
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.72027	2.58702	14.34190
	QN->Q (FR)	0.15254	1.72416	14.49570

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)	1.13309	3.23721	19.17780
	QN->Q (RF)	0.04866	0.79951	8.31649
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	1.20296	3.54595	18.43840
	QN->Q (RF)	0.04990	0.76396	7.49743

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)	1.00140	2.18729	10.77870
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	1.04564	2.40460	10.89510

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)	0.54744	1.21227	5.50050
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.52772	1.17382	4.97024

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)	-0.13520	-0.17885	-1.17904
	setup	CK (R)	0.45291	0.44242	1.71166
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.13590	-0.18060	-1.18102
	setup	CK (R)	0.45301	0.44050	1.71073

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)	-0.56529	-1.03967	-10.66070
	setup	CK (R)	0.67266	1.12048	10.81920
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.56788	-1.03939	-10.66120
	setup	CK (R)	0.67291	1.12046	10.81920

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 ()	0.24861	0.61011	13.33370
	min_pulse_width	CK ()	0.65293	0.62085	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.24100	0.60796	13.33370
	min_pulse_width	CK ()	0.64010	0.61655	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 ()**	0.74788	0.88515	13.33370
	min_pulse_width	**CK ()**	0.55126	0.95176	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.74942	0.88300	13.33370
	min_pulse_width	**CK ()**	0.54765	0.95176	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	0.00496	0.00452	0.00256
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00447	0.00409	0.00297

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	0.00535	0.00522	0.00466
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00484	0.00466	0.00401

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	0.00535	0.00522	0.00467
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00485	0.00467	0.00401

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	0.00494	0.00450	0.00243
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00444	0.00407	0.00292

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	-0.00129	-0.00135	-0.00134
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00500	0.00485	0.00461
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00129	-0.00135	-0.00134
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00501	0.00485	0.00461

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	0.00133	0.00135	0.00134
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00888	0.00874	0.00858
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00133	0.00135	0.00134
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00888	0.00874	0.00858

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)	-0.00017	-0.00040	-0.00060
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00030	-0.00055	-0.00073
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00017	-0.00040	-0.00060
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00030	-0.00055	-0.00073

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)	0.00687	0.00663	0.00652
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01363	0.01340	0.01288
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01402	0.01358	0.01322
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00737	0.00713	0.00703
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00687	0.00663	0.00652
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01364	0.01340	0.01289
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01402	0.01358	0.01323
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00737	0.00713	0.00703

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__inv_1	0.00362	0.41456
sky130_osu_sc_15T_ls__inv_10	0.03317	3.94750
sky130_osu_sc_15T_ls__inv_2	0.00682	0.82351
sky130_osu_sc_15T_ls__inv_3	0.01015	1.21153
sky130_osu_sc_15T_ls__inv_4	0.01338	1.62393
sky130_osu_sc_15T_ls__inv_6	0.02005	2.42468
sky130_osu_sc_15T_ls__inv_8	0.02661	3.20137
sky130_osu_sc_15T_ls__inv_l	0.00276	0.25826

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00007	0.00010
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00066	0.00097
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00013	0.00019
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00020	0.00029
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00026	0.00039
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00040	0.00058
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00053	0.00078
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00009	0.00014

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)**	0.10511	1.41534	13.61270
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.10101	0.93967	13.56650
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.07659	1.20272	13.53510
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.07937	1.12381	13.57350
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.07558	1.06209	13.56010
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.08015	0.99796	13.59030
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.08919	0.96163	13.57370
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.14072	1.61633	13.73240

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)**	0.04409	0.74413	7.77528
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.05429	0.57913	7.81966
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.03548	0.67733	7.76679
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.03763	0.65393	7.83633
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.03675	0.62976	7.82326
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.04177	0.60548	7.84927
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.04759	0.58991	7.84488
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.04633	0.72933	7.11566

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	0.00238	0.00232	0.00234
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02022	0.02008	0.02055
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00420	0.00413	0.00420
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00644	0.00634	0.00635
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.00826	0.00814	0.00823
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01228	0.01217	0.01230
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.01627	0.01611	0.01651
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00180	0.00175	0.00174

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	-0.00030	-0.00033	-0.00035
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00605	-0.00605	-0.00564
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00113	-0.00118	-0.00117
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00141	-0.00150	-0.00147
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00229	-0.00236	-0.00229
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00347	-0.00358	-0.00340
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00472	-0.00482	-0.00452
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00020	-0.00023	-0.00025

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_15T_ls__mux2_1	0.25084	0.25207	0.00742	0.37708

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00018	0.00018

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)	-	0.05547	0.88463	9.08444
	A1->Y (RR)	-	0.06660	0.88982	9.09710
	S0->Y (RR)	(!A0 * A1)	0.13539	1.05109	8.56868
	S0->Y (FR)	(A0 * !A1)	0.11772	1.23367	10.30090

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)	-	0.04422	0.70240	7.35144
	A1->Y (FF)	-	0.03749	0.69626	7.33571
	S0->Y (FF)	(!A0 * A1)	0.24145	0.99261	7.47681
	S0->Y (RF)	(A0 * !A1)	0.04839	0.73416	7.20795

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	-	-0.00251	-0.00251	-0.00252
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00175	-0.00176	-0.00175
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00303	0.00283	0.00279
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00146	-0.00171	-0.00184

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	-	0.00251	0.00251	0.00252
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00175	0.00176	0.00175
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00067	0.00042	0.00030
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00633	0.00613	0.00606

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)	-0.00069	-0.00069	-0.00069

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)	0.00069	0.00069	0.00069

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)	-0.00081	-0.00081	-0.00081

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)	0.00081	0.00081	0.00081

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)	-0.00040	-0.00066	-0.00079
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00039	-0.00066	-0.00078

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)	0.00481	0.00461	0.00455
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00455	0.00436	0.00430

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__nand2_1	7.93650
sky130_osu_sc_15T_ls__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nand2_1	0.00362	0.00358	0.41099
sky130_osu_sc_15T_ls__nand2_l	0.00276	0.00275	0.25623

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00007	0.00010
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00010	0.00014

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)	0.11197	1.42186	13.59250
	B->Y (FR)	0.13028	1.43053	13.50970
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.14691	1.62175	13.70110
	B->Y (FR)	0.17103	1.64411	13.71010

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)	0.07414	0.95853	9.35901
	B->Y (RF)	0.08305	0.96890	9.32038
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.07776	0.93829	8.46062
	B->Y (RF)	0.08586	0.94470	8.35808

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	0.00252	0.00246	0.00247
	B	0.00000	0.00000	0.00000
	B	0.00309	0.00303	0.00301
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00188	0.00184	0.00182
	B	0.00000	0.00000	0.00000
	B	0.00230	0.00225	0.00222

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	-0.00010	-0.00015	-0.00016
	B	0.00000	0.00000	0.00000
	B	-0.00009	-0.00013	-0.00015
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00010	-0.00012	-0.00014
	B	0.00000	0.00000	0.00000
	B	-0.00009	-0.00011	-0.00013

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)	-0.00157	-0.00157	-0.00159
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00111	-0.00112	-0.00113

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)	0.00159	0.00162	0.00160
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00112	0.00115	0.00113

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)	-0.00145	-0.00145	-0.00145
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00103	-0.00103	-0.00103

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)	0.00145	0.00145	0.00146
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00103	0.00104	0.00104

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__nor2_1	7.93650
sky130_osu_sc_15T_ls__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nor2_1	0.00357	0.00388	0.18151
sky130_osu_sc_15T_ls__nor2_l	0.00265	0.00298	0.11924

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00008	0.00019
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00010	0.00028

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)	0.29220	1.94260	13.93340
	B->Y (FR)	0.24759	1.83974	13.57510
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.35363	2.18919	13.89360
	B->Y (FR)	0.31824	2.09920	13.69060

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)	0.05192	0.64807	5.98295
	B->Y (RF)	0.04609	0.63902	5.96000
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.05233	0.63694	5.53436
	B->Y (RF)	0.04819	0.62956	5.51547

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	0.00314	0.00308	0.00307
	B	0.00000	0.00000	0.00000
	B	0.00261	0.00252	0.00250
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00226	0.00221	0.00220
	B	0.00000	0.00000	0.00000
	B	0.00195	0.00185	0.00184

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	0.00031	0.00022	0.00016
	B	0.00000	0.00000	0.00000
	B	-0.00025	-0.00027	-0.00033
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00019	0.00014	0.00009
	B	0.00000	0.00000	0.00000
	B	-0.00016	-0.00017	-0.00022

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)	-0.00130	-0.00136	-0.00135
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00089	-0.00091	-0.00092

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)	0.00134	0.00136	0.00135
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00092	0.00091	0.00092

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)	-0.00080	-0.00080	-0.00079
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00054	-0.00054	-0.00054

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)	0.00084	0.00085	0.00081
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00057	0.00057	0.00055

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__oai21_l	0.00361	0.00366	0.00314	0.17987

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00009	0.00017

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)	0.33842	1.94430	13.70000
	A1->Y (FR)	0.39489	2.05894	14.07380
	B0->Y (FR)	0.17823	1.42546	11.39920

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)	0.09742	0.80382	6.83470
	A1->Y (RF)	0.10763	0.80535	6.81046
	B0->Y (RF)	0.07998	0.79147	6.97392

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	0.00341	0.00333	0.00328
	A1	0.00000	0.00000	0.00000
	A1	0.00398	0.00390	0.00389
	B0	0.00271	0.00262	0.00260

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	0.00023	0.00018
	A1	0.00000	0.00000	0.00000
	A1	0.00084	0.00075	0.00069
	B0	0.00114	0.00111	0.00105

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)	-0.00079	-0.00080	-0.00080
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00131	-0.00137	-0.00136
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00141	-0.00141	-0.00141

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)	0.00085	0.00085	0.00081
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00135	0.00137	0.00136
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00141	0.00143	0.00141

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)	-0.00126	-0.00132	-0.00131
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00130	-0.00135	-0.00135
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00138	-0.00139	-0.00139

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)	0.00131	0.00132	0.00131
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00134	0.00135	0.00135
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00138	0.00141	0.00139

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)	-0.00113	-0.00114	-0.00117

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)	0.00117	0.00120	0.00118

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__oai22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_1	0.00344	0.00371	0.00384	0.00372	0.17859

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00012	0.00020

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)	0.43577	2.08611	13.97960
	A1->Y (FR)	0.38554	1.97548	13.61310
	B0->Y (FR)	0.27113	1.85273	13.48910
	B1->Y (FR)	0.32614	1.96493	13.85680

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)	0.13768	0.85457	6.89753
	A1->Y (RF)	0.11859	0.83120	6.85710
	B0->Y (RF)	0.09961	0.81419	6.99224
	B1->Y (RF)	0.11988	0.83924	7.05350

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	0.00506	0.00499	0.00496
	A1	0.00446	0.00437	0.00432
	B0	0.00332	0.00323	0.00319
	B1	0.00393	0.00385	0.00383

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00118	0.00111	0.00103
	A1	0.00064	0.00063	0.00054
	B0	0.00064	0.00062	0.00053
	B1	0.00120	0.00112	0.00103

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)	-0.00129	-0.00136	-0.00135
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00129	-0.00136	-0.00135
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00130	-0.00136	-0.00135
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00139	-0.00140	-0.00139

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)	0.00134	0.00136	0.00135
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00134	0.00136	0.00135
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00134	0.00136	0.00135
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00139	0.00141	0.00140

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)	-0.00079	-0.00079	-0.00079
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00079	-0.00079	-0.00079
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00129	-0.00134	-0.00133
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00138	-0.00138	-0.00138

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)	0.00084	0.00084	0.00080
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00084	0.00084	0.00080
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00133	0.00134	0.00133
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00138	0.00139	0.00138

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)	-0.00079	-0.00079	-0.00078
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00079	-0.00080	-0.00078
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00148	-0.00152	-0.00151
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00150	-0.00151	-0.00156

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)	0.00083	0.00083	0.00080
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00083	0.00083	0.00080
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00151	0.00152	0.00151
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00156	0.00159	0.00157

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)	-0.00127	-0.00133	-0.00132
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00127	-0.00133	-0.00132
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00151	-0.00157	-0.00156
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00153	-0.00154	-0.00159

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)	0.00131	0.00133	0.00132
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00131	0.00133	0.00132
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00155	0.00157	0.00156
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00160	0.00161	0.00160

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__or2_1	10.37850
sky130_osu_sc_15T_ls__or2_2	12.82050
sky130_osu_sc_15T_ls__or2_4	17.70450
sky130_osu_sc_15T_ls__or2_8	27.47250
sky130_osu_sc_15T_ls__or2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__or2_1	0.00391	0.00371	0.41032
sky130_osu_sc_15T_ls__or2_2	0.00391	0.00371	0.82432
sky130_osu_sc_15T_ls__or2_4	0.00392	0.00371	1.61762
sky130_osu_sc_15T_ls__or2_8	0.00388	0.00371	3.16238
sky130_osu_sc_15T_ls__or2_l	0.00303	0.00281	0.25700

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00016	0.00023
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00024	0.00026
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00040	0.00044
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00073	0.00083
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00022	0.00032

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)	0.19059	1.37190	9.78681
	B->Y (RR)	0.17980	1.34763	9.60827
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.19668	1.22357	10.09970
	B->Y (RR)	0.18482	1.20281	9.98464
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.25606	1.17767	10.60210
	B->Y (RR)	0.24369	1.16148	10.51320
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.37640	1.22505	11.27020
	B->Y (RR)	0.36368	1.21320	11.20460
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.22151	1.55821	9.72525
	B->Y (RR)	0.21166	1.53509	9.57301

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)	0.54818	1.37779	8.48038
	B->Y (FF)	0.47984	1.25609	7.93850
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.70032	1.52101	8.92215
	B->Y (FF)	0.63188	1.40137	8.47864
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	1.03197	1.88432	9.64801
	B->Y (FF)	0.96397	1.76159	9.31116
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	1.68577	2.62097	10.69200
	B->Y (FF)	1.61734	2.49433	10.42470
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.62527	1.43859	8.01022
	B->Y (FF)	0.54910	1.31963	7.59310

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	0.00259	0.00241	0.00224
	B	0.00000	0.00000	0.00000
	B	0.00201	0.00185	0.00171
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00436	0.00429	0.00411
	B	0.00000	0.00000	0.00000
	B	0.00376	0.00375	0.00411
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00827	0.00841	0.00833
	B	0.00000	0.00000	0.00000
	B	0.00767	0.00793	0.00789
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01601	0.01650	0.01668
	B	0.00000	0.00000	0.00000
	B	0.01540	0.01603	0.01635
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00189	0.00176	0.00163
	B	0.00000	0.00000	0.00000
	B	0.00151	0.00139	0.00128

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	0.00546	0.00542	0.00536
	B	0.00000	0.00000	0.00000
	B	0.00474	0.00470	0.00465
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00671	0.00691	0.00687
	B	0.00000	0.00000	0.00000
	B	0.00599	0.00620	0.00615
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00979	0.01040	0.01053
	B	0.00000	0.00000	0.00000
	B	0.00907	0.00967	0.00977
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01594	0.01705	0.01784
	B	0.00000	0.00000	0.00000
	B	0.01520	0.01634	0.01704
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00411	0.00402	0.00398
	B	0.00000	0.00000	0.00000
	B	0.00360	0.00355	0.00351

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)	-0.00131	-0.00136	-0.00136
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00131	-0.00137	-0.00136
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00131	-0.00136	-0.00136
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00131	-0.00137	-0.00136
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00090	-0.00093	-0.00093

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)	0.00135	0.00136	0.00136
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00135	0.00137	0.00136
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00135	0.00136	0.00136
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00135	0.00137	0.00136
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00093	0.00093	0.00093

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)	-0.00079	-0.00080	-0.00080
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00080	-0.00080	-0.00080
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00080	-0.00080	-0.00080
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00080	-0.00080	-0.00080
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00056	-0.00055	-0.00055

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)	0.00085	0.00085	0.00081
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00085	0.00085	0.00081
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00085	0.00085	0.00081
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00085	0.00085	0.00081
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00058	0.00059	0.00056

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__tbufi_1	10.37850
sky130_osu_sc_15T_ls__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tbufi_1	0.00387	0.00498	0.18246
sky130_osu_sc_15T_ls__tbufi_l	0.00298	0.00388	0.11931

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00011	0.00013
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00016	0.00019

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)	0.23288	1.82644	13.57310
	OE->Y (FR)	0.15216	0.67327	4.88858
	OE->Y (RR)	0.31388	1.80263	9.98274
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.30375	2.08656	13.68550
	OE->Y (FR)	0.17929	0.69611	4.95589
	OE->Y (RR)	0.36595	2.03563	9.84913

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)	0.07064	0.76324	6.84380
	OE->Y (FF)	0.15404	0.67430	4.89557
	OE->Y (RF)	0.07020	0.76491	6.78980
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.07583	0.75854	6.32593
	OE->Y (FF)	0.18074	0.69769	4.96237
	OE->Y (RF)	0.07349	0.75357	6.26877

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	0.00241	0.00232	0.00228
	OE	0.00000	0.00000	0.00000
	OE	0.00231	0.00206	0.00198
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00180	0.00171	0.00169
	OE	0.00000	0.00000	0.00000
	OE	0.00165	0.00145	0.00138

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	-0.00026	-0.00027	-0.00033
	OE	0.00000	0.00000	0.00000
	OE	0.00173	0.00148	0.00137
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00016	-0.00017	-0.00022
	OE	0.00000	0.00000	0.00000
	OE	0.00117	0.00098	0.00090

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)	-0.00123	-0.00125	-0.00124
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00115	-0.00116	-0.00115
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00091	-0.00091	-0.00091
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00085	-0.00086	-0.00085

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)	0.00123	0.00125	0.00124
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00120	0.00120	0.00118
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00091	0.00091	0.00091
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00088	0.00088	0.00086

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)	0.00095	0.00070	0.00059
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00086	0.00060	0.00049
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00064	0.00045	0.00037
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00057	0.00037	0.00029

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)	0.00278	0.00255	0.00249
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00289	0.00266	0.00257
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00219	0.00200	0.00195
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00227	0.00208	0.00201

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__tnbufi_1	10.37850
sky130_osu_sc_15T_ls__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tnbufi_1	0.00386	0.00582	0.18225
sky130_osu_sc_15T_ls__tnbufi_l	0.00298	0.00427	0.11926

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00009	0.00020
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00012	0.00028

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)	0.23499	1.82537	13.56790
	OE->Y (RR)	0.04983	0.36364	3.47363
	OE->Y (FR)	0.25971	1.91275	13.90900
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.30552	2.08547	13.68290
	OE->Y (RR)	0.04905	0.34953	3.47371
	OE->Y (FR)	0.31730	2.15901	13.86970

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)	0.06903	0.76411	6.84055
	OE->Y (RF)	0.04927	0.36228	3.47364
	OE->Y (FF)	0.19191	0.99725	6.73466
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.07374	0.75768	6.32423
	OE->Y (RF)	0.04842	0.34812	3.47359
	OE->Y (FF)	0.22035	1.02057	6.49520

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	0.00248	0.00239	0.00235
	OE	0.00000	0.00000	0.00000
	OE	0.00577	0.00560	0.00560
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00188	0.00178	0.00176
	OE	0.00000	0.00000	0.00000
	OE	0.00423	0.00410	0.00409

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	-0.00035	-0.00037	-0.00042
	OE	0.00000	0.00000	0.00000
	OE	0.00528	0.00510	0.00509
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00025	-0.00026	-0.00031
	OE	0.00000	0.00000	0.00000
	OE	0.00382	0.00368	0.00366

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)	-0.00105	-0.00106	-0.00105
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00097	-0.00098	-0.00098
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00073	-0.00073	-0.00073
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00068	-0.00068	-0.00068

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)	0.00105	0.00106	0.00105
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00102	0.00102	0.00100
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00073	0.00073	0.00073
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00070	0.00070	0.00069

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)	-0.00152	-0.00185	-0.00196
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00145	-0.00179	-0.00193
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00101	-0.00124	-0.00131
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00096	-0.00120	-0.00130

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)	0.00442	0.00425	0.00423
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00433	0.00417	0.00414
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00323	0.00309	0.00308
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00317	0.00302	0.00302

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xnor2_l	0.00765	0.00669	0.18134

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00028	0.00040

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	0.40955	1.90469	10.18470
	A->Y (FR)	!B	0.31412	1.91003	13.60950
	B->Y (RR)	A	0.34182	1.83199	10.03670
	B->Y (FR)	!A	0.36180	2.00943	13.95010

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	0.29779	1.10981	7.22356
	A->Y (RF)	!B	0.09924	0.78756	6.79567
	B->Y (FF)	A	0.28206	1.09058	7.19159
	B->Y (RF)	!A	0.10859	0.80040	6.81887

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	0.00231	0.00204	0.00186
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00599	0.00570	0.00562
	B	A	0.00000	0.00000	0.00000
	B	A	0.00127	0.00102	0.00086
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00624	0.00601	0.00597

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	0.00716	0.00692	0.00677
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00181	0.00155	0.00137
	B	A	0.00000	0.00000	0.00000
	B	A	0.00655	0.00644	0.00636
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00223	0.00193	0.00174

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__xor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xor2_l	0.00766	0.00674	0.18098

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00028	0.00034

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	0.42201	1.91250	10.16740
	A->Y (FR)	B	0.33770	1.97946	13.94780
	B->Y (RR)	!A	0.35159	1.84797	10.09830
	B->Y (FR)	A	0.36813	2.02185	13.99160

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	0.30135	1.10962	7.27026
	A->Y (RF)	B	0.09081	0.79099	6.86897
	B->Y (FF)	!A	0.28191	1.09141	7.19701
	B->Y (RF)	A	0.10249	0.79964	6.82057

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	0.00681	0.00653	0.00648
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00154	0.00114	0.00093
	B	A	0.00000	0.00000	0.00000
	B	A	0.00689	0.00666	0.00660
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00116	0.00090	0.00075

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	0.00155	0.00120	0.00100
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00748	0.00730	0.00723
	B	A	0.00000	0.00000	0.00000
	B	A	0.00154	0.00124	0.00105
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00670	0.00660	0.00652

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__ant	5.49450
sky130_osu_sc_15T_ls__tiehi	5.49450
sky130_osu_sc_15T_ls__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_ls__ant	0.05785
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	24053.40000	48106.70000
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
	-0.00154	0.00213	0.04062

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
	0.41965	0.39129	0.06172