sky130_osu_sc_12T_ls_tt_1P35_25C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_LS__ADDFx
SKY130_OSU_SC_12T_LS__ADDHx
SKY130_OSU_SC_12T_LS__AND2x
SKY130_OSU_SC_12T_LS__AOI21
SKY130_OSU_SC_12T_LS__AOI22
SKY130_OSU_SC_12T_LS__BUFx
SKY130_OSU_SC_12T_LS__DFFRx
SKY130_OSU_SC_12T_LS__DFFSRx
SKY130_OSU_SC_12T_LS__DFFSx
SKY130_OSU_SC_12T_LS__DFFx
SKY130_OSU_SC_12T_LS__INVx
SKY130_OSU_SC_12T_LS__MUX2
SKY130_OSU_SC_12T_LS__NAND2x
SKY130_OSU_SC_12T_LS__NOR2x
SKY130_OSU_SC_12T_LS__OAI21
SKY130_OSU_SC_12T_LS__OAI22
SKY130_OSU_SC_12T_LS__OR2x
SKY130_OSU_SC_12T_LS__TBUFIx
SKY130_OSU_SC_12T_LS__TNBUFIx
SKY130_OSU_SC_12T_LS__XNOR2
SKY130_OSU_SC_12T_LS__XOR2
SKY130_OSU_SC_12T_LS_x

SKY130_OSU_SC_12T_LS__ADDFx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__addf_1	31.25760
sky130_osu_sc_12T_ls__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_12T_ls__addf_1	0.01058	0.01060	0.00827	0.47954	0.20000	0.43772
sky130_osu_sc_12T_ls__addf_l	0.01058	0.01060	0.00828	0.32882	0.19990	0.43752

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.00088	0.00095
sky130_osu_sc_12T_ls__addf_l	0.00000	0.00080	0.00086

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.28454	2.21836	22.02640
	B->CO (RR)	0.27310	2.16167	21.64310
	CI->CO (RR)	0.27052	2.22096	22.31840
	CON->CO (FR)	0.06566	1.14745	13.28570
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.28705	2.09756	18.49150
	B->CO (RR)	0.27593	2.05419	18.36440
	CI->CO (RR)	0.27312	2.10033	18.82460
	CON->CO (FR)	0.07825	1.23600	12.99850

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.63651	3.83870	36.14660
	B->CO (FF)	0.58193	3.69918	35.19830
	CI->CO (FF)	0.57166	3.75105	36.08150
	CON->CO (RF)	0.03059	0.61402	7.50758
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.61656	3.35311	27.71330
	B->CO (FF)	0.56302	3.23390	27.05160
	CI->CO (FF)	0.55163	3.26486	27.65860
	CON->CO (RF)	0.03391	0.63077	7.21443

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.47947	1.81823	13.25250
	B->CON (FR)	0.42995	1.72927	12.96090
	CI->CON (FR)	0.41515	1.72928	13.21610
sky130_osu_sc_12T_ls__addf_l	A->CON (FR)	0.45691	1.79540	13.22600
	B->CON (FR)	0.40886	1.70732	12.93540
	CI->CON (FR)	0.39276	1.70652	13.18990

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.13494	0.69575	6.16536
	B->CON (RF)	0.12826	0.69276	6.31596
	CI->CON (RF)	0.12091	0.69994	6.46828
sky130_osu_sc_12T_ls__addf_l	A->CON (RF)	0.13042	0.69111	6.15843
	B->CON (RF)	0.12394	0.68842	6.30876
	CI->CON (RF)	0.11638	0.69534	6.46081

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.87385	3.94410	31.13590
	B->S (-R)	0.84906	3.87839	30.74700
	CI->S (-R)	0.80468	3.84811	31.04570
	CON->S (RR)	0.17087	1.14802	8.97168
sky130_osu_sc_12T_ls__addf_l	A->S (-R)	0.84018	3.91662	31.10410
	B->S (-R)	0.81646	3.85219	30.71490
	CI->S (-R)	0.77095	3.82026	31.00780
	CON->S (RR)	0.17099	1.14793	8.96793

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-F)	0.54846	1.98359	14.57640
	B->S (-F)	0.55296	1.91012	14.40890
	CI->S (-F)	0.53400	1.97893	14.87550
	CON->S (FF)	0.25575	0.96474	7.00948
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.53719	1.97417	14.56450
	B->S (-F)	0.54252	1.90145	14.39680
	CI->S (-F)	0.52280	1.96974	14.85540
	CON->S (FF)	0.25585	0.96462	7.00826

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00163	0.00157	0.00153
	B	0.00188	0.00190	0.00189
	CI	0.00195	0.00199	0.00198
sky130_osu_sc_12T_ls__addf_l	A	0.00148	0.00142	0.00136
	B	0.00172	0.00173	0.00169
	CI	0.00180	0.00183	0.00181

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00510	0.00508	0.00511
	B	0.00500	0.00503	0.00506
	CI	0.00440	0.00448	0.00451
sky130_osu_sc_12T_ls__addf_l	A	0.00497	0.00494	0.00495
	B	0.00487	0.00489	0.00489
	CI	0.00426	0.00435	0.00434

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00509	0.00506	0.00484
	B	0.00499	0.00501	0.00497
	CI	0.00440	0.00447	0.00443
sky130_osu_sc_12T_ls__addf_l	A	0.00497	0.00493	0.00489
	B	0.00487	0.00488	0.00484
	CI	0.00426	0.00433	0.00412

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00161	0.00156	0.00148
	B	0.00186	0.00187	0.00177
	CI	0.00195	0.00198	0.00193
sky130_osu_sc_12T_ls__addf_l	A	0.00146	0.00140	0.00132
	B	0.00171	0.00171	0.00161
	CI	0.00179	0.00182	0.00177

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00510	0.00508	0.00511
	B	0.00500	0.00503	0.00505
	CI	0.00440	0.00448	0.00451
sky130_osu_sc_12T_ls__addf_l	A	0.00497	0.00495	0.00498
	B	0.00487	0.00490	0.00492
	CI	0.00427	0.00435	0.00438

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01026	0.01029	0.01022
	B	0.00951	0.00931	0.00921
	CI	0.00847	0.00844	0.00839
sky130_osu_sc_12T_ls__addf_l	A	0.01027	0.01029	0.01023
	B	0.00951	0.00931	0.00921
	CI	0.00847	0.00844	0.00839

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__addh_1	18.55920
sky130_osu_sc_12T_ls__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ls__addh_1	0.00505	0.00545	0.46533	0.47225	0.47090
sky130_osu_sc_12T_ls__addh_l	0.00504	0.00545	0.32961	0.47655	0.33067

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.00075	0.00083
sky130_osu_sc_12T_ls__addh_l	0.00000	0.00059	0.00067

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CO (RR)	0.20514	1.16095	8.89750
	B->CO (RR)	0.20940	1.16086	9.08424
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.20694	1.23753	8.72693
	B->CO (RR)	0.21106	1.24027	8.92054

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CO (FF)	0.21249	0.90680	7.20166
	B->CO (FF)	0.22237	0.92123	7.30363
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.20540	0.91874	6.99284
	B->CO (FF)	0.21497	0.93307	7.10218

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CON (RR)	0.30231	1.23102	8.90869
	B->CON (RR)	0.30636	1.22905	9.09062
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.28072	1.20856	8.88345
	B->CON (RR)	0.28479	1.20847	9.07370

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CON (FF)	0.25795	0.93386	7.24554
	B->CON (FF)	0.26129	0.94480	7.34297
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.23908	0.91199	7.13090
	B->CON (FF)	0.24268	0.92270	7.23638

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->S (FR)	0.37529	1.98560	17.41510
	B->S (FR)	0.37905	1.99494	17.52670
	CON->S (FR)	0.06757	1.14487	13.24200
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.36280	1.94974	15.48740
	B->S (FR)	0.36664	1.95803	15.58350
	CON->S (FR)	0.07838	1.23755	13.05270

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->S (RF)	0.39775	2.05828	16.82770
	B->S (RF)	0.40196	2.05624	17.01110
	CON->S (RF)	0.03001	0.61141	7.47315
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.37737	1.84383	13.06700
	B->S (RF)	0.38156	1.84462	13.25550
	CON->S (RF)	0.03318	0.63171	7.25440

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00255	0.00244	0.00238
	B	0.00000	0.00000	0.00000
	B	0.00238	0.00228	0.00219
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00225	0.00212	0.00207
	B	0.00000	0.00000	0.00000
	B	0.00209	0.00197	0.00190

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00355	0.00345	0.00330
	B	0.00000	0.00000	0.00000
	B	0.00370	0.00371	0.00358
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00325	0.00314	0.00302
	B	0.00000	0.00000	0.00000
	B	0.00341	0.00340	0.00331

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00255	0.00244	0.00238
	B	0.00000	0.00000	0.00000
	B	0.00238	0.00228	0.00219
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00225	0.00212	0.00207
	B	0.00000	0.00000	0.00000
	B	0.00209	0.00197	0.00188

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00355	0.00345	0.00331
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00371	0.00358
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00325	0.00313	0.00298
	B	0.00000	0.00000	0.00000
	B	0.00341	0.00339	0.00325

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00356	0.00346	0.00333
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00372	0.00366
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00326	0.00315	0.00308
	B	0.00000	0.00000	0.00000
	B	0.00341	0.00340	0.00310

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00255	0.00244	0.00238
	B	0.00000	0.00000	0.00000
	B	0.00238	0.00228	0.00220
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00225	0.00212	0.00206
	B	0.00000	0.00000	0.00000
	B	0.00209	0.00196	0.00188

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.24483	0.23161	0.05154
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.24485	0.23163	0.05156

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.24478	0.23117	0.05148
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.24480	0.23119	0.05150

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__and2_1	8.30280
sky130_osu_sc_12T_ls__and2_2	10.25640
sky130_osu_sc_12T_ls__and2_4	14.16360
sky130_osu_sc_12T_ls__and2_6	18.07080
sky130_osu_sc_12T_ls__and2_8	21.97800
sky130_osu_sc_12T_ls__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__and2_1	0.00277	0.00287	0.46876
sky130_osu_sc_12T_ls__and2_2	0.00277	0.00287	0.93378
sky130_osu_sc_12T_ls__and2_4	0.00277	0.00287	1.81455
sky130_osu_sc_12T_ls__and2_6	0.00280	0.00287	2.72428
sky130_osu_sc_12T_ls__and2_8	0.00277	0.00287	3.55518
sky130_osu_sc_12T_ls__and2_l	0.00212	0.00219	0.32853

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00031	0.00044
sky130_osu_sc_12T_ls__and2_2	0.00000	0.00045	0.00062
sky130_osu_sc_12T_ls__and2_4	0.00000	0.00073	0.00099
sky130_osu_sc_12T_ls__and2_6	0.00000	0.00102	0.00135
sky130_osu_sc_12T_ls__and2_8	0.00000	0.00130	0.00172
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00016	0.00022

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	**A->Y (RR)**	0.15802	1.07991	8.52271
	B->Y (RR)	0.16540	1.09054	8.75100
sky130_osu_sc_12T_ls__and2_2	**A->Y (RR)**	0.17372	0.96740	8.78660
	B->Y (RR)	0.18103	0.97116	8.98118
sky130_osu_sc_12T_ls__and2_4	**A->Y (RR)**	0.23599	0.95472	9.26235
	B->Y (RR)	0.24336	0.95025	9.39350
sky130_osu_sc_12T_ls__and2_6	**A->Y (RR)**	0.29959	0.99451	9.71185
	B->Y (RR)	0.30681	0.98724	9.82307
sky130_osu_sc_12T_ls__and2_8	**A->Y (RR)**	0.36075	1.04220	9.96840
	B->Y (RR)	0.36804	1.03530	10.04650
sky130_osu_sc_12T_ls__and2_l	**A->Y (RR)**	0.16837	1.16543	8.31054
	B->Y (RR)	0.17529	1.17356	8.53188

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (FF)	0.16177	0.82425	6.62374
	B->Y (FF)	0.17024	0.83939	6.76583
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.19837	0.82681	7.01634
	B->Y (FF)	0.20547	0.83709	7.12097
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.28882	0.90469	7.59563
	B->Y (FF)	0.29194	0.90884	7.65779
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.38201	1.00151	8.05592
	B->Y (FF)	0.38083	1.00098	8.09700
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.46926	1.09681	8.34425
	B->Y (FF)	0.46464	1.09264	8.38102
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.16403	0.83944	6.25992
	B->Y (FF)	0.17857	0.86057	6.40262

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00185	0.00163	0.00165
	B	0.00000	0.00000	0.00000
	B	0.00189	0.00166	0.00160
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00334	0.00325	0.00333
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00333	0.00325
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00675	0.00695	0.00710
	B	0.00000	0.00000	0.00000
	B	0.00680	0.00702	0.00711
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01016	0.01061	0.01078
	B	0.00000	0.00000	0.00000
	B	0.01019	0.01069	0.01079
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01353	0.01399	0.01446
	B	0.00000	0.00000	0.00000
	B	0.01356	0.01427	0.01454
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00142	0.00128	0.00131
	B	0.00000	0.00000	0.00000
	B	0.00145	0.00130	0.00126

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00442	0.00430	0.00433
	B	0.00000	0.00000	0.00000
	B	0.00499	0.00485	0.00486
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00556	0.00566	0.00570
	B	0.00000	0.00000	0.00000
	B	0.00613	0.00622	0.00622
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00836	0.00895	0.00902
	B	0.00000	0.00000	0.00000
	B	0.00893	0.00947	0.00951
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01125	0.01227	0.01248
	B	0.00000	0.00000	0.00000
	B	0.01181	0.01276	0.01292
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01395	0.01536	0.01576
	B	0.00000	0.00000	0.00000
	B	0.01453	0.01585	0.01617
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00336	0.00324	0.00330
	B	0.00000	0.00000	0.00000
	B	0.00375	0.00364	0.00368

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00145	-0.00147	-0.00147
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00145	-0.00147	-0.00147
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00145	-0.00146	-0.00147
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00147	-0.00147	-0.00149
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00145	-0.00146	-0.00147
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00103	-0.00103	-0.00104

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00147	0.00151	0.00148
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00147	0.00151	0.00148
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00147	0.00150	0.00148
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00148	0.00151	0.00149
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00147	0.00149	0.00148
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00105	0.00107	0.00105

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00138	-0.00139	-0.00139
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00138	-0.00139	-0.00139
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00138	-0.00139	-0.00139
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00138	-0.00139	-0.00139
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00138	-0.00139	-0.00139
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00098	-0.00099	-0.00099

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00140	0.00139
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00141	0.00139
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00140	0.00139
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00139	0.00139
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00139	0.00139
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00099	0.00100	0.00099

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__aoi21_l	0.00249	0.00269	0.00267	0.20042

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00016	0.00027

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi21_l	A0->Y (FR)	0.24150	1.61668	13.24380
	A1->Y (FR)	0.19932	1.50447	12.75930
	B0->Y (FR)	0.19312	1.53701	13.25500

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi21_l	A0->Y (RF)	0.06684	0.62182	6.05492
	A1->Y (RF)	0.06118	0.62671	6.23776
	B0->Y (RF)	0.03997	0.56555	5.89570

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00351	0.00345	0.00343
	A1	0.00000	0.00000	0.00000
	A1	0.00297	0.00289	0.00286
	B0	0.00293	0.00285	0.00280

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00066	0.00057	0.00050
	A1	0.00000	0.00000	0.00000
	A1	0.00067	0.00057	0.00050
	B0	-0.00022	-0.00023	-0.00029

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00113	-0.00118	-0.00117
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00120	-0.00121	-0.00120
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00120	-0.00120	-0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00116	0.00118	0.00117
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00120	0.00121	0.00120
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00121	0.00121	0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00113	-0.00117	-0.00117
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00120	-0.00120	-0.00120
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00132	-0.00134	-0.00134

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00117	0.00117	0.00117
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00120	0.00122	0.00121
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00134	0.00134	0.00134

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00063	-0.00064	-0.00063

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00072	0.00072	0.00066

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__aoi22_l	0.00249	0.00268	0.00283	0.00264	0.19846

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00025	0.00037

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi22_l	A0->Y (FR)	0.30889	1.69035	13.27850
	A1->Y (FR)	0.27596	1.64811	13.20710
	B0->Y (FR)	0.20587	1.54526	13.18460
	B1->Y (FR)	0.23930	1.58625	13.26340

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi22_l	A0->Y (RF)	0.08456	0.64038	6.05783
	A1->Y (RF)	0.07884	0.64507	6.24050
	B0->Y (RF)	0.05196	0.61145	6.18815
	B1->Y (RF)	0.05795	0.60652	6.00930

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00434	0.00428	0.00424
	A1	0.00381	0.00373	0.00368
	B0	0.00314	0.00303	0.00297
	B1	0.00368	0.00359	0.00354

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00135	0.00126	0.00117
	A1	0.00136	0.00126	0.00117
	B0	-0.00008	-0.00009	-0.00015
	B1	-0.00008	-0.00008	-0.00014

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00113	-0.00118	-0.00117
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00119	-0.00120	-0.00120
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00119	-0.00120	-0.00120
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00119	-0.00120	-0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00116	0.00118	0.00117
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00120	0.00121	0.00120
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00121	0.00121	0.00120
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00121	0.00121	0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00113	-0.00117	-0.00117
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00120	-0.00120	-0.00120
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00131	-0.00133	-0.00133
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00131	-0.00133	-0.00133

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00116	0.00117	0.00117
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00121	0.00120	0.00121
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00134	0.00137	0.00134
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00134	0.00137	0.00134

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00063	-0.00064	-0.00063
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00062	-0.00063	-0.00063
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00139	-0.00139	-0.00140
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00138	-0.00139	-0.00140

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00075	0.00075	0.00066
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00062	0.00064	0.00063
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00140	0.00141	0.00140
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00140	0.00141	0.00140

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00064	-0.00065	-0.00064
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00063	-0.00064	-0.00064
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00127	-0.00128	-0.00127
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00127	-0.00127	-0.00127

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00076	0.00076	0.00067
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00063	0.00064	0.00064
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00128	0.00128	0.00127
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00128	0.00128	0.00127

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__buf_1	6.34920
sky130_osu_sc_12T_ls__buf_2	8.30280
sky130_osu_sc_12T_ls__buf_4	12.21000
sky130_osu_sc_12T_ls__buf_6	16.11720
sky130_osu_sc_12T_ls__buf_8	20.02440
sky130_osu_sc_12T_ls__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__buf_1	0.00288	0.44776
sky130_osu_sc_12T_ls__buf_2	0.00288	0.92128
sky130_osu_sc_12T_ls__buf_4	0.00288	1.82546
sky130_osu_sc_12T_ls__buf_6	0.00083	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00288	3.56121
sky130_osu_sc_12T_ls__buf_l	0.00216	0.32937

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00031	0.00031
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00047	0.00049
sky130_osu_sc_12T_ls__buf_4	0.00000	0.00078	0.00086
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.00140	0.00159
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00015	0.00015

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (RR)**	0.11919	1.04437	8.43811
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.11930	0.90816	8.72471
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.15636	0.86614	9.18358
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.23273	0.89635	9.71104
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.12747	1.11409	8.21643

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (FF)**	0.15338	0.80414	6.43872
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.18976	0.81163	6.92911
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.28096	0.89376	7.57237
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.46189	1.08719	8.32288
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.15937	0.83137	6.20400

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00176	0.00147	0.00148
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00325	0.00308	0.00308
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00669	0.00680	0.00692
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01345	0.01402	0.01430
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00137	0.00117	0.00119

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00435	0.00416	0.00422
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00547	0.00548	0.00551
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00829	0.00874	0.00879
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01394	0.01514	0.01544
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00335	0.00321	0.00327

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00036	-0.00036	-0.00036

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
	0.00036	0.00036	0.00036

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__dffr_1	42.49080
sky130_osu_sc_12T_ls__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ls__dffr_1	0.00261	0.00263	0.00844	0.46211	0.46319
sky130_osu_sc_12T_ls__dffr_l	0.00261	0.00263	0.00843	0.32996	0.33219

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.00125	0.00141
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.00109	0.00125

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RR)	0.81264	2.27035	14.36250
	QN->Q (FR)	0.07236	1.20105	13.84600
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.78813	2.35644	13.98770
	QN->Q (FR)	0.08178	1.28254	13.48110

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RF)	0.73416	2.37992	16.96240
	QN->Q (RF)	0.03314	0.64837	7.90968
	RN->Q (FF)	0.51783	2.32187	19.47950
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.74816	2.55798	16.72630
	QN->Q (RF)	0.03564	0.65993	7.61055
	RN->Q (FF)	0.53226	2.49925	19.22630

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->QN (RR)	0.65701	1.58830	9.24307
	RN->QN (FR)	0.44021	1.52899	11.76300
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.66038	1.67934	9.22604
	RN->QN (FR)	0.44390	1.62020	11.73320

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	**CK->QN (RF)**	0.68590	1.24921	4.54902
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.65357	1.23019	4.41931

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.10998	-0.14101	-0.79564
	setup	CK (R)	0.61477	0.61328	1.96772
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.11037	-0.14082	-0.79579
	setup	CK (R)	0.61547	0.61680	1.97979

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.34240	-0.69001	-7.83146
	setup	CK (R)	0.39216	0.71955	7.89371
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.33931	-0.68853	-7.83144
	setup	CK (R)	0.39219	0.71950	7.89349

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.10998	-0.14101	-0.79564
	setup	CK (R)	0.61477	0.61328	1.96772
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.11037	-0.14082	-0.79579
	setup	CK (R)	0.61547	0.61680	1.97979

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.34240	-0.69001	-7.83146
	setup	CK (R)	0.39216	0.71955	7.89371
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.33931	-0.68853	-7.83144
	setup	CK (R)	0.39219	0.71950	7.89349

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.55750	0.56021	1.71439
	removal	CK (R)	-0.10427	-0.12216	-0.13998
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.56045	0.56324	1.71490
	removal	CK (R)	-0.10427	-0.12216	-0.13998

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.55750	0.56021	1.71439
	removal	CK (R)	-0.10427	-0.12216	-0.13998
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.56045	0.56324	1.71490
	removal	CK (R)	-0.10427	-0.12216	-0.13998

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	min_pulse_width	RN ()	0.33175	0.65013	13.33370
	min_pulse_width	RN ()	0.32820	0.64792	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.32711	0.64572	13.33370
	min_pulse_width	RN ()	0.32466	0.64572	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_12T_ls__dffr_1	min_pulse_width	CK ()	0.35156	0.48706	13.33370
	min_pulse_width	CK ()	0.39917	0.48706	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.32593	0.48706	13.33370
	min_pulse_width	CK ()	0.38818	0.48706	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_12T_ls__dffr_1	min_pulse_width	CK ()	0.81057	0.87048	13.33370
	min_pulse_width	CK ()	0.32225	0.62148	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.81466	0.87489	13.33370
	min_pulse_width	CK ()	0.31989	0.62148	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00439	0.00390	0.00124
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00395	0.00350	0.00199

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00496	0.00465	0.00325
	RN	-0.00061	-0.02027	-0.21055
	RN	0.01105	0.01085	0.00927
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00449	0.00422	0.00345
	RN	-0.00061	-0.01656	-0.15034
	RN	0.01058	0.01041	0.00945

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00496	0.00465	0.00326
	RN	-0.00061	-0.02029	-0.21104
	RN	0.01105	0.01085	0.00925
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00450	0.00423	0.00346
	RN	-0.00061	-0.01662	-0.15135
	RN	0.01059	0.01042	0.00944

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00437	0.00389	0.00112
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00393	0.00348	0.00186

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00110	-0.00118	-0.00118
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00524	0.00503	0.00488
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00210	0.00192	0.00181
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00110	-0.00118	-0.00118
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00524	0.00503	0.00488
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00210	0.00192	0.00181

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00118	0.00119	0.00118
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00788	0.00776	0.00759
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00384	0.00373	0.00369
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00118	0.00119	0.00118
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00788	0.00776	0.00759
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00384	0.00373	0.00369

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00174	0.00149	0.00145
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00509	0.00471	0.00456
sky130_osu_sc_12T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00174	0.00149	0.00145
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00509	0.00471	0.00456

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00426	0.00407	0.00409
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00838	0.00812	0.00795
sky130_osu_sc_12T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00426	0.00407	0.00409
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00838	0.00812	0.00795

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00020	-0.00055	-0.00064
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00266	0.00215	0.00184
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00023	-0.00058	-0.00069
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00020	-0.00055	-0.00064
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00266	0.00215	0.00184
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00023	-0.00058	-0.00069

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00678	0.00648	0.00641
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01340	0.01298	0.01258
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01006	0.00981	0.00954
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01320	0.01269	0.01251
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00717	0.00686	0.00684
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00678	0.00648	0.00641
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01340	0.01298	0.01258
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01006	0.00981	0.00954
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01320	0.01269	0.01251
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00717	0.00686	0.00684

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__dffsr_1	46.39800
sky130_osu_sc_12T_ls__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_ls__dffsr_1	0.00258	0.00265	0.00614	0.00856	0.47293	0.47453
sky130_osu_sc_12T_ls__dffsr_l	0.00258	0.00265	0.00614	0.00855	0.33145	0.33297

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.00136	0.00157
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.00120	0.00141

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RR)	0.82966	2.29805	14.63520
	QN->Q (FR)	0.06917	1.18404	13.65030
	RN->Q (RR)	0.67758	2.15832	14.69560
	SN->Q (FR)	0.66836	2.27112	17.74780
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.81990	2.40363	14.20840
	QN->Q (FR)	0.08164	1.28129	13.50310
	RN->Q (RR)	0.66773	2.26532	14.26830
	SN->Q (FR)	0.65506	2.37515	17.28130

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RF)	0.84048	2.49342	17.18000
	QN->Q (RF)	0.03292	0.65159	7.97727
	RN->Q (FF)	0.55184	2.35318	19.70860
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.85750	2.67855	16.91950
	QN->Q (RF)	0.03547	0.66012	7.62012
	RN->Q (FF)	0.57068	2.54322	19.43450

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RR)	0.76232	1.69834	9.37573
	RN->QN (FR)	0.47507	1.55885	11.90740
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.76801	1.79852	9.37385
	RN->QN (FR)	0.48234	1.66095	11.89700

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RF)	0.71103	1.28588	4.76277
	RN->QN (RF)	0.55847	1.15012	4.82715
	SN->QN (FF)	0.54939	1.26346	7.86771
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.69026	1.27718	4.59691
	RN->QN (RF)	0.53759	1.14159	4.66337
	SN->QN (FF)	0.52592	1.25091	7.66060

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.12323	-0.15555	-0.91610
	setup	CK (R)	0.61409	0.60784	1.93276
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.12573	-0.15558	-0.91675
	setup	CK (R)	0.61804	0.60968	1.93829

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.39635	-0.73613	-8.08444
	setup	CK (R)	0.45943	0.76093	8.13972
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.39614	-0.73459	-8.08563
	setup	CK (R)	0.45943	0.76093	8.12910

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.12323	-0.15555	-0.91610
	setup	CK (R)	0.61409	0.60784	1.93276
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.12573	-0.15558	-0.91675
	setup	CK (R)	0.61804	0.60968	1.93829

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.39635	-0.73613	-8.08444
	setup	CK (R)	0.45943	0.76093	8.13972
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.39614	-0.73459	-8.08563
	setup	CK (R)	0.45943	0.76093	8.12910

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.51446	0.50855	1.61242
	removal	CK (R)	-0.06747	-0.08330	-0.12736
	hold	SN (R)	-0.53429	-0.76354	-5.79297
	setup	SN (R)	0.56263	0.81265	7.57239
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.51429	0.50939	1.61634
	removal	CK (R)	-0.06747	-0.08330	-0.12736
	hold	SN (R)	-0.51191	-0.73972	-5.67826
	setup	SN (R)	0.56087	0.79066	7.50862

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.51446	0.50855	1.61242
	removal	CK (R)	-0.06747	-0.08330	-0.12736
	hold	SN (R)	-0.53633	-0.76354	-5.79297
	hold	SN (R)	-0.53429	-0.76614	-5.80179
	setup	SN (R)	0.55958	0.80910	7.56135
	setup	SN (R)	0.56263	0.81265	7.57239
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.51429	0.50939	1.61634
	removal	CK (R)	-0.06747	-0.08330	-0.12736
	hold	SN (R)	-0.51850	-0.73972	-5.67826
	hold	SN (R)	-0.51191	-0.74194	-5.70721
	setup	SN (R)	0.56087	0.79066	7.46197
	setup	SN (R)	0.53341	0.78915	7.50862

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	RN ()	0.37196	0.67436	13.33370
	min_pulse_width	RN ()	0.38478	0.67436	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.37078	0.67216	13.33370
	min_pulse_width	RN ()	0.37844	0.67216	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.06492	0.08871	1.51744
	removal	CK (R)	-0.01878	-0.05469	-0.61164
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.06059	0.08853	1.40361
	removal	CK (R)	-0.01878	-0.05469	-0.61164

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.06492	0.08871	1.51744
	removal	CK (R)	-0.01878	-0.05469	-0.61164
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.06059	0.08853	1.40361
	removal	CK (R)	-0.01878	-0.05469	-0.61164

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	SN ()	0.54267	0.84184	13.33370
	min_pulse_width	SN ()	0.55375	0.84404	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.53206	0.81539	13.33370
	min_pulse_width	SN ()	0.52237	0.81980	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_12T_ls__dffsr_1	min_pulse_width	CK ()	0.36621	0.48706	13.33370
	min_pulse_width	CK ()	0.44311	0.48706	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.35156	0.48706	13.33370
	min_pulse_width	CK ()	0.43579	0.48706	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_12T_ls__dffsr_1	min_pulse_width	CK ()	0.81640	0.86608	13.33370
	min_pulse_width	CK ()	0.39503	0.66555	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.81640	0.86608	13.33370
	min_pulse_width	CK ()	0.39503	0.66555	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00534	0.00489	0.00218
	RN	0.00984	0.00950	0.00669
	SN	-0.00061	-0.02055	-0.21548
	SN	0.01078	0.01049	0.00764
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00492	0.00451	0.00300
	RN	0.00942	0.00912	0.00754
	SN	-0.00061	-0.01660	-0.15102
	SN	0.01036	0.01012	0.00849

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00567	0.00544	0.00440
	RN	-0.00061	-0.02055	-0.21548
	RN	0.01168	0.01151	0.01030
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00522	0.00499	0.00422
	RN	-0.00061	-0.01660	-0.15102
	RN	0.01123	0.01105	0.01011

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00568	0.00545	0.00442
	RN	-0.00061	-0.02059	-0.21621
	RN	0.01168	0.01151	0.01032
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00523	0.00500	0.00424
	RN	-0.00061	-0.01665	-0.15171
	RN	0.01123	0.01105	0.01012

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00531	0.00486	0.00196
	RN	0.00982	0.00948	0.00649
	SN	-0.00061	-0.02059	-0.21620
	SN	0.01076	0.01047	0.00752
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00490	0.00449	0.00286
	RN	0.00940	0.00910	0.00742
	SN	-0.00061	-0.01665	-0.15170
	SN	0.01034	0.01010	0.00837

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00115	-0.00120	-0.00119
	(!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)	0.00652	0.00634	0.00620
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00228	0.00211	0.00200
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00226	0.00210	0.00198
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00229	0.00212	0.00201
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00115	-0.00120	-0.00119
	(!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)	0.00652	0.00634	0.00620
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00228	0.00211	0.00200
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00226	0.00210	0.00198
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00229	0.00212	0.00201

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00120	0.00120	0.00119
	(!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)	0.00903	0.00892	0.00870
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00426	0.00416	0.00411
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00428	0.00418	0.00413
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00424	0.00414	0.00410
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00120	0.00120	0.00119
	(!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)	0.00903	0.00892	0.00870
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00426	0.00416	0.00411
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00428	0.00418	0.00413
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00424	0.00414	0.00410

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00154	0.00129	0.00120
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00604	0.00564	0.00543
sky130_osu_sc_12T_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)	0.00154	0.00129	0.00120
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00604	0.00564	0.00543

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00473	0.00454	0.00456
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00897	0.00868	0.00847
sky130_osu_sc_12T_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)	0.00473	0.00454	0.00456
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00897	0.00868	0.00847

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	-0.00310	-0.00312	-0.00312
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00331	-0.00335	-0.00336
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00310	-0.00314	-0.00313
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00135	0.00115	0.00097
sky130_osu_sc_12T_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)	-0.00310	-0.00312	-0.00312
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00331	-0.00336	-0.00336
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00310	-0.00314	-0.00313
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00135	0.00114	0.00097

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00313	0.00314	0.00313
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00336	0.00335	0.00336
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00313	0.00315	0.00313
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00713	0.00695	0.00692
sky130_osu_sc_12T_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)	0.00313	0.00315	0.00313
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00336	0.00336	0.00336
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00313	0.00315	0.00313
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00713	0.00695	0.00692

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00024	-0.00059	-0.00068
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00319	0.00270	0.00239
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00316	0.00267	0.00237
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00015	-0.00052	-0.00061
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00178	0.00119	0.00106
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00024	-0.00059	-0.00068
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00319	0.00270	0.00239
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00316	0.00267	0.00236
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00015	-0.00052	-0.00061
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00178	0.00119	0.00106

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01485	0.01444	0.01402
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00691	0.00660	0.00653
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01020	0.00997	0.00971
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01023	0.00999	0.00974
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01440	0.01386	0.01361
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00718	0.00686	0.00683
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00917	0.00865	0.00864
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01485	0.01444	0.01402
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00691	0.00660	0.00653
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01020	0.00997	0.00971
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01023	0.00999	0.00974
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01440	0.01386	0.01361
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00718	0.00686	0.00683
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00917	0.00865	0.00864

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__dffs_1	38.58360
sky130_osu_sc_12T_ls__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ls__dffs_1	0.00259	0.00514	0.00840	0.46276	0.46737
sky130_osu_sc_12T_ls__dffs_l	0.00259	0.00514	0.00840	0.33138	0.33315

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.00107	0.00127
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.00092	0.00112

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RR)	0.52832	1.95103	14.08510
	QN->Q (FR)	0.07248	1.20908	13.82700
	SN->Q (FR)	0.43777	2.02079	17.05030
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.52452	2.06779	13.78050
	QN->Q (FR)	0.08182	1.27981	13.49360
	SN->Q (FR)	0.43208	2.13625	16.67990

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RF)	0.80565	2.45384	17.03400
	QN->Q (RF)	0.03300	0.64666	7.89828
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.81409	2.62817	16.84310
	QN->Q (RF)	0.03553	0.65926	7.61170

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RR)	0.72607	1.66541	9.37231
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.72431	1.74782	9.30842

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RF)	0.42165	0.94562	4.29268
	SN->QN (FF)	0.32926	1.01787	7.26427
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.40804	0.94892	4.18048
	SN->QN (FF)	0.31394	1.01945	7.09017

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.08396	-0.12084	-0.76405
	setup	CK (R)	0.37261	0.37622	1.81471
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.08638	-0.12114	-0.76426
	setup	CK (R)	0.37155	0.37370	1.81715

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.35320	-0.69968	-7.89802
	setup	CK (R)	0.43409	0.73531	7.96369
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.35563	-0.70003	-7.89783
	setup	CK (R)	0.43475	0.73531	7.96361

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.08396	-0.12084	-0.76405
	setup	CK (R)	0.37261	0.37622	1.81471
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.08638	-0.12114	-0.76426
	setup	CK (R)	0.37155	0.37370	1.81715

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.35320	-0.69968	-7.89802
	setup	CK (R)	0.43409	0.73531	7.96369
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.35563	-0.70003	-7.89783
	setup	CK (R)	0.43475	0.73531	7.96361

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	recovery	CK (R)	0.07971	0.10531	1.16302
	removal	CK (R)	-0.02840	-0.06071	-0.57389
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.07882	0.10540	1.06843
	removal	CK (R)	-0.02840	-0.06071	-0.57389

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	recovery	CK (R)	0.07971	0.10531	1.16302
	removal	CK (R)	-0.02840	-0.06071	-0.57389
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.07882	0.10540	1.06843
	removal	CK (R)	-0.02840	-0.06071	-0.57389

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	min_pulse_width	SN ()	0.31275	0.71623	13.33370
	min_pulse_width	SN ()	0.32093	0.71623	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.30609	0.69420	13.33370
	min_pulse_width	SN ()	0.30265	0.69861	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_12T_ls__dffs_1	min_pulse_width	CK ()	0.19043	0.48706	13.33370
	min_pulse_width	CK ()	0.42114	0.48706	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.18310	0.48706	13.33370
	min_pulse_width	CK ()	0.41016	0.48706	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_12T_ls__dffs_1	min_pulse_width	CK ()	0.57135	0.65894	13.33370
	min_pulse_width	CK ()	0.37110	0.63690	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.57135	0.65894	13.33370
	min_pulse_width	CK ()	0.37110	0.63690	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00439	0.00389	0.00130
	SN	-0.00061	-0.02028	-0.21084
	SN	0.00931	0.00893	0.00615
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00394	0.00349	0.00201
	SN	-0.00061	-0.01660	-0.15099
	SN	0.00885	0.00853	0.00684

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00494	0.00466	0.00329
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00449	0.00423	0.00348

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00495	0.00466	0.00330
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00449	0.00423	0.00349

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00437	0.00387	0.00112
	SN	-0.00061	-0.02040	-0.21293
	SN	0.00929	0.00891	0.00604
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00392	0.00347	0.00189
	SN	-0.00061	-0.01665	-0.15179
	SN	0.00883	0.00851	0.00677

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00117	-0.00122	-0.00121
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00515	0.00493	0.00473
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00209	0.00191	0.00180
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00117	-0.00122	-0.00121
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00515	0.00493	0.00473
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00209	0.00191	0.00180

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00122	0.00122	0.00121
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00789	0.00776	0.00761
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00391	0.00381	0.00376
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00122	0.00122	0.00121
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00789	0.00776	0.00761
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00391	0.00381	0.00376

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00230	-0.00231	-0.00231
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00154	0.00133	0.00126
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00230	-0.00231	-0.00231
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00155	0.00133	0.00126

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00231	0.00235	0.00232
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00502	0.00477	0.00474
sky130_osu_sc_12T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00231	0.00235	0.00232
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00502	0.00477	0.00474

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00020	-0.00055	-0.00064
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00019	-0.00053	-0.00064
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00163	0.00104	0.00093
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00020	-0.00055	-0.00064
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00019	-0.00053	-0.00064
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00163	0.00104	0.00093

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01335	0.01294	0.01252
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00679	0.00649	0.00642
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01315	0.01257	0.01242
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00713	0.00683	0.00680
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00869	0.00818	0.00818
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01335	0.01294	0.01252
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00679	0.00649	0.00642
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01315	0.01257	0.01242
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00713	0.00683	0.00680
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00869	0.00819	0.00818

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dff_1	32.23440
sky130_osu_sc_12T_ls__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ls__dff_1	0.00274	0.00816	0.44411
sky130_osu_sc_12T_ls__dff_l	0.00274	0.00814	0.31647

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.00122	0.00135
sky130_osu_sc_12T_ls__dff_l	0.00000	0.00106	0.00119

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	CK->Q (RR)	0.44182	1.37799	8.90419
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.43907	1.45011	8.71466

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	CK->Q (RF)	0.69297	1.20123	4.65064
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.69749	1.22841	4.56763

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	hold	CK (R)	-0.08653	-0.12179	-0.80632
	setup	CK (R)	0.28786	0.29791	1.81217
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.08648	-0.12185	-0.80760
	setup	CK (R)	0.28834	0.29822	1.82346

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	hold	CK (R)	-0.34112	-0.70105	-7.94685
	setup	CK (R)	0.39913	0.73931	8.03693
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.33726	-0.69933	-7.94807
	setup	CK (R)	0.39909	0.73931	8.03687

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	min_pulse_width	CK ()	0.16846	0.48706	13.33370
	min_pulse_width	CK ()	0.38818	0.48706	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.16113	0.48706	13.33370
	min_pulse_width	CK ()	0.38086	0.48706	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_12T_ls__dff_1	**min_pulse_width**	**CK ()**	0.48686	0.63029	13.33370
	min_pulse_width	**CK ()**	0.32277	0.63690	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.48686	0.63029	13.33370
	min_pulse_width	**CK ()**	0.32277	0.63690	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00924	0.00851	0.00828
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00833	0.00759	0.00737

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01010	0.00963	0.00934
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00918	0.00871	0.00841

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00109	-0.00117	-0.00117
	!CK	0.00000	0.00000	0.00000
	!CK	0.00471	0.00451	0.00430
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00109	-0.00117	-0.00117
	!CK	0.00000	0.00000	0.00000
	!CK	0.00471	0.00451	0.00430

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00117	0.00119	0.00117
	!CK	0.00000	0.00000	0.00000
	!CK	0.00820	0.00804	0.00786
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00117	0.00119	0.00117
	!CK	0.00000	0.00000	0.00000
	!CK	0.00820	0.00804	0.00786

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00022	-0.00057	-0.00066
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00019	-0.00053	-0.00064
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00022	-0.00057	-0.00066
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00019	-0.00053	-0.00064

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00677	0.00647	0.00640
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01289	0.01248	0.01209
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01335	0.01276	0.01261
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00709	0.00678	0.00676
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00677	0.00647	0.00640
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01289	0.01248	0.01209
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01335	0.01276	0.01261
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00709	0.00677	0.00676

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__inv_1	4.39560
sky130_osu_sc_12T_ls__inv_10	21.97800
sky130_osu_sc_12T_ls__inv_2	6.34920
sky130_osu_sc_12T_ls__inv_3	8.30280
sky130_osu_sc_12T_ls__inv_4	10.25640
sky130_osu_sc_12T_ls__inv_6	14.16360
sky130_osu_sc_12T_ls__inv_8	18.07080
sky130_osu_sc_12T_ls__inv_l	4.38570

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__inv_1	0.00268	0.44171
sky130_osu_sc_12T_ls__inv_10	0.02377	4.43635
sky130_osu_sc_12T_ls__inv_2	0.00495	0.90500
sky130_osu_sc_12T_ls__inv_3	0.00732	1.33675
sky130_osu_sc_12T_ls__inv_4	0.00963	1.79962
sky130_osu_sc_12T_ls__inv_6	0.01441	2.68780
sky130_osu_sc_12T_ls__inv_8	0.01909	3.57549
sky130_osu_sc_12T_ls__inv_l	0.00213	0.31792

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00016	0.00018
sky130_osu_sc_12T_ls__inv_10	0.00000	0.00155	0.00183
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00031	0.00037
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00047	0.00055
sky130_osu_sc_12T_ls__inv_4	0.00000	0.00062	0.00073
sky130_osu_sc_12T_ls__inv_6	0.00000	0.00093	0.00110
sky130_osu_sc_12T_ls__inv_8	0.00000	0.00124	0.00146
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00008	0.00009

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (FR)**	0.07114	1.16286	13.18550
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.06300	0.74703	13.16740
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.04989	0.97437	13.13350
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.05136	0.90697	13.15770
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.04833	0.85430	13.13860
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.05084	0.79817	13.14280
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.05609	0.76580	13.15620
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.08281	1.24971	13.00660

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (RF)**	0.03045	0.60110	7.25495
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.03529	0.43882	7.42639
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.02394	0.54019	7.33576
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.02525	0.51436	7.40208
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.02446	0.49124	7.40650
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.02761	0.46616	7.42795
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.03119	0.45054	7.44043
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.03408	0.62362	7.11090

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00218	0.00213	0.00212
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.01786	0.01779	0.01822
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00375	0.00369	0.00373
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00577	0.00567	0.00574
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.00733	0.00724	0.00736
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01088	0.01082	0.01102
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.01439	0.01430	0.01463
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00173	0.00168	0.00166

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00027	-0.00031	-0.00034
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00541	-0.00552	-0.00499
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00100	-0.00105	-0.00105
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00125	-0.00136	-0.00132
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00204	-0.00214	-0.00204
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00309	-0.00323	-0.00303
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00422	-0.00434	-0.00401
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00021	-0.00024	-0.00026

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ls__mux2_1	0.30655	0.30791	0.00552	0.42033

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00041	0.00043

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__mux2_1	A0->Y (RR)	-	0.03006	0.65638	8.15740
	A1->Y (RR)	-	0.03803	0.66161	8.16716
	S0->Y (RR)	(!A0 * A1)	0.08581	0.78636	7.30464
	S0->Y (FR)	(A0 * !A1)	0.07327	0.92768	9.09472

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__mux2_1	A0->Y (FF)	-	0.02881	0.55749	6.75758
	A1->Y (FF)	-	0.02444	0.55084	6.74284
	S0->Y (FF)	(!A0 * A1)	0.15613	0.77621	6.34493
	S0->Y (RF)	(A0 * !A1)	0.03301	0.58519	6.52403

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00218	-0.00219	-0.00219
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00146	-0.00146	-0.00146
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00292	0.00269	0.00276
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00129	-0.00160	-0.00161

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00218	0.00219	0.00219
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00146	0.00146	0.00146
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00050	0.00019	0.00020
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00582	0.00558	0.00563

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00056	-0.00056	-0.00056

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00056	0.00056	0.00056

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00067	-0.00067	-0.00067

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00067	0.00067	0.00067

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00041	-0.00072	-0.00071
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00040	-0.00071	-0.00072

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00450	0.00427	0.00431
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00424	0.00402	0.00406

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__nand2_1	6.34920
sky130_osu_sc_12T_ls__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nand2_1	0.00266	0.00265	0.43982
sky130_osu_sc_12T_ls__nand2_l	0.00208	0.00210	0.31673

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00016	0.00026
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00009	0.00013

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (FR)	0.07516	1.16835	13.18530
	B->Y (FR)	0.08569	1.14438	12.83720
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.08439	1.25098	13.00080
	B->Y (FR)	0.09893	1.26511	12.99980

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (RF)	0.04937	0.76682	8.82098
	B->Y (RF)	0.05558	0.76470	8.61528
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.05412	0.80578	8.63825
	B->Y (RF)	0.05988	0.80160	8.39211

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00230	0.00225	0.00223
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00280	0.00278
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00174	0.00168	0.00167
	B	0.00000	0.00000	0.00000
	B	0.00213	0.00208	0.00207

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00012	-0.00017	-0.00019
	B	0.00000	0.00000	0.00000
	B	-0.00011	-0.00015	-0.00017
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00008	-0.00012	-0.00013
	B	0.00000	0.00000	0.00000
	B	-0.00008	-0.00011	-0.00013

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00140	-0.00140	-0.00141
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00099	-0.00100	-0.00101

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00141	0.00145	0.00142
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00100	0.00103	0.00101

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00129	-0.00130	-0.00130
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00093	-0.00094	-0.00094

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00131	0.00131	0.00130
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00094	0.00094	0.00094

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__nor2_1	6.34920
sky130_osu_sc_12T_ls__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nor2_1	0.00261	0.00290	0.21262
sky130_osu_sc_12T_ls__nor2_l	0.00199	0.00221	0.15582

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00017	0.00037
sky130_osu_sc_12T_ls__nor2_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_12T_ls__nor2_1	A->Y (FR)	0.17909	1.51267	13.15990
	B->Y (FR)	0.15198	1.46276	13.11340
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.19390	1.63001	12.97190
	B->Y (FR)	0.17238	1.57899	12.93290

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nor2_1	A->Y (RF)	0.03692	0.51787	5.41908
	B->Y (RF)	0.03211	0.50906	5.40076
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.03933	0.53514	5.32292
	B->Y (RF)	0.03522	0.52819	5.30624

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00290	0.00284	0.00281
	B	0.00000	0.00000	0.00000
	B	0.00240	0.00231	0.00227
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00212	0.00208	0.00156
	B	0.00000	0.00000	0.00000
	B	0.00181	0.00174	0.00146

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00029	0.00019	0.00014
	B	0.00000	0.00000	0.00000
	B	-0.00022	-0.00024	-0.00030
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00021	0.00014	0.00011
	B	0.00000	0.00000	0.00000
	B	-0.00015	-0.00016	-0.00021

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00111	-0.00119	-0.00119
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00076	-0.00082	-0.00081

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00119	0.00120	0.00119
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00081	0.00082	0.00081

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00063	-0.00065	-0.00063
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00044	-0.00045	-0.00045

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00067	0.00068	0.00065
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00047	0.00048	0.00046

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__oai21_l	0.00265	0.00273	0.00236	0.21438

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00018	0.00031

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai21_l	A0->Y (FR)	0.21083	1.53043	13.25160
	A1->Y (FR)	0.24596	1.58982	13.29790
	B0->Y (FR)	0.10594	1.10226	10.72080

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai21_l	A0->Y (RF)	0.06580	0.63714	6.26128
	A1->Y (RF)	0.07477	0.63923	6.23393
	B0->Y (RF)	0.05301	0.64112	6.56916

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00322	0.00312	0.00308
	A1	0.00000	0.00000	0.00000
	A1	0.00377	0.00369	0.00365
	B0	0.00257	0.00248	0.00244

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00022	0.00020	0.00015
	A1	0.00000	0.00000	0.00000
	A1	0.00076	0.00067	0.00062
	B0	0.00099	0.00094	0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00064	-0.00064	-0.00064
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00117	-0.00120	-0.00121
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00124	-0.00125	-0.00124

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00068	0.00068	0.00065
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00120	0.00120	0.00121
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00124	0.00125	0.00125

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00106	-0.00115	-0.00114
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00115	-0.00120	-0.00120
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00122	-0.00123	-0.00123

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00114	0.00115	0.00114
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00119	0.00120	0.00120
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00122	0.00123	0.00123

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00104	-0.00105	-0.00108

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00108	0.00108	0.00108

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__oai22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__oai22_l	0.00247	0.00261	0.00280	0.00275	0.22058

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_l	0.00000	0.00026	0.00037

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai22_l	A0->Y (FR)	0.26594	1.60403	13.34090
	A1->Y (FR)	0.23614	1.54999	13.30820
	B0->Y (FR)	0.16082	1.46933	13.22620
	B1->Y (FR)	0.19318	1.52469	13.26170

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai22_l	A0->Y (RF)	0.09541	0.68050	6.39632
	A1->Y (RF)	0.08098	0.66224	6.36404
	B0->Y (RF)	0.06832	0.66456	6.67647
	B1->Y (RF)	0.08373	0.68272	6.72664

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00473	0.00467	0.00463
	A1	0.00417	0.00408	0.00403
	B0	0.00307	0.00298	0.00293
	B1	0.00366	0.00359	0.00353

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00107	0.00099	0.00093
	A1	0.00057	0.00056	0.00048
	B0	0.00057	0.00055	0.00047
	B1	0.00108	0.00097	0.00091

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00108	-0.00116	-0.00116
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00108	-0.00116	-0.00116
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00112	-0.00116	-0.00116
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00119	-0.00119	-0.00119

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00116	0.00117	0.00116
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00116	0.00117	0.00116
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00116	0.00117	0.00116
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00119	0.00122	0.00119

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00062	-0.00063	-0.00062
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00062	-0.00063	-0.00062
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00112	-0.00115	-0.00115
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00118	-0.00119	-0.00118

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00066	0.00067	0.00063
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00066	0.00067	0.00063
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00114	0.00115	0.00115
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00119	0.00121	0.00119

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00062	-0.00064	-0.00063
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00062	-0.00064	-0.00063
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00134	-0.00137	-0.00137
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00135	-0.00135	-0.00140

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00067	0.00067	0.00064
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00067	0.00067	0.00064
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00137	0.00138	0.00137
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00140	0.00141	0.00140

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00107	-0.00116	-0.00115
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00107	-0.00116	-0.00115
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00136	-0.00141	-0.00140
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00137	-0.00139	-0.00142

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00115	0.00116	0.00115
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00115	0.00116	0.00115
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00140	0.00142	0.00140
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00142	0.00146	0.00143

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__or2_1	8.30280
sky130_osu_sc_12T_ls__or2_2	10.25640
sky130_osu_sc_12T_ls__or2_4	14.16360
sky130_osu_sc_12T_ls__or2_8	21.97800
sky130_osu_sc_12T_ls__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__or2_1	0.00296	0.00274	0.44650
sky130_osu_sc_12T_ls__or2_2	0.00295	0.00274	0.90760
sky130_osu_sc_12T_ls__or2_4	0.00295	0.00274	1.80504
sky130_osu_sc_12T_ls__or2_8	0.00295	0.00274	3.54647
sky130_osu_sc_12T_ls__or2_l	0.00224	0.00210	0.31816

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00034	0.00049
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00051	0.00062
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00085	0.00088
sky130_osu_sc_12T_ls__or2_8	0.00000	0.00152	0.00159
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00017	0.00024

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (RR)	0.13026	1.07540	8.63306
	B->Y (RR)	0.12132	1.05082	8.45906
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.13181	0.93114	8.79495
	B->Y (RR)	0.12202	0.91103	8.65353
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.16906	0.88540	9.23715
	B->Y (RR)	0.15898	0.86940	9.14042
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.24535	0.91209	9.80187
	B->Y (RR)	0.23501	0.90043	9.73028
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.14055	1.15768	8.44010
	B->Y (RR)	0.13220	1.13538	8.27479

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (FF)	0.32969	0.99783	7.07562
	B->Y (FF)	0.28422	0.93483	6.68344
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.41283	1.06233	7.51418
	B->Y (FF)	0.36794	0.99926	7.20563
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.60100	1.26088	8.17032
	B->Y (FF)	0.55611	1.19605	7.98322
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.97438	1.68005	9.04534
	B->Y (FF)	0.92935	1.61282	8.98408
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.34276	1.02454	6.77775
	B->Y (FF)	0.30027	0.96222	6.37254

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00234	0.00210	0.00203
	B	0.00000	0.00000	0.00000
	B	0.00183	0.00164	0.00160
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00386	0.00374	0.00368
	B	0.00000	0.00000	0.00000
	B	0.00332	0.00328	0.00327
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00730	0.00744	0.00749
	B	0.00000	0.00000	0.00000
	B	0.00675	0.00702	0.00715
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01410	0.01471	0.01491
	B	0.00000	0.00000	0.00000
	B	0.01355	0.01433	0.01464
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00179	0.00163	0.00160
	B	0.00000	0.00000	0.00000
	B	0.00143	0.00129	0.00130

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00508	0.00495	0.00491
	B	0.00000	0.00000	0.00000
	B	0.00435	0.00428	0.00432
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00620	0.00632	0.00629
	B	0.00000	0.00000	0.00000
	B	0.00548	0.00563	0.00566
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00897	0.00950	0.00958
	B	0.00000	0.00000	0.00000
	B	0.00825	0.00879	0.00892
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01460	0.01560	0.01621
	B	0.00000	0.00000	0.00000
	B	0.01387	0.01488	0.01550
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00380	0.00371	0.00367
	B	0.00000	0.00000	0.00000
	B	0.00329	0.00324	0.00330

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00112	-0.00120	-0.00120
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00112	-0.00120	-0.00120
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00112	-0.00120	-0.00120
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00112	-0.00120	-0.00120
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00077	-0.00082	-0.00082

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00119	0.00120	0.00120
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00119	0.00120	0.00120
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00119	0.00120	0.00120
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00119	0.00120	0.00120
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00082	0.00082	0.00082

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00064	-0.00064	-0.00064
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00064	-0.00064	-0.00064
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00064	-0.00064	-0.00064
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00064	-0.00064	-0.00064
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00044	-0.00044	-0.00044

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00068	0.00069	0.00065
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00068	0.00069	0.00065
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00069	0.00069	0.00065
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00069	0.00069	0.00065
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00047	0.00047	0.00045

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__tbufi_1	8.30280
sky130_osu_sc_12T_ls__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tbufi_1	0.00287	0.00376	0.21706
sky130_osu_sc_12T_ls__tbufi_l	0.00222	0.00290	0.15404

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00024	0.00031
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00012	0.00015

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (FR)	0.14066	1.44198	13.08660
	OE->Y (FR)	0.10323	0.49757	4.01400
	OE->Y (RR)	0.19092	1.34100	8.53586
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.16530	1.56667	12.86200
	OE->Y (FR)	0.10558	0.49092	4.01303
	OE->Y (RR)	0.20892	1.46877	8.42660

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (RF)	0.04764	0.62090	6.42838
	OE->Y (FF)	0.10439	0.49961	4.01400
	OE->Y (RF)	0.04584	0.60831	6.22619
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.05292	0.64448	6.24343
	OE->Y (FF)	0.10732	0.49276	4.01305
	OE->Y (RF)	0.05008	0.62817	6.02012

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00221	0.00212	0.00208
	OE	0.00000	0.00000	0.00000
	OE	0.00211	0.00182	0.00186
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00168	0.00161	0.00149
	OE	0.00000	0.00000	0.00000
	OE	0.00156	0.00134	0.00139

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00025	-0.00030
	OE	0.00000	0.00000	0.00000
	OE	0.00144	0.00115	0.00117
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00014	-0.00015	-0.00021
	OE	0.00000	0.00000	0.00000
	OE	0.00101	0.00079	0.00084

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00105	-0.00106	-0.00106
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00097	-0.00097	-0.00097
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00076	-0.00077	-0.00076
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00070	-0.00072	-0.00070

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00105	0.00106	0.00106
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00100	0.00101	0.00099
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00076	0.00077	0.00076
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00073	0.00073	0.00071

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00082	0.00052	0.00055
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00071	0.00042	0.00045
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00057	0.00035	0.00040
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00049	0.00027	0.00032

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00261	0.00237	0.00240
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00272	0.00247	0.00247
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00198	0.00180	0.00185
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00207	0.00188	0.00191

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__tnbufi_1	8.30280
sky130_osu_sc_12T_ls__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tnbufi_1	0.00286	0.00420	0.21729
sky130_osu_sc_12T_ls__tnbufi_l	0.00212	0.00321	0.15469

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00022	0.00037
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00012	0.00018

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (FR)	0.14186	1.44226	13.09380
	OE->Y (RR)	0.03618	0.28494	4.01320
	OE->Y (FR)	0.15630	1.48284	13.12020
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.16198	1.56862	12.88970
	OE->Y (RR)	0.03897	0.28469	4.01293
	OE->Y (FR)	0.17366	1.60828	12.93530

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (RF)	0.04642	0.62057	6.43091
	OE->Y (RF)	0.03592	0.28489	4.01320
	OE->Y (FF)	0.12307	0.77201	5.59188
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.05007	0.64188	6.25235
	OE->Y (RF)	0.03863	0.28468	4.01295
	OE->Y (FF)	0.13542	0.80014	5.31147

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00230	0.00221	0.00216
	OE	0.00000	0.00000	0.00000
	OE	0.00533	0.00517	0.00526
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00173	0.00166	0.00155
	OE	0.00000	0.00000	0.00000
	OE	0.00409	0.00394	0.00384

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00033	-0.00035	-0.00041
	OE	0.00000	0.00000	0.00000
	OE	0.00475	0.00457	0.00466
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00026	-0.00027	-0.00031
	OE	0.00000	0.00000	0.00000
	OE	0.00363	0.00348	0.00356

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00087	-0.00088	-0.00087
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00079	-0.00081	-0.00079
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00060	-0.00060	-0.00060
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00054	-0.00055	-0.00054

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00087	0.00088	0.00087
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00082	0.00083	0.00081
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00060	0.00060	0.00060
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00057	0.00057	0.00056

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00130	-0.00168	-0.00166
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00124	-0.00163	-0.00164
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00091	-0.00119	-0.00115
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00086	-0.00116	-0.00114

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00404	0.00387	0.00396
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00396	0.00379	0.00388
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00313	0.00298	0.00307
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00307	0.00292	0.00301

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xnor2_l	0.00573	0.00484	0.21897

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00059	0.00072

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xnor2_l	A->Y (RR)	B	0.25000	1.41081	8.76249
	A->Y (FR)	!B	0.19038	1.49395	13.14080
	B->Y (RR)	A	0.20995	1.36925	8.67353
	B->Y (FR)	!A	0.21693	1.53911	13.15630

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xnor2_l	A->Y (FF)	B	0.19357	0.86730	6.08512
	A->Y (RF)	!B	0.06573	0.62674	6.26540
	B->Y (FF)	A	0.17953	0.85124	6.06998
	B->Y (RF)	!A	0.07346	0.63746	6.28299

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00224	0.00190	0.00187
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00562	0.00529	0.00529
	B	A	0.00000	0.00000	0.00000
	B	A	0.00122	0.00096	0.00095
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00579	0.00556	0.00558

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00652	0.00622	0.00618
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00159	0.00128	0.00123
	B	A	0.00000	0.00000	0.00000
	B	A	0.00595	0.00581	0.00584
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00198	0.00163	0.00159

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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_12T_ls__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xor2_l	0.00575	0.00488	0.21157

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00059	0.00068

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xor2_l	A->Y (RR)	!B	0.26793	1.42944	8.74282
	A->Y (FR)	B	0.21646	1.54152	13.14620
	B->Y (RR)	!A	0.21952	1.39106	8.69720
	B->Y (FR)	A	0.23566	1.56801	13.17020

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xor2_l	A->Y (FF)	!B	0.19846	0.86600	6.05844
	A->Y (RF)	B	0.06261	0.63865	6.39062
	B->Y (FF)	!A	0.18655	0.85204	6.00764
	B->Y (RF)	A	0.06934	0.63139	6.19352

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00639	0.00610	0.00611
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00151	0.00100	0.00094
	B	A	0.00000	0.00000	0.00000
	B	A	0.00643	0.00620	0.00622
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00114	0.00086	0.00085

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00132	0.00091	0.00083
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00686	0.00666	0.00667
	B	A	0.00000	0.00000	0.00000
	B	A	0.00132	0.00096	0.00091
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00604	0.00594	0.00597

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__ant	4.39560
sky130_osu_sc_12T_ls__tiehi	4.39560
sky130_osu_sc_12T_ls__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ls__ant	0.07743
sky130_osu_sc_12T_ls__tiehi	0.00000
sky130_osu_sc_12T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__ant	0.00000	32947.50000	65895.00000
sky130_osu_sc_12T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_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_12T_ls__ant	0.00000	0.00000	0.00000
	-0.00123	0.00416	0.07103

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__ant	0.00000	0.00000	0.00000
	0.57430	0.54229	0.09816