sky130_osu_sc_12T_ls_ss_1P44_-40C.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_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.01048	0.01054	0.00824	0.27874	0.11093	0.25856
sky130_osu_sc_12T_ls__addf_l	0.01048	0.01054	0.00826	0.18114	0.11151	0.25975

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.00067	0.00077
sky130_osu_sc_12T_ls__addf_l	0.00000	0.00059	0.00077

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)	0.41981	2.61681	21.03440
	B->CO (RR)	0.40453	2.56314	20.83910
	CI->CO (RR)	0.40293	2.61796	21.33190
	CON->CO (FR)	0.11112	1.43182	13.98280
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.43421	2.52800	17.92620
	B->CO (RR)	0.41963	2.48895	17.93390
	CI->CO (RR)	0.41747	2.52885	18.24810
	CON->CO (FR)	0.14161	1.59281	13.85280

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)	1.14467	5.31528	39.11090
	B->CO (FF)	1.05917	5.13424	38.25000
	CI->CO (FF)	1.05246	5.18748	38.94640
	CON->CO (RF)	0.03823	0.66641	7.40568
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	1.11848	4.59869	29.22760
	B->CO (FF)	1.03465	4.44247	28.64280
	CI->CO (FF)	1.02691	4.46962	29.06960
	CON->CO (RF)	0.04612	0.70850	7.38287

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)	0.81878	2.46236	14.25400
	B->CON (FR)	0.74448	2.34827	13.98440
	CI->CON (FR)	0.72676	2.33373	14.09970
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.77943	2.42580	14.25170
	B->CON (FR)	0.70625	2.31278	13.98230
	CI->CON (FR)	0.68730	2.29714	14.09740

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)	0.17667	0.79128	6.36999
	B->CON (RF)	0.16890	0.78965	6.55619
	CI->CON (RF)	0.16002	0.79340	6.65409
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.16958	0.78500	6.37132
	B->CON (RF)	0.16210	0.78370	6.55761
	CI->CON (RF)	0.15292	0.78718	6.65495

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)	1.52348	5.71820	36.70100
	B->S (-R)	1.46296	5.60132	36.20420
	CI->S (-R)	1.42598	5.58270	36.51190
	CON->S (RR)	0.25864	1.50702	10.61430
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	1.45453	5.67009	36.77930
	B->S (-R)	1.39652	5.55966	36.28340
	CI->S (-R)	1.35730	5.53899	36.59980
	CON->S (RR)	0.25883	1.50978	10.64910

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)	0.89587	2.45629	14.45330
	B->S (-F)	0.91362	2.39421	14.34670
	CI->S (-F)	0.87782	2.45193	14.74750
	CON->S (FF)	0.44730	1.21073	8.19657
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.87850	2.44539	14.47920
	B->S (-F)	0.89734	2.38192	14.37490
	CI->S (-F)	0.86057	2.43968	14.76300
	CON->S (FF)	0.44729	1.21146	8.20460

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	0.00173	0.00170	0.00165
	B	0.00198	0.00202	0.00198
	CI	0.00212	0.00216	0.00214
sky130_osu_sc_12T_ls__addf_l	A	0.00154	0.00151	0.00145
	B	0.00179	0.00182	0.00175
	CI	0.00193	0.00197	0.00193

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00571	0.00570	0.00566
	B	0.00563	0.00564	0.00560
	CI	0.00492	0.00501	0.00497
sky130_osu_sc_12T_ls__addf_l	A	0.00556	0.00554	0.00549
	B	0.00548	0.00547	0.00542
	CI	0.00476	0.00484	0.00479

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00571	0.00569	0.00565
	B	0.00564	0.00561	0.00556
	CI	0.00492	0.00499	0.00495
sky130_osu_sc_12T_ls__addf_l	A	0.00556	0.00554	0.00549
	B	0.00548	0.00545	0.00540
	CI	0.00476	0.00483	0.00479

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00172	0.00170	0.00160
	B	0.00196	0.00200	0.00187
	CI	0.00212	0.00216	0.00209
sky130_osu_sc_12T_ls__addf_l	A	0.00153	0.00150	0.00138
	B	0.00178	0.00181	0.00166
	CI	0.00193	0.00197	0.00189

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00571	0.00570	0.00566
	B	0.00564	0.00564	0.00560
	CI	0.00492	0.00501	0.00497
sky130_osu_sc_12T_ls__addf_l	A	0.00556	0.00554	0.00550
	B	0.00549	0.00548	0.00544
	CI	0.00477	0.00485	0.00481

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01148	0.01151	0.01144
	B	0.01075	0.01059	0.01043
	CI	0.00937	0.00937	0.00932
sky130_osu_sc_12T_ls__addf_l	A	0.01148	0.01151	0.01142
	B	0.01075	0.01059	0.01043
	CI	0.00937	0.00937	0.00932

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00515	0.00541	0.27336	0.27685	0.27554
sky130_osu_sc_12T_ls__addh_l	0.00515	0.00541	0.18057	0.27787	0.18195

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.00067	0.00076
sky130_osu_sc_12T_ls__addh_l	0.00000	0.00052	0.00062

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)	0.31418	1.53909	10.64600
	B->CO (RR)	0.31823	1.53046	10.77380
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.32799	1.67684	10.49800
	B->CO (RR)	0.33191	1.66959	10.64190

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)	0.36376	1.11097	8.28652
	B->CO (FF)	0.37824	1.13083	8.35444
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.35485	1.13323	8.20448
	B->CO (FF)	0.36892	1.15203	8.27986

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)	0.47739	1.67044	10.70980
	B->CON (RR)	0.48107	1.65946	10.85660
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.44073	1.63493	10.65240
	B->CON (RR)	0.44467	1.62468	10.78950

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)	0.42425	1.14654	8.32953
	B->CON (FF)	0.43238	1.16175	8.39384
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.38834	1.10757	8.19625
	B->CON (FF)	0.39681	1.12235	8.26513

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)	0.61438	2.43915	18.11400
	B->S (FR)	0.62326	2.45393	18.18760
	CON->S (FR)	0.11316	1.43200	13.96150
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.59960	2.44483	16.50760
	B->S (FR)	0.60883	2.45826	16.58230
	CON->S (FR)	0.14068	1.59186	13.89590

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)	0.65149	2.74059	18.61140
	B->S (RF)	0.65535	2.73042	18.74010
	CON->S (RF)	0.03765	0.66602	7.39603
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.62246	2.42977	14.28750
	B->S (RF)	0.62641	2.41934	14.43160
	CON->S (RF)	0.04522	0.71036	7.41087

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	0.00288	0.00281	0.00271
	B	0.00000	0.00000	0.00000
	B	0.00272	0.00265	0.00254
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00253	0.00243	0.00233
	B	0.00000	0.00000	0.00000
	B	0.00236	0.00227	0.00217

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	0.00405	0.00398	0.00378
	B	0.00000	0.00000	0.00000
	B	0.00422	0.00425	0.00407
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00368	0.00361	0.00345
	B	0.00000	0.00000	0.00000
	B	0.00386	0.00387	0.00373

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	0.00288	0.00281	0.00271
	B	0.00000	0.00000	0.00000
	B	0.00272	0.00264	0.00256
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00253	0.00243	0.00233
	B	0.00000	0.00000	0.00000
	B	0.00236	0.00227	0.00217

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	0.00405	0.00398	0.00377
	B	0.00000	0.00000	0.00000
	B	0.00422	0.00425	0.00407
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00369	0.00359	0.00339
	B	0.00000	0.00000	0.00000
	B	0.00386	0.00386	0.00368

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	0.00405	0.00398	0.00391
	B	0.00000	0.00000	0.00000
	B	0.00423	0.00425	0.00421
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00369	0.00361	0.00352
	B	0.00000	0.00000	0.00000
	B	0.00387	0.00387	0.00380

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	0.00288	0.00281	0.00272
	B	0.00000	0.00000	0.00000
	B	0.00272	0.00264	0.00256
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00252	0.00243	0.00233
	B	0.00000	0.00000	0.00000
	B	0.00236	0.00226	0.00217

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)	0.15511	0.14588	0.02721
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.15513	0.14585	0.02722

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)	0.15508	0.14543	0.02671
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.15510	0.14545	0.02673

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00276	0.00284	0.27593
sky130_osu_sc_12T_ls__and2_2	0.00276	0.00284	0.55191
sky130_osu_sc_12T_ls__and2_4	0.00276	0.00284	1.08455
sky130_osu_sc_12T_ls__and2_6	0.00279	0.00284	1.61890
sky130_osu_sc_12T_ls__and2_8	0.00276	0.00284	2.14349
sky130_osu_sc_12T_ls__and2_l	0.00207	0.00213	0.18205

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00029	0.00044
sky130_osu_sc_12T_ls__and2_2	0.00000	0.00045	0.00048
sky130_osu_sc_12T_ls__and2_4	0.00000	0.00077	0.00086
sky130_osu_sc_12T_ls__and2_6	0.00000	0.00109	0.00126
sky130_osu_sc_12T_ls__and2_8	0.00000	0.00141	0.00166
sky130_osu_sc_12T_ls__and2_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__and2_1	A->Y (RR)	0.24347	1.44528	10.27900
	B->Y (RR)	0.25198	1.44654	10.48410
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.26317	1.29049	10.57800
	B->Y (RR)	0.27149	1.28713	10.72330
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.35740	1.26801	11.08530
	B->Y (RR)	0.36591	1.26114	11.16980
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.45570	1.31890	11.51780
	B->Y (RR)	0.46379	1.31302	11.54450
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.54990	1.39273	11.86240
	B->Y (RR)	0.55834	1.38782	11.86120
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.27469	1.61486	10.33270
	B->Y (RR)	0.28330	1.61575	10.52440

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)**	0.27065	0.98929	7.79296
	B->Y (FF)	0.28622	1.00644	7.89249
sky130_osu_sc_12T_ls__and2_2	**A->Y (FF)**	0.34165	1.03332	8.14790
	B->Y (FF)	0.35503	1.05018	8.22170
sky130_osu_sc_12T_ls__and2_4	**A->Y (FF)**	0.50755	1.19622	8.70469
	B->Y (FF)	0.51507	1.21006	8.74751
sky130_osu_sc_12T_ls__and2_6	**A->Y (FF)**	0.67756	1.38624	9.13141
	B->Y (FF)	0.67870	1.38835	9.15602
sky130_osu_sc_12T_ls__and2_8	**A->Y (FF)**	0.83906	1.55645	9.46164
	B->Y (FF)	0.83482	1.55115	9.46888
sky130_osu_sc_12T_ls__and2_l	**A->Y (FF)**	0.29548	1.04440	7.72860
	B->Y (FF)	0.32043	1.06937	7.83537

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	0.00213	0.00196	0.00185
	B	0.00000	0.00000	0.00000
	B	0.00217	0.00201	0.00190
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00387	0.00383	0.00372
	B	0.00000	0.00000	0.00000
	B	0.00391	0.00390	0.00378
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00786	0.00801	0.00806
	B	0.00000	0.00000	0.00000
	B	0.00791	0.00812	0.00812
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01185	0.01226	0.01234
	B	0.00000	0.00000	0.00000
	B	0.01190	0.01234	0.01244
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01581	0.01640	0.01664
	B	0.00000	0.00000	0.00000
	B	0.01586	0.01651	0.01670
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00162	0.00152	0.00143
	B	0.00000	0.00000	0.00000
	B	0.00165	0.00155	0.00146

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	0.00506	0.00495	0.00486
	B	0.00000	0.00000	0.00000
	B	0.00564	0.00552	0.00544
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00634	0.00647	0.00640
	B	0.00000	0.00000	0.00000
	B	0.00694	0.00705	0.00697
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00954	0.01009	0.01010
	B	0.00000	0.00000	0.00000
	B	0.01014	0.01067	0.01064
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01285	0.01379	0.01394
	B	0.00000	0.00000	0.00000
	B	0.01343	0.01433	0.01445
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01596	0.01722	0.01760
	B	0.00000	0.00000	0.00000
	B	0.01656	0.01775	0.01809
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00377	0.00367	0.00362
	B	0.00000	0.00000	0.00000
	B	0.00417	0.00407	0.00401

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)	-0.00167	-0.00169	-0.00168
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00167	-0.00168	-0.00168
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00166	-0.00168	-0.00168
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00169	-0.00169	-0.00170
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00167	-0.00167	-0.00168
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00115	-0.00117	-0.00117

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)	0.00169	0.00169	0.00169
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00169	0.00169	0.00169
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00169	0.00171	0.00169
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00171	0.00174	0.00171
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00169	0.00172	0.00169
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00117	0.00117	0.00117

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)	-0.00159	-0.00160	-0.00160
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00159	-0.00160	-0.00160
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00159	-0.00160	-0.00160
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00159	-0.00160	-0.00160
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00159	-0.00160	-0.00160
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00111	-0.00112	-0.00111

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)	0.00159	0.00161	0.00160
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00160	0.00163	0.00160
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00160	0.00161	0.00160
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00160	0.00161	0.00160
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00160	0.00161	0.00160
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00111	0.00112	0.00112

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00245	0.00265	0.00265	0.11297

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00014	0.00020

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)	0.40075	2.09414	14.14660
	A1->Y (FR)	0.33534	1.95780	13.70910
	B0->Y (FR)	0.33844	1.98347	14.03700

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)	0.08466	0.69575	6.27051
	A1->Y (RF)	0.07860	0.70108	6.47316
	B0->Y (RF)	0.05433	0.65177	6.39668

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	0.00380	0.00374	0.00373
	A1	0.00000	0.00000	0.00000
	A1	0.00327	0.00319	0.00316
	B0	0.00329	0.00320	0.00315

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	0.00048	0.00039	0.00032
	A1	0.00000	0.00000	0.00000
	A1	0.00049	0.00039	0.00031
	B0	-0.00029	-0.00029	-0.00036

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)	-0.00130	-0.00134	-0.00134
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00138	-0.00138	-0.00138
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00138	-0.00139	-0.00138

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)	0.00134	0.00134	0.00134
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00138	0.00140	0.00139
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00139	0.00140	0.00139

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)	-0.00131	-0.00135	-0.00134
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00138	-0.00139	-0.00139
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00152	-0.00153	-0.00153

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)	0.00134	0.00135	0.00134
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00138	0.00140	0.00139
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00153	0.00154	0.00154

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)	-0.00081	-0.00082	-0.00081

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)	0.00089	0.00088	0.00083

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_12T_ls__aoi22_1	0.00245	0.00264	0.00282	0.00261	0.11210

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__aoi22_1	0.00000	0.00019	0.00040

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)	0.50841	2.20695	14.24160
	A1->Y (FR)	0.45554	2.14218	14.14940
	B0->Y (FR)	0.36220	2.00155	13.99260
	B1->Y (FR)	0.41570	2.06101	14.08750

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)	0.10511	0.71783	6.28839
	A1->Y (RF)	0.09898	0.72345	6.49163
	B0->Y (RF)	0.06997	0.68698	6.43230
	B1->Y (RF)	0.07618	0.68164	6.23366

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	0.00466	0.00460	0.00458
	A1	0.00413	0.00405	0.00401
	B0	0.00353	0.00342	0.00336
	B1	0.00407	0.00398	0.00393

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00112	0.00105	0.00095
	A1	0.00113	0.00105	0.00095
	B0	-0.00013	-0.00013	-0.00019
	B1	-0.00013	-0.00013	-0.00019

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)	-0.00131	-0.00133	-0.00134
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00138	-0.00138	-0.00138
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00138	-0.00139	-0.00138
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00138	-0.00139	-0.00138

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)	0.00133	0.00133	0.00134
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00138	0.00140	0.00139
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00138	0.00139	0.00139
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00138	0.00139	0.00139

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)	-0.00131	-0.00135	-0.00134
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00138	-0.00139	-0.00139
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00151	-0.00151	-0.00153
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00151	-0.00151	-0.00153

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)	0.00134	0.00135	0.00134
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00138	0.00139	0.00139
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00152	0.00153	0.00153
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00152	0.00153	0.00153

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)	-0.00081	-0.00081	-0.00081
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00080	-0.00081	-0.00081
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00158	-0.00160	-0.00160
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00158	-0.00160	-0.00160

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)	0.00088	0.00088	0.00082
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00080	0.00081	0.00081
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00159	0.00161	0.00161
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00160	0.00161	0.00160

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)	-0.00081	-0.00082	-0.00082
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00081	-0.00082	-0.00082
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00146	-0.00147	-0.00146
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00146	-0.00147	-0.00146

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)	0.00088	0.00090	0.00083
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00081	0.00082	0.00082
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00146	0.00148	0.00147
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00146	0.00148	0.00147

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00287	0.26548
sky130_osu_sc_12T_ls__buf_2	0.00287	0.54389
sky130_osu_sc_12T_ls__buf_4	0.00286	1.08557
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00287	2.14776
sky130_osu_sc_12T_ls__buf_l	0.00211	0.18163

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00024	0.00024
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00036	0.00044
sky130_osu_sc_12T_ls__buf_4	0.00000	0.00060	0.00084
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.00108	0.00164
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00010	0.00010

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)**	0.18192	1.39171	10.14990
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.17466	1.20595	10.42420
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.22529	1.13829	10.90110
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.33350	1.16165	11.50440
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.21071	1.54416	10.16640

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)**	0.25752	0.96925	7.65694
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.32792	1.01583	8.07395
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.49455	1.18619	8.67092
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.82700	1.54747	9.43502
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.28761	1.03417	7.67804

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	0.00203	0.00182	0.00167
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00376	0.00367	0.00354
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00780	0.00794	0.00790
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01578	0.01622	0.01639
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00157	0.00141	0.00130

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	0.00500	0.00486	0.00477
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00626	0.00631	0.00623
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00948	0.00995	0.00992
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01593	0.01706	0.01735
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00378	0.00368	0.00361

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
	-0.00041	-0.00042	-0.00041

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
	0.00041	0.00042	0.00041

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00257	0.00262	0.00860	0.27394	0.27475
sky130_osu_sc_12T_ls__dffr_l	0.00257	0.00262	0.00860	0.18112	0.18138

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.00095	0.00131
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.00080	0.00117

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)	1.50038	3.26139	15.64430
	QN->Q (FR)	0.12004	1.50129	14.50470
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	1.46925	3.39030	15.30700
	QN->Q (FR)	0.14576	1.61620	14.17300

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)	1.24724	3.34676	19.17560
	QN->Q (RF)	0.04163	0.70190	7.78815
	RN->Q (FF)	0.86378	3.08497	21.71660
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	1.30358	3.68563	19.16420
	QN->Q (RF)	0.04844	0.73495	7.66471
	RN->Q (FF)	0.92069	3.42222	21.70080

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)	1.11196	2.32585	11.38080
	RN->QN (FR)	0.72827	2.06313	13.92980
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	1.13389	2.47710	11.30980
	RN->QN (FR)	0.74945	2.21553	13.85100

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)**	1.28396	1.97285	6.04240
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	1.22946	1.93122	5.95072

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)	-0.15948	-0.17907	-0.93046
	setup	CK (R)	1.11586	1.11198	1.84153
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.16056	-0.17997	-0.93012
	setup	CK (R)	1.11720	1.11532	1.85129

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)	-0.60652	-1.00248	-11.53660
	setup	CK (R)	0.68255	1.05881	11.63270
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.60605	-1.00149	-11.53540
	setup	CK (R)	0.68244	1.05844	11.63260

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)	-0.15948	-0.17907	-0.93046
	setup	CK (R)	1.11586	1.11198	1.84153
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.16056	-0.17997	-0.93012
	setup	CK (R)	1.11720	1.11532	1.85129

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)	-0.60652	-1.00248	-11.53660
	setup	CK (R)	0.68255	1.05881	11.63270
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.60605	-1.00149	-11.53540
	setup	CK (R)	0.68244	1.05844	11.63260

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)	1.05201	1.05268	1.63373
	removal	CK (R)	-0.18899	-0.21961	-0.14324
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	1.05252	1.05651	1.64118
	removal	CK (R)	-0.18899	-0.21961	-0.14324

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)	1.05201	1.05268	1.63373
	removal	CK (R)	-0.18899	-0.21961	-0.14324
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	1.05252	1.05651	1.64118
	removal	CK (R)	-0.18899	-0.21961	-0.14324

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 ()	0.56102	0.88987	13.33370
	min_pulse_width	RN ()	0.55966	0.88769	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.56231	0.88114	13.33370
	min_pulse_width	RN ()	0.55895	0.88114	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 ()	0.64762	0.73700	13.33370
	min_pulse_width	CK ()	0.67677	0.60815	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.58695	0.68240	13.33370
	min_pulse_width	CK ()	0.66174	0.60378	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 ()	1.47336	1.52321	13.33370
	min_pulse_width	CK ()	0.57111	0.91171	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	1.47547	1.52539	13.33370
	min_pulse_width	CK ()	0.56976	0.90953	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	0.00489	0.00460	0.00301
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00435	0.00407	0.00325

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	0.00556	0.00536	0.00475
	RN	-0.00071	-0.01706	-0.14201
	RN	0.01237	0.01228	0.01152
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00500	0.00481	0.00445
	RN	-0.00071	-0.01331	-0.09389
	RN	0.01180	0.01172	0.01124

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	0.00556	0.00536	0.00474
	RN	-0.00071	-0.01709	-0.14243
	RN	0.01237	0.01228	0.01153
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00500	0.00481	0.00446
	RN	-0.00071	-0.01332	-0.09402
	RN	0.01181	0.01172	0.01124

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	0.00487	0.00458	0.00288
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00433	0.00405	0.00307

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	-0.00132	-0.00135	-0.00136
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00562	0.00546	0.00528
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00217	0.00203	0.00188
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00132	-0.00137	-0.00136
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00562	0.00546	0.00528
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00217	0.00203	0.00188

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	0.00135	0.00137	0.00136
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00874	0.00865	0.00851
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00423	0.00412	0.00408
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00135	0.00137	0.00136
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00874	0.00865	0.00851
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00423	0.00412	0.00408

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)	0.00196	0.00178	0.00163
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00571	0.00541	0.00515
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)	0.00196	0.00178	0.00163
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00571	0.00541	0.00515

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)	0.00481	0.00462	0.00457
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00952	0.00933	0.00909
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)	0.00481	0.00462	0.00457
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00952	0.00933	0.00909

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)	-0.00034	-0.00058	-0.00079
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00283	0.00248	0.00207
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00031	-0.00058	-0.00079
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00034	-0.00058	-0.00079
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00283	0.00248	0.00207
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00031	-0.00058	-0.00079

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)	0.00785	0.00755	0.00744
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01504	0.01474	0.01425
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01142	0.01124	0.01095
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01501	0.01457	0.01424
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00824	0.00791	0.00784
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00785	0.00755	0.00744
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01504	0.01474	0.01425
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01142	0.01124	0.01095
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01501	0.01457	0.01424
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00824	0.00791	0.00784

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00254	0.00264	0.00605	0.00869	0.27910	0.27989
sky130_osu_sc_12T_ls__dffsr_l	0.00254	0.00264	0.00605	0.00869	0.18114	0.18132

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.00109	0.00135
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.00094	0.00121

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)	1.40269	3.15690	15.74100
	QN->Q (FR)	0.11560	1.46290	14.34870
	RN->Q (RR)	1.17340	2.94228	15.67380
	SN->Q (FR)	1.16523	3.03319	18.70590
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	1.40243	3.32312	15.37750
	QN->Q (FR)	0.14537	1.61354	14.16640
	RN->Q (RR)	1.17518	3.10894	15.31170
	SN->Q (FR)	1.16151	3.19189	18.31350

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)	1.39636	3.50090	19.40400
	QN->Q (RF)	0.04131	0.70392	7.82945
	RN->Q (FF)	0.92772	3.14673	21.91570
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	1.45744	3.85257	19.33900
	QN->Q (RF)	0.04820	0.73433	7.66235
	RN->Q (FF)	0.99178	3.49667	21.85170

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)	1.25969	2.48057	11.55330
	RN->QN (FR)	0.79314	2.12592	14.07110
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	1.28513	2.64173	11.48550
	RN->QN (FR)	0.82082	2.29006	13.99960

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)	1.20619	1.88835	6.10929
	RN->QN (RF)	0.97549	1.68104	6.04076
	SN->QN (FF)	0.96690	1.77179	9.06540
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	1.17689	1.87545	6.01584
	RN->QN (RF)	0.94592	1.66803	5.94954
	SN->QN (FF)	0.93783	1.75525	8.94837

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)	-0.17438	-0.19136	-1.04881
	setup	CK (R)	1.03088	1.01122	1.75506
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.17535	-0.19155	-1.04850
	setup	CK (R)	1.02924	1.01024	1.75477

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)	-0.69133	-1.07838	-11.75820
	setup	CK (R)	0.78361	1.12735	11.81880
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.69376	-1.07547	-11.75900
	setup	CK (R)	0.77961	1.12735	11.81830

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)	-0.17438	-0.19136	-1.04881
	setup	CK (R)	1.03088	1.01122	1.75506
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.17535	-0.19155	-1.04850
	setup	CK (R)	1.02924	1.01024	1.75477

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)	-0.69133	-1.07838	-11.75820
	setup	CK (R)	0.78361	1.12735	11.81880
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.69376	-1.07547	-11.75900
	setup	CK (R)	0.77961	1.12735	11.81830

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)	0.90456	0.89235	1.43091
	removal	CK (R)	-0.11020	-0.13345	-0.11270
	hold	SN (R)	-0.95356	-1.21612	-9.35173
	setup	SN (R)	0.98020	1.26279	10.29110
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.90465	0.89554	1.42866
	removal	CK (R)	-0.11187	-0.13145	-0.11313
	hold	SN (R)	-0.89754	-1.16510	-9.26146
	setup	SN (R)	0.97223	1.23000	10.21670

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)	0.90456	0.89235	1.43091
	removal	CK (R)	-0.11020	-0.13345	-0.11270
	hold	SN (R)	-0.95974	-1.21612	-9.35173
	hold	SN (R)	-0.95356	-1.21759	-9.35926
	setup	SN (R)	0.98020	1.25755	10.26370
	setup	SN (R)	0.97452	1.26279	10.29110
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.90465	0.89554	1.42866
	removal	CK (R)	-0.11187	-0.13145	-0.11313
	hold	SN (R)	-0.93783	-1.18142	-9.26146
	hold	SN (R)	-0.89754	-1.16510	-9.27452
	setup	SN (R)	0.97223	1.23000	10.18570
	setup	SN (R)	0.92047	1.22575	10.21670

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 ()	0.64095	0.93792	13.33370
	min_pulse_width	RN ()	0.64453	0.93792	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.65580	0.93355	13.33370
	min_pulse_width	RN ()	0.65073	0.93137	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)	0.08269	0.09500	0.72320
	removal	CK (R)	-0.01725	-0.04560	-0.54776
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.07731	0.09100	0.70268
	removal	CK (R)	-0.01725	-0.04560	-0.54776

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)	0.08269	0.09500	0.72320
	removal	CK (R)	-0.01725	-0.04560	-0.54776
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.07731	0.09100	0.70268
	removal	CK (R)	-0.01725	-0.04560	-0.54776

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 ()	0.94788	1.28953	13.33370
	min_pulse_width	SN ()	0.96521	1.28953	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.93912	1.24804	13.33370
	min_pulse_width	SN ()	0.91115	1.25240	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 ()	0.58930	0.65619	13.33370
	min_pulse_width	CK ()	0.72616	0.65401	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.55874	0.62999	13.33370
	min_pulse_width	CK ()	0.71547	0.64746	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 ()	1.39632	1.42930	13.33370
	min_pulse_width	CK ()	0.67647	0.97941	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	1.39570	1.43148	13.33370
	min_pulse_width	CK ()	0.67273	0.97941	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	0.00587	0.00561	0.00409
	RN	0.01109	0.01088	0.00934
	SN	-0.00071	-0.01725	-0.14469
	SN	0.01200	0.01182	0.01037
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00536	0.00512	0.00426
	RN	0.01058	0.01038	0.00962
	SN	-0.00071	-0.01331	-0.09390
	SN	0.01149	0.01133	0.01059

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	0.00624	0.00610	0.00562
	RN	-0.00071	-0.01725	-0.14469
	RN	0.01312	0.01306	0.01243
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00570	0.00555	0.00519
	RN	-0.00071	-0.01331	-0.09390
	RN	0.01258	0.01250	0.01200

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	0.00625	0.00611	0.00563
	RN	-0.00071	-0.01728	-0.14510
	RN	0.01312	0.01307	0.01244
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00571	0.00556	0.00521
	RN	-0.00071	-0.01332	-0.09399
	RN	0.01258	0.01251	0.01200

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	0.00585	0.00559	0.00386
	RN	0.01107	0.01086	0.00914
	SN	-0.00071	-0.01728	-0.14509
	SN	0.01199	0.01180	0.01016
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00534	0.00510	0.00407
	RN	0.01056	0.01036	0.00940
	SN	-0.00071	-0.01332	-0.09399
	SN	0.01147	0.01131	0.01038

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	-0.00133	-0.00137	-0.00137
	(!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)	0.00700	0.00686	0.00668
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00241	0.00228	0.00213
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00238	0.00226	0.00211
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00242	0.00229	0.00214
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00133	-0.00137	-0.00137
	(!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)	0.00700	0.00686	0.00668
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00241	0.00228	0.00213
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00238	0.00226	0.00211
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00242	0.00229	0.00214

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	0.00136	0.00138	0.00137
	(!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)	0.00990	0.00981	0.00960
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00472	0.00462	0.00458
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00474	0.00463	0.00460
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00470	0.00459	0.00456
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00136	0.00138	0.00137
	(!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)	0.00990	0.00981	0.00960
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00472	0.00462	0.00458
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00474	0.00463	0.00460
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00470	0.00459	0.00456

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)	0.00185	0.00167	0.00147
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00682	0.00653	0.00620
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)	0.00185	0.00167	0.00147
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00682	0.00653	0.00620

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)	0.00536	0.00517	0.00512
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01020	0.01000	0.00972
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)	0.00536	0.00517	0.00512
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01020	0.01000	0.00972

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)	-0.00354	-0.00357	-0.00357
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00381	-0.00386	-0.00385
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00356	-0.00360	-0.00359
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00127	0.00113	0.00089
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)	-0.00354	-0.00357	-0.00357
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00381	-0.00386	-0.00385
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00356	-0.00360	-0.00359
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00127	0.00113	0.00089

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)	0.00357	0.00359	0.00358
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00385	0.00388	0.00385
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00357	0.00361	0.00359
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00797	0.00778	0.00777
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)	0.00357	0.00359	0.00358
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00385	0.00388	0.00385
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00357	0.00361	0.00359
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00797	0.00778	0.00777

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)	-0.00039	-0.00062	-0.00083
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00344	0.00313	0.00269
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00340	0.00309	0.00265
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00022	-0.00050	-0.00070
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00201	0.00159	0.00122
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00039	-0.00062	-0.00083
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00344	0.00313	0.00270
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00340	0.00309	0.00266
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00022	-0.00050	-0.00070
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00201	0.00159	0.00122

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)	0.01661	0.01631	0.01582
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00799	0.00769	0.00756
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01161	0.01144	0.01117
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01164	0.01143	0.01118
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01623	0.01577	0.01534
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00823	0.00791	0.00783
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01055	0.01004	0.00988
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01661	0.01631	0.01582
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00799	0.00769	0.00756
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01161	0.01144	0.01117
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01164	0.01143	0.01118
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01623	0.01577	0.01534
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00822	0.00791	0.00783
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01055	0.01004	0.00986

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00255	0.00503	0.00853	0.27431	0.27467
sky130_osu_sc_12T_ls__dffs_l	0.00255	0.00503	0.00852	0.18173	0.18149

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.00088	0.00105
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.00074	0.00090

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)	0.90119	2.60403	15.01470
	QN->Q (FR)	0.12028	1.49973	14.49120
	SN->Q (FR)	0.77417	2.59829	18.17380
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.90950	2.78652	14.76510
	QN->Q (FR)	0.14580	1.61487	14.18690
	SN->Q (FR)	0.77972	2.78068	17.90040

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)	1.36067	3.46341	19.28730
	QN->Q (RF)	0.04144	0.70009	7.77792
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	1.40593	3.79336	19.31380
	QN->Q (RF)	0.04828	0.73417	7.66366

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)	1.22168	2.43943	11.48750
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	1.23372	2.58074	11.41510

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)	0.72298	1.34997	5.42298
	SN->QN (FF)	0.59170	1.35155	8.59486
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.70343	1.35195	5.38676
	SN->QN (FF)	0.56946	1.35072	8.51565

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)	-0.12364	-0.14582	-0.88805
	setup	CK (R)	0.63414	0.62230	1.46483
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.12630	-0.14505	-0.88957
	setup	CK (R)	0.63175	0.62132	1.46532

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)	-0.62508	-1.01811	-11.60000
	setup	CK (R)	0.75831	1.08619	11.70090
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.62863	-1.01833	-11.60200
	setup	CK (R)	0.75450	1.08585	11.70030

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)	-0.12364	-0.14582	-0.88805
	setup	CK (R)	0.63414	0.62230	1.46483
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.12630	-0.14505	-0.88957
	setup	CK (R)	0.63175	0.62132	1.46532

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)	-0.62508	-1.01811	-11.60000
	setup	CK (R)	0.75831	1.08619	11.70090
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.62863	-1.01833	-11.60200
	setup	CK (R)	0.75450	1.08585	11.70030

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)	0.11749	0.13700	1.01062
	removal	CK (R)	-0.03942	-0.07695	-0.76828
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.11500	0.13664	1.00576
	removal	CK (R)	-0.03942	-0.07695	-0.76726

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)	0.11749	0.13700	1.01062
	removal	CK (R)	-0.03942	-0.07695	-0.76828
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.11500	0.13664	1.00576
	removal	CK (R)	-0.03942	-0.07695	-0.76726

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 ()	0.56458	1.04712	13.33370
	min_pulse_width	SN ()	0.57901	1.04056	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.55188	1.01217	13.33370
	min_pulse_width	SN ()	0.54257	1.01654	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 ()	0.28859	0.54700	13.33370
	min_pulse_width	CK ()	0.70894	0.62999	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.27522	0.54482	13.33370
	min_pulse_width	CK ()	0.68751	0.61688	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 ()	0.99053	1.03401	13.33370
	min_pulse_width	CK ()	0.65319	0.94010	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.98844	1.03183	13.33370
	min_pulse_width	CK ()	0.64960	0.94010	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	0.00488	0.00458	0.00300
	SN	-0.00071	-0.01707	-0.14220
	SN	0.01037	0.01018	0.00868
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00433	0.00405	0.00317
	SN	-0.00071	-0.01333	-0.09421
	SN	0.00982	0.00965	0.00881

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	0.00554	0.00537	0.00478
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00499	0.00482	0.00447

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	0.00555	0.00538	0.00478
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00499	0.00482	0.00448

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	0.00486	0.00457	0.00284
	SN	-0.00071	-0.01708	-0.14238
	SN	0.01036	0.01016	0.00847
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00432	0.00404	0.00302
	SN	-0.00071	-0.01332	-0.09408
	SN	0.00980	0.00963	0.00864

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	-0.00135	-0.00140	-0.00139
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00555	0.00538	0.00514
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00216	0.00203	0.00188
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00135	-0.00140	-0.00139
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00555	0.00539	0.00516
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00216	0.00203	0.00188

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	0.00138	0.00140	0.00139
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00885	0.00874	0.00862
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00432	0.00420	0.00417
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00138	0.00140	0.00139
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00885	0.00874	0.00862
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00432	0.00420	0.00417

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)	-0.00259	-0.00260	-0.00260
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00179	0.00166	0.00149
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)	-0.00259	-0.00260	-0.00260
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00179	0.00165	0.00149

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)	0.00260	0.00262	0.00261
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00563	0.00542	0.00533
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)	0.00260	0.00262	0.00261
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00563	0.00542	0.00533

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)	-0.00034	-0.00059	-0.00079
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00026	-0.00054	-0.00074
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00182	0.00138	0.00105
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00034	-0.00058	-0.00079
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00026	-0.00054	-0.00074
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00182	0.00138	0.00105

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)	0.01502	0.01471	0.01419
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00786	0.00755	0.00743
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01507	0.01455	0.01423
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00818	0.00787	0.00779
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01000	0.00948	0.00934
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01502	0.01471	0.01419
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00786	0.00755	0.00743
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01507	0.01455	0.01423
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00818	0.00787	0.00779
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01000	0.00948	0.00934

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00273	0.00847	0.26321
sky130_osu_sc_12T_ls__dff_l	0.00273	0.00846	0.17655

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.00095	0.00104
sky130_osu_sc_12T_ls__dff_l	0.00000	0.00081	0.00090

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)	0.71997	1.93284	10.79580
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.72969	2.06999	10.71960

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)	1.16773	1.76484	5.96704
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	1.19788	1.83305	6.02280

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)	-0.12840	-0.14822	-0.96521
	setup	CK (R)	0.46020	0.44589	1.37252
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.12626	-0.14886	-0.96743
	setup	CK (R)	0.45785	0.44440	1.36893

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)	-0.60747	-1.02343	-11.64570
	setup	CK (R)	0.70444	1.10088	11.79400
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.60988	-1.02402	-11.64750
	setup	CK (R)	0.70372	1.10070	11.79350

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 ()	0.24142	0.54700	13.33370
	min_pulse_width	CK ()	0.66173	0.59941	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.23642	0.54482	13.33370
	min_pulse_width	CK ()	0.65098	0.59941	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 ()**	0.81587	0.89424	13.33370
	min_pulse_width	**CK ()**	0.58052	0.94447	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.81587	0.89424	13.33370
	min_pulse_width	**CK ()**	0.58052	0.94447	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	0.01035	0.00984	0.00925
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00924	0.00871	0.00815

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	0.01138	0.01104	0.01066
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01027	0.00991	0.00956

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	-0.00131	-0.00135	-0.00135
	!CK	0.00000	0.00000	0.00000
	!CK	0.00519	0.00502	0.00479
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00131	-0.00135	-0.00135
	!CK	0.00000	0.00000	0.00000
	!CK	0.00518	0.00502	0.00479

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	0.00134	0.00136	0.00135
	!CK	0.00000	0.00000	0.00000
	!CK	0.00928	0.00912	0.00898
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00134	0.00136	0.00135
	!CK	0.00000	0.00000	0.00000
	!CK	0.00928	0.00912	0.00898

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)	-0.00037	-0.00061	-0.00081
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00026	-0.00053	-0.00073
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00037	-0.00061	-0.00081
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00026	-0.00053	-0.00073

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)	0.00783	0.00753	0.00743
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01462	0.01433	0.01385
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01535	0.01483	0.01450
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00815	0.00782	0.00774
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00784	0.00753	0.00743
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01462	0.01433	0.01385
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01535	0.01483	0.01450
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00815	0.00782	0.00774

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00267	0.26430
sky130_osu_sc_12T_ls__inv_10	0.02367	2.66950
sky130_osu_sc_12T_ls__inv_2	0.00493	0.54131
sky130_osu_sc_12T_ls__inv_3	0.00729	0.80132
sky130_osu_sc_12T_ls__inv_4	0.00959	1.07769
sky130_osu_sc_12T_ls__inv_6	0.01435	1.61306
sky130_osu_sc_12T_ls__inv_8	0.01901	2.15879
sky130_osu_sc_12T_ls__inv_l	0.00208	0.17666

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00012	0.00020
sky130_osu_sc_12T_ls__inv_10	0.00000	0.00120	0.00199
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00024	0.00040
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00036	0.00060
sky130_osu_sc_12T_ls__inv_4	0.00000	0.00048	0.00080
sky130_osu_sc_12T_ls__inv_6	0.00000	0.00072	0.00120
sky130_osu_sc_12T_ls__inv_8	0.00000	0.00096	0.00160
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00005	0.00006

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)**	0.11879	1.45683	14.00060
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.09312	0.91995	14.01800
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.08159	1.20342	13.97300
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.08280	1.12464	13.99270
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.07645	1.05831	13.97860
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.07847	0.98569	13.99240
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.08446	0.94449	14.04240
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.14819	1.60418	13.85670

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)**	0.03814	0.65913	7.27872
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.04288	0.51814	7.42243
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.02989	0.60417	7.33677
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.03138	0.58311	7.39319
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.03029	0.56209	7.39350
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.03376	0.54110	7.41570
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.03797	0.52804	7.44046
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.04655	0.70234	7.32277

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	0.00253	0.00247	0.00245
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02090	0.02061	0.02095
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00436	0.00426	0.00429
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00671	0.00656	0.00661
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.00854	0.00831	0.00847
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01270	0.01253	0.01267
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.01682	0.01657	0.01682
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00197	0.00191	0.00190

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	-0.00034	-0.00038	-0.00041
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00621	-0.00631	-0.00597
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00119	-0.00124	-0.00126
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00149	-0.00158	-0.00158
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00238	-0.00247	-0.00243
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00359	-0.00373	-0.00361
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00486	-0.00499	-0.00480
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00024	-0.00027	-0.00029

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.18529	0.18624	0.00550	0.25164

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00038	0.00060

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)	-	0.05394	0.86260	9.28296
	A1->Y (RR)	-	0.06744	0.87128	9.27417
	S0->Y (RR)	(!A0 * A1)	0.12982	1.03634	9.00128
	S0->Y (FR)	(A0 * !A1)	0.12101	1.24615	10.61650

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)	-	0.03965	0.63439	7.12453
	A1->Y (FF)	-	0.03233	0.62845	7.10950
	S0->Y (FF)	(!A0 * A1)	0.26488	0.94615	7.60550
	S0->Y (RF)	(A0 * !A1)	0.04111	0.65628	6.93355

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	-	-0.00246	-0.00246	-0.00246
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00166	-0.00167	-0.00167
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00349	0.00327	0.00320
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00149	-0.00174	-0.00188

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	-	0.00246	0.00246	0.00246
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00166	0.00167	0.00167
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00052	0.00028	0.00015
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00666	0.00642	0.00635

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)	-0.00066	-0.00066	-0.00066

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)	0.00066	0.00066	0.00066

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)	-0.00080	-0.00079	-0.00079

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)	0.00080	0.00079	0.00079

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)	-0.00049	-0.00074	-0.00087
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00048	-0.00074	-0.00087

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)	0.00519	0.00497	0.00490
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00496	0.00473	0.00467

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00265	0.00263	0.26543
sky130_osu_sc_12T_ls__nand2_l	0.00203	0.00204	0.17638

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00013	0.00040
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00006	0.00011

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)	0.12583	1.46753	14.05640
	B->Y (FR)	0.14300	1.45160	13.77210
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.15101	1.60305	13.86160
	B->Y (FR)	0.17428	1.63324	13.87570

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)	0.06665	0.85328	8.73914
	B->Y (RF)	0.07352	0.85071	8.50523
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.07746	0.91170	8.62677
	B->Y (RF)	0.08424	0.91292	8.42383

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	0.00267	0.00261	0.00258
	B	0.00000	0.00000	0.00000
	B	0.00323	0.00316	0.00315
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00197	0.00192	0.00190
	B	0.00000	0.00000	0.00000
	B	0.00235	0.00230	0.00229

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	-0.00017	-0.00022	-0.00024
	B	0.00000	0.00000	0.00000
	B	-0.00015	-0.00020	-0.00021
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00011	-0.00014	-0.00016
	B	0.00000	0.00000	0.00000
	B	-0.00010	-0.00013	-0.00015

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)	-0.00160	-0.00161	-0.00162
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00112	-0.00113	-0.00113

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)	0.00161	0.00163	0.00162
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00112	0.00113	0.00113

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)	-0.00149	-0.00149	-0.00149
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00105	-0.00106	-0.00106

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)	0.00149	0.00150	0.00150
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00106	0.00106	0.00106

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00258	0.00288	0.12129
sky130_osu_sc_12T_ls__nor2_l	0.00192	0.00216	0.08119

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00013	0.00020
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00006	0.00008

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)	0.30735	1.97765	14.19660
	B->Y (FR)	0.27543	1.90695	14.08880
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.35825	2.17581	13.99980
	B->Y (FR)	0.33258	2.09930	13.82950

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)	0.04412	0.58158	5.75705
	B->Y (RF)	0.03992	0.57446	5.73896
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.05149	0.61385	5.80360
	B->Y (RF)	0.04763	0.60788	5.78654

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	0.00322	0.00315	0.00313
	B	0.00000	0.00000	0.00000
	B	0.00277	0.00267	0.00263
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00231	0.00226	0.00225
	B	0.00000	0.00000	0.00000
	B	0.00205	0.00197	0.00194

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	0.00015	0.00007	0.00000
	B	0.00000	0.00000	0.00000
	B	-0.00030	-0.00030	-0.00037
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00013	0.00007	0.00003
	B	0.00000	0.00000	0.00000
	B	-0.00019	-0.00019	-0.00024

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)	-0.00133	-0.00137	-0.00136
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00089	-0.00092	-0.00091

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)	0.00135	0.00137	0.00136
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00091	0.00092	0.00091

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)	-0.00081	-0.00083	-0.00081
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00056	-0.00057	-0.00056

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)	0.00083	0.00083	0.00082
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00057	0.00058	0.00056

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00263	0.00268	0.00232	0.11947

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00011	0.00026

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)	0.37416	1.99662	14.08970
	A1->Y (FR)	0.42044	2.08794	14.21070
	B0->Y (FR)	0.19065	1.42867	11.54700

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)	0.08573	0.71215	6.40380
	A1->Y (RF)	0.09537	0.71436	6.39438
	B0->Y (RF)	0.07163	0.71314	6.68934

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	0.00358	0.00347	0.00343
	A1	0.00000	0.00000	0.00000
	A1	0.00409	0.00401	0.00397
	B0	0.00282	0.00273	0.00266

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	0.00021	0.00021	0.00015
	A1	0.00000	0.00000	0.00000
	A1	0.00070	0.00062	0.00056
	B0	0.00098	0.00095	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)	-0.00082	-0.00083	-0.00082
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00136	-0.00139	-0.00138
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00143	-0.00144	-0.00143

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)	0.00083	0.00083	0.00082
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00138	0.00139	0.00138
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00143	0.00144	0.00143

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)	-0.00127	-0.00132	-0.00131
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00133	-0.00138	-0.00137
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00141	-0.00142	-0.00141

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)	0.00131	0.00132	0.00131
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00137	0.00138	0.00137
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00141	0.00142	0.00142

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)	-0.00117	-0.00117	-0.00120

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)	0.00121	0.00122	0.00121

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__oai22_1	0.00242	0.00258	0.00279	0.00272	0.12207

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00021	0.00040

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)	0.45505	2.11768	14.27250
	A1->Y (FR)	0.41590	2.03550	14.15680
	B0->Y (FR)	0.29042	1.89999	14.01210
	B1->Y (FR)	0.33606	1.98701	14.12730

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)	0.11760	0.75550	6.51019
	A1->Y (RF)	0.10174	0.73677	6.47875
	B0->Y (RF)	0.08815	0.73704	6.76820
	B1->Y (RF)	0.10518	0.75589	6.81364

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	0.00503	0.00496	0.00493
	A1	0.00451	0.00442	0.00437
	B0	0.00342	0.00333	0.00327
	B1	0.00398	0.00389	0.00385

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00092	0.00083	0.00076
	A1	0.00047	0.00047	0.00039
	B0	0.00046	0.00046	0.00037
	B1	0.00092	0.00083	0.00075

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)	-0.00130	-0.00134	-0.00133
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00130	-0.00134	-0.00133
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00130	-0.00134	-0.00133
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00137	-0.00137	-0.00137

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)	0.00132	0.00134	0.00133
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00132	0.00134	0.00133
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00132	0.00134	0.00133
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00137	0.00138	0.00137

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)	-0.00079	-0.00081	-0.00080
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00079	-0.00081	-0.00080
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00129	-0.00132	-0.00132
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00136	-0.00137	-0.00137

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)	0.00081	0.00081	0.00080
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00081	0.00081	0.00080
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00132	0.00132	0.00132
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00136	0.00137	0.00137

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)	-0.00080	-0.00081	-0.00080
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00080	-0.00081	-0.00080
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00153	-0.00157	-0.00156
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00154	-0.00156	-0.00160

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)	0.00081	0.00082	0.00081
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00081	0.00082	0.00081
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00155	0.00157	0.00156
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00160	0.00161	0.00161

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)	-0.00128	-0.00133	-0.00132
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00128	-0.00133	-0.00132
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00156	-0.00161	-0.00160
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00158	-0.00159	-0.00163

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)	0.00131	0.00133	0.00132
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00131	0.00133	0.00132
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00161	0.00161	0.00160
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00163	0.00167	0.00164

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00291	0.00273	0.26419
sky130_osu_sc_12T_ls__or2_2	0.00292	0.00273	0.54097
sky130_osu_sc_12T_ls__or2_4	0.00292	0.00273	1.07468
sky130_osu_sc_12T_ls__or2_8	0.00291	0.00273	2.12722
sky130_osu_sc_12T_ls__or2_l	0.00217	0.00205	0.17663

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00021	0.00028
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00029	0.00048
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00046	0.00088
sky130_osu_sc_12T_ls__or2_8	0.00000	0.00078	0.00168
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00011	0.00014

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)	0.19375	1.41578	10.27830
	B->Y (RR)	0.18462	1.39639	10.14560
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.18845	1.22741	10.51310
	B->Y (RR)	0.17794	1.21150	10.41340
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.23896	1.15456	10.92900
	B->Y (RR)	0.22828	1.14154	10.85810
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.34670	1.17517	11.53950
	B->Y (RR)	0.33581	1.16593	11.47510
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.22615	1.58220	10.31040
	B->Y (RR)	0.21671	1.56450	10.19880

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)	0.58253	1.32490	8.29858
	B->Y (FF)	0.51828	1.22987	8.02021
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.74748	1.49230	8.73222
	B->Y (FF)	0.68290	1.39447	8.54173
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	1.10928	1.88550	9.42943
	B->Y (FF)	1.04488	1.78810	9.32317
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	1.83033	2.67995	10.50000
	B->Y (FF)	1.76597	2.57613	10.40830
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.64572	1.42266	8.32610
	B->Y (FF)	0.58051	1.32192	8.01857

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	0.00255	0.00238	0.00221
	B	0.00000	0.00000	0.00000
	B	0.00208	0.00195	0.00178
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00432	0.00426	0.00409
	B	0.00000	0.00000	0.00000
	B	0.00382	0.00386	0.00370
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00836	0.00848	0.00846
	B	0.00000	0.00000	0.00000
	B	0.00785	0.00815	0.00806
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01636	0.01686	0.01844
	B	0.00000	0.00000	0.00000
	B	0.01586	0.01652	0.01670
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00195	0.00183	0.00170
	B	0.00000	0.00000	0.00000
	B	0.00161	0.00152	0.00140

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	0.00570	0.00560	0.00555
	B	0.00000	0.00000	0.00000
	B	0.00499	0.00494	0.00488
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00697	0.00710	0.00707
	B	0.00000	0.00000	0.00000
	B	0.00626	0.00642	0.00639
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01014	0.01059	0.01075
	B	0.00000	0.00000	0.00000
	B	0.00942	0.00992	0.01003
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01644	0.01735	0.01816
	B	0.00000	0.00000	0.00000
	B	0.01575	0.01669	0.01735
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00419	0.00413	0.00408
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00368	0.00362

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)	-0.00135	-0.00137	-0.00137
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00135	-0.00137	-0.00137
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00135	-0.00137	-0.00137
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00133	-0.00137	-0.00137
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00090	-0.00092	-0.00092

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)	0.00137	0.00137	0.00137
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00137	0.00137	0.00137
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00137	0.00137	0.00137
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00137	0.00137	0.00137
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00091	0.00092	0.00092

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)	-0.00082	-0.00082	-0.00082
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00082	-0.00082	-0.00082
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00082	-0.00083	-0.00082
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00082	-0.00083	-0.00082
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00055	-0.00055	-0.00055

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)	0.00083	0.00084	0.00082
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00084	0.00082
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00084	0.00082
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00084	0.00082
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00056	0.00057	0.00055

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00286	0.00370	0.12348
sky130_osu_sc_12T_ls__tbufi_l	0.00217	0.00279	0.08217

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00015	0.00040
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00008	0.00011

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)	0.25566	1.88124	14.06710
	OE->Y (FR)	0.17672	0.65602	5.53082
	OE->Y (RR)	0.31189	1.83074	10.40790
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.31859	2.09831	13.91250
	OE->Y (FR)	0.19216	0.66670	5.44695
	OE->Y (RR)	0.36877	2.06748	10.46160

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)	0.06412	0.69719	6.63646
	OE->Y (FF)	0.17867	0.65699	5.53436
	OE->Y (RF)	0.06099	0.68084	6.41078
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.07551	0.73761	6.59467
	OE->Y (FF)	0.19446	0.66833	5.44862
	OE->Y (RF)	0.07074	0.72181	6.40758

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	0.00256	0.00246	0.00241
	OE	0.00000	0.00000	0.00000
	OE	0.00232	0.00207	0.00196
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00191	0.00183	0.00179
	OE	0.00000	0.00000	0.00000
	OE	0.00169	0.00151	0.00142

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	-0.00030	-0.00030	-0.00037
	OE	0.00000	0.00000	0.00000
	OE	0.00165	0.00140	0.00129
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00018	-0.00018	-0.00024
	OE	0.00000	0.00000	0.00000
	OE	0.00115	0.00097	0.00089

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)	-0.00126	-0.00127	-0.00126
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00119	-0.00120	-0.00119
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00090	-0.00089	-0.00090
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00085	-0.00085	-0.00085

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)	0.00126	0.00127	0.00126
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00120	0.00121	0.00120
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00090	0.00089	0.00090
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00086	0.00086	0.00085

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)	0.00092	0.00067	0.00056
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00080	0.00056	0.00044
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00064	0.00046	0.00037
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00055	0.00037	0.00028

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)	0.00302	0.00277	0.00271
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00314	0.00289	0.00280
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00226	0.00208	0.00203
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00235	0.00218	0.00211

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00285	0.00419	0.12349
sky130_osu_sc_12T_ls__tnbufi_l	0.00207	0.00314	0.08209

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00020	0.00024
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00008	0.00010

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)	0.25745	1.88044	14.06610
	OE->Y (RR)	0.04541	0.34714	4.28330
	OE->Y (FR)	0.26632	1.93514	14.15900
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.31154	2.09174	13.89430
	OE->Y (RR)	0.05262	0.36939	4.28303
	OE->Y (FR)	0.31853	2.15344	14.05450

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)	0.06237	0.69650	6.63574
	OE->Y (RF)	0.04492	0.34716	4.28331
	OE->Y (FF)	0.19720	0.93411	7.05199
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.07099	0.73453	6.58942
	OE->Y (RF)	0.05245	0.37013	4.28300
	OE->Y (FF)	0.23430	0.99031	6.96630

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	0.00266	0.00256	0.00250
	OE	0.00000	0.00000	0.00000
	OE	0.00603	0.00585	0.00584
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00196	0.00188	0.00184
	OE	0.00000	0.00000	0.00000
	OE	0.00456	0.00440	0.00439

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	-0.00042	-0.00042	-0.00048
	OE	0.00000	0.00000	0.00000
	OE	0.00545	0.00526	0.00523
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00031	-0.00031	-0.00036
	OE	0.00000	0.00000	0.00000
	OE	0.00409	0.00394	0.00390

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)	-0.00105	-0.00105	-0.00105
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00099	-0.00099	-0.00099
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00071	-0.00072	-0.00071
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00067	-0.00067	-0.00066

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)	0.00105	0.00105	0.00105
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00100	0.00100	0.00100
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00071	0.00072	0.00071
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00068	0.00068	0.00067

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)	-0.00157	-0.00188	-0.00199
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00148	-0.00181	-0.00195
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00105	-0.00128	-0.00137
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00100	-0.00124	-0.00135

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)	0.00465	0.00447	0.00443
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00455	0.00436	0.00432
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00353	0.00339	0.00333
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00347	0.00332	0.00329

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00570	0.00478	0.12409

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00042	0.00064

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	0.41236	1.93849	10.64060
	A->Y (FR)	!B	0.34264	1.97322	14.16100
	B->Y (RR)	A	0.35935	1.88542	10.54760
	B->Y (FR)	!A	0.37017	2.03500	14.24030

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	0.30982	1.05045	7.49858
	A->Y (RF)	!B	0.08791	0.70560	6.44466
	B->Y (FF)	A	0.29403	1.03536	7.47467
	B->Y (RF)	!A	0.09500	0.71353	6.46084

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	0.00236	0.00209	0.00191
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00645	0.00612	0.00603
	B	A	0.00000	0.00000	0.00000
	B	A	0.00142	0.00119	0.00102
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00651	0.00627	0.00622

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	0.00724	0.00701	0.00686
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00172	0.00148	0.00129
	B	A	0.00000	0.00000	0.00000
	B	A	0.00678	0.00668	0.00660
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00196	0.00166	0.00149

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.00570	0.00483	0.11919

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00042	0.00051

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	0.44996	1.96890	10.53650
	A->Y (FR)	B	0.36642	2.01771	14.10490
	B->Y (RR)	!A	0.37276	1.89917	10.42280
	B->Y (FR)	A	0.39650	2.06022	14.15550

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	0.32060	1.05148	7.46415
	A->Y (RF)	B	0.08166	0.71380	6.59582
	B->Y (FF)	!A	0.30522	1.03912	7.42925
	B->Y (RF)	A	0.08820	0.70495	6.37749

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	0.00723	0.00691	0.00681
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00162	0.00122	0.00101
	B	A	0.00000	0.00000	0.00000
	B	A	0.00720	0.00693	0.00690
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00130	0.00107	0.00090

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	0.00127	0.00093	0.00071
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00778	0.00761	0.00755
	B	A	0.00000	0.00000	0.00000
	B	A	0.00126	0.00097	0.00077
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00692	0.00681	0.00673

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

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	0.03395
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	21569.90000	43139.90000
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
	-0.00154	0.00122	0.03378

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
	0.37662	0.35334	0.05300