sky130_osu_sc_12T_ls_tt_1P50_25C.ccs Library

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

SKY130_OSU_SC_12T_LS__ADDFx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.01086	0.01090	0.00844	0.68832	0.29705	0.62257
sky130_osu_sc_12T_ls__addf_l	0.01086	0.01090	0.00844	0.47115	0.29771	0.62182

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.00191	0.00220
sky130_osu_sc_12T_ls__addf_l	0.00000	0.00166	0.00208

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)	0.21860	1.96907	22.51960
	B->CO (RR)	0.21008	1.91947	22.10700
	CI->CO (RR)	0.20741	1.98294	22.94200
	CON->CO (FR)	0.04675	0.98638	12.78020
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.22102	1.85800	18.73040
	B->CO (RR)	0.21294	1.82094	18.61450
	CI->CO (RR)	0.20977	1.87242	19.19450
	CON->CO (FR)	0.05584	1.06958	12.60220

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.42927	3.08851	34.10230
	B->CO (FF)	0.38892	2.96643	33.04070
	CI->CO (FF)	0.38300	3.03540	34.20390
	CON->CO (RF)	0.02581	0.57421	7.63102
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.41667	2.71222	26.23620
	B->CO (FF)	0.37727	2.60830	25.49730
	CI->CO (FF)	0.37070	2.65820	26.34970
	CON->CO (RF)	0.02870	0.59391	7.32236

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)	0.33286	1.47700	12.55460
	B->CON (FR)	0.29486	1.39986	12.22990
	CI->CON (FR)	0.28649	1.42244	12.68690
sky130_osu_sc_12T_ls__addf_l	A->CON (FR)	0.31664	1.46179	12.55480
	B->CON (FR)	0.27966	1.38554	12.23020
	CI->CON (FR)	0.27036	1.40734	12.68720

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)	0.11187	0.62813	6.02297
	B->CON (RF)	0.10688	0.63290	6.26375
	CI->CON (RF)	0.10056	0.64429	6.47104
sky130_osu_sc_12T_ls__addf_l	A->CON (RF)	0.10816	0.62486	6.02549
	B->CON (RF)	0.10334	0.62799	6.26604
	CI->CON (RF)	0.09684	0.64094	6.47342

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.60111	3.07425	28.13750
	B->S (-R)	0.59076	3.03211	27.72550
	CI->S (-R)	0.55167	3.01470	28.22130
	CON->S (RR)	0.12978	0.94703	8.08718
sky130_osu_sc_12T_ls__addf_l	A->S (-R)	0.57812	3.05465	28.09780
	B->S (-R)	0.56838	3.01246	27.66870
	CI->S (-R)	0.52884	2.99547	28.17860
	CON->S (RR)	0.12985	0.94666	8.07802

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)	0.39990	1.71156	14.58430
	B->S (-F)	0.39983	1.65269	14.47240
	CI->S (-F)	0.38824	1.72284	15.00850
	CON->S (FF)	0.18470	0.82649	6.40155
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.39083	1.70408	14.56730
	B->S (-F)	0.39162	1.64574	14.45910
	CI->S (-F)	0.37915	1.71687	14.99470
	CON->S (FF)	0.18466	0.82626	6.39761

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	0.00201	0.00193	0.00196
	B	0.00236	0.00237	0.00245
	CI	0.00244	0.00251	0.00261
sky130_osu_sc_12T_ls__addf_l	A	0.00182	0.00172	0.00172
	B	0.00217	0.00217	0.00220
	CI	0.00225	0.00230	0.00237

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00646	0.00645	0.00679
	B	0.00633	0.00639	0.00678
	CI	0.00557	0.00571	0.00610
sky130_osu_sc_12T_ls__addf_l	A	0.00630	0.00627	0.00647
	B	0.00617	0.00621	0.00643
	CI	0.00540	0.00553	0.00575

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00645	0.00642	0.00651
	B	0.00632	0.00638	0.00646
	CI	0.00556	0.00567	0.00577
sky130_osu_sc_12T_ls__addf_l	A	0.00630	0.00625	0.00635
	B	0.00616	0.00621	0.00629
	CI	0.00540	0.00550	0.00560

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00199	0.00190	0.00177
	B	0.00235	0.00235	0.00225
	CI	0.00244	0.00250	0.00250
sky130_osu_sc_12T_ls__addf_l	A	0.00180	0.00170	0.00159
	B	0.00215	0.00215	0.00206
	CI	0.00225	0.00230	0.00230

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00646	0.00644	0.00675
	B	0.00633	0.00639	0.00673
	CI	0.00557	0.00571	0.00604
sky130_osu_sc_12T_ls__addf_l	A	0.00631	0.00628	0.00658
	B	0.00617	0.00623	0.00654
	CI	0.00541	0.00554	0.00587

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01312	0.01314	0.01315
	B	0.01207	0.01173	0.01206
	CI	0.01081	0.01075	0.01076
sky130_osu_sc_12T_ls__addf_l	A	0.01312	0.01315	0.01315
	B	0.01208	0.01173	0.01202
	CI	0.01081	0.01075	0.01077

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	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	0.00529	0.00560	0.67006	0.68114	0.68123
sky130_osu_sc_12T_ls__addh_l	0.00531	0.00560	0.47393	0.68081	0.47865

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.00184	0.00204
sky130_osu_sc_12T_ls__addh_l	0.00000	0.00134	0.00154

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)	0.15496	0.95249	8.01317
	B->CO (RR)	0.15856	0.95261	8.14471
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.15628	1.02400	7.91234
	B->CO (RR)	0.15986	1.02616	8.05083

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)	0.15165	0.79603	6.68670
	B->CO (FF)	0.15900	0.81033	6.78697
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.14743	0.81258	6.48857
	B->CO (FF)	0.15457	0.82791	6.59626

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)	0.22574	0.99794	7.98474
	B->CON (RR)	0.22927	0.99650	8.11345
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.20905	0.97596	7.89664
	B->CON (RR)	0.21266	0.97598	8.03588

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)	0.18919	0.82106	6.73451
	B->CON (FF)	0.19021	0.82980	6.82906
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.17554	0.79875	6.58704
	B->CON (FF)	0.17655	0.80840	6.69155

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)	0.27339	1.73942	17.21860
	B->S (FR)	0.27469	1.74858	17.33400
	CON->S (FR)	0.04856	0.99002	12.81610
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.26453	1.70045	15.10160
	B->S (FR)	0.26577	1.71075	15.20350
	CON->S (FR)	0.05621	1.07456	12.70770

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)	0.29008	1.70872	16.05560
	B->S (RF)	0.29362	1.70639	16.18880
	CON->S (RF)	0.02530	0.57282	7.62032
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.27541	1.54236	12.44930
	B->S (RF)	0.27904	1.54101	12.58480
	CON->S (RF)	0.02809	0.59683	7.40514

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	0.00317	0.00303	0.00308
	B	0.00000	0.00000	0.00000
	B	0.00294	0.00280	0.00274
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00281	0.00263	0.00277
	B	0.00000	0.00000	0.00000
	B	0.00257	0.00240	0.00242

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	0.00446	0.00430	0.00423
	B	0.00000	0.00000	0.00000
	B	0.00466	0.00465	0.00465
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00408	0.00391	0.00390
	B	0.00000	0.00000	0.00000
	B	0.00428	0.00425	0.00425

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	0.00318	0.00303	0.00308
	B	0.00000	0.00000	0.00000
	B	0.00294	0.00280	0.00274
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00281	0.00263	0.00272
	B	0.00000	0.00000	0.00000
	B	0.00257	0.00240	0.00237

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	0.00445	0.00430	0.00426
	B	0.00000	0.00000	0.00000
	B	0.00466	0.00466	0.00464
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00408	0.00390	0.00379
	B	0.00000	0.00000	0.00000
	B	0.00428	0.00425	0.00419

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	0.00446	0.00431	0.00433
	B	0.00000	0.00000	0.00000
	B	0.00466	0.00466	0.00461
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00408	0.00392	0.00395
	B	0.00000	0.00000	0.00000
	B	0.00429	0.00426	0.00433

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	0.00317	0.00303	0.00310
	B	0.00000	0.00000	0.00000
	B	0.00294	0.00280	0.00278
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00281	0.00263	0.00270
	B	0.00000	0.00000	0.00000
	B	0.00257	0.00240	0.00237

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)	0.45595	0.43304	0.10552
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.45598	0.43308	0.10556

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)	0.45589	0.43272	0.10860
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.45593	0.43276	0.10864

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00285	0.00295	0.67187
sky130_osu_sc_12T_ls__and2_2	0.00285	0.00295	1.35010
sky130_osu_sc_12T_ls__and2_4	0.00285	0.00295	2.60727
sky130_osu_sc_12T_ls__and2_6	0.00288	0.00294	3.89335
sky130_osu_sc_12T_ls__and2_8	0.00285	0.00295	5.12042
sky130_osu_sc_12T_ls__and2_l	0.00217	0.00224	0.47124

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00080	0.00122
sky130_osu_sc_12T_ls__and2_2	0.00000	0.00123	0.00145
sky130_osu_sc_12T_ls__and2_4	0.00000	0.00209	0.00221
sky130_osu_sc_12T_ls__and2_6	0.00000	0.00294	0.00319
sky130_osu_sc_12T_ls__and2_8	0.00000	0.00380	0.00418
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00024	0.00034

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (RR)	0.11896	0.87704	7.63526
	B->Y (RR)	0.12507	0.88790	7.79797
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.13189	0.78919	7.92688
	B->Y (RR)	0.13790	0.79142	8.06425
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.17931	0.78154	8.30930
	B->Y (RR)	0.18535	0.77556	8.41445
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.22714	0.81807	8.70817
	B->Y (RR)	0.23297	0.80592	8.79193
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.27369	0.86144	8.99326
	B->Y (RR)	0.27973	0.84627	9.06760
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.12738	0.95826	7.51819
	B->Y (RR)	0.13320	0.96528	7.66831

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)	0.11684	0.71680	6.10544
	B->Y (FF)	0.12229	0.73294	6.23074
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.14107	0.71492	6.47732
	B->Y (FF)	0.14542	0.72360	6.58459
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.20354	0.76202	6.99444
	B->Y (FF)	0.20434	0.76677	7.06250
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.26808	0.82924	7.41958
	B->Y (FF)	0.26539	0.82739	7.46361
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.32863	0.89509	7.70721
	B->Y (FF)	0.32311	0.88875	7.73129
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.11858	0.73681	5.78505
	B->Y (FF)	0.12899	0.75885	5.92704

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	0.00227	0.00198	0.00255
	B	0.00000	0.00000	0.00000
	B	0.00232	0.00199	0.00224
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00416	0.00404	0.00461
	B	0.00000	0.00000	0.00000
	B	0.00421	0.00408	0.00430
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00847	0.00867	0.00916
	B	0.00000	0.00000	0.00000
	B	0.00852	0.00876	0.00897
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01273	0.01330	0.01391
	B	0.00000	0.00000	0.00000
	B	0.01278	0.01337	0.01392
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01705	0.01759	0.01867
	B	0.00000	0.00000	0.00000
	B	0.01711	0.01783	0.01877
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00174	0.00154	0.00207
	B	0.00000	0.00000	0.00000
	B	0.00178	0.00156	0.00185

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	0.00553	0.00539	0.00588
	B	0.00000	0.00000	0.00000
	B	0.00626	0.00607	0.00651
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00695	0.00714	0.00760
	B	0.00000	0.00000	0.00000
	B	0.00769	0.00780	0.00821
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01042	0.01120	0.01177
	B	0.00000	0.00000	0.00000
	B	0.01120	0.01184	0.01231
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01403	0.01540	0.01612
	B	0.00000	0.00000	0.00000
	B	0.01480	0.01596	0.01658
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01759	0.01934	0.02029
	B	0.00000	0.00000	0.00000
	B	0.01819	0.01987	0.02066
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00420	0.00406	0.00459
	B	0.00000	0.00000	0.00000
	B	0.00470	0.00456	0.00505

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)	-0.00186	-0.00187	-0.00189
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00187	-0.00188	-0.00189
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00186	-0.00187	-0.00189
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00189	-0.00189	-0.00190
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00187	-0.00188	-0.00188
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00131	-0.00132	-0.00133

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)	0.00188	0.00193	0.00189
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00188	0.00192	0.00189
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00188	0.00191	0.00189
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00190	0.00192	0.00191
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00188	0.00190	0.00189
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00133	0.00136	0.00133

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)	-0.00177	-0.00178	-0.00178
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00177	-0.00179	-0.00178
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00177	-0.00178	-0.00178
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00177	-0.00179	-0.00178
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00177	-0.00178	-0.00178
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00126	-0.00127	-0.00126

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)	0.00180	0.00181	0.00178
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00180	0.00181	0.00179
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00180	0.00178	0.00179
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00180	0.00180	0.00178
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00180	0.00180	0.00179
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00128	0.00128	0.00126

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00258	0.00277	0.00274	0.28962

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00037	0.00049

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)	0.16794	1.33278	12.45130
	A1->Y (FR)	0.13660	1.23286	11.90010
	B0->Y (FR)	0.13238	1.28930	12.64880

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)	0.05622	0.56163	5.83787
	A1->Y (RF)	0.05151	0.57347	6.12246
	B0->Y (RF)	0.03414	0.52429	5.81842

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	0.00451	0.00445	0.00444
	A1	0.00000	0.00000	0.00000
	A1	0.00382	0.00372	0.00370
	B0	0.00372	0.00360	0.00360

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	0.00086	0.00072	0.00066
	A1	0.00000	0.00000	0.00000
	A1	0.00087	0.00072	0.00068
	B0	-0.00031	-0.00032	-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)	-0.00145	-0.00152	-0.00151
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00154	-0.00155	-0.00155
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00155	-0.00156	-0.00155

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)	0.00151	0.00153	0.00151
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00155	0.00157	0.00155
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00158	0.00157	0.00155

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)	-0.00145	-0.00153	-0.00152
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00155	-0.00156	-0.00155
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00170	-0.00172	-0.00172

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)	0.00151	0.00153	0.00152
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00155	0.00156	0.00156
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00172	0.00176	0.00173

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)	-0.00077	-0.00078	-0.00077

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)	0.00086	0.00087	0.00079

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__aoi22_l	0.00258	0.00276	0.00291	0.00272	0.28610

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00052	0.00099

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)	0.21520	1.38473	12.45090
	A1->Y (FR)	0.19188	1.35410	12.38650
	B0->Y (FR)	0.14108	1.28797	12.56170
	B1->Y (FR)	0.16488	1.32307	12.63440

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)	0.07236	0.57792	5.82762
	A1->Y (RF)	0.06754	0.58954	6.11140
	B0->Y (RF)	0.04215	0.55841	6.06716
	B1->Y (RF)	0.04727	0.54685	5.78660

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	0.00558	0.00551	0.00549
	A1	0.00490	0.00479	0.00475
	B0	0.00398	0.00382	0.00382
	B1	0.00468	0.00456	0.00456

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00175	0.00162	0.00154
	A1	0.00176	0.00162	0.00156
	B0	-0.00015	-0.00021	-0.00024
	B1	-0.00013	-0.00014	-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)	-0.00145	-0.00152	-0.00151
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00155	-0.00155	-0.00155
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00154	-0.00156	-0.00155
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00154	-0.00156	-0.00155

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)	0.00150	0.00152	0.00151
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00155	0.00157	0.00155
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00157	0.00157	0.00155
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00157	0.00157	0.00155

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)	-0.00146	-0.00152	-0.00151
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00155	-0.00156	-0.00155
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00170	-0.00171	-0.00171
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00170	-0.00171	-0.00171

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)	0.00151	0.00153	0.00151
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00156	0.00158	0.00156
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00172	0.00175	0.00172
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00172	0.00175	0.00172

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)	-0.00077	-0.00078	-0.00077
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00076	-0.00077	-0.00076
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00178	-0.00179	-0.00180
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00178	-0.00178	-0.00180

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)	0.00090	0.00090	0.00080
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00076	0.00077	0.00076
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00179	0.00180	0.00180
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00179	0.00180	0.00180

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)	-0.00077	-0.00079	-0.00078
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00077	-0.00078	-0.00077
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00163	-0.00164	-0.00164
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00163	-0.00164	-0.00164

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)	0.00091	0.00091	0.00081
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00077	0.00078	0.00077
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00165	0.00166	0.00164
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00165	0.00166	0.00164

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00296	0.63465
sky130_osu_sc_12T_ls__buf_2	0.00296	1.30718
sky130_osu_sc_12T_ls__buf_4	0.00296	2.59820
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00296	5.10647
sky130_osu_sc_12T_ls__buf_l	0.00221	0.47245

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00073	0.00073
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00109	0.00122
sky130_osu_sc_12T_ls__buf_4	0.00000	0.00182	0.00221
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.00327	0.00418
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00023	0.00023

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)**	0.09067	0.84947	7.55644
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.09290	0.73628	7.77069
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.12265	0.70828	8.21064
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.18290	0.74496	8.74628
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.09674	0.91444	7.42790

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)**	0.11065	0.69822	5.87034
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.13451	0.70028	6.33680
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.19724	0.75417	6.94566
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.32222	0.88629	7.67663
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.11476	0.72954	5.75095

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	0.00217	0.00179	0.00230
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00406	0.00383	0.00439
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00837	0.00849	0.00898
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01689	0.01769	0.01831
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00168	0.00141	0.00192

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	0.00543	0.00520	0.00570
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00682	0.00682	0.00730
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01034	0.01089	0.01136
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01746	0.01892	0.01968
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00416	0.00401	0.00454

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
	-0.00044	-0.00044	-0.00044

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
	0.00044	0.00044	0.00044

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00270	0.00271	0.00854	0.66347	0.66945
sky130_osu_sc_12T_ls__dffr_l	0.00270	0.00271	0.00854	0.47679	0.47218

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.00259	0.00331
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.00209	0.00280

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RR)	0.56274	1.84381	14.05180
	QN->Q (FR)	0.05243	1.05441	13.52620
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.54869	1.95001	13.86530
	QN->Q (FR)	0.05900	1.12393	13.25530

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RF)	0.52349	1.92055	15.93130
	QN->Q (RF)	0.02800	0.61152	8.10965
	RN->Q (FF)	0.37682	1.94215	18.31580
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.53264	2.08685	15.88840
	QN->Q (RF)	0.03021	0.62860	7.81489
	RN->Q (FF)	0.38738	2.10940	18.26300

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->QN (RR)	0.46965	1.24278	8.20106
	RN->QN (FR)	0.32348	1.26334	10.58170
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.47136	1.32016	8.12594
	RN->QN (FR)	0.32566	1.34087	10.49540

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	**CK->QN (RF)**	0.47453	0.96372	4.06917
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.45362	0.95918	3.92347

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)	-0.08553	-0.11183	-0.56883
	setup	CK (R)	0.42777	0.43872	1.85287
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.08793	-0.11315	-0.56937
	setup	CK (R)	0.42680	0.43523	1.85916

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)	-0.23356	-0.53833	-5.89196
	setup	CK (R)	0.27374	0.55737	5.93902
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.23339	-0.54065	-5.89011
	setup	CK (R)	0.27107	0.55737	5.93902

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)	-0.08553	-0.11183	-0.56883
	setup	CK (R)	0.42777	0.43872	1.85287
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.08793	-0.11315	-0.56937
	setup	CK (R)	0.42680	0.43523	1.85916

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)	-0.23356	-0.53833	-5.89196
	setup	CK (R)	0.27374	0.55737	5.93902
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.23339	-0.54065	-5.89011
	setup	CK (R)	0.27107	0.55737	5.93902

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.38365	0.39891	1.73771
	removal	CK (R)	-0.07727	-0.09156	-0.13682
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.38264	0.39743	1.75266
	removal	CK (R)	-0.07593	-0.09312	-0.13539

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.38365	0.39891	1.73771
	removal	CK (R)	-0.07727	-0.09156	-0.13682
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.38264	0.39743	1.75266
	removal	CK (R)	-0.07593	-0.09312	-0.13539

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 ()	0.23972	0.52753	13.33370
	min_pulse_width	RN ()	0.23972	0.52753	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.23477	0.52532	13.33370
	min_pulse_width	RN ()	0.23477	0.52532	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 ()	0.24998	0.45654	13.33370
	min_pulse_width	CK ()	0.27752	0.45654	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.23276	0.45654	13.33370
	min_pulse_width	CK ()	0.27063	0.45654	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	min_pulse_width	CK ()	0.56307	0.63846	13.33370
	min_pulse_width	CK ()	0.22396	0.48317	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.56307	0.63846	13.33370
	min_pulse_width	CK ()	0.22396	0.48317	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	0.00544	0.00462	-0.00076
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00488	0.00416	0.00144

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	0.00623	0.00567	0.00232
	RN	-0.00074	-0.03094	-0.37320
	RN	0.01396	0.01354	0.00995
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00565	0.00518	0.00350
	RN	-0.00074	-0.02537	-0.26819
	RN	0.01337	0.01304	0.01112

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	0.00623	0.00567	0.00229
	RN	-0.00074	-0.03110	-0.37656
	RN	0.01396	0.01354	0.00991
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00565	0.00519	0.00353
	RN	-0.00074	-0.02523	-0.26560
	RN	0.01338	0.01305	0.01114

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	0.00542	0.00460	-0.00086
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00486	0.00414	0.00139

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	-0.00139	-0.00153	-0.00153
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00663	0.00630	0.00635
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00266	0.00238	0.00249
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00139	-0.00153	-0.00153
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00663	0.00630	0.00635
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00266	0.00238	0.00249

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	0.00153	0.00154	0.00153
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01008	0.00990	0.00982
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00491	0.00476	0.00481
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00153	0.00154	0.00153
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01008	0.00990	0.00982
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00491	0.00476	0.00481

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)	0.00215	0.00179	0.00218
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00635	0.00581	0.00611
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)	0.00215	0.00179	0.00218
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00635	0.00581	0.00611

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)	0.00534	0.00510	0.00555
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01059	0.01022	0.01042
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)	0.00534	0.00510	0.00555
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01059	0.01022	0.01042

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)	-0.00031	-0.00079	-0.00047
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00339	0.00259	0.00270
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00035	-0.00087	-0.00050
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00031	-0.00079	-0.00047
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00339	0.00259	0.00270
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00035	-0.00087	-0.00050

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)	0.00842	0.00805	0.00840
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01689	0.01627	0.01618
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01269	0.01232	0.01234
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01658	0.01592	0.01667
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00902	0.00863	0.00901
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00841	0.00805	0.00840
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01689	0.01627	0.01618
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01269	0.01232	0.01234
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01658	0.01592	0.01667
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00902	0.00863	0.00901

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00266	0.00273	0.00631	0.00865	0.69326	0.68616
sky130_osu_sc_12T_ls__dffsr_l	0.00266	0.00273	0.00631	0.00865	0.47242	0.47287

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.00298	0.00353
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.00247	0.00303

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RR)	0.58140	1.88682	14.55680
	QN->Q (FR)	0.04978	1.03348	13.41780
	RN->Q (RR)	0.47155	1.78832	14.64770
	SN->Q (FR)	0.45796	1.90768	17.45900
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.57701	1.98475	13.88150
	QN->Q (FR)	0.05889	1.11935	13.17720
	RN->Q (RR)	0.46740	1.88739	13.96340
	SN->Q (FR)	0.45190	2.00440	16.73100

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RF)	0.59958	2.01358	16.40160
	QN->Q (RF)	0.02781	0.61853	8.26245
	RN->Q (FF)	0.40127	1.97788	18.81460
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.61190	2.16537	15.84980
	QN->Q (RF)	0.03006	0.62630	7.77925
	RN->Q (FF)	0.41440	2.13196	18.25450

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RR)	0.54513	1.31870	8.27507
	RN->QN (FR)	0.34812	1.28259	10.68560
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.54964	1.40628	8.23662
	RN->QN (FR)	0.35276	1.37201	10.63900

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RF)	0.49820	1.00115	4.26764
	RN->QN (RF)	0.38854	0.90499	4.35900
	SN->QN (FF)	0.37531	1.02436	7.15781
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.48518	1.00253	4.05745
	RN->QN (RF)	0.37557	0.90717	4.14922
	SN->QN (FF)	0.36054	1.02390	6.91250

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)	-0.09720	-0.12428	-0.67014
	setup	CK (R)	0.43426	0.43578	1.86905
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.09803	-0.12440	-0.66825
	setup	CK (R)	0.43073	0.43523	1.87205

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)	-0.27218	-0.56979	-6.11473
	setup	CK (R)	0.32114	0.58738	6.15137
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.27015	-0.56964	-6.11482
	setup	CK (R)	0.31745	0.58726	6.15143

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)	-0.09720	-0.12428	-0.67014
	setup	CK (R)	0.43426	0.43578	1.86905
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.09803	-0.12440	-0.66825
	setup	CK (R)	0.43073	0.43523	1.87205

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)	-0.27218	-0.56979	-6.11473
	setup	CK (R)	0.32114	0.58738	6.15137
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.27015	-0.56964	-6.11482
	setup	CK (R)	0.31745	0.58726	6.15143

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)	0.35629	0.36061	1.63117
	removal	CK (R)	-0.04842	-0.05975	-0.11145
	hold	SN (R)	-0.36572	-0.56544	-3.84491
	setup	SN (R)	0.39256	0.60488	6.20049
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.35327	0.36132	1.63729
	removal	CK (R)	-0.04996	-0.05910	-0.11210
	hold	SN (R)	-0.35109	-0.54933	-3.75706
	setup	SN (R)	0.39127	0.58981	6.08502

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)	0.35629	0.36061	1.63117
	removal	CK (R)	-0.04842	-0.05975	-0.11145
	hold	SN (R)	-0.36572	-0.56544	-3.84491
	hold	SN (R)	-0.36703	-0.56879	-3.85098
	setup	SN (R)	0.39008	0.60154	6.07656
	setup	SN (R)	0.39256	0.60488	6.20049
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.35327	0.36132	1.63729
	removal	CK (R)	-0.04996	-0.05910	-0.11210
	hold	SN (R)	-0.35326	-0.54933	-3.75706
	hold	SN (R)	-0.35109	-0.55082	-3.77343
	setup	SN (R)	0.39127	0.58756	5.92763
	setup	SN (R)	0.37217	0.58981	6.08502

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 ()	0.26715	0.54750	13.33370
	min_pulse_width	RN ()	0.27961	0.54750	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.26610	0.54528	13.33370
	min_pulse_width	RN ()	0.27230	0.54528	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)	0.05473	0.08387	2.87762
	removal	CK (R)	-0.01728	-0.05662	-0.53209
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.05410	0.08270	2.75394
	removal	CK (R)	-0.01728	-0.05662	-0.53209

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)	0.05473	0.08387	2.87762
	removal	CK (R)	-0.01728	-0.05662	-0.53209
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.05410	0.08270	2.75394
	removal	CK (R)	-0.01728	-0.05662	-0.53209

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 ()	0.36600	0.63402	13.33370
	min_pulse_width	SN ()	0.37694	0.63624	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.36426	0.61849	13.33370
	min_pulse_width	SN ()	0.35609	0.62071	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 ()	0.26031	0.45654	13.33370
	min_pulse_width	CK ()	0.30850	0.45654	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.24653	0.45654	13.33370
	min_pulse_width	CK ()	0.30506	0.45654	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	CK ()	0.57081	0.63624	13.33370
	min_pulse_width	CK ()	0.27283	0.51422	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.57036	0.63846	13.33370
	min_pulse_width	CK ()	0.27283	0.51422	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	0.00669	0.00590	0.00035
	RN	0.01236	0.01171	0.00551
	SN	-0.00074	-0.03176	-0.38996
	SN	0.01364	0.01304	0.00690
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00616	0.00550	0.00276
	RN	0.01182	0.01131	0.00816
	SN	-0.00074	-0.02523	-0.26573
	SN	0.01310	0.01264	0.00924

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	0.00714	0.00672	0.00426
	RN	-0.00074	-0.03176	-0.38996
	RN	0.01474	0.01437	0.01168
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00658	0.00617	0.00455
	RN	-0.00074	-0.02523	-0.26573
	RN	0.01417	0.01381	0.01196

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	0.00715	0.00673	0.00428
	RN	-0.00074	-0.03157	-0.38597
	RN	0.01474	0.01438	0.01172
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00658	0.00617	0.00454
	RN	-0.00074	-0.02525	-0.26599
	RN	0.01417	0.01381	0.01197

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	0.00666	0.00588	0.00024
	RN	0.01234	0.01169	0.00567
	SN	-0.00074	-0.03157	-0.38594
	SN	0.01362	0.01302	0.00685
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00614	0.00547	0.00269
	RN	0.01180	0.01129	0.00810
	SN	-0.00074	-0.02525	-0.26597
	SN	0.01308	0.01261	0.00927

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	-0.00149	-0.00154	-0.00154
	(!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)	0.00832	0.00802	0.00807
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00291	0.00264	0.00274
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00289	0.00262	0.00271
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00293	0.00266	0.00275
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00149	-0.00154	-0.00154
	(!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)	0.00832	0.00802	0.00807
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00291	0.00264	0.00274
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00289	0.00262	0.00271
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00293	0.00266	0.00275

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	0.00156	0.00155	0.00154
	(!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)	0.01156	0.01138	0.01121
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00543	0.00530	0.00534
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00546	0.00533	0.00536
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00542	0.00527	0.00532
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00156	0.00155	0.00154
	(!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)	0.01156	0.01138	0.01121
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00543	0.00530	0.00534
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00546	0.00533	0.00536
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00542	0.00527	0.00532

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)	0.00182	0.00147	0.00179
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00752	0.00697	0.00717
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)	0.00182	0.00147	0.00179
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00752	0.00697	0.00717

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)	0.00592	0.00565	0.00613
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01132	0.01091	0.01108
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)	0.00592	0.00565	0.00613
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01132	0.01091	0.01108

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)	-0.00396	-0.00399	-0.00399
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00420	-0.00431	-0.00429
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00394	-0.00401	-0.00400
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00178	0.00147	0.00159
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)	-0.00396	-0.00399	-0.00399
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00420	-0.00431	-0.00429
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00394	-0.00401	-0.00400
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00178	0.00147	0.00159

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)	0.00400	0.00408	0.00400
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00428	0.00433	0.00429
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00399	0.00402	0.00400
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00907	0.00882	0.00884
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)	0.00400	0.00399	0.00400
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00428	0.00433	0.00429
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00399	0.00402	0.00400
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00907	0.00882	0.00884

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)	-0.00036	-0.00084	-0.00053
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00405	0.00329	0.00338
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00401	0.00324	0.00334
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00025	-0.00077	-0.00041
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00217	0.00130	0.00207
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00036	-0.00084	-0.00053
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00405	0.00329	0.00338
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00401	0.00325	0.00334
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00025	-0.00077	-0.00041
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00217	0.00130	0.00207

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)	0.01878	0.01819	0.01807
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00857	0.00819	0.00855
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01289	0.01253	0.01257
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01292	0.01256	0.01261
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01813	0.01737	0.01806
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00902	0.00863	0.00901
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01143	0.01075	0.01161
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01878	0.01819	0.01807
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00857	0.00821	0.00855
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01289	0.01253	0.01257
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01292	0.01256	0.01261
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01813	0.01738	0.01805
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00902	0.00863	0.00901
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01143	0.01075	0.01161

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00268	0.00524	0.00857	0.66475	0.67368
sky130_osu_sc_12T_ls__dffs_l	0.00268	0.00524	0.00857	0.47388	0.47343

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.00232	0.00261
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.00182	0.00211

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)	0.38509	1.64217	13.87300
	QN->Q (FR)	0.05242	1.04444	13.50560
	SN->Q (FR)	0.31404	1.75122	16.63810
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.38403	1.76100	13.61850
	QN->Q (FR)	0.05901	1.11902	13.18340
	SN->Q (FR)	0.31182	1.86825	16.30990

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RF)	0.57681	1.97665	15.99060
	QN->Q (RF)	0.02788	0.60978	8.09783
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.58246	2.13532	15.83230
	QN->Q (RF)	0.03012	0.62596	7.78112

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RR)	0.52104	1.30138	8.28882
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.51962	1.37311	8.18676

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)	0.30933	0.76990	3.90814
	SN->QN (FF)	0.23734	0.88013	6.66804
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.30046	0.78114	3.76691
	SN->QN (FF)	0.22715	0.88948	6.46775

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)	-0.06826	-0.09583	-0.54182
	setup	CK (R)	0.27484	0.28963	1.80758
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.06808	-0.09621	-0.54367
	setup	CK (R)	0.27455	0.28973	1.81819

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)	-0.24083	-0.54486	-5.93785
	setup	CK (R)	0.29979	0.56715	5.98934
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.24255	-0.54551	-5.93703
	setup	CK (R)	0.29976	0.56715	5.98927

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)	-0.06826	-0.09583	-0.54182
	setup	CK (R)	0.27484	0.28963	1.80758
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.06808	-0.09621	-0.54367
	setup	CK (R)	0.27455	0.28973	1.81819

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)	-0.24083	-0.54486	-5.93785
	setup	CK (R)	0.29979	0.56715	5.98934
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.24255	-0.54551	-5.93703
	setup	CK (R)	0.29976	0.56715	5.98927

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)	0.06522	0.09342	2.08698
	removal	CK (R)	-0.02515	-0.05774	-0.50010
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.06469	0.09342	1.95169
	removal	CK (R)	-0.02515	-0.05774	-0.50010

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)	0.06522	0.09342	2.08698
	removal	CK (R)	-0.02515	-0.05774	-0.50010
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.06469	0.09342	1.95169
	removal	CK (R)	-0.02515	-0.05774	-0.50010

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 ()	0.22330	0.58078	13.33370
	min_pulse_width	SN ()	0.22771	0.58078	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.21625	0.56747	13.33370
	min_pulse_width	SN ()	0.21490	0.56969	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 ()	0.15014	0.45654	13.33370
	min_pulse_width	CK ()	0.29129	0.45654	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.14325	0.45654	13.33370
	min_pulse_width	CK ()	0.28441	0.45654	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 ()	0.40931	0.52975	13.33370
	min_pulse_width	CK ()	0.25506	0.49426	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.40761	0.52753	13.33370
	min_pulse_width	CK ()	0.25506	0.49426	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	0.00544	0.00459	-0.00051
	SN	-0.00074	-0.03097	-0.37392
	SN	0.01168	0.01096	0.00545
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00488	0.00414	0.00156
	SN	-0.00074	-0.02528	-0.26656
	SN	0.01111	0.01052	0.00712

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	0.00620	0.00567	0.00242
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00563	0.00519	0.00358

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	0.00620	0.00567	0.00237
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00563	0.00519	0.00358

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	0.00542	0.00457	-0.00079
	SN	-0.00074	-0.03122	-0.37892
	SN	0.01167	0.01094	0.00521
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00486	0.00412	0.00145
	SN	-0.00074	-0.02527	-0.26629
	SN	0.01109	0.01050	0.00736

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	-0.00152	-0.00157	-0.00157
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00649	0.00615	0.00613
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00265	0.00238	0.00247
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00152	-0.00157	-0.00157
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00649	0.00615	0.00613
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00265	0.00238	0.00247

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	0.00158	0.00158	0.00157
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01005	0.00985	0.00978
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00500	0.00485	0.00491
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00158	0.00158	0.00157
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01005	0.00985	0.00978
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00500	0.00485	0.00491

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)	-0.00293	-0.00295	-0.00294
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00197	0.00164	0.00196
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)	-0.00293	-0.00295	-0.00294
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00197	0.00164	0.00196

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)	0.00295	0.00298	0.00295
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00633	0.00600	0.00636
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)	0.00295	0.00298	0.00295
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00633	0.00601	0.00636

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)	-0.00031	-0.00079	-0.00047
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00029	-0.00081	-0.00045
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00196	0.00111	0.00190
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00031	-0.00079	-0.00047
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00029	-0.00081	-0.00045
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00196	0.00111	0.00190

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)	0.01680	0.01621	0.01606
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00842	0.00807	0.00841
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01648	0.01569	0.01644
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00897	0.00859	0.00896
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01084	0.01016	0.01106
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01680	0.01621	0.01606
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00842	0.00805	0.00841
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01648	0.01567	0.01644
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00897	0.00859	0.00896
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01084	0.01016	0.01106

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dff_1	32.23440
sky130_osu_sc_12T_ls__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ls__dff_1	0.00283	0.00847	0.62685
sky130_osu_sc_12T_ls__dff_l	0.00283	0.00847	0.44939

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.00271	0.00294
sky130_osu_sc_12T_ls__dff_l	0.00000	0.00221	0.00243

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)**	0.32242	1.09694	7.86733
sky130_osu_sc_12T_ls__dff_l	**CK->Q (RR)**	0.32118	1.16720	7.76266

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	**CK->Q (RF)**	0.49210	0.93800	4.04923
sky130_osu_sc_12T_ls__dff_l	**CK->Q (RF)**	0.49551	0.96894	3.99522

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)	-0.06537	-0.09491	-0.57465
	setup	CK (R)	0.21188	0.23873	1.81965
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.06558	-0.09491	-0.57487
	setup	CK (R)	0.21182	0.23914	1.84647

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)	-0.23219	-0.54627	-5.98091
	setup	CK (R)	0.27081	0.56715	6.05253
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.22923	-0.54594	-5.97698
	setup	CK (R)	0.27081	0.56715	6.05248

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 ()	0.12948	0.45654	13.33370
	min_pulse_width	CK ()	0.27063	0.45654	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.12604	0.45654	13.33370
	min_pulse_width	CK ()	0.26375	0.45654	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** ()	0.35007	0.50757	13.33370
	min_pulse_width	**CK** ()	0.21769	0.49426	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK** ()	0.35007	0.50757	13.33370
	min_pulse_width	**CK** ()	0.21769	0.49426	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	0.01148	0.01040	0.01113
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01032	0.00925	0.00999

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	0.01266	0.01197	0.01203
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01151	0.01081	0.01088

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	-0.00138	-0.00152	-0.00152
	!CK	0.00000	0.00000	0.00000
	!CK	0.00591	0.00558	0.00559
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00138	-0.00152	-0.00152
	!CK	0.00000	0.00000	0.00000
	!CK	0.00591	0.00558	0.00559

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	0.00152	0.00153	0.00152
	!CK	0.00000	0.00000	0.00000
	!CK	0.01043	0.01017	0.01010
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00152	0.00153	0.00152
	!CK	0.00000	0.00000	0.00000
	!CK	0.01043	0.01017	0.01010

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)	-0.00034	-0.00082	-0.00049
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00029	-0.00080	-0.00044
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00034	-0.00082	-0.00049
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00029	-0.00081	-0.00044

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)	0.00840	0.00798	0.00839
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01620	0.01560	0.01550
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01672	0.01588	0.01670
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00892	0.00853	0.00891
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00840	0.00799	0.00839
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01620	0.01560	0.01551
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01672	0.01588	0.01670
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00892	0.00853	0.00891

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00275	0.62333
sky130_osu_sc_12T_ls__inv_10	0.02454	6.29602
sky130_osu_sc_12T_ls__inv_2	0.00510	1.29369
sky130_osu_sc_12T_ls__inv_3	0.00755	1.90760
sky130_osu_sc_12T_ls__inv_4	0.00994	2.55450
sky130_osu_sc_12T_ls__inv_6	0.01488	3.82169
sky130_osu_sc_12T_ls__inv_8	0.01971	5.05298
sky130_osu_sc_12T_ls__inv_l	0.00218	0.44389

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00036	0.00049
sky130_osu_sc_12T_ls__inv_10	0.00000	0.00363	0.00493
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00073	0.00099
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00109	0.00148
sky130_osu_sc_12T_ls__inv_4	0.00000	0.00145	0.00197
sky130_osu_sc_12T_ls__inv_6	0.00000	0.00218	0.00296
sky130_osu_sc_12T_ls__inv_8	0.00000	0.00291	0.00394
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00011	0.00011

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)**	0.05117	1.00021	12.63170
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.05002	0.64957	12.65110
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.03653	0.84234	12.64060
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.03810	0.78507	12.68070
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.03647	0.73896	12.60320
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.03915	0.69210	12.62550
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.04400	0.66303	12.59670
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.05951	1.07528	12.47910

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)**	0.02567	0.55689	7.27940
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.03115	0.38954	7.51009
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.02029	0.49549	7.42048
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.02153	0.46801	7.49973
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.02098	0.44159	7.48488
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.02408	0.41813	7.51745
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.02747	0.39971	7.51119
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.02883	0.58235	7.11250

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	0.00274	0.00269	0.00126
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02237	0.02250	0.00871
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00471	0.00461	0.00190
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00725	0.00717	0.00517
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.00921	0.00917	0.00345
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01365	0.01369	0.00548
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.01805	0.01803	0.00659
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00216	0.00211	0.00212

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	-0.00039	-0.00043	-0.00044
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00743	-0.00738	-0.00631
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00135	-0.00141	-0.00134
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00174	-0.00184	-0.00168
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00278	-0.00285	-0.00258
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00424	-0.00430	-0.00383
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00579	-0.00586	-0.00508
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00028	-0.00032	-0.00032

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00816	0.00804	0.00568	0.00396

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00102	0.00147

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)	-	0.02131	0.25170	0.71669
	A1->Y (RR)	-	0.02649	0.25767	0.72340
	S0->Y (RR)	(!A0 * A1)	0.06588	0.25989	0.35745
	S0->Y (FR)	(A0 * !A1)	0.05357	0.37296	2.69261

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)	-	0.02241	0.19079	0.97202
	A1->Y (FF)	-	0.01946	0.18729	0.96942
	S0->Y (FF)	(!A0 * A1)	0.11172	0.44942	2.75198
	S0->Y (RF)	(A0 * !A1)	0.02805	0.16528	0.09825

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	-	-0.00271	-0.00272	-0.00273
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00180	-0.00180	-0.00180
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00362	0.00334	0.00390
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00166	-0.00208	-0.00158

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	-	0.00271	0.00272	0.00273
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00180	0.00180	0.00180
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00057	0.00015	0.00069
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00733	0.00703	0.00752

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)	-0.00068	-0.00068	-0.00068

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)	0.00068	0.00068	0.00068

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)	-0.00082	-0.00082	-0.00082

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)	0.00082	0.00082	0.00082

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)	-0.00056	-0.00099	-0.00046
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00054	-0.00097	-0.00047

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)	0.00567	0.00538	0.00588
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00528	0.00501	0.00556

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00274	0.00273	0.61938
sky130_osu_sc_12T_ls__nand2_l	0.00213	0.00216	0.44675

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00037	0.00099
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00013	0.00023

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)	0.05407	1.00376	12.62700
	B->Y (FR)	0.06167	0.97760	12.24120
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.06059	1.08104	12.54570
	B->Y (FR)	0.07154	1.09086	12.53750

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)	0.03999	0.70739	8.94091
	B->Y (RF)	0.04519	0.69781	8.63646
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.04412	0.74665	8.79209
	B->Y (RF)	0.04897	0.74008	8.44550

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	0.00290	0.00284	0.00175
	B	0.00000	0.00000	0.00000
	B	0.00363	0.00356	0.00357
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00218	0.00214	0.00214
	B	0.00000	0.00000	0.00000
	B	0.00269	0.00264	0.00265

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	-0.00020	-0.00026	-0.00026
	B	0.00000	0.00000	0.00000
	B	-0.00018	-0.00025	-0.00026
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00013	-0.00018	-0.00017
	B	0.00000	0.00000	0.00000
	B	-0.00013	-0.00017	-0.00018

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)	-0.00179	-0.00180	-0.00181
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00127	-0.00128	-0.00129

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)	0.00181	0.00185	0.00182
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00128	0.00131	0.00129

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)	-0.00166	-0.00167	-0.00167
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00120	-0.00120	-0.00120

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)	0.00168	0.00169	0.00167
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00121	0.00122	0.00120

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00269	0.00297	0.31557
sky130_osu_sc_12T_ls__nor2_l	0.00204	0.00226	0.22700

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00038	0.00049
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00013	0.00022

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)	0.12243	1.25472	12.48550
	B->Y (FR)	0.10143	1.22711	12.57780
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.13246	1.35187	12.29750
	B->Y (FR)	0.11569	1.32524	12.36890

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)	0.03214	0.47351	5.30468
	B->Y (RF)	0.02714	0.46593	5.28745
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.03422	0.49210	5.17485
	B->Y (RF)	0.02992	0.48570	5.15983

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	0.00372	0.00364	0.00363
	B	0.00000	0.00000	0.00000
	B	0.00301	0.00290	0.00291
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00271	0.00265	0.00265
	B	0.00000	0.00000	0.00000
	B	0.00226	0.00218	0.00221

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	0.00037	0.00023	0.00021
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00034	-0.00037
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00026	0.00017	0.00018
	B	0.00000	0.00000	0.00000
	B	-0.00020	-0.00022	-0.00023

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)	-0.00140	-0.00154	-0.00154
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00095	-0.00105	-0.00105

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)	0.00153	0.00155	0.00154
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00105	0.00105	0.00105

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)	-0.00077	-0.00078	-0.00077
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00055	-0.00055	-0.00054

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)	0.00082	0.00082	0.00079
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00057	0.00058	0.00055

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00273	0.00282	0.00242	0.31937

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00032	0.00061

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)	0.14232	1.27636	12.72590
	A1->Y (FR)	0.16894	1.31204	12.63680
	B0->Y (FR)	0.07583	0.96814	10.53560

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)	0.05385	0.58129	6.17426
	A1->Y (RF)	0.06227	0.58228	6.12966
	B0->Y (RF)	0.04286	0.59599	6.62888

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	0.00408	0.00397	0.00397
	A1	0.00000	0.00000	0.00000
	A1	0.00484	0.00474	0.00472
	B0	0.00329	0.00318	0.00317

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	0.00024	0.00020	0.00015
	A1	0.00000	0.00000	0.00000
	A1	0.00095	0.00081	0.00077
	B0	0.00123	0.00117	0.00115

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)	-0.00077	-0.00078	-0.00078
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00152	-0.00156	-0.00156
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00160	-0.00161	-0.00160

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	0.00079
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00155	0.00156	0.00156
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00161	0.00162	0.00160

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)	-0.00134	-0.00149	-0.00148
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00150	-0.00155	-0.00155
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00158	-0.00158	-0.00158

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)	0.00147	0.00149	0.00148
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00154	0.00155	0.00155
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00158	0.00159	0.00158

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)	-0.00134	-0.00134	-0.00137

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)	0.00138	0.00138	0.00138

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00256	0.00269	0.00288	0.00283	0.32995

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00057	0.00099

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)	0.18172	1.31611	12.65280
	A1->Y (FR)	0.15974	1.28623	12.75420
	B0->Y (FR)	0.10739	1.23138	12.70170
	B1->Y (FR)	0.13169	1.26204	12.60180

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)	0.08157	0.62255	6.32994
	A1->Y (RF)	0.06799	0.60627	6.29694
	B0->Y (RF)	0.05749	0.61858	6.75757
	B1->Y (RF)	0.07185	0.63502	6.81266

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	0.00612	0.00604	0.00602
	A1	0.00536	0.00524	0.00524
	B0	0.00393	0.00383	0.00382
	B1	0.00475	0.00465	0.00461

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00138	0.00126	0.00121
	A1	0.00073	0.00070	0.00063
	B0	0.00072	0.00067	0.00062
	B1	0.00139	0.00124	0.00120

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)	-0.00137	-0.00151	-0.00150
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00137	-0.00151	-0.00150
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00145	-0.00151	-0.00150
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00152	-0.00154	-0.00153

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)	0.00150	0.00151	0.00150
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00150	0.00151	0.00150
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00150	0.00151	0.00150
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00154	0.00155	0.00154

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)	-0.00075	-0.00076	-0.00075
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00075	-0.00076	-0.00075
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00145	-0.00149	-0.00149
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * 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__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00080	0.00081	0.00077
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00080	0.00081	0.00077
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00149	0.00149	0.00149
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00153	0.00155	0.00153

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)	-0.00076	-0.00077	-0.00076
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00076	-0.00078	-0.00076
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00172	-0.00176	-0.00176
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00174	-0.00176	-0.00179

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	0.00078
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00081	0.00081	0.00078
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00176	0.00176	0.00176
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00180	0.00181	0.00180

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)	-0.00135	-0.00150	-0.00149
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00135	-0.00150	-0.00149
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00175	-0.00181	-0.00180
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00177	-0.00179	-0.00182

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)	0.00149	0.00150	0.00149
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00149	0.00150	0.00149
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00180	0.00181	0.00180
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00183	0.00185	0.00184

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00304	0.00282	0.63465
sky130_osu_sc_12T_ls__or2_2	0.00304	0.00282	1.30492
sky130_osu_sc_12T_ls__or2_4	0.00304	0.00282	2.60030
sky130_osu_sc_12T_ls__or2_8	0.00303	0.00282	5.08745
sky130_osu_sc_12T_ls__or2_l	0.00229	0.00215	0.44966

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00068	0.00096
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00098	0.00145
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00158	0.00244
sky130_osu_sc_12T_ls__or2_8	0.00000	0.00277	0.00441
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00024	0.00034

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (RR)	0.10093	0.88261	7.74462
	B->Y (RR)	0.09249	0.85728	7.58595
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.10421	0.76431	7.91982
	B->Y (RR)	0.09505	0.74216	7.78846
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.13417	0.73045	8.34824
	B->Y (RR)	0.12481	0.71562	8.24426
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.19432	0.76147	8.86599
	B->Y (RR)	0.18483	0.74703	8.77444
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.10861	0.95630	7.57567
	B->Y (RR)	0.10066	0.93259	7.43610

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)	0.22456	0.83019	6.36811
	B->Y (FF)	0.19143	0.79068	6.07303
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.27762	0.86021	6.82534
	B->Y (FF)	0.24497	0.82366	6.59565
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.40147	0.98437	7.46415
	B->Y (FF)	0.36885	0.94705	7.31259
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.64780	1.25858	8.23207
	B->Y (FF)	0.61499	1.21878	8.19815
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.23513	0.85980	6.09953
	B->Y (FF)	0.20426	0.82324	5.82490

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	0.00294	0.00257	0.00291
	B	0.00000	0.00000	0.00000
	B	0.00226	0.00198	0.00250
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00486	0.00465	0.00501
	B	0.00000	0.00000	0.00000
	B	0.00415	0.00410	0.00465
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00917	0.00932	0.01017
	B	0.00000	0.00000	0.00000
	B	0.00847	0.00884	0.00936
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01773	0.01848	0.01942
	B	0.00000	0.00000	0.00000
	B	0.01702	0.01809	0.01912
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00223	0.00198	0.00237
	B	0.00000	0.00000	0.00000
	B	0.00177	0.00158	0.00205

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	0.00641	0.00620	0.00627
	B	0.00000	0.00000	0.00000
	B	0.00543	0.00533	0.00581
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00783	0.00794	0.00797
	B	0.00000	0.00000	0.00000
	B	0.00684	0.00701	0.00748
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01135	0.01194	0.01210
	B	0.00000	0.00000	0.00000
	B	0.01029	0.01099	0.01152
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01834	0.01966	0.02043
	B	0.00000	0.00000	0.00000
	B	0.01737	0.01868	0.01976
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00477	0.00463	0.00473
	B	0.00000	0.00000	0.00000
	B	0.00410	0.00403	0.00454

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)	-0.00142	-0.00156	-0.00155
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00141	-0.00156	-0.00155
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00141	-0.00156	-0.00155
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00141	-0.00156	-0.00155
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00096	-0.00105	-0.00106

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)	0.00154	0.00156	0.00155
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00154	0.00156	0.00155
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00154	0.00156	0.00155
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00154	0.00156	0.00155
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00106	0.00105	0.00106

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)	-0.00077	-0.00078	-0.00078
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00077	-0.00078	-0.00078
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00077	-0.00078	-0.00078
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00077	-0.00078	-0.00078
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00054	-0.00053	-0.00053

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	0.00083	0.00079
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00083	0.00079
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00083	0.00079
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00083	0.00079
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00056	0.00057	0.00054

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00295	0.00386	0.32411
sky130_osu_sc_12T_ls__tbufi_l	0.00227	0.00296	0.22831

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00047	0.00099
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00017	0.00023

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (FR)	0.09385	1.20898	12.55830
	OE->Y (FR)	0.07703	0.40114	4.44518
	OE->Y (RR)	0.13625	1.07137	7.60872
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.11125	1.32336	12.40950
	OE->Y (FR)	0.07926	0.39504	4.44503
	OE->Y (RR)	0.14930	1.18790	7.57181

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)	0.03872	0.57484	6.45013
	OE->Y (FF)	0.07868	0.40291	4.44511
	OE->Y (RF)	0.03694	0.55597	6.14052
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.04328	0.60007	6.25144
	OE->Y (FF)	0.08019	0.39711	4.44505
	OE->Y (RF)	0.04063	0.57878	5.91552

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	0.00279	0.00268	0.00268
	OE	0.00000	0.00000	0.00000
	OE	0.00270	0.00234	0.00291
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00211	0.00203	0.00204
	OE	0.00000	0.00000	0.00000
	OE	0.00198	0.00169	0.00230

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	-0.00031	-0.00034	-0.00037
	OE	0.00000	0.00000	0.00000
	OE	0.00178	0.00139	0.00197
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00019	-0.00022	-0.00023
	OE	0.00000	0.00000	0.00000
	OE	0.00125	0.00096	0.00155

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)	-0.00130	-0.00132	-0.00131
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00119	-0.00119	-0.00119
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00094	-0.00095	-0.00095
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00086	-0.00088	-0.00086

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)	0.00130	0.00132	0.00131
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00123	0.00124	0.00121
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00094	0.00095	0.00095
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00089	0.00089	0.00087

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)	0.00102	0.00064	0.00120
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00090	0.00056	0.00108
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00072	0.00044	0.00101
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00062	0.00034	0.00091

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)	0.00328	0.00295	0.00349
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00342	0.00308	0.00356
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00248	0.00224	0.00280
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00259	0.00235	0.00288

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00294	0.00434	0.32254
sky130_osu_sc_12T_ls__tnbufi_l	0.00217	0.00330	0.23128

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00056	0.00073
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00017	0.00023

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (FR)	0.09465	1.20641	12.52200
	OE->Y (RR)	0.03154	0.29913	4.44530
	OE->Y (FR)	0.10784	1.22960	12.41820
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.10913	1.32775	12.50210
	OE->Y (RR)	0.03411	0.29889	4.44504
	OE->Y (FR)	0.11990	1.35224	12.43290

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)	0.03782	0.57363	6.43469
	OE->Y (RF)	0.03113	0.29912	4.44532
	OE->Y (FF)	0.08953	0.66005	5.00302
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.04111	0.60101	6.29082
	OE->Y (RF)	0.03374	0.29887	4.44504
	OE->Y (FF)	0.09855	0.69361	4.80464

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	0.00290	0.00278	0.00279
	OE	0.00000	0.00000	0.00000
	OE	0.00678	0.00659	0.00727
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00217	0.00208	0.00210
	OE	0.00000	0.00000	0.00000
	OE	0.00516	0.00500	0.00568

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	-0.00045	-0.00047	-0.00050
	OE	0.00000	0.00000	0.00000
	OE	0.00597	0.00579	0.00640
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00034	-0.00036	-0.00036
	OE	0.00000	0.00000	0.00000
	OE	0.00454	0.00437	0.00500

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)	-0.00107	-0.00109	-0.00108
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00097	-0.00097	-0.00097
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00074	-0.00075	-0.00074
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00066	-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)	0.00107	0.00109	0.00108
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00100	0.00101	0.00098
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00074	0.00075	0.00074
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00069	0.00069	0.00068

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)	-0.00170	-0.00220	-0.00165
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00162	-0.00216	-0.00163
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00118	-0.00154	-0.00099
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00114	-0.00151	-0.00098

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)	0.00512	0.00493	0.00556
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00502	0.00483	0.00546
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00393	0.00378	0.00440
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00388	0.00372	0.00436

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00589	0.00500	0.33476

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00125	0.00171

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	0.17685	1.13450	7.94829
	A->Y (FR)	!B	0.12734	1.25268	12.74350
	B->Y (RR)	A	0.14687	1.10308	7.88898
	B->Y (FR)	!A	0.14943	1.27866	12.63180

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	0.14444	0.75657	5.51388
	A->Y (RF)	!B	0.05318	0.57559	6.25256
	B->Y (FF)	A	0.13165	0.74325	5.49466
	B->Y (RF)	!A	0.06118	0.58668	6.26784

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	0.00286	0.00240	0.00291
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00706	0.00666	0.00720
	B	A	0.00000	0.00000	0.00000
	B	A	0.00144	0.00111	0.00166
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00735	0.00707	0.00763

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	0.00822	0.00779	0.00820
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00196	0.00155	0.00202
	B	A	0.00000	0.00000	0.00000
	B	A	0.00750	0.00734	0.00787
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00244	0.00196	0.00246

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00590	0.00504	0.31290

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00125	0.00145

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	0.18865	1.13643	7.75341
	A->Y (FR)	B	0.15057	1.27492	12.44930
	B->Y (RR)	!A	0.15440	1.11226	7.73529
	B->Y (FR)	A	0.16462	1.29303	12.46240

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	0.14523	0.74646	5.36999
	A->Y (RF)	B	0.05215	0.58947	6.36576
	B->Y (FF)	!A	0.13681	0.73867	5.34706
	B->Y (RF)	A	0.05857	0.57557	6.06339

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	0.00808	0.00771	0.00828
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00184	0.00113	0.00158
	B	A	0.00000	0.00000	0.00000
	B	A	0.00816	0.00788	0.00846
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00134	0.00099	0.00154

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	0.00160	0.00103	0.00151
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00865	0.00840	0.00891
	B	A	0.00000	0.00000	0.00000
	B	A	0.00161	0.00111	0.00158
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00760	0.00748	0.00803

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_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	0.13091
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	58672.70000	117345.00000
sky130_osu_sc_12T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__ant	0.00000	0.00000	0.00000
	-0.00145	0.00934	0.14967

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
	1.02212	0.96914	0.19649