sky130_osu_sc_12T_ls_tt_1P62_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_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.01105	0.01110	0.00856	0.85446	0.37405	0.76406
sky130_osu_sc_12T_ls__addf_l	0.01105	0.01110	0.00856	0.58199	0.37485	0.76390

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.00421	0.00504
sky130_osu_sc_12T_ls__addf_l	0.00000	0.00354	0.00489

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)	0.18648	1.82665	22.74890
	B->CO (RR)	0.17930	1.78164	22.33380
	CI->CO (RR)	0.17637	1.84685	23.26600
	CON->CO (FR)	0.03825	0.90002	12.47120
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.18857	1.71718	18.75140
	B->CO (RR)	0.18187	1.68562	18.65300
	CI->CO (RR)	0.17877	1.73845	19.30570
	CON->CO (FR)	0.04565	0.97732	12.29800

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)	0.33901	2.71262	32.89870
	B->CO (FF)	0.30533	2.59904	31.77060
	CI->CO (FF)	0.30140	2.67664	33.11290
	CON->CO (RF)	0.02324	0.54983	7.70726
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.32944	2.38826	25.29800
	B->CO (FF)	0.29683	2.29293	24.52450
	CI->CO (FF)	0.29188	2.35289	25.53020
	CON->CO (RF)	0.02594	0.57069	7.37627

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)	0.26807	1.30059	12.05760
	B->CON (FR)	0.23591	1.23052	11.71330
	CI->CON (FR)	0.23045	1.26609	12.30820
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.25464	1.28885	12.05990
	B->CON (FR)	0.22340	1.21878	11.71540
	CI->CON (FR)	0.21700	1.25363	12.31040

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)	0.10000	0.58674	5.89614
	B->CON (RF)	0.09592	0.59698	6.19403
	CI->CON (RF)	0.09008	0.60891	6.43951
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.09669	0.58379	5.89917
	B->CON (RF)	0.09277	0.59392	6.19712
	CI->CON (RF)	0.08679	0.60593	6.44273

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)	0.48054	2.63503	26.43590
	B->S (-R)	0.47628	2.60603	25.94430
	CI->S (-R)	0.44023	2.59410	26.63920
	CON->S (RR)	0.10983	0.83445	7.55661
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.46211	2.62060	26.41890
	B->S (-R)	0.45840	2.59215	25.92800
	CI->S (-R)	0.42178	2.57975	26.62230
	CON->S (RR)	0.10989	0.83438	7.55468

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)	0.33187	1.56419	14.50100
	B->S (-F)	0.33010	1.51147	14.43450
	CI->S (-F)	0.32136	1.57829	15.02950
	CON->S (FF)	0.14955	0.75188	6.11668
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.32392	1.55838	14.49220
	B->S (-F)	0.32273	1.50564	14.42830
	CI->S (-F)	0.31367	1.57251	15.02280
	CON->S (FF)	0.14955	0.75181	6.11395

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	0.00234	0.00224	0.00258
	B	0.00280	0.00281	0.00319
	CI	0.00288	0.00298	0.00349
sky130_osu_sc_12T_ls__addf_l	A	0.00211	0.00198	0.00220
	B	0.00257	0.00255	0.00281
	CI	0.00266	0.00272	0.00307

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00720	0.00732	0.00905
	B	0.00752	0.00765	0.00907
	CI	0.00661	0.00682	0.00825
sky130_osu_sc_12T_ls__addf_l	A	0.00748	0.00749	0.00829
	B	0.00733	0.00744	0.00829
	CI	0.00641	0.00660	0.00750

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00766	0.00765	0.00806
	B	0.00751	0.00758	0.00805
	CI	0.00660	0.00677	0.00730
sky130_osu_sc_12T_ls__addf_l	A	0.00748	0.00746	0.00785
	B	0.00732	0.00739	0.00785
	CI	0.00641	0.00657	0.00709

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00232	0.00220	0.00229
	B	0.00279	0.00276	0.00287
	CI	0.00288	0.00295	0.00318
sky130_osu_sc_12T_ls__addf_l	A	0.00209	0.00196	0.00206
	B	0.00255	0.00252	0.00264
	CI	0.00265	0.00271	0.00295

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00767	0.00769	0.00881
	B	0.00752	0.00764	0.00890
	CI	0.00661	0.00681	0.00808
sky130_osu_sc_12T_ls__addf_l	A	0.00749	0.00750	0.00859
	B	0.00733	0.00745	0.00868
	CI	0.00641	0.00662	0.00786

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01566	0.01567	0.01611
	B	0.01434	0.01386	0.01526
	CI	0.01288	0.01276	0.01333
sky130_osu_sc_12T_ls__addf_l	A	0.01567	0.01567	0.01612
	B	0.01435	0.01386	0.01526
	CI	0.01289	0.01276	0.01333

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00543	0.00571	0.81801	0.84441	0.84366
sky130_osu_sc_12T_ls__addh_l	0.00543	0.00570	0.57874	0.83854	0.58797

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.00435	0.00485
sky130_osu_sc_12T_ls__addh_l	0.00000	0.00302	0.00352

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)	0.13059	0.83441	7.38869
	B->CO (RR)	0.13390	0.83231	7.48274
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.13166	0.90017	7.32704
	B->CO (RR)	0.13490	0.90066	7.42274

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)	0.12427	0.72699	6.37537
	B->CO (FF)	0.13065	0.74161	6.45974
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.12130	0.74455	6.19813
	B->CO (FF)	0.12756	0.76204	6.28768

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)	0.18955	0.87365	7.44572
	B->CON (RR)	0.19271	0.87055	7.53530
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.17532	0.85096	7.32292
	B->CON (RR)	0.17860	0.84986	7.41830

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)	0.15819	0.75270	6.48680
	B->CON (FF)	0.15826	0.76157	6.56532
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.14670	0.72803	6.31313
	B->CON (FF)	0.14683	0.73978	6.40447

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)	0.22677	1.59500	17.07700
	B->S (FR)	0.22704	1.60538	17.16480
	CON->S (FR)	0.04011	0.90471	12.51030
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.21937	1.54992	14.71810
	B->S (FR)	0.21963	1.56035	14.82670
	CON->S (FR)	0.04625	0.98120	12.39710

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)	0.24024	1.52174	15.56340
	B->S (RF)	0.24346	1.51851	15.65240
	CON->S (RF)	0.02279	0.54525	7.68606
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.22835	1.37432	11.97820
	B->S (RF)	0.23154	1.37313	12.06710
	CON->S (RF)	0.02538	0.57218	7.44654

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	0.00373	0.00354	0.00400
	B	0.00000	0.00000	0.00000
	B	0.00343	0.00325	0.00348
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00330	0.00308	0.00365
	B	0.00000	0.00000	0.00000
	B	0.00300	0.00277	0.00312

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	0.00525	0.00505	0.00537
	B	0.00000	0.00000	0.00000
	B	0.00549	0.00550	0.00586
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00480	0.00459	0.00500
	B	0.00000	0.00000	0.00000
	B	0.00505	0.00502	0.00550

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	0.00373	0.00354	0.00399
	B	0.00000	0.00000	0.00000
	B	0.00343	0.00325	0.00346
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00329	0.00308	0.00359
	B	0.00000	0.00000	0.00000
	B	0.00300	0.00277	0.00307

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	0.00525	0.00505	0.00534
	B	0.00000	0.00000	0.00000
	B	0.00549	0.00550	0.00587
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00480	0.00458	0.00482
	B	0.00000	0.00000	0.00000
	B	0.00505	0.00501	0.00530

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	0.00525	0.00506	0.00534
	B	0.00000	0.00000	0.00000
	B	0.00549	0.00551	0.00564
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00481	0.00460	0.00508
	B	0.00000	0.00000	0.00000
	B	0.00505	0.00502	0.00545

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	0.00373	0.00354	0.00400
	B	0.00000	0.00000	0.00000
	B	0.00343	0.00325	0.00350
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00329	0.00308	0.00362
	B	0.00000	0.00000	0.00000
	B	0.00300	0.00277	0.00322

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)	0.68004	0.64755	0.16827
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.68009	0.64760	0.16832

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)	0.68000	0.64736	0.17621
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.68005	0.64741	0.17626

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00290	0.00300	0.82283
sky130_osu_sc_12T_ls__and2_2	0.00290	0.00301	1.65513
sky130_osu_sc_12T_ls__and2_4	0.00290	0.00301	3.20882
sky130_osu_sc_12T_ls__and2_6	0.00293	0.00300	4.73972
sky130_osu_sc_12T_ls__and2_8	0.00290	0.00301	6.29069
sky130_osu_sc_12T_ls__and2_l	0.00221	0.00228	0.58332

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00196	0.00307
sky130_osu_sc_12T_ls__and2_2	0.00000	0.00308	0.00335
sky130_osu_sc_12T_ls__and2_4	0.00000	0.00530	0.00585
sky130_osu_sc_12T_ls__and2_6	0.00000	0.00753	0.00863
sky130_osu_sc_12T_ls__and2_8	0.00000	0.00976	0.01142
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00038	0.00056

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)	0.10012	0.76455	7.08161
	B->Y (RR)	0.10556	0.77236	7.18917
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.11135	0.68672	7.33539
	B->Y (RR)	0.11668	0.68801	7.42473
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.15121	0.68587	7.72090
	B->Y (RR)	0.15679	0.67663	7.77560
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.19158	0.71663	8.01692
	B->Y (RR)	0.19663	0.70312	8.05282
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.23041	0.75759	8.36407
	B->Y (RR)	0.23580	0.74164	8.38276
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.10752	0.84299	7.08950
	B->Y (RR)	0.11276	0.84826	7.17876

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)	0.09652	0.65300	5.84617
	B->Y (FF)	0.10076	0.66722	5.94549
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.11542	0.64630	6.17419
	B->Y (FF)	0.11857	0.65521	6.25271
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.16527	0.68831	6.62962
	B->Y (FF)	0.16546	0.69095	6.69244
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.21697	0.73900	6.98796
	B->Y (FF)	0.21390	0.73996	7.01966
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.26540	0.79384	7.27842
	B->Y (FF)	0.25981	0.78889	7.30748
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.09787	0.67715	5.60895
	B->Y (FF)	0.10643	0.69715	5.73740

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	0.00264	0.00228	0.00430
	B	0.00000	0.00000	0.00000
	B	0.00269	0.00227	0.00349
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00489	0.00472	0.00668
	B	0.00000	0.00000	0.00000
	B	0.00493	0.00476	0.00586
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00996	0.01023	0.01244
	B	0.00000	0.00000	0.00000
	B	0.01004	0.01028	0.01176
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01509	0.01566	0.01785
	B	0.00000	0.00000	0.00000
	B	0.01512	0.01575	0.01725
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02016	0.02086	0.02445
	B	0.00000	0.00000	0.00000
	B	0.02024	0.02109	0.02245
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00202	0.00181	0.00375
	B	0.00000	0.00000	0.00000
	B	0.00206	0.00178	0.00304

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	0.00651	0.00640	0.00821
	B	0.00000	0.00000	0.00000
	B	0.00737	0.00718	0.00884
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00818	0.00844	0.01023
	B	0.00000	0.00000	0.00000
	B	0.00907	0.00920	0.01082
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01230	0.01326	0.01502
	B	0.00000	0.00000	0.00000
	B	0.01317	0.01394	0.01555
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01658	0.01809	0.02014
	B	0.00000	0.00000	0.00000
	B	0.01744	0.01876	0.02053
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02081	0.02287	0.02511
	B	0.00000	0.00000	0.00000
	B	0.02159	0.02337	0.02536
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00493	0.00483	0.00666
	B	0.00000	0.00000	0.00000
	B	0.00553	0.00540	0.00711

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)	-0.00223	-0.00224	-0.00225
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00223	-0.00224	-0.00225
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00223	-0.00224	-0.00225
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00225	-0.00226	-0.00228
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00223	-0.00225	-0.00225
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00157	-0.00159	-0.00159

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)	0.00225	0.00228	0.00226
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00225	0.00228	0.00226
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00225	0.00228	0.00226
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00227	0.00230	0.00228
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00225	0.00227	0.00226
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00158	0.00161	0.00159

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)	-0.00213	-0.00213	-0.00213
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00213	-0.00213
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00214	-0.00213
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00213	-0.00213
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00214	-0.00213
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00150	-0.00151	-0.00151

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)	0.00215	0.00217	0.00213
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00217	0.00214
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00216	0.00214
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00215	0.00214
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00215	0.00214
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00152	0.00153	0.00151

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00264	0.00282	0.00279	0.36027

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00084	0.00139

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)	0.13554	1.18472	11.92300
	A1->Y (FR)	0.10933	1.09068	11.33390
	B0->Y (FR)	0.10594	1.16004	12.25270

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)	0.05064	0.52443	5.66680
	A1->Y (RF)	0.04647	0.54029	6.01509
	B0->Y (RF)	0.03107	0.49917	5.75403

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	0.00541	0.00534	0.00535
	A1	0.00000	0.00000	0.00000
	A1	0.00457	0.00446	0.00445
	B0	0.00441	0.00428	0.00444

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	0.00102	0.00083	0.00088
	A1	0.00000	0.00000	0.00000
	A1	0.00105	0.00085	0.00097
	B0	-0.00042	-0.00048	-0.00037

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)	-0.00173	-0.00183	-0.00182
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00185	-0.00187	-0.00186
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00186	-0.00187	-0.00186

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)	0.00181	0.00183	0.00182
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00185	0.00188	0.00187
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00188	0.00188	0.00187

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)	-0.00174	-0.00182	-0.00182
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00186	-0.00186	-0.00186
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00204	-0.00206	-0.00206

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)	0.00182	0.00182	0.00182
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00186	0.00188	0.00187
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00206	0.00211	0.00207

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)	-0.00088	-0.00090	-0.00089

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)	0.00098	0.00099	0.00091

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00264	0.00282	0.00296	0.00277	0.35610

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00113	0.00278

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)	0.17382	1.22756	11.91850
	A1->Y (FR)	0.15474	1.20128	11.85590
	B0->Y (FR)	0.11271	1.15862	12.17060
	B1->Y (FR)	0.13223	1.18454	12.24370

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)	0.06581	0.53990	5.65386
	A1->Y (RF)	0.06151	0.55630	6.00125
	B0->Y (RF)	0.03714	0.52645	5.96240
	B1->Y (RF)	0.04178	0.50963	5.61791

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	0.00668	0.00660	0.00660
	A1	0.00586	0.00573	0.00572
	B0	0.00472	0.00454	0.00471
	B1	0.00556	0.00542	0.00560

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00210	0.00193	0.00195
	A1	0.00212	0.00193	0.00203
	B0	-0.00021	-0.00029	-0.00015
	B1	-0.00018	-0.00027	-0.00021

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)	-0.00175	-0.00182	-0.00182
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00185	-0.00187	-0.00186
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00186	-0.00187	-0.00186
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00186	-0.00186	-0.00186

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)	0.00181	0.00183	0.00182
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00185	0.00188	0.00187
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00188	0.00188	0.00187
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00188	0.00188	0.00187

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)	-0.00175	-0.00183	-0.00182
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00186	-0.00187	-0.00187
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00203	-0.00205	-0.00205
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00203	-0.00205	-0.00205

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)	0.00182	0.00185	0.00182
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00186	0.00189	0.00187
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00206	0.00210	0.00206
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00206	0.00210	0.00206

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)	-0.00088	-0.00089	-0.00088
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00088	-0.00088	-0.00088
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00213	-0.00215	-0.00215
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00213	-0.00212	-0.00215

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)	0.00103	0.00103	0.00092
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00088	0.00088	0.00088
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00214	0.00216	0.00215
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00214	0.00216	0.00215

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)	-0.00089	-0.00090	-0.00090
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00089	-0.00090	-0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00196	-0.00197	-0.00196
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00196	-0.00197	-0.00196

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)	0.00103	0.00104	0.00093
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00089	0.00090	0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00198	0.00198	0.00197
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00198	0.00198	0.00197

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00301	0.77144
sky130_osu_sc_12T_ls__buf_2	0.00301	1.60993
sky130_osu_sc_12T_ls__buf_4	0.00301	3.18909
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00301	6.28856
sky130_osu_sc_12T_ls__buf_l	0.00225	0.58350

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00167	0.00167
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00251	0.00307
sky130_osu_sc_12T_ls__buf_4	0.00000	0.00418	0.00585
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.00753	0.01142
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00035	0.00035

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)**	0.07710	0.73996	6.97730
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.07984	0.64207	7.22729
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.10571	0.61948	7.59884
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.15763	0.65666	8.13400
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.08219	0.80279	6.97431

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)**	0.09112	0.63223	5.57594
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.10970	0.63164	6.03785
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.15963	0.68042	6.57490
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.25938	0.78704	7.25624
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.09467	0.67041	5.56824

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	0.00251	0.00206	0.00381
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00475	0.00449	0.00629
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00984	0.01001	0.01210
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01993	0.02084	0.02295
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00194	0.00165	0.00345

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	0.00636	0.00614	0.00787
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00801	0.00803	0.00967
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01214	0.01281	0.01439
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02058	0.02229	0.02415
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00488	0.00475	0.00656

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
	-0.00052	-0.00052	-0.00051

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
	0.00052	0.00052	0.00051

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00276	0.00276	0.00872	0.82356	0.82065
sky130_osu_sc_12T_ls__dffr_l	0.00276	0.00276	0.00872	0.58150	0.58663

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.00553	0.00801
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.00420	0.00668

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)	0.45128	1.63164	13.96550
	QN->Q (FR)	0.04331	0.97189	13.27770
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.44135	1.73162	13.61570
	QN->Q (FR)	0.04859	1.02859	12.92470

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)	0.42884	1.68742	15.37800
	QN->Q (RF)	0.02526	0.58898	8.23810
	RN->Q (FF)	0.31352	1.73802	17.68380
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.43626	1.83122	15.11450
	QN->Q (RF)	0.02733	0.60489	7.87019
	RN->Q (FF)	0.32117	1.88156	17.41390

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)	0.38543	1.06435	7.50783
	RN->QN (FR)	0.26907	1.11349	9.80505
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.38680	1.14104	7.54698
	RN->QN (FR)	0.27152	1.18982	9.83474

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)**	0.38060	0.82416	3.83882
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.36475	0.83078	3.75456

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)	-0.07641	-0.09847	-0.40142
	setup	CK (R)	0.34207	0.35850	1.70160
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.07735	-0.09583	-0.40249
	setup	CK (R)	0.34501	0.36334	1.71135

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)	-0.18999	-0.46612	-4.80183
	setup	CK (R)	0.22238	0.48139	4.88652
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.18964	-0.46548	-4.80385
	setup	CK (R)	0.22220	0.48139	4.88729

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)	-0.07641	-0.09847	-0.40142
	setup	CK (R)	0.34207	0.35850	1.70160
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.07735	-0.09583	-0.40249
	setup	CK (R)	0.34501	0.36334	1.71135

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)	-0.18999	-0.46612	-4.80183
	setup	CK (R)	0.22238	0.48139	4.88652
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.18964	-0.46548	-4.80385
	setup	CK (R)	0.22220	0.48139	4.88729

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)	0.30778	0.32641	1.65107
	removal	CK (R)	-0.06494	-0.07675	-0.12785
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.30674	0.32438	1.66379
	removal	CK (R)	-0.06471	-0.07675	-0.13185

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)	0.30778	0.32641	1.65107
	removal	CK (R)	-0.06494	-0.07675	-0.12785
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.30674	0.32438	1.66379
	removal	CK (R)	-0.06471	-0.07675	-0.13185

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 ()	0.19792	0.45727	13.33370
	min_pulse_width	RN ()	0.19700	0.45504	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.19265	0.45281	13.33370
	min_pulse_width	RN ()	0.19265	0.45281	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 ()	0.20382	0.43945	13.33370
	min_pulse_width	CK ()	0.22373	0.43945	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.19054	0.43945	13.33370
	min_pulse_width	CK ()	0.22041	0.43945	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 ()	0.45166	0.53743	13.33370
	min_pulse_width	CK ()	0.18059	0.43945	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.45148	0.53966	13.33370
	min_pulse_width	CK ()	0.18059	0.43945	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	0.00635	0.00521	-0.00106
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00569	0.00475	0.00168

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	0.00732	0.00651	0.00106
	RN	-0.00085	-0.04093	-0.54034
	RN	0.01652	0.01586	0.01017
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00664	0.00602	0.00369
	RN	-0.00085	-0.03322	-0.38152
	RN	0.01583	0.01534	0.01272

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	0.00732	0.00654	0.00104
	RN	-0.00085	-0.04085	-0.53843
	RN	0.01652	0.01586	0.01011
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00664	0.00603	0.00363
	RN	-0.00085	-0.03340	-0.38489
	RN	0.01583	0.01534	0.01267

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	0.00633	0.00521	-0.00104
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00567	0.00474	0.00132

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	-0.00165	-0.00185	-0.00184
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00785	0.00743	0.00834
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00316	0.00279	0.00377
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00165	-0.00185	-0.00184
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00785	0.00743	0.00834
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00316	0.00279	0.00377

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	0.00184	0.00185	0.00184
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01203	0.01179	0.01243
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00586	0.00566	0.00644
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00184	0.00185	0.00184
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01203	0.01179	0.01243
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00586	0.00566	0.00644

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)	0.00250	0.00208	0.00388
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00745	0.00678	0.00849
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)	0.00250	0.00208	0.00388
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00745	0.00678	0.00849

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)	0.00630	0.00605	0.00782
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01254	0.01217	0.01364
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)	0.00630	0.00605	0.00782
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01254	0.01217	0.01364

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)	-0.00041	-0.00101	0.00072
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00400	0.00302	0.00455
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00045	-0.00106	0.00072
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00041	-0.00101	0.00072
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00400	0.00302	0.00455
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00045	-0.00106	0.00072

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)	0.00981	0.00940	0.01116
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01997	0.01924	0.02041
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01501	0.01450	0.01585
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01952	0.01875	0.02222
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01061	0.01020	0.01186
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00981	0.00936	0.01116
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01997	0.01924	0.02041
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01501	0.01455	0.01585
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01952	0.01873	0.02222
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01061	0.01020	0.01186

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00272	0.00278	0.00642	0.00875	0.84731	0.85008
sky130_osu_sc_12T_ls__dffsr_l	0.00272	0.00278	0.00642	0.00875	0.57763	0.58198

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.00660	0.00827
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.00527	0.00694

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)	0.47029	1.66354	14.23740
	QN->Q (FR)	0.04104	0.94410	13.02870
	RN->Q (RR)	0.37927	1.58548	14.30060
	SN->Q (FR)	0.36489	1.70571	16.90520
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.46804	1.76551	13.63020
	QN->Q (FR)	0.04849	1.02500	12.83080
	RN->Q (RR)	0.37810	1.69008	13.70380
	SN->Q (FR)	0.36261	1.80911	16.26010

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)	0.49086	1.75436	15.58330
	QN->Q (RF)	0.02509	0.59344	8.34444
	RN->Q (FF)	0.33250	1.76041	17.91700
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.50091	1.89664	15.10080
	QN->Q (RF)	0.02718	0.60277	7.83901
	RN->Q (FF)	0.34291	1.90444	17.42390

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)	0.44690	1.12831	7.62377
	RN->QN (FR)	0.28871	1.13497	9.95642
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.45075	1.20889	7.57631
	RN->QN (FR)	0.29334	1.21548	9.90313

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)	0.40332	0.86131	4.05675
	RN->QN (RF)	0.31359	0.78670	4.13424
	SN->QN (FF)	0.29825	0.90533	6.72609
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.39370	0.86875	3.82772
	RN->QN (RF)	0.30404	0.79466	3.90171
	SN->QN (FF)	0.28861	0.91338	6.46732

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)	-0.08423	-0.10793	-0.48871
	setup	CK (R)	0.35141	0.36191	1.71389
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.08579	-0.10865	-0.49050
	setup	CK (R)	0.35185	0.36186	1.72045

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)	-0.21687	-0.48687	-4.98670
	setup	CK (R)	0.25866	0.50411	5.04949
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.21506	-0.49004	-4.98603
	setup	CK (R)	0.25936	0.50411	5.04949

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)	-0.08423	-0.10793	-0.48871
	setup	CK (R)	0.35141	0.36191	1.71389
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.08579	-0.10865	-0.49050
	setup	CK (R)	0.35185	0.36186	1.72045

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)	-0.21687	-0.48687	-4.98670
	setup	CK (R)	0.25866	0.50411	5.04949
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.21506	-0.49004	-4.98603
	setup	CK (R)	0.25936	0.50411	5.04949

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)	0.28598	0.29727	1.56926
	removal	CK (R)	-0.03913	-0.04941	-0.10140
	hold	SN (R)	-0.29051	-0.46864	-2.72394
	setup	SN (R)	0.31798	0.50318	5.92166
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.28324	0.29740	1.57133
	removal	CK (R)	-0.04046	-0.04873	-0.10226
	hold	SN (R)	-0.27751	-0.45464	-2.65493
	setup	SN (R)	0.31376	0.49265	5.81673

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)	0.28598	0.29727	1.56926
	removal	CK (R)	-0.03913	-0.04941	-0.10140
	hold	SN (R)	-0.29051	-0.46864	-2.72394
	hold	SN (R)	-0.29199	-0.46991	-2.73287
	setup	SN (R)	0.31313	0.50130	5.77494
	setup	SN (R)	0.31798	0.50318	5.92166
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.28324	0.29740	1.57133
	removal	CK (R)	-0.04046	-0.04873	-0.10226
	hold	SN (R)	-0.28165	-0.45464	-2.65493
	hold	SN (R)	-0.27751	-0.45585	-2.66986
	setup	SN (R)	0.31376	0.48964	5.69101
	setup	SN (R)	0.30068	0.49265	5.81673

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 ()	0.22429	0.47731	13.33370
	min_pulse_width	RN ()	0.23152	0.47731	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.22328	0.47508	13.33370
	min_pulse_width	RN ()	0.22585	0.47286	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)	0.04959	0.07843	4.24953
	removal	CK (R)	-0.01564	-0.05593	-0.44514
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.04566	0.07822	4.06546
	removal	CK (R)	-0.01564	-0.05593	-0.44405

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)	0.04959	0.07843	4.24953
	removal	CK (R)	-0.01564	-0.05593	-0.44514
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.04566	0.07822	4.06546
	removal	CK (R)	-0.01564	-0.05593	-0.44405

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 ()	0.29119	0.53521	13.33370
	min_pulse_width	SN ()	0.30055	0.53743	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.29202	0.52185	13.33370
	min_pulse_width	SN ()	0.28646	0.52630	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 ()	0.21046	0.43945	13.33370
	min_pulse_width	CK ()	0.25028	0.43945	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.20050	0.43945	13.33370
	min_pulse_width	CK ()	0.24696	0.43945	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 ()	0.46173	0.53966	13.33370
	min_pulse_width	CK ()	0.22041	0.43945	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.45968	0.53966	13.33370
	min_pulse_width	CK ()	0.22041	0.43945	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	0.00787	0.00678	-0.00110
	RN	0.01455	0.01367	0.00451
	SN	-0.00085	-0.04164	-0.55592
	SN	0.01614	0.01523	0.00577
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00725	0.00635	0.00317
	RN	0.01392	0.01325	0.00878
	SN	-0.00085	-0.03309	-0.37898
	SN	0.01552	0.01482	0.00989

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	0.00842	0.00783	0.00403
	RN	-0.00085	-0.04164	-0.55592
	RN	0.01742	0.01686	0.01278
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00776	0.00720	0.00489
	RN	-0.00085	-0.03309	-0.37898
	RN	0.01675	0.01622	0.01367

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	0.00843	0.00783	0.00399
	RN	-0.00085	-0.04172	-0.55773
	RN	0.01743	0.01686	0.01275
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00776	0.00720	0.00490
	RN	-0.00085	-0.03324	-0.38183
	RN	0.01675	0.01622	0.01395

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	0.00785	0.00674	-0.00131
	RN	0.01453	0.01364	0.00448
	SN	-0.00085	-0.04172	-0.55770
	SN	0.01612	0.01521	0.00574
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00723	0.00634	0.00297
	RN	0.01390	0.01323	0.00872
	SN	-0.00085	-0.03324	-0.38181
	SN	0.01549	0.01480	0.00988

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	-0.00180	-0.00186	-0.00186
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00990	0.00951	0.01041
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00347	0.00312	0.00406
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00344	0.00309	0.00404
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00349	0.00314	0.00409
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00180	-0.00186	-0.00186
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00990	0.00952	0.01041
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00347	0.00312	0.00406
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00344	0.00309	0.00404
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00349	0.00314	0.00409

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	0.00188	0.00187	0.00186
	(!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)	0.01381	0.01358	0.01408
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00649	0.00632	0.00704
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00651	0.00633	0.00706
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00646	0.00630	0.00700
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00188	0.00187	0.00186
	(!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)	0.01381	0.01358	0.01408
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00649	0.00632	0.00704
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00651	0.00633	0.00706
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00646	0.00630	0.00700

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)	0.00206	0.00162	0.00334
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00881	0.00815	0.00975
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)	0.00206	0.00162	0.00334
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00881	0.00815	0.00975

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)	0.00697	0.00670	0.00853
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01339	0.01298	0.01439
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)	0.00697	0.00670	0.00853
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01339	0.01298	0.01439

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)	-0.00473	-0.00476	-0.00476
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00499	-0.00513	-0.00512
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00469	-0.00478	-0.00477
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00216	0.00174	0.00295
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)	-0.00473	-0.00476	-0.00476
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00499	-0.00513	-0.00512
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00469	-0.00478	-0.00477
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00216	0.00176	0.00295

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)	0.00478	0.00487	0.00478
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00510	0.00514	0.00512
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00476	0.00478	0.00477
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01079	0.01049	0.01103
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)	0.00478	0.00487	0.00478
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00510	0.00514	0.00512
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00476	0.00478	0.00477
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01079	0.01049	0.01103

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)	-0.00046	-0.00105	0.00065
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00478	0.00380	0.00535
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00473	0.00378	0.00529
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00094	0.00082
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00247	0.00150	0.00503
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00046	-0.00105	0.00065
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00478	0.00380	0.00535
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00473	0.00378	0.00529
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00092	0.00082
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00247	0.00150	0.00503

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)	0.02224	0.02152	0.02269
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00999	0.00956	0.01133
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01525	0.01480	0.01618
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01530	0.01482	0.01619
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02138	0.02054	0.02383
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01062	0.01019	0.01185
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01339	0.01269	0.01620
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02224	0.02152	0.02269
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00999	0.00959	0.01133
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01525	0.01480	0.01618
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01530	0.01482	0.01619
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02138	0.02053	0.02383
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01062	0.01019	0.01185
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01339	0.01269	0.01620

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00274	0.00531	0.00868	0.81998	0.82524
sky130_osu_sc_12T_ls__dffs_l	0.00274	0.00531	0.00868	0.57738	0.58250

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.00511	0.00637
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.00378	0.00504

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)	0.31894	1.47471	13.74620
	QN->Q (FR)	0.04334	0.96695	13.22270
	SN->Q (FR)	0.25741	1.60188	16.35110
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.31871	1.58625	13.37450
	QN->Q (FR)	0.04858	1.02327	12.84280
	SN->Q (FR)	0.25654	1.71041	15.93670

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)	0.47269	1.73239	15.33340
	QN->Q (RF)	0.02516	0.58642	8.20045
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.47720	1.86976	15.03780
	QN->Q (RF)	0.02724	0.60178	7.82760

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)	0.42782	1.11369	7.58048
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.42661	1.18239	7.53044

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)	0.25725	0.67574	3.71505
	SN->QN (FF)	0.19503	0.80415	6.32009
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.25055	0.69324	3.59945
	SN->QN (FF)	0.18761	0.81806	6.15410

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)	-0.05879	-0.08432	-0.38124
	setup	CK (R)	0.22946	0.25589	1.71104
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.05933	-0.08550	-0.38133
	setup	CK (R)	0.22888	0.25857	1.72932

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)	-0.19326	-0.47050	-4.80996
	setup	CK (R)	0.24251	0.48439	4.92450
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.19349	-0.46821	-4.81077
	setup	CK (R)	0.24317	0.48439	4.92450

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)	-0.05879	-0.08432	-0.38124
	setup	CK (R)	0.22946	0.25589	1.71104
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.05933	-0.08550	-0.38133
	setup	CK (R)	0.22888	0.25857	1.72932

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)	-0.19326	-0.47050	-4.80996
	setup	CK (R)	0.24251	0.48439	4.92450
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.19349	-0.46821	-4.81077
	setup	CK (R)	0.24317	0.48439	4.92450

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)	0.05450	0.08541	3.22109
	removal	CK (R)	-0.02289	-0.05666	-0.43196
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.05414	0.08523	3.10531
	removal	CK (R)	-0.02411	-0.05666	-0.43196

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)	0.05450	0.08541	3.22109
	removal	CK (R)	-0.02289	-0.05666	-0.43196
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.05414	0.08523	3.10531
	removal	CK (R)	-0.02411	-0.05666	-0.43196

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 ()	0.18130	0.51071	13.33370
	min_pulse_width	SN ()	0.18517	0.51071	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.17681	0.49735	13.33370
	min_pulse_width	SN ()	0.17755	0.49958	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 ()	0.12749	0.43945	13.33370
	min_pulse_width	CK ()	0.23369	0.43945	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.12085	0.43945	13.33370
	min_pulse_width	CK ()	0.23037	0.43945	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 ()	0.33438	0.45949	13.33370
	min_pulse_width	CK ()	0.20714	0.43945	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.33598	0.46172	13.33370
	min_pulse_width	CK ()	0.20714	0.43945	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	0.00636	0.00519	-0.00127
	SN	-0.00085	-0.04083	-0.53799
	SN	0.01376	0.01273	0.00457
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00569	0.00473	0.00175
	SN	-0.00085	-0.03308	-0.37882
	SN	0.01309	0.01228	0.00870

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	0.00728	0.00653	0.00127
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00660	0.00601	0.00377

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	0.00728	0.00654	0.00119
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00661	0.00603	0.00372

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	0.00634	0.00518	-0.00119
	SN	-0.00085	-0.04098	-0.54140
	SN	0.01374	0.01271	0.00468
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00567	0.00472	0.00152
	SN	-0.00085	-0.03325	-0.38215
	SN	0.01307	0.01226	0.00856

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	-0.00183	-0.00189	-0.00188
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00766	0.00722	0.00808
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00315	0.00279	0.00376
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00183	-0.00189	-0.00188
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00766	0.00722	0.00808
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00315	0.00279	0.00376

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	0.00191	0.00191	0.00188
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01197	0.01171	0.01231
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00598	0.00580	0.00655
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00191	0.00191	0.00188
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01197	0.01171	0.01231
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00598	0.00580	0.00655

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)	-0.00347	-0.00349	-0.00350
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00234	0.00194	0.00341
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)	-0.00347	-0.00349	-0.00350
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00234	0.00194	0.00341

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)	0.00350	0.00354	0.00351
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00748	0.00709	0.00861
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)	0.00350	0.00354	0.00351
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00748	0.00709	0.00861

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)	-0.00041	-0.00100	0.00072
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00038	-0.00099	0.00078
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00222	0.00124	0.00485
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00041	-0.00100	0.00072
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00038	-0.00099	0.00078
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00221	0.00124	0.00485

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)	0.01983	0.01913	0.02027
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00982	0.00944	0.01117
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01937	0.01849	0.02189
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01055	0.01015	0.01180
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01268	0.01197	0.01562
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01983	0.01913	0.02027
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00981	0.00944	0.01117
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01937	0.01850	0.02189
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01055	0.01015	0.01180
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01268	0.01197	0.01562

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00289	0.00863	0.76223
sky130_osu_sc_12T_ls__dff_l	0.00289	0.00863	0.55243

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.00607	0.00672
sky130_osu_sc_12T_ls__dff_l	0.00000	0.00474	0.00539

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)**	0.26730	0.94757	7.24262
sky130_osu_sc_12T_ls__dff_l	**CK->Q (RR)**	0.26676	1.01718	7.22125

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)**	0.40220	0.80744	3.71980
sky130_osu_sc_12T_ls__dff_l	**CK->Q (RF)**	0.40495	0.84201	3.71369

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)	-0.05705	-0.08336	-0.40981
	setup	CK (R)	0.17921	0.21066	1.72793
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.05700	-0.08344	-0.40994
	setup	CK (R)	0.17910	0.21071	1.75295

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)	-0.18108	-0.46921	-4.84142
	setup	CK (R)	0.21671	0.48438	4.96572
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.18288	-0.46947	-4.83502
	setup	CK (R)	0.21668	0.48438	4.96562

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 ()	0.11089	0.43945	13.33370
	min_pulse_width	CK ()	0.21709	0.43945	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.10757	0.43945	13.33370
	min_pulse_width	CK ()	0.21046	0.43945	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 ()**	0.28679	0.43945	13.33370
	min_pulse_width	**CK ()**	0.17395	0.43945	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.28679	0.43945	13.33370
	min_pulse_width	**CK ()**	0.17395	0.43945	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	0.01342	0.01211	0.01571
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01205	0.01079	0.01439

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	0.01486	0.01404	0.01546
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01351	0.01271	0.01414

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	-0.00164	-0.00184	-0.00183
	!CK	0.00000	0.00000	0.00000
	!CK	0.00696	0.00654	0.00742
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00164	-0.00184	-0.00183
	!CK	0.00000	0.00000	0.00000
	!CK	0.00696	0.00654	0.00742

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	0.00182	0.00184	0.00183
	!CK	0.00000	0.00000	0.00000
	!CK	0.01240	0.01208	0.01274
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00182	0.00184	0.00183
	!CK	0.00000	0.00000	0.00000
	!CK	0.01240	0.01208	0.01274

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)	-0.00044	-0.00103	0.00070
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00038	-0.00098	0.00079
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00044	-0.00103	0.00070
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00038	-0.00098	0.00079

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)	0.00978	0.00938	0.01115
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01912	0.01838	0.01964
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01964	0.01871	0.02225
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01049	0.01008	0.01175
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00978	0.00938	0.01115
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01912	0.01838	0.01964
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01964	0.01871	0.02225
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01049	0.01008	0.01175

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00281	0.76077
sky130_osu_sc_12T_ls__inv_10	0.02507	7.70313
sky130_osu_sc_12T_ls__inv_2	0.00521	1.59845
sky130_osu_sc_12T_ls__inv_3	0.00771	2.32797
sky130_osu_sc_12T_ls__inv_4	0.01015	3.17266
sky130_osu_sc_12T_ls__inv_6	0.01520	4.73400
sky130_osu_sc_12T_ls__inv_8	0.02013	6.26575
sky130_osu_sc_12T_ls__inv_l	0.00221	0.54818

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00084	0.00139
sky130_osu_sc_12T_ls__inv_10	0.00000	0.00836	0.01392
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00167	0.00278
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00251	0.00418
sky130_osu_sc_12T_ls__inv_4	0.00000	0.00335	0.00557
sky130_osu_sc_12T_ls__inv_6	0.00000	0.00502	0.00835
sky130_osu_sc_12T_ls__inv_8	0.00000	0.00669	0.01113
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00017	0.00021

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)**	0.04220	0.91114	12.27290
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.04359	0.59313	12.31000
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.03048	0.77042	12.34880
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.03204	0.71545	12.30680
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.03101	0.67517	12.35440
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.03364	0.63381	12.36100
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.03814	0.60740	12.34500
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.04886	0.98538	12.20790

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)**	0.02318	0.53004	7.25780
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.02882	0.35726	7.52536
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.01833	0.46775	7.46027
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.01956	0.43744	7.50427
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.01913	0.41602	7.55435
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.02221	0.38813	7.58169
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.02541	0.36894	7.57889
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.02605	0.55829	7.14566

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	0.00323	0.00319	0.00335
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02633	0.02601	0.02916
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00556	0.00554	0.00595
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00854	0.00850	0.00916
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01087	0.01036	0.01178
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01608	0.01630	0.01762
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02124	0.02139	0.02340
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00253	0.00249	0.00267

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	-0.00050	-0.00053	-0.00043
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00922	-0.00908	-0.00664
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00168	-0.00172	-0.00142
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00220	-0.00227	-0.00175
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00346	-0.00348	-0.00273
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00528	-0.00513	-0.00405
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00722	-0.00716	-0.00535
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00036	-0.00039	-0.00029

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.08000	0.07989	0.00578	0.07589

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00242	0.00417

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)	-	0.01738	0.29454	2.67921
	A1->Y (RR)	-	0.02127	0.29799	2.68638
	S0->Y (RR)	(!A0 * A1)	0.05616	0.29156	0.54024
	S0->Y (FR)	(A0 * !A1)	0.04476	0.45781	3.41721

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)	-	0.01917	0.25429	2.22155
	A1->Y (FF)	-	0.01679	0.25119	2.21652
	S0->Y (FF)	(!A0 * A1)	0.09146	0.43777	2.65942
	S0->Y (RF)	(A0 * !A1)	0.02540	0.26859	1.48749

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	-	-0.00318	-0.00318	-0.00318
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00209	-0.00210	-0.00210
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00424	0.00396	0.00605
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00198	-0.00246	-0.00043

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	-	0.00318	0.00318	0.00319
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00209	0.00210	0.00210
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00062	0.00015	0.00227
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00865	0.00834	0.01026

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)	-0.00079	-0.00079	-0.00079

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)	0.00079	0.00079	0.00079

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)	-0.00094	-0.00094	-0.00094

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)	0.00094	0.00094	0.00094

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)	-0.00070	-0.00117	0.00092
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00067	-0.00114	0.00090

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)	0.00669	0.00638	0.00833
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00619	0.00591	0.00800

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00279	0.00279	0.75636
sky130_osu_sc_12T_ls__nand2_l	0.00216	0.00219	0.54642

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00085	0.00278
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00019	0.00042

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)	0.04452	0.91410	12.26740
	B->Y (FR)	0.05078	0.88652	11.82990
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.04975	0.98709	12.20570
	B->Y (FR)	0.05912	0.99503	12.19670

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)	0.03517	0.66905	8.96423
	B->Y (RF)	0.03982	0.65551	8.59439
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.03897	0.71352	8.85298
	B->Y (RF)	0.04334	0.70046	8.43891

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	0.00342	0.00337	0.00345
	B	0.00000	0.00000	0.00000
	B	0.00431	0.00422	0.00440
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00257	0.00253	0.00269
	B	0.00000	0.00000	0.00000
	B	0.00319	0.00314	0.00330

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	-0.00027	-0.00033	-0.00024
	B	0.00000	0.00000	0.00000
	B	-0.00025	-0.00034	-0.00028
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00018	-0.00023	-0.00012
	B	0.00000	0.00000	0.00000
	B	-0.00017	-0.00024	-0.00017

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)	-0.00215	-0.00215	-0.00217
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00153	-0.00153	-0.00153

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)	0.00217	0.00219	0.00218
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00153	0.00155	0.00154

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)	-0.00200	-0.00201	-0.00200
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00143	-0.00144	-0.00143

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)	0.00202	0.00202	0.00200
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00144	0.00145	0.00144

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00274	0.00303	0.39686
sky130_osu_sc_12T_ls__nor2_l	0.00207	0.00230	0.28694

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00086	0.00139
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00019	0.00027

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)	0.09783	1.11706	11.98600
	B->Y (FR)	0.07967	1.09857	12.16970
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.10542	1.20779	11.86060
	B->Y (FR)	0.09089	1.19084	12.03200

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)	0.02960	0.44918	5.20038
	B->Y (RF)	0.02452	0.43883	5.18362
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.03150	0.46668	5.09286
	B->Y (RF)	0.02712	0.46260	5.07817

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	0.00445	0.00436	0.00440
	B	0.00000	0.00000	0.00000
	B	0.00354	0.00342	0.00363
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00323	0.00316	0.00321
	B	0.00000	0.00000	0.00000
	B	0.00265	0.00257	0.00280

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	0.00043	0.00026	0.00041
	B	0.00000	0.00000	0.00000
	B	-0.00039	-0.00043	-0.00029
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00030	0.00021	0.00037
	B	0.00000	0.00000	0.00000
	B	-0.00025	-0.00026	-0.00013

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)	-0.00165	-0.00185	-0.00185
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00113	-0.00126	-0.00126

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)	0.00184	0.00186	0.00185
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00125	0.00127	0.00126

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)	-0.00089	-0.00090	-0.00089
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00062	-0.00063	-0.00063

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)	0.00094	0.00095	0.00090
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00066	0.00066	0.00064

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00279	0.00287	0.00246	0.40230

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00062	0.00161

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)	0.11258	1.14132	12.32290
	A1->Y (FR)	0.13531	1.16437	12.14270
	B0->Y (FR)	0.06228	0.89068	10.35260

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)	0.04768	0.54551	6.07615
	A1->Y (RF)	0.05575	0.54629	6.02007
	B0->Y (RF)	0.03764	0.56665	6.62681

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	0.00484	0.00472	0.00488
	A1	0.00000	0.00000	0.00000
	A1	0.00581	0.00569	0.00572
	B0	0.00393	0.00381	0.00401

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	0.00025	0.00019	0.00023
	A1	0.00000	0.00000	0.00000
	A1	0.00110	0.00093	0.00097
	B0	0.00144	0.00138	0.00150

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)	-0.00089	-0.00090	-0.00090
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00183	-0.00188	-0.00188
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00191	-0.00192	-0.00192

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)	0.00095	0.00095	0.00091
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00188	0.00188	0.00188
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00193	0.00194	0.00193

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)	-0.00160	-0.00179	-0.00178
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00180	-0.00187	-0.00186
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00189	-0.00190	-0.00190

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)	0.00177	0.00181	0.00178
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00185	0.00188	0.00186
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00190	0.00191	0.00190

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)	-0.00160	-0.00160	-0.00163

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)	0.00164	0.00167	0.00164

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00261	0.00275	0.00293	0.00288	0.41716

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00130	0.00278

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)	0.14498	1.16370	12.14870
	A1->Y (FR)	0.12655	1.14501	12.34110
	B0->Y (FR)	0.08442	1.10191	12.30240
	B1->Y (FR)	0.10479	1.12109	12.11110

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)	0.07422	0.58635	6.25136
	A1->Y (RF)	0.06120	0.56974	6.21750
	B0->Y (RF)	0.05183	0.58966	6.77611
	B1->Y (RF)	0.06555	0.60346	6.83504

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	0.00737	0.00728	0.00731
	A1	0.00641	0.00629	0.00644
	B0	0.00469	0.00459	0.00474
	B1	0.00572	0.00561	0.00562

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00164	0.00148	0.00151
	A1	0.00087	0.00080	0.00081
	B0	0.00084	0.00078	0.00087
	B1	0.00165	0.00147	0.00158

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)	-0.00162	-0.00181	-0.00181
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00162	-0.00181	-0.00181
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00175	-0.00180	-0.00181
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00184	-0.00185	-0.00184

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)	0.00181	0.00182	0.00181
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00180	0.00182	0.00181
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00180	0.00180	0.00181
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00184	0.00186	0.00185

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)	-0.00087	-0.00088	-0.00087
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00087	-0.00088	-0.00087
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00175	-0.00180	-0.00179
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00183	-0.00185	-0.00184

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)	0.00092	0.00092	0.00088
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00092	0.00093	0.00088
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00178	0.00180	0.00179
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00184	0.00186	0.00184

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)	-0.00087	-0.00089	-0.00088
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00087	-0.00089	-0.00088
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00206	-0.00212	-0.00211
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00209	-0.00211	-0.00214

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)	0.00093	0.00094	0.00089
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00093	0.00094	0.00089
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00211	0.00212	0.00211
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00215	0.00215	0.00216

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)	-0.00160	-0.00180	-0.00179
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00160	-0.00180	-0.00179
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00210	-0.00216	-0.00216
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00213	-0.00214	-0.00218

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)	0.00179	0.00182	0.00179
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00179	0.00182	0.00179
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00216	0.00217	0.00216
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00218	0.00221	0.00220

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00309	0.00287	0.77276
sky130_osu_sc_12T_ls__or2_2	0.00310	0.00287	1.60047
sky130_osu_sc_12T_ls__or2_4	0.00310	0.00287	3.15516
sky130_osu_sc_12T_ls__or2_8	0.00308	0.00287	6.19546
sky130_osu_sc_12T_ls__or2_l	0.00233	0.00219	0.55073

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00142	0.00195
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00198	0.00335
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00310	0.00613
sky130_osu_sc_12T_ls__or2_8	0.00000	0.00533	0.01170
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00034	0.00048

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)	0.08699	0.77443	7.14390
	B->Y (RR)	0.07872	0.74832	7.00755
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.09065	0.67058	7.32449
	B->Y (RR)	0.08177	0.64751	7.20652
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.11674	0.64145	7.64972
	B->Y (RR)	0.10772	0.62356	7.55991
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.16854	0.67495	8.16215
	B->Y (RR)	0.15949	0.66112	8.09003
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.09337	0.84442	7.04941
	B->Y (RR)	0.08566	0.82135	6.93266

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)	0.17859	0.73967	5.95675
	B->Y (FF)	0.15096	0.71251	5.78329
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.21904	0.75779	6.40785
	B->Y (FF)	0.19180	0.73599	6.26614
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.31492	0.85043	6.97063
	B->Y (FF)	0.28754	0.82578	6.86950
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.50563	1.06254	7.68079
	B->Y (FF)	0.47823	1.03728	7.68080
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.18764	0.77129	5.77955
	B->Y (FF)	0.16194	0.74216	5.60493

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	0.00345	0.00297	0.00438
	B	0.00000	0.00000	0.00000
	B	0.00264	0.00234	0.00406
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00572	0.00545	0.00689
	B	0.00000	0.00000	0.00000
	B	0.00487	0.00482	0.00664
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01082	0.01100	0.01279
	B	0.00000	0.00000	0.00000
	B	0.00997	0.01044	0.01258
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02094	0.02189	0.02368
	B	0.00000	0.00000	0.00000
	B	0.02013	0.02135	0.02376
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00262	0.00232	0.00366
	B	0.00000	0.00000	0.00000
	B	0.00206	0.00196	0.00352

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	0.00759	0.00731	0.00799
	B	0.00000	0.00000	0.00000
	B	0.00638	0.00630	0.00802
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00928	0.00935	0.00995
	B	0.00000	0.00000	0.00000
	B	0.00804	0.00827	0.00987
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01341	0.01408	0.01473
	B	0.00000	0.00000	0.00000
	B	0.01231	0.01292	0.01450
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02227	0.02320	0.02444
	B	0.00000	0.00000	0.00000
	B	0.02107	0.02201	0.02414
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00563	0.00547	0.00623
	B	0.00000	0.00000	0.00000
	B	0.00481	0.00479	0.00650

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)	-0.00167	-0.00187	-0.00186
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00167	-0.00187	-0.00186
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00167	-0.00188	-0.00187
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00167	-0.00188	-0.00187
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00114	-0.00128	-0.00127

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)	0.00185	0.00189	0.00186
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00185	0.00189	0.00186
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00186	0.00189	0.00187
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00185	0.00189	0.00187
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00127	0.00129	0.00127

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)	-0.00089	-0.00090	-0.00089
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00089	-0.00090	-0.00089
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00089	-0.00090	-0.00089
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00089	-0.00090	-0.00089
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00061	-0.00062	-0.00061

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)	0.00095	0.00095	0.00091
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00095	0.00096	0.00091
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00095	0.00096	0.00091
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00095	0.00096	0.00091
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00065	0.00065	0.00062

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00300	0.00392	0.41029
sky130_osu_sc_12T_ls__tbufi_l	0.00231	0.00300	0.28517

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00097	0.00279
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00024	0.00042

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)	0.07363	1.08432	12.17430
	OE->Y (FR)	0.06554	0.33969	4.73326
	OE->Y (RR)	0.11176	0.92569	7.08439
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.08757	1.18516	11.98970
	OE->Y (FR)	0.06690	0.33544	4.73312
	OE->Y (RR)	0.12227	1.02824	7.01510

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)	0.03413	0.54357	6.43407
	OE->Y (FF)	0.06671	0.34441	4.73316
	OE->Y (RF)	0.03236	0.52352	6.05554
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.03832	0.57125	6.19998
	OE->Y (FF)	0.06832	0.34133	4.73315
	OE->Y (RF)	0.03576	0.54514	5.79184

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	0.00329	0.00317	0.00335
	OE	0.00000	0.00000	0.00000
	OE	0.00321	0.00280	0.00488
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00249	0.00240	0.00260
	OE	0.00000	0.00000	0.00000
	OE	0.00234	0.00206	0.00407

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	-0.00039	-0.00043	-0.00031
	OE	0.00000	0.00000	0.00000
	OE	0.00206	0.00163	0.00383
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00025	-0.00027	-0.00014
	OE	0.00000	0.00000	0.00000
	OE	0.00145	0.00115	0.00325

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)	-0.00153	-0.00154	-0.00153
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00138	-0.00140	-0.00138
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00111	-0.00111	-0.00111
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00100	-0.00102	-0.00100

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)	0.00153	0.00154	0.00153
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00141	0.00143	0.00140
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00111	0.00111	0.00111
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00103	0.00103	0.00101

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)	0.00120	0.00077	0.00297
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00106	0.00064	0.00284
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00084	0.00053	0.00264
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00073	0.00043	0.00253

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)	0.00387	0.00353	0.00557
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00402	0.00366	0.00566
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00291	0.00269	0.00470
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00304	0.00280	0.00480

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00299	0.00444	0.41015
sky130_osu_sc_12T_ls__tnbufi_l	0.00220	0.00337	0.28717

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00134	0.00167
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00027	0.00035

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)	0.07429	1.08409	12.17170
	OE->Y (RR)	0.02897	0.30940	4.73341
	OE->Y (FR)	0.08667	1.09768	11.97390
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.08596	1.18632	12.03740
	OE->Y (RR)	0.03160	0.30914	4.73309
	OE->Y (FR)	0.09607	1.20112	11.86720

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)	0.03337	0.54309	6.43258
	OE->Y (RF)	0.02871	0.30939	4.73337
	OE->Y (FF)	0.07423	0.59373	4.79094
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.03648	0.57211	6.22268
	OE->Y (RF)	0.03133	0.30915	4.73311
	OE->Y (FF)	0.08165	0.62657	4.59631

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	0.00342	0.00330	0.00347
	OE	0.00000	0.00000	0.00000
	OE	0.00806	0.00791	0.01021
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00256	0.00247	0.00267
	OE	0.00000	0.00000	0.00000
	OE	0.00612	0.00601	0.00823

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	-0.00055	-0.00059	-0.00046
	OE	0.00000	0.00000	0.00000
	OE	0.00704	0.00689	0.00899
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00041	-0.00042	-0.00029
	OE	0.00000	0.00000	0.00000
	OE	0.00534	0.00521	0.00729

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)	-0.00126	-0.00127	-0.00126
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00112	-0.00114	-0.00112
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00087	-0.00088	-0.00087
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00077	-0.00078	-0.00077

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)	0.00126	0.00127	0.00126
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00115	0.00116	0.00113
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00087	0.00088	0.00087
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00080	0.00080	0.00078

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)	-0.00207	-0.00265	-0.00041
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00198	-0.00261	-0.00038
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00141	-0.00185	0.00027
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00137	-0.00182	0.00029

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)	0.00606	0.00590	0.00816
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00596	0.00581	0.00809
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00463	0.00454	0.00671
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00458	0.00447	0.00664

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00600	0.00511	0.42368

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00270	0.00446

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	0.14421	0.97845	7.36691
	A->Y (FR)	!B	0.10011	1.11797	12.33100
	B->Y (RR)	A	0.11890	0.95298	7.32598
	B->Y (FR)	!A	0.11974	1.13358	12.12920

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	0.12193	0.68493	5.21102
	A->Y (RF)	!B	0.04676	0.54098	6.17531
	B->Y (FF)	A	0.10975	0.67267	5.20087
	B->Y (RF)	!A	0.05487	0.55256	6.18782

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	0.00342	0.00289	0.00489
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00832	0.00789	0.01009
	B	A	0.00000	0.00000	0.00000
	B	A	0.00161	0.00126	0.00337
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00874	0.00842	0.01060

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	0.00971	0.00919	0.01106
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00229	0.00179	0.00394
	B	A	0.00000	0.00000	0.00000
	B	A	0.00887	0.00874	0.01076
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00282	0.00228	0.00443

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00601	0.00515	0.39754

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00270	0.00335

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	0.15336	0.98439	7.25286
	A->Y (FR)	B	0.12146	1.13801	12.02430
	B->Y (RR)	!A	0.12547	0.96655	7.24025
	B->Y (FR)	A	0.13313	1.15209	12.03370

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	0.12059	0.67572	5.04885
	A->Y (RF)	B	0.04676	0.56045	6.34948
	B->Y (FF)	!A	0.11396	0.66875	5.04078
	B->Y (RF)	A	0.05294	0.54223	5.97788

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	0.00959	0.00920	0.01131
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00213	0.00123	0.00321
	B	A	0.00000	0.00000	0.00000
	B	A	0.00971	0.00943	0.01153
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00151	0.00111	0.00323

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	0.00185	0.00118	0.00334
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01021	0.00997	0.01185
	B	A	0.00000	0.00000	0.00000
	B	A	0.00185	0.00126	0.00339
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00898	0.00890	0.01090

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.18025
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	84919.50000	169839.00000
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
	-0.00161	0.01508	0.24080

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
	1.47898	1.40522	0.30762