sky130_osu_sc_18T_ls_tt_1P68_25C.ccs Library

Cell Groups
SKY130_OSU_SC_18T_LS__ADDFx
SKY130_OSU_SC_18T_LS__ADDHx
SKY130_OSU_SC_18T_LS__AND2x
SKY130_OSU_SC_18T_LS__AOI21
SKY130_OSU_SC_18T_LS__AOI22
SKY130_OSU_SC_18T_LS__BUFx
SKY130_OSU_SC_18T_LS__DFFRx
SKY130_OSU_SC_18T_LS__DFFSRx
SKY130_OSU_SC_18T_LS__DFFSx
SKY130_OSU_SC_18T_LS__DFFx
SKY130_OSU_SC_18T_LS__INVx
SKY130_OSU_SC_18T_LS__MUX2
SKY130_OSU_SC_18T_LS__NAND2x
SKY130_OSU_SC_18T_LS__NOR2x
SKY130_OSU_SC_18T_LS__OAI21
SKY130_OSU_SC_18T_LS__OAI22
SKY130_OSU_SC_18T_LS__OR2x
SKY130_OSU_SC_18T_LS__TBUFIx
SKY130_OSU_SC_18T_LS__TNBUFIx
SKY130_OSU_SC_18T_LS__XNOR2
SKY130_OSU_SC_18T_LS__XOR2
SKY130_OSU_SC_18T_LS_x

SKY130_OSU_SC_18T_LS__ADDFx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__addf_1	46.88640
sky130_osu_sc_18T_ls__addf_l	46.88640

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_18T_ls__addf_1	0.02135	0.02137	0.01636	2.13117	1.00097	2.07131
sky130_osu_sc_18T_ls__addf_l	0.02134	0.02137	0.01639	1.46384	1.01245	1.46026

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addf_1	0.00000	0.00273	0.00303
sky130_osu_sc_18T_ls__addf_l	0.00000	0.00227	0.00257

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.17896	1.90681	25.68660
	B->CO (RR)	0.15762	1.81138	24.50600
	CI->CO (RR)	0.17127	1.93699	26.19890
	CON->CO (FR)	0.03726	0.88587	12.20450
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.18003	1.78126	20.99480
	B->CO (RR)	0.15896	1.70140	20.19160
	CI->CO (RR)	0.17209	1.81235	21.53620
	CON->CO (FR)	0.04215	0.95954	12.15970

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	0.26699	2.49880	33.11960
	B->CO (FF)	0.23910	2.38763	32.01360
	CI->CO (FF)	0.23346	2.46789	33.27110
	CON->CO (RF)	0.02730	0.64734	8.90087
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	0.26021	2.23317	25.84660
	B->CO (FF)	0.23255	2.13648	25.10930
	CI->CO (FF)	0.22670	2.20288	26.01540
	CON->CO (RF)	0.02928	0.67027	8.52353

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->CON (FR)	0.20298	1.18967	11.92450
	B->CON (FR)	0.17703	1.12627	11.67800
	CI->CON (FR)	0.16961	1.16044	12.11510
sky130_osu_sc_18T_ls__addf_l	A->CON (FR)	0.19240	1.18371	11.99780
	B->CON (FR)	0.16714	1.12057	11.74650
	CI->CON (FR)	0.15905	1.15449	12.18880

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->CON (RF)	0.10140	0.67946	7.02887
	B->CON (RF)	0.09540	0.67353	7.10934
	CI->CON (RF)	0.09359	0.71044	7.62047
sky130_osu_sc_18T_ls__addf_l	A->CON (RF)	0.09779	0.67816	7.07209
	B->CON (RF)	0.09215	0.67240	7.14893
	CI->CON (RF)	0.08995	0.70913	7.66315

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->S (-R)	0.38386	2.37582	26.42700
	B->S (-R)	0.39043	2.36273	25.82450
	CI->S (-R)	0.34791	2.33949	26.56760
	CON->S (RR)	0.10424	0.76920	7.54973
sky130_osu_sc_18T_ls__addf_l	A->S (-R)	0.36653	2.20129	22.19260
	B->S (-R)	0.37398	2.19792	21.84970
	CI->S (-R)	0.33063	2.16562	22.34820
	CON->S (RR)	0.10416	0.82493	7.45311

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->S (-F)	0.29661	1.70952	18.18160
	B->S (-F)	0.30197	1.64871	17.54910
	CI->S (-F)	0.28842	1.73595	18.68890
	CON->S (FF)	0.12697	0.79473	7.09285
sky130_osu_sc_18T_ls__addf_l	A->S (-F)	0.27963	1.56031	15.05030
	B->S (-F)	0.28526	1.51224	14.66440
	CI->S (-F)	0.27116	1.58773	15.58740
	CON->S (FF)	0.12124	0.80417	6.80411

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00365	0.00376	0.00587
	B	0.00559	0.00556	0.00710
	CI	0.00590	0.00612	0.00835
sky130_osu_sc_18T_ls__addf_l	A	0.00331	0.00298	0.00399
	B	0.00465	0.00448	0.00547
	CI	0.00495	0.00504	0.00646

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01560	0.01587	0.02044
	B	0.01645	0.01679	0.02039
	CI	0.01436	0.01499	0.01873
sky130_osu_sc_18T_ls__addf_l	A	0.01570	0.01573	0.01775
	B	0.01549	0.01575	0.01791
	CI	0.01341	0.01393	0.01629

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01662	0.01664	0.01789
	B	0.01641	0.01669	0.01790
	CI	0.01434	0.01483	0.01632
sky130_osu_sc_18T_ls__addf_l	A	0.01569	0.01567	0.01690
	B	0.01548	0.01570	0.01696
	CI	0.01339	0.01385	0.01531

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00420	0.00399	0.00458
	B	0.00554	0.00543	0.00612
	CI	0.00588	0.00603	0.00701
sky130_osu_sc_18T_ls__addf_l	A	0.00327	0.00297	0.00355
	B	0.00462	0.00441	0.00508
	CI	0.00494	0.00499	0.00598

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01560	0.01586	0.02027
	B	0.01644	0.01678	0.02020
	CI	0.01436	0.01499	0.01851
sky130_osu_sc_18T_ls__addf_l	A	0.01570	0.01573	0.01773
	B	0.01549	0.01575	0.01791
	CI	0.01341	0.01393	0.01624

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.03522	0.03562	0.03696
	B	0.03119	0.03063	0.03541
	CI	0.02842	0.02844	0.03028
sky130_osu_sc_18T_ls__addf_l	A	0.03398	0.03405	0.03557
	B	0.02998	0.02922	0.03424
	CI	0.02721	0.02715	0.02915

SKY130_OSU_SC_18T_LS__ADDHx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__addh_1	27.83880
sky130_osu_sc_18T_ls__addh_l	27.83880

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_18T_ls__addh_1	0.01052	0.01143	2.09067	1.08131	2.12731
sky130_osu_sc_18T_ls__addh_l	0.01052	0.01143	1.20809	1.06508	1.22454

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addh_1	0.00000	0.00232	0.00253
sky130_osu_sc_18T_ls__addh_l	0.00000	0.00300	0.00362

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->CO (RR)	0.12286	0.78113	7.32458
	B->CO (RR)	0.12726	0.77916	7.41031
sky130_osu_sc_18T_ls__addh_l	A->CO (RR)	0.12663	0.88430	7.33503
	B->CO (RR)	0.13098	0.88643	7.42122

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->CO (FF)	0.11061	0.76569	7.10268
	B->CO (FF)	0.11820	0.78077	7.15292
sky130_osu_sc_18T_ls__addh_l	A->CO (FF)	0.10869	0.78766	6.56489
	B->CO (FF)	0.11599	0.80327	6.61799

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->CON (RR)	B	0.17070	0.65807	3.94328
	A->CON (FR)	!B	0.11298	1.08937	12.11460
	B->CON (RR)	A	0.17518	0.65729	4.02029
	B->CON (FR)	!A	0.13955	1.11489	12.01590
sky130_osu_sc_18T_ls__addh_l	A->CON (RR)	B	0.15231	0.62453	3.78065
	A->CON (FR)	!B	0.09995	1.06677	11.99090
	B->CON (RR)	A	0.15680	0.62662	3.86756
	B->CON (FR)	!A	0.12648	1.09502	11.89120

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->CON (FF)	B	0.16071	0.81959	6.25030
	A->CON (RF)	!B	0.06072	0.67407	7.71031
	B->CON (FF)	A	0.16108	0.85575	6.61507
	B->CON (RF)	!A	0.07141	0.66413	7.38651
sky130_osu_sc_18T_ls__addh_l	A->CON (FF)	B	0.14567	0.78074	5.98470
	A->CON (RF)	!B	0.05619	0.66503	7.64284
	B->CON (FF)	A	0.14574	0.81775	6.34687
	B->CON (RF)	!A	0.06703	0.65672	7.32153

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->S (RR)	!B	0.12914	1.84038	25.51830
	A->S (FR)	B	0.22926	1.95819	23.68460
	B->S (RR)	!A	0.13921	1.77663	24.31510
	B->S (FR)	A	0.23101	2.04815	24.92650
	CON->S (FR)	-	0.04138	0.90939	12.49690
sky130_osu_sc_18T_ls__addh_l	A->S (RR)	!B	0.13123	1.69870	19.61460
	A->S (FR)	B	0.22097	1.79818	17.76460
	B->S (RR)	!A	0.14161	1.65265	18.87170
	B->S (FR)	A	0.22238	1.87034	18.55300
	CON->S (FR)	-	0.04914	1.04088	12.62590

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->S (FF)	!B	0.16651	2.26274	31.26700
	A->S (RF)	B	0.21503	1.47945	16.79330
	B->S (FF)	!A	0.19320	2.29085	31.21990
	B->S (RF)	A	0.21948	1.47825	16.87640
	CON->S (RF)	-	0.02562	0.63008	8.67572
sky130_osu_sc_18T_ls__addh_l	A->S (FF)	!B	0.15758	1.92394	22.11910
	A->S (RF)	B	0.19940	1.27986	11.41560
	B->S (FF)	!A	0.18429	1.95201	22.03110
	B->S (RF)	A	0.20387	1.28161	11.49780
	CON->S (RF)	-	0.02899	0.67079	8.22857

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00718	0.00681	0.00734
	B	0.00000	0.00000	0.00000
	B	0.00646	0.00605	0.00612
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00587	0.00542	0.00709
	B	0.00000	0.00000	0.00000
	B	0.00515	0.00466	0.00588

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.01132	0.01088	0.01200
	B	0.00000	0.00000	0.00000
	B	0.01172	0.01182	0.01304
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00999	0.00952	0.01105
	B	0.00000	0.00000	0.00000
	B	0.01040	0.01039	0.01197

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00718	0.00683	0.00794
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00980	0.00980	0.01022
	B	A	0.00000	0.00000	0.00000
	B	A	0.00645	0.00607	0.00689
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01101	0.01099	0.01112
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00586	0.00541	0.00673
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00895	0.00874	0.00921
	B	A	0.00000	0.00000	0.00000
	B	A	0.00514	0.00465	0.00554
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01016	0.01006	0.01011

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.01131	0.01092	0.01200
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00153	0.00150	0.00124
	B	A	0.00000	0.00000	0.00000
	B	A	0.01172	0.01182	0.01343
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00261	0.00245	0.00243
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00999	0.00953	0.01086
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00039	0.00034	0.00027
	B	A	0.00000	0.00000	0.00000
	B	A	0.01040	0.01038	0.01194
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00147	0.00129	0.00128

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.01133	0.01089	0.01215
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00154	0.00157	0.00162
	B	A	0.00000	0.00000	0.00000
	B	A	0.01173	0.01184	0.01332
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00263	0.00251	0.00251
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01000	0.00954	0.01073
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00040	0.00036	0.00043
	B	A	0.00000	0.00000	0.00000
	B	A	0.01041	0.01040	0.01204
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00149	0.00129	0.00122

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00718	0.00682	0.00799
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00981	0.00990	0.01026
	B	A	0.00000	0.00000	0.00000
	B	A	0.00646	0.00605	0.00605
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01102	0.01107	0.01127
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00587	0.00541	0.00760
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00895	0.00894	0.00923
	B	A	0.00000	0.00000	0.00000
	B	A	0.00515	0.00465	0.00639
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01017	0.01008	0.01013

SKY130_OSU_SC_18T_LS__AND2x

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__and2_1	12.45420
sky130_osu_sc_18T_ls__and2_2	15.38460
sky130_osu_sc_18T_ls__and2_4	21.24540
sky130_osu_sc_18T_ls__and2_6	27.10620
sky130_osu_sc_18T_ls__and2_8	32.96700
sky130_osu_sc_18T_ls__and2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__and2_1	0.00565	0.00575	2.11936
sky130_osu_sc_18T_ls__and2_2	0.00565	0.00575	4.13482
sky130_osu_sc_18T_ls__and2_4	0.00565	0.00576	7.89732
sky130_osu_sc_18T_ls__and2_6	0.00569	0.00575	11.69468
sky130_osu_sc_18T_ls__and2_8	0.00567	0.00577	15.01158
sky130_osu_sc_18T_ls__and2_l	0.00433	0.00443	1.46577

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__and2_1	0.00000	0.00102	0.00151
sky130_osu_sc_18T_ls__and2_2	0.00000	0.00151	0.00204
sky130_osu_sc_18T_ls__and2_4	0.00000	0.00251	0.00310
sky130_osu_sc_18T_ls__and2_6	0.00000	0.00351	0.00417
sky130_osu_sc_18T_ls__and2_8	0.00000	0.00451	0.00523
sky130_osu_sc_18T_ls__and2_l	0.00000	0.00061	0.00091

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__and2_1	A->Y (RR)	0.09396	0.70324	7.02328
	B->Y (RR)	0.09939	0.71118	7.10699
sky130_osu_sc_18T_ls__and2_2	A->Y (RR)	0.10846	0.65111	7.20394
	B->Y (RR)	0.11391	0.65207	7.27123
sky130_osu_sc_18T_ls__and2_4	A->Y (RR)	0.14945	0.67612	7.61716
	B->Y (RR)	0.15467	0.66675	7.66471
sky130_osu_sc_18T_ls__and2_6	A->Y (RR)	0.18822	0.72021	8.00121
	B->Y (RR)	0.19350	0.70625	8.03230
sky130_osu_sc_18T_ls__and2_8	A->Y (RR)	0.22708	0.77001	8.24661
	B->Y (RR)	0.23239	0.75123	8.25775
sky130_osu_sc_18T_ls__and2_l	A->Y (RR)	0.10420	0.78619	7.04174
	B->Y (RR)	0.10999	0.79417	7.12486

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__and2_1	A->Y (FF)	0.08460	0.68300	6.57747
	B->Y (FF)	0.09026	0.70278	6.68576
sky130_osu_sc_18T_ls__and2_2	A->Y (FF)	0.09904	0.66704	6.79194
	B->Y (FF)	0.10530	0.68181	6.87333
sky130_osu_sc_18T_ls__and2_4	A->Y (FF)	0.13842	0.70589	7.18196
	B->Y (FF)	0.14477	0.71678	7.24231
sky130_osu_sc_18T_ls__and2_6	A->Y (FF)	0.18070	0.75500	7.51368
	B->Y (FF)	0.18694	0.76420	7.57164
sky130_osu_sc_18T_ls__and2_8	A->Y (FF)	0.21967	0.79689	7.62386
	B->Y (FF)	0.22605	0.80515	7.68789
sky130_osu_sc_18T_ls__and2_l	A->Y (FF)	0.09079	0.73097	6.49881
	B->Y (FF)	0.09782	0.75289	6.60382

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00556	0.00509	0.01067
	B	0.00000	0.00000	0.00000
	B	0.00566	0.00481	0.00830
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01106	0.01080	0.01631
	B	0.00000	0.00000	0.00000
	B	0.01116	0.01074	0.01420
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02283	0.02338	0.02932
	B	0.00000	0.00000	0.00000
	B	0.02289	0.02348	0.02756
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03450	0.03579	0.04148
	B	0.00000	0.00000	0.00000
	B	0.03467	0.03594	0.03979
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04628	0.04782	0.05353
	B	0.00000	0.00000	0.00000
	B	0.04647	0.04814	0.05185
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00408	0.00355	0.00777
	B	0.00000	0.00000	0.00000
	B	0.00417	0.00349	0.00609

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.01356	0.01371	0.01935
	B	0.00000	0.00000	0.00000
	B	0.01528	0.01525	0.02052
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01719	0.01813	0.02373
	B	0.00000	0.00000	0.00000
	B	0.01892	0.01961	0.02474
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02606	0.02846	0.03418
	B	0.00000	0.00000	0.00000
	B	0.02779	0.02974	0.03499
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03494	0.03874	0.04502
	B	0.00000	0.00000	0.00000
	B	0.03677	0.03982	0.04535
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04413	0.04867	0.05562
	B	0.00000	0.00000	0.00000
	B	0.04565	0.04948	0.05547
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.01042	0.01042	0.01452
	B	0.00000	0.00000	0.00000
	B	0.01170	0.01163	0.01546

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00518	-0.00523	-0.00522
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00518	-0.00523	-0.00522
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00516	-0.00523	-0.00522
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00519	-0.00525	-0.00524
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00516	-0.00523	-0.00522
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00377	-0.00380	-0.00379

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00521	0.00526	0.00524
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00521	0.00526	0.00524
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00521	0.00526	0.00524
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00524	0.00528	0.00526
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00522	0.00525	0.00524
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00379	0.00382	0.00381

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00492	-0.00494	-0.00493
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00492	-0.00494	-0.00493
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00492	-0.00493	-0.00493
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00492	-0.00494	-0.00493
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00492	-0.00494	-0.00493
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00357	-0.00358	-0.00358

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00495	0.00498	0.00494
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00495	0.00498	0.00494
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00495	0.00498	0.00494
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00495	0.00498	0.00494
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00495	0.00498	0.00494
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00360	0.00360	0.00359

SKY130_OSU_SC_18T_LS__AOI21

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__aoi21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ls__aoi21_l	0.00534	0.00555	0.00540	0.99776

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi21_l	0.00000	0.00048	0.00074

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi21_l	A0->Y (FR)	0.10867	1.09609	11.84200
	A1->Y (FR)	0.09306	1.04494	11.46320
	B0->Y (FR)	0.07947	1.06658	12.03110

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi21_l	A0->Y (RF)	0.05591	0.60895	6.68857
	A1->Y (RF)	0.05076	0.62915	7.06219
	B0->Y (RF)	0.03432	0.59979	7.00835

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.01211	0.01199	0.01211
	A1	0.00000	0.00000	0.00000
	A1	0.01025	0.01009	0.01017
	B0	0.00939	0.00883	0.00971

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00230	0.00187	0.00204
	A1	0.00000	0.00000	0.00000
	A1	0.00234	0.00190	0.00224
	B0	-0.00127	-0.00130	-0.00104

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00438	-0.00461	-0.00458
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00466	-0.00470	-0.00467
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00466	-0.00468	-0.00467

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00455	0.00461	0.00458
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00467	0.00470	0.00469
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00470	0.00470	0.00469

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00434	-0.00455	-0.00453
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00460	-0.00462	-0.00462
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00496	-0.00497	-0.00500

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00450	0.00455	0.00453
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00461	0.00467	0.00463
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00499	0.00504	0.00502

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00218	-0.00220	-0.00219

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00240	0.00242	0.00225

SKY130_OSU_SC_18T_LS__AOI22

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__aoi22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ls__aoi22_1	0.00535	0.00555	0.00575	0.00551	0.97746

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi22_1	0.00000	0.00074	0.00106

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi22_l	A0->Y (FR)	0.13815	1.13971	11.90800
	A1->Y (FR)	0.12301	1.10458	11.70860
	B0->Y (FR)	0.08429	1.06135	11.88940
	B1->Y (FR)	0.09960	1.10364	12.13780

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi22_l	A0->Y (RF)	0.07344	0.62459	6.63314
	A1->Y (RF)	0.06832	0.64464	7.00566
	B0->Y (RF)	0.03864	0.60960	6.97284
	B1->Y (RF)	0.04391	0.58913	6.60218

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.01485	0.01457	0.01479
	A1	0.01302	0.01273	0.01294
	B0	0.01006	0.00926	0.01035
	B1	0.01182	0.01158	0.01225

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.00496	0.00452	0.00462
	A1	0.00500	0.00457	0.00484
	B0	-0.00075	-0.00081	-0.00047
	B1	-0.00063	-0.00084	-0.00061

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00441	-0.00459	-0.00458
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00466	-0.00468	-0.00467
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00466	-0.00468	-0.00467
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00466	-0.00468	-0.00467

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00455	0.00459	0.00458
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00467	0.00470	0.00469
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00470	0.00470	0.00468
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00470	0.00470	0.00468

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00436	-0.00456	-0.00453
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00461	-0.00463	-0.00462
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00496	-0.00497	-0.00500
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00496	-0.00496	-0.00500

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00450	0.00456	0.00453
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00461	0.00467	0.00463
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00498	0.00504	0.00501
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00498	0.00504	0.00501

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00219	-0.00221	-0.00220
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00218	-0.00220	-0.00219
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00508	-0.00511	-0.00512
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00508	-0.00511	-0.00512

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00251	0.00252	0.00228
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00219	0.00220	0.00219
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00511	0.00519	0.00513
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00511	0.00519	0.00513

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00220	-0.00222	-0.00221
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00220	-0.00222	-0.00220
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00473	-0.00476	-0.00474
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00473	-0.00476	-0.00474

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00252	0.00253	0.00229
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00220	0.00222	0.00220
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00477	0.00478	0.00475
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00477	0.00478	0.00475

SKY130_OSU_SC_18T_LS__BUFx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__buf_1	9.52380
sky130_osu_sc_18T_ls__buf_2	12.45420
sky130_osu_sc_18T_ls__buf_4	18.31500
sky130_osu_sc_18T_ls__buf_6	24.17580
sky130_osu_sc_18T_ls__buf_8	30.03660
sky130_osu_sc_18T_ls__buf_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ls__buf_1	0.00575	2.09836
sky130_osu_sc_18T_ls__buf_2	0.00576	4.16493
sky130_osu_sc_18T_ls__buf_4	0.00575	7.95575
sky130_osu_sc_18T_ls__buf_6	0.00098	1.80000
sky130_osu_sc_18T_ls__buf_8	0.00577	15.25298
sky130_osu_sc_18T_ls__buf_l	0.00447	1.47779

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__buf_1	0.00000	0.00102	0.00102
sky130_osu_sc_18T_ls__buf_2	0.00000	0.00153	0.00155
sky130_osu_sc_18T_ls__buf_4	0.00000	0.00255	0.00262
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ls__buf_8	0.00000	0.00459	0.00474
sky130_osu_sc_18T_ls__buf_l	0.00000	0.00056	0.00056

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__buf_1	**A->Y (RR)**	0.07232	0.66333	6.89958
sky130_osu_sc_18T_ls__buf_2	**A->Y (RR)**	0.08045	0.60343	7.14061
sky130_osu_sc_18T_ls__buf_4	**A->Y (RR)**	0.10852	0.60679	7.47075
sky130_osu_sc_18T_ls__buf_8	**A->Y (RR)**	0.16162	0.67178	8.02283
sky130_osu_sc_18T_ls__buf_l	**A->Y (RR)**	0.08058	0.74704	6.98721

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__buf_1	**A->Y (FF)**	0.08033	0.67300	6.49174
sky130_osu_sc_18T_ls__buf_2	**A->Y (FF)**	0.09546	0.66100	6.81350
sky130_osu_sc_18T_ls__buf_4	**A->Y (FF)**	0.13512	0.70078	7.18582
sky130_osu_sc_18T_ls__buf_8	**A->Y (FF)**	0.21640	0.79410	7.68968
sky130_osu_sc_18T_ls__buf_l	**A->Y (FF)**	0.08772	0.72572	6.48534

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00510	0.00440	0.00954
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01064	0.01021	0.01523
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02247	0.02280	0.02745
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.04577	0.04770	0.05351
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00385	0.00342	0.00706

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.01310	0.01312	0.01862
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01669	0.01737	0.02279
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02560	0.02764	0.03309
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.04352	0.04756	0.05400
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.01016	0.01005	0.01409

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00066	-0.00067	-0.00066

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
	0.00066	0.00067	0.00066

SKY130_OSU_SC_18T_LS__DFFRx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__dffr_1	63.73620
sky130_osu_sc_18T_ls__dffr_l	63.73620

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_18T_ls__dffr_1	0.00550	0.00549	0.01589	2.06160	2.06113
sky130_osu_sc_18T_ls__dffr_l	0.00550	0.00549	0.01588	1.47984	1.46218

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffr_1	0.00000	0.00393	0.00440
sky130_osu_sc_18T_ls__dffr_l	0.00000	0.00347	0.00394

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffr_1	CK->Q (RR)	0.37707	1.58108	15.84430
	QN->Q (FR)	0.04288	0.97059	13.32220
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RR)	0.36804	1.68954	15.57380
	QN->Q (FR)	0.04576	1.02703	13.06160

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffr_1	CK->Q (RF)	0.36868	1.60909	16.52660
	QN->Q (RF)	0.03158	0.74477	10.17780
	RN->Q (FF)	0.27007	1.67904	18.54290
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RF)	0.37306	1.75424	16.44910
	QN->Q (RF)	0.03228	0.75395	9.59945
	RN->Q (FF)	0.27554	1.82445	18.45950

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffr_1	CK->QN (RR)	0.32651	0.95259	7.28889
	RN->QN (FR)	0.22782	1.02311	9.30565
sky130_osu_sc_18T_ls__dffr_l	CK->QN (RR)	0.32649	1.01736	7.28281
	RN->QN (FR)	0.22878	1.08710	9.29005

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffr_1	**CK->QN (RF)**	0.31611	0.80186	4.93145
sky130_osu_sc_18T_ls__dffr_l	**CK->QN (RF)**	0.30214	0.80765	4.67702

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	hold	CK (R)	-0.07778	-0.10197	-0.36965
	setup	CK (R)	0.29686	0.33166	1.55520
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.07491	-0.10313	-0.36911
	setup	CK (R)	0.29726	0.33321	1.57108

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	hold	CK (R)	-0.15588	-0.48260	-4.29205
	setup	CK (R)	0.19095	0.49582	4.45775
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.15727	-0.48201	-4.28052
	setup	CK (R)	0.18794	0.49582	4.45767

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	hold	CK (R)	-0.07778	-0.10197	-0.36965
	setup	CK (R)	0.29686	0.33166	1.55520
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.07491	-0.10313	-0.36911
	setup	CK (R)	0.29726	0.33321	1.57108

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	hold	CK (R)	-0.15588	-0.48260	-4.29205
	setup	CK (R)	0.19095	0.49582	4.45775
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.15727	-0.48201	-4.28052
	setup	CK (R)	0.18794	0.49582	4.45767

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	recovery	CK (R)	0.24454	0.28082	1.50405
	removal	CK (R)	-0.04434	-0.05217	-0.10391
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.24630	0.28252	1.51388
	removal	CK (R)	-0.04434	-0.05217	-0.10391

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	recovery	CK (R)	0.24454	0.28082	1.50405
	removal	CK (R)	-0.04434	-0.05217	-0.10391
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.24630	0.28252	1.51388
	removal	CK (R)	-0.04434	-0.05217	-0.10391

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	min_pulse_width	RN ()	0.16250	0.53589	13.33370
	min_pulse_width	RN ()	0.16049	0.53589	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	RN ()	0.15848	0.53589	13.33370
	min_pulse_width	RN ()	0.15647	0.53589	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_18T_ls__dffr_1	min_pulse_width	CK ()	0.17053	0.53589	13.33370
	min_pulse_width	CK ()	0.18859	0.53589	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.15848	0.53589	13.33370
	min_pulse_width	CK ()	0.18458	0.53589	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_18T_ls__dffr_1	min_pulse_width	CK ()	0.37931	0.53589	13.33370
	min_pulse_width	CK ()	0.15246	0.53589	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.37931	0.53589	13.33370
	min_pulse_width	CK ()	0.15246	0.53589	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01277	0.00888	0.00000
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01126	0.00840	-0.00323

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01503	0.01294	0.00000
	RN	-0.00175	-0.09888	-1.45466
	RN	0.03451	0.03257	0.01329
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01349	0.01197	0.00323
	RN	-0.00175	-0.08104	-1.04417
	RN	0.03296	0.03159	0.02283

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01502	0.01299	0.00000
	RN	-0.00175	-0.09887	-1.45431
	RN	0.03450	0.03257	0.01327
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01349	0.01199	0.00336
	RN	-0.00175	-0.08046	-1.03171
	RN	0.03296	0.03159	0.02289

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01273	0.00887	0.00000
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01123	0.00833	-0.00336

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00416	-0.00456	-0.00455
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01566	0.01474	0.01744
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00713	0.00629	0.00910
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00416	-0.00456	-0.00455
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01566	0.01474	0.01744
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00713	0.00629	0.00910

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00452	0.00458	0.00455
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02702	0.02660	0.02877
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01256	0.01226	0.01466
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00452	0.00458	0.00455
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02702	0.02660	0.02877
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01256	0.01226	0.01466

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00497	0.00418	0.00966
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01389	0.01272	0.01799
sky130_osu_sc_18T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00497	0.00418	0.00966
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01389	0.01272	0.01799

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01186	0.01158	0.01764
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02583	0.02496	0.03058
sky130_osu_sc_18T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01186	0.01158	0.01764
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02583	0.02496	0.03058

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00092	-0.00185	0.00344
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00759	0.00566	0.01071
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00146	-0.00244	0.00291
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00092	-0.00185	0.00344
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00759	0.00566	0.01071
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00146	-0.00244	0.00291

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01866	0.01858	0.02435
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04093	0.03955	0.04433
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03148	0.03067	0.03568
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04026	0.03975	0.05068
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02145	0.02111	0.02672
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01865	0.01859	0.02435
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04093	0.03955	0.04433
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03148	0.03067	0.03568
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04026	0.03976	0.05068
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02145	0.02111	0.02672

SKY130_OSU_SC_18T_LS__DFFSRx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__dffsr_1	69.59700
sky130_osu_sc_18T_ls__dffsr_l	69.59700

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_18T_ls__dffsr_1	0.00545	0.00550	0.01171	0.01613	2.16268	2.14739
sky130_osu_sc_18T_ls__dffsr_l	0.00545	0.00550	0.01170	0.01613	1.47256	1.46949

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ls__dffsr_1	0.00000	0.00415	0.00466
sky130_osu_sc_18T_ls__dffsr_l	0.00000	0.00369	0.00420

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffsr_1	CK->Q (RR)	0.38621	1.58378	15.94180
	QN->Q (FR)	0.04080	0.95381	13.24730
	RN->Q (RR)	0.30824	1.51926	15.98440
	SN->Q (FR)	0.29189	1.67084	18.38870
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RR)	0.38837	1.71633	15.55560
	QN->Q (FR)	0.04569	1.02380	12.99090
	RN->Q (RR)	0.31091	1.65328	15.59390
	SN->Q (FR)	0.29412	1.80202	17.97020

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffsr_1	CK->Q (RF)	0.41291	1.64658	16.71500
	QN->Q (RF)	0.02883	0.70583	9.73250
	RN->Q (FF)	0.28004	1.68686	18.76780
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RF)	0.42243	1.80392	16.41680
	QN->Q (RF)	0.03221	0.75160	9.56452
	RN->Q (FF)	0.28991	1.84341	18.45590

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffsr_1	CK->QN (RR)	0.37189	1.00067	7.41862
	RN->QN (FR)	0.23965	1.04101	9.46806
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RR)	0.37517	1.07188	7.37036
	RN->QN (FR)	0.24278	1.11217	9.41118

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffsr_1	CK->QN (RF)	0.32949	0.81478	4.93856
	RN->QN (RF)	0.25195	0.75117	4.97745
	SN->QN (FF)	0.23560	0.90248	7.38064
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RF)	0.32405	0.84088	4.77421
	RN->QN (RF)	0.24699	0.77814	4.81083
	SN->QN (FF)	0.23035	0.92715	7.18506

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	hold	CK (R)	-0.08058	-0.11162	-0.44256
	setup	CK (R)	0.29002	0.32363	1.57563
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.08326	-0.11295	-0.44134
	setup	CK (R)	0.29018	0.32316	1.57478

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	hold	CK (R)	-0.17625	-0.50212	-4.45741
	setup	CK (R)	0.22055	0.51808	4.58630
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.17555	-0.50298	-4.45799
	setup	CK (R)	0.21962	0.51669	4.58699

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	hold	CK (R)	-0.08058	-0.11162	-0.44256
	setup	CK (R)	0.29002	0.32363	1.57563
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.08326	-0.11295	-0.44134
	setup	CK (R)	0.29018	0.32316	1.57478

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	hold	CK (R)	-0.17625	-0.50212	-4.45741
	setup	CK (R)	0.22055	0.51808	4.58630
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.17555	-0.50298	-4.45799
	setup	CK (R)	0.21962	0.51669	4.58699

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	recovery	CK (R)	0.22046	0.24800	1.42477
	removal	CK (R)	-0.02615	-0.03051	-0.07125
	hold	SN (R)	-0.22671	-0.44732	-2.30947
	setup	SN (R)	0.25277	0.49686	5.80008
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.22166	0.24690	1.41412
	removal	CK (R)	-0.02615	-0.03051	-0.06831
	hold	SN (R)	-0.22039	-0.43775	-2.24715
	setup	SN (R)	0.25016	0.48798	5.74055

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	recovery	CK (R)	0.22046	0.24800	1.42477
	removal	CK (R)	-0.02615	-0.03051	-0.07125
	hold	SN (R)	-0.22671	-0.44732	-2.30947
	hold	SN (R)	-0.22853	-0.45048	-2.32089
	setup	SN (R)	0.25277	0.49678	5.53086
	setup	SN (R)	0.24829	0.49686	5.80008
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.22166	0.24690	1.41412
	removal	CK (R)	-0.02615	-0.03051	-0.06831
	hold	SN (R)	-0.22131	-0.43775	-2.24715
	hold	SN (R)	-0.22039	-0.43931	-2.26379
	setup	SN (R)	0.25016	0.48590	5.43381
	setup	SN (R)	0.23321	0.48798	5.74055

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	min_pulse_width	RN ()	0.18458	0.53589	13.33370
	min_pulse_width	RN ()	0.18659	0.53589	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	RN ()	0.18458	0.53589	13.33370
	min_pulse_width	RN ()	0.18056	0.53589	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	recovery	CK (R)	0.04933	0.09398	4.84562
	removal	CK (R)	-0.01605	-0.06968	-0.44338
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.05043	0.09365	4.66526
	removal	CK (R)	-0.01605	-0.06968	-0.44232

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	recovery	CK (R)	0.04933	0.09398	4.84562
	removal	CK (R)	-0.01605	-0.06968	-0.44338
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.05043	0.09365	4.66526
	removal	CK (R)	-0.01605	-0.06968	-0.44232

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	min_pulse_width	SN ()	0.23276	0.53589	13.33370
	min_pulse_width	SN ()	0.23075	0.53589	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	SN ()	0.23276	0.53589	13.33370
	min_pulse_width	SN ()	0.21871	0.53589	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_18T_ls__dffsr_1	min_pulse_width	CK ()	0.17253	0.53589	13.33370
	min_pulse_width	CK ()	0.20666	0.53589	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.16651	0.53589	13.33370
	min_pulse_width	CK ()	0.20465	0.53589	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_18T_ls__dffsr_1	min_pulse_width	CK ()	0.37730	0.53589	13.33370
	min_pulse_width	CK ()	0.18458	0.53589	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.37730	0.53589	13.33370
	min_pulse_width	CK ()	0.18458	0.53589	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01609	0.01330	0.00000
	RN	0.03009	0.02765	-0.00110
	SN	-0.00175	-0.10176	-1.52599
	SN	0.03356	0.03117	0.00056
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01469	0.01186	-0.00608
	RN	0.02869	0.02620	0.00361
	SN	-0.00175	-0.08081	-1.03904
	SN	0.03215	0.02975	0.00600

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01731	0.01559	0.00000
	RN	-0.00175	-0.10176	-1.52599
	RN	0.03541	0.03364	0.01738
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01592	0.01453	0.00608
	RN	-0.00175	-0.08081	-1.03904
	RN	0.03399	0.03253	0.02422

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01730	0.01560	0.00000
	RN	-0.00175	-0.10133	-1.51519
	RN	0.03541	0.03365	0.01752
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01592	0.01455	0.00612
	RN	-0.00175	-0.08070	-1.03687
	RN	0.03399	0.03253	0.02416

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01605	0.01327	0.00000
	RN	0.03005	0.02762	-0.00078
	SN	-0.00175	-0.10133	-1.51509
	SN	0.03351	0.03112	0.00173
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01465	0.01183	-0.00612
	RN	0.02864	0.02623	0.00391
	SN	-0.00175	-0.08070	-1.03679
	SN	0.03211	0.02971	0.00647

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00441	-0.00456	-0.00455
	(!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)	0.02028	0.01940	0.02209
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00812	0.00730	0.01006
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00807	0.00725	0.01000
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00816	0.00735	0.01010
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00441	-0.00456	-0.00455
	(!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)	0.02028	0.01940	0.02209
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00812	0.00730	0.01006
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00807	0.00726	0.01000
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00816	0.00735	0.01010

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00456	0.00458	0.00455
	(!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)	0.03065	0.03021	0.03202
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01330	0.01303	0.01534
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01334	0.01307	0.01536
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01325	0.01298	0.01528
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00456	0.00458	0.00455
	(!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)	0.03064	0.03021	0.03202
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01329	0.01302	0.01533
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01333	0.01306	0.01535
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01324	0.01297	0.01527

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.00419	0.00343	0.00870
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01666	0.01550	0.02062
sky130_osu_sc_18T_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)	0.00419	0.00343	0.00870
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01666	0.01550	0.02063

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.01282	0.01257	0.01875
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02738	0.02638	0.03200
sky130_osu_sc_18T_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)	0.01281	0.01256	0.01873
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02737	0.02637	0.03199

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	-0.01029	-0.01031	-0.01037
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01039	-0.01062	-0.01060
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01011	-0.01026	-0.01022
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00668	0.00584	0.00925
sky130_osu_sc_18T_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)	-0.01029	-0.01031	-0.01037
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01037	-0.01061	-0.01058
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01010	-0.01025	-0.01022
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00669	0.00585	0.00926

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.01033	0.01045	0.01040
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01053	0.01063	0.01060
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01019	0.01029	0.01023
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02095	0.02049	0.02242
sky130_osu_sc_18T_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)	0.01033	0.01045	0.01040
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01051	0.01061	0.01058
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01018	0.01028	0.01023
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02094	0.02048	0.02241

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00092	-0.00185	0.00343
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00857	0.00677	0.01175
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00848	0.00666	0.01169
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00124	-0.00222	0.00315
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00602	0.00406	0.01489
sky130_osu_sc_18T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00092	-0.00185	0.00343
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00856	0.00676	0.01174
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00847	0.00665	0.01168
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00124	-0.00222	0.00315
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00602	0.00406	0.01489

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_18T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04566	0.04435	0.04910
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01871	0.01868	0.02435
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03212	0.03135	0.03639
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03223	0.03152	0.03660
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04382	0.04325	0.05370
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02127	0.02092	0.02654
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02488	0.02475	0.03592
sky130_osu_sc_18T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04566	0.04436	0.04911
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01871	0.01868	0.02433
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03212	0.03135	0.03639
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03223	0.03152	0.03660
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04381	0.04324	0.05370
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02127	0.02092	0.02654
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02487	0.02474	0.03591

SKY130_OSU_SC_18T_LS__DFFSx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__dffs_1	57.87540
sky130_osu_sc_18T_ls__dffs_l	57.87540

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_18T_ls__dffs_1	0.00548	0.00926	0.01589	2.06425	2.07239
sky130_osu_sc_18T_ls__dffs_l	0.00548	0.00926	0.01589	1.46525	1.47556

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffs_1	0.00000	0.00345	0.00444
sky130_osu_sc_18T_ls__dffs_l	0.00000	0.00298	0.00398

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffs_1	CK->Q (RR)	0.27776	1.46390	15.69470
	QN->Q (FR)	0.04269	0.96597	13.23510
	SN->Q (FR)	0.21935	1.62243	18.09660
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RR)	0.27664	1.57682	15.27420
	QN->Q (FR)	0.04558	1.01696	12.91830
	SN->Q (FR)	0.21758	1.72929	17.63690

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffs_1	CK->Q (RF)	0.40729	1.65067	16.51990
	QN->Q (RF)	0.03133	0.74184	10.13960
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RF)	0.40918	1.78402	16.27870
	QN->Q (RF)	0.03208	0.74603	9.51742

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffs_1	CK->QN (RR)	0.36365	0.99582	7.32963
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RR)	0.36126	1.05837	7.35535

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffs_1	CK->QN (RF)	0.22309	0.68950	4.83387
	SN->QN (FF)	0.16416	0.84913	7.23631
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RF)	0.21680	0.70775	4.60570
	SN->QN (FF)	0.15730	0.86122	6.96557

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	hold	CK (R)	-0.05956	-0.08721	-0.33840
	setup	CK (R)	0.19471	0.24021	1.59969
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.05816	-0.08894	-0.33551
	setup	CK (R)	0.19617	0.24291	1.60916

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	hold	CK (R)	-0.16008	-0.48477	-3.87262
	setup	CK (R)	0.20793	0.50146	4.47123
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.15700	-0.48409	-3.82580
	setup	CK (R)	0.20776	0.50146	4.47120

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	hold	CK (R)	-0.05956	-0.08721	-0.33840
	setup	CK (R)	0.19471	0.24021	1.59969
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.05816	-0.08894	-0.33551
	setup	CK (R)	0.19617	0.24291	1.60916

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	hold	CK (R)	-0.16008	-0.48477	-3.87262
	setup	CK (R)	0.20793	0.50146	4.47123
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.15700	-0.48409	-3.82580
	setup	CK (R)	0.20776	0.50146	4.47120

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	recovery	CK (R)	0.05628	0.09355	3.82431
	removal	CK (R)	-0.01988	-0.06315	-0.41948
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.05599	0.09345	3.69563
	removal	CK (R)	-0.01988	-0.06315	-0.41948

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	recovery	CK (R)	0.05628	0.09355	3.82431
	removal	CK (R)	-0.01988	-0.06315	-0.41948
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.05599	0.09345	3.69563
	removal	CK (R)	-0.01988	-0.06315	-0.41948

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	min_pulse_width	SN ()	0.14844	0.53589	13.33370
	min_pulse_width	SN ()	0.15045	0.53589	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	SN ()	0.14644	0.53589	13.33370
	min_pulse_width	SN ()	0.14242	0.53589	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_18T_ls__dffs_1	min_pulse_width	CK ()	0.11632	0.53589	13.33370
	min_pulse_width	CK ()	0.19863	0.53589	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.11030	0.53589	13.33370
	min_pulse_width	CK ()	0.19462	0.53589	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_18T_ls__dffs_1	min_pulse_width	CK ()	0.28094	0.53589	13.33370
	min_pulse_width	CK ()	0.17454	0.53589	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.27893	0.53589	13.33370
	min_pulse_width	CK ()	0.17454	0.53589	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01280	0.00888	0.00000
	SN	-0.00175	-0.09896	-1.45654
	SN	0.02833	0.02456	-0.01660
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01127	0.00835	-0.00398
	SN	-0.00175	-0.08056	-1.03388
	SN	0.02680	0.02414	0.00307

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01494	0.01302	0.00000
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01342	0.01200	0.00398

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01494	0.01301	0.00000
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01342	0.01201	0.00389

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01276	0.00886	0.00000
	SN	-0.00175	-0.09919	-1.46212
	SN	0.02829	0.02453	-0.01622
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01123	0.00835	-0.00389
	SN	-0.00175	-0.08090	-1.04108
	SN	0.02676	0.02405	0.00280

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00446	-0.00460	-0.00460
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01504	0.01403	0.01672
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00697	0.00613	0.00894
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00446	-0.00460	-0.00460
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01504	0.01403	0.01672
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00697	0.00613	0.00894

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00461	0.00463	0.00460
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02633	0.02581	0.02798
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01278	0.01248	0.01491
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00461	0.00463	0.00460
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02633	0.02581	0.02798
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01278	0.01248	0.01491

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00754	-0.00757	-0.00757
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00571	0.00510	0.00836
sky130_osu_sc_18T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00754	-0.00757	-0.00757
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00571	0.00510	0.00836

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00757	0.00765	0.00759
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01434	0.01384	0.01755
sky130_osu_sc_18T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00757	0.00765	0.00759
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01434	0.01384	0.01755

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00094	-0.00187	0.00342
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00136	-0.00234	0.00301
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00482	0.00284	0.01388
sky130_osu_sc_18T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00094	-0.00187	0.00342
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00136	-0.00234	0.00301
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00482	0.00284	0.01388

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04027	0.03896	0.04379
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01866	0.01860	0.02436
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03946	0.03877	0.04971
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02133	0.02103	0.02661
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02427	0.02409	0.03558
sky130_osu_sc_18T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04027	0.03896	0.04379
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01866	0.01861	0.02436
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03946	0.03881	0.04971
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02133	0.02103	0.02661
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02427	0.02412	0.03558

SKY130_OSU_SC_18T_LS__DFFx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__dff_1	48.35160
sky130_osu_sc_18T_ls__dff_l	48.35160

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_18T_ls__dff_1	0.00564	0.01579	2.16656	2.14655
sky130_osu_sc_18T_ls__dff_l	0.00564	0.01577	1.45200	1.45474

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dff_1	0.00000	0.00380	0.00415
sky130_osu_sc_18T_ls__dff_l	0.00000	0.00334	0.00369

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dff_1	CK->Q (RR)	0.24609	1.41990	15.74690
	QN->Q (FR)	0.04053	0.95143	13.20640
sky130_osu_sc_18T_ls__dff_l	CK->Q (RR)	0.25369	1.55771	15.21800
	QN->Q (FR)	0.04635	1.02901	13.03750

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dff_1	CK->Q (RF)	0.34782	1.57295	16.61890
	QN->Q (RF)	0.02869	0.70379	9.71069
sky130_osu_sc_18T_ls__dff_l	CK->Q (RF)	0.35975	1.73376	16.21870
	QN->Q (RF)	0.03215	0.74529	9.47267

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dff_1	CK->QN (RR)	0.30810	0.92788	7.31195
sky130_osu_sc_18T_ls__dff_l	CK->QN (RR)	0.31335	1.00653	7.29570

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dff_1	CK->QN (RF)	0.19548	0.65341	4.74038
sky130_osu_sc_18T_ls__dff_l	CK->QN (RF)	0.19487	0.68548	4.54013

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dff_1	hold	CK (R)	-0.05546	-0.08817	-0.36697
	setup	CK (R)	0.16015	0.20968	1.57400
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.05576	-0.08845	-0.36782
	setup	CK (R)	0.16172	0.21017	1.57787

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dff_1	hold	CK (R)	-0.15026	-0.48683	-3.82377
	setup	CK (R)	0.17722	0.50056	4.50907
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.14884	-0.48703	-3.82719
	setup	CK (R)	0.17722	0.50056	4.51294

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dff_1	min_pulse_width	CK ()	0.10428	0.53589	13.33370
	min_pulse_width	CK ()	0.18257	0.53589	13.33370
sky130_osu_sc_18T_ls__dff_l	min_pulse_width	CK ()	0.10227	0.53589	13.33370
	min_pulse_width	CK ()	0.17655	0.53589	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_18T_ls__dff_1	**min_pulse_width**	**CK** ()	0.24480	0.53589	13.33370
	min_pulse_width	**CK** ()	0.13841	0.53589	13.33370
sky130_osu_sc_18T_ls__dff_l	**min_pulse_width**	**CK** ()	0.24480	0.53589	13.33370
	min_pulse_width	**CK** ()	0.13841	0.53589	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01353	0.01057	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01212	0.00916	-0.00313

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01522	0.01352	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01384	0.01234	0.00313

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01522	0.01352	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01384	0.01237	0.00314

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01349	0.01057	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01208	0.00913	-0.00314

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00416	-0.00454	-0.00454
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01414	0.01328	0.01607
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00416	-0.00454	-0.00454
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01415	0.01329	0.01608

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00451	0.00458	0.00454
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02708	0.02666	0.02883
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00451	0.00458	0.00454
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02709	0.02666	0.02883

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00095	-0.00188	0.00343
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00135	-0.00232	0.00304
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00095	-0.00188	0.00343
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00135	-0.00232	0.00304

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01860	0.01860	0.02430
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03943	0.03819	0.04316
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04001	0.03942	0.05031
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02125	0.02090	0.02653
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01860	0.01822	0.02430
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03944	0.03819	0.04317
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04002	0.03878	0.05032
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02125	0.02090	0.02653

SKY130_OSU_SC_18T_LS__INVx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__inv_1	6.59340
sky130_osu_sc_18T_ls__inv_10	32.96700
sky130_osu_sc_18T_ls__inv_2	9.52380
sky130_osu_sc_18T_ls__inv_3	12.45420
sky130_osu_sc_18T_ls__inv_4	15.38460
sky130_osu_sc_18T_ls__inv_6	21.24540
sky130_osu_sc_18T_ls__inv_8	27.10620
sky130_osu_sc_18T_ls__inv_l	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ls__inv_1	0.00553	2.09447
sky130_osu_sc_18T_ls__inv_10	0.05231	18.61832
sky130_osu_sc_18T_ls__inv_2	0.01065	4.12852
sky130_osu_sc_18T_ls__inv_3	0.01589	5.95121
sky130_osu_sc_18T_ls__inv_4	0.02103	7.97864
sky130_osu_sc_18T_ls__inv_6	0.03154	11.65229
sky130_osu_sc_18T_ls__inv_8	0.04193	15.48909
sky130_osu_sc_18T_ls__inv_l	0.00422	1.43669

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__inv_1	0.00000	0.00051	0.00053
sky130_osu_sc_18T_ls__inv_10	0.00000	0.00510	0.00531
sky130_osu_sc_18T_ls__inv_2	0.00000	0.00102	0.00106
sky130_osu_sc_18T_ls__inv_3	0.00000	0.00153	0.00159
sky130_osu_sc_18T_ls__inv_4	0.00000	0.00204	0.00213
sky130_osu_sc_18T_ls__inv_6	0.00000	0.00306	0.00319
sky130_osu_sc_18T_ls__inv_8	0.00000	0.00408	0.00425
sky130_osu_sc_18T_ls__inv_l	0.00000	0.00028	0.00035

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__inv_1	**A->Y (FR)**	0.03849	0.88615	12.16170
sky130_osu_sc_18T_ls__inv_10	**A->Y (FR)**	0.06000	0.63382	12.10480
sky130_osu_sc_18T_ls__inv_2	**A->Y (FR)**	0.03213	0.77079	12.12210
sky130_osu_sc_18T_ls__inv_3	**A->Y (FR)**	0.03575	0.72828	12.17910
sky130_osu_sc_18T_ls__inv_4	**A->Y (FR)**	0.03732	0.69346	12.13770
sky130_osu_sc_18T_ls__inv_6	**A->Y (FR)**	0.04274	0.65983	12.09440
sky130_osu_sc_18T_ls__inv_8	**A->Y (FR)**	0.05082	0.64424	12.17880
sky130_osu_sc_18T_ls__inv_l	**A->Y (FR)**	0.04334	0.95888	12.10420

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__inv_1	**A->Y (RF)**	0.02570	0.62157	8.56336
sky130_osu_sc_18T_ls__inv_10	**A->Y (RF)**	0.04324	0.41742	8.37164
sky130_osu_sc_18T_ls__inv_2	**A->Y (RF)**	0.02205	0.54245	8.53220
sky130_osu_sc_18T_ls__inv_3	**A->Y (RF)**	0.02425	0.50877	8.57191
sky130_osu_sc_18T_ls__inv_4	**A->Y (RF)**	0.02468	0.48137	8.55192
sky130_osu_sc_18T_ls__inv_6	**A->Y (RF)**	0.03133	0.44917	8.50285
sky130_osu_sc_18T_ls__inv_8	**A->Y (RF)**	0.03732	0.43116	8.52996
sky130_osu_sc_18T_ls__inv_l	**A->Y (RF)**	0.02858	0.66100	8.42523

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00687	0.00689	0.00753
sky130_osu_sc_18T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.05973	0.06054	0.06861
sky130_osu_sc_18T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01244	0.01268	0.01402
sky130_osu_sc_18T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01900	0.01926	0.02136
sky130_osu_sc_18T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02457	0.02396	0.02781
sky130_osu_sc_18T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.03636	0.03730	0.04155
sky130_osu_sc_18T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.04807	0.04988	0.05512
sky130_osu_sc_18T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00524	0.00522	0.00568

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00149	-0.00145	-0.00113
sky130_osu_sc_18T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.02417	-0.02376	-0.01695
sky130_osu_sc_18T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00465	-0.00432	-0.00361
sky130_osu_sc_18T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00627	-0.00605	-0.00456
sky130_osu_sc_18T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00955	-0.00914	-0.00699
sky130_osu_sc_18T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01459	-0.01399	-0.01046
sky130_osu_sc_18T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01970	-0.01879	-0.01381
sky130_osu_sc_18T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00102	-0.00103	-0.00081

SKY130_OSU_SC_18T_LS__MUX2

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__mux2_1	18.31500

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_18T_ls__mux2_1	0.32947	0.32942	0.01124	0.32531

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__mux2_1	0.00000	0.00132	0.00148

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__mux2_1	A0->Y (RR)	-	0.02067	0.35374	3.43074
	A1->Y (RR)	-	0.02230	0.35393	3.43283
	S0->Y (RR)	(!A0 * A1)	0.05812	0.32499	0.96679
	S0->Y (FR)	(A0 * !A1)	0.05588	0.50149	3.85927

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__mux2_1	A0->Y (FF)	-	0.01796	0.31470	2.93490
	A1->Y (FF)	-	0.01739	0.31257	2.92654
	S0->Y (FF)	(!A0 * A1)	0.08543	0.46901	2.75226
	S0->Y (RF)	(A0 * !A1)	0.03048	0.34416	2.34572

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00722	-0.00722	-0.00723
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00507	-0.00508	-0.00509
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00791	0.00769	0.01454
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00491	-0.00565	0.00042

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00722	0.00722	0.00723
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00507	0.00508	0.00509
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00149	0.00082	0.00711
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01847	0.01818	0.02450

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00188	-0.00187	-0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00188	0.00187	0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00223	-0.00222	-0.00222

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00223	0.00222	0.00222

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00174	-0.00238	0.00378
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00169	-0.00244	0.00377

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01390	0.01360	0.02003
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01248	0.01227	0.01908

SKY130_OSU_SC_18T_LS__NAND2x

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__nand2_1	9.52380
sky130_osu_sc_18T_ls__nand2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__nand2_1	0.00555	0.00551	2.06753
sky130_osu_sc_18T_ls__nand2_l	0.00423	0.00421	1.42302

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nand2_1	0.00000	0.00051	0.00098
sky130_osu_sc_18T_ls__nand2_l	0.00000	0.00030	0.00070

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nand2_1	A->Y (FR)	0.03978	0.89011	12.16490
	B->Y (FR)	0.04688	0.88857	12.04410
sky130_osu_sc_18T_ls__nand2_l	A->Y (FR)	0.04448	0.96199	12.10170
	B->Y (FR)	0.05291	0.96597	12.05660

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nand2_1	A->Y (RF)	0.03659	0.77048	10.66460
	B->Y (RF)	0.04164	0.75745	10.34150
sky130_osu_sc_18T_ls__nand2_l	A->Y (RF)	0.04127	0.83517	10.54730
	B->Y (RF)	0.04614	0.82451	10.21440

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00733	0.00733	0.00796
	B	0.00000	0.00000	0.00000
	B	0.00920	0.00910	0.00970
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00555	0.00552	0.00596
	B	0.00000	0.00000	0.00000
	B	0.00692	0.00683	0.00726

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00091	-0.00097	-0.00065
	B	0.00000	0.00000	0.00000
	B	-0.00084	-0.00094	-0.00075
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00066	-0.00073	-0.00051
	B	0.00000	0.00000	0.00000
	B	-0.00062	-0.00070	-0.00059

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00510	-0.00514	-0.00514
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00368	-0.00370	-0.00370

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00513	0.00517	0.00515
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00369	0.00373	0.00371

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00477	-0.00478	-0.00478
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00343	-0.00345	-0.00343

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00480	0.00483	0.00479
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00344	0.00347	0.00344

SKY130_OSU_SC_18T_LS__NOR2x

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__nor2_1	9.52380
sky130_osu_sc_18T_ls__nor2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__nor2_1	0.00552	0.00586	1.06927
sky130_osu_sc_18T_ls__nor2_l	0.00414	0.00450	0.73820

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nor2_1	0.00000	0.00053	0.00106
sky130_osu_sc_18T_ls__nor2_l	0.00000	0.00030	0.00043

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nor2_1	A->Y (FR)	0.08228	1.05175	11.87380
	B->Y (FR)	0.06260	1.03093	11.97440
sky130_osu_sc_18T_ls__nor2_l	A->Y (FR)	0.09113	1.15128	11.81730
	B->Y (FR)	0.07390	1.13416	11.93490

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nor2_1	A->Y (RF)	0.03412	0.52658	6.07247
	B->Y (RF)	0.02719	0.51339	6.05085
sky130_osu_sc_18T_ls__nor2_l	A->Y (RF)	0.03646	0.55438	5.98420
	B->Y (RF)	0.03012	0.54644	5.96569

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00994	0.00983	0.01002
	B	0.00000	0.00000	0.00000
	B	0.00748	0.00717	0.00806
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00723	0.00713	0.00726
	B	0.00000	0.00000	0.00000
	B	0.00564	0.00551	0.00596

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00092	0.00058	0.00096
	B	0.00000	0.00000	0.00000
	B	-0.00119	-0.00124	-0.00080
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00059	0.00036	0.00065
	B	0.00000	0.00000	0.00000
	B	-0.00076	-0.00081	-0.00052

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00420	-0.00460	-0.00457
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00293	-0.00319	-0.00319

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00455	0.00462	0.00457
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00318	0.00319	0.00319

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00218	-0.00220	-0.00219
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00155	-0.00157	-0.00156

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00231	0.00232	0.00223
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00163	0.00164	0.00158

SKY130_OSU_SC_18T_LS__OAI21

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__oai21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ls__oai21_l	0.00560	0.00563	0.00468	1.06896

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai21_l	0.00000	0.00059	0.00086

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__oai21_l	A0->Y (FR)	0.08480	1.05934	12.05310
	A1->Y (FR)	0.10939	1.08572	11.95540
	B0->Y (FR)	0.05423	0.87649	10.29740

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__oai21_l	A0->Y (RF)	0.05165	0.64041	7.25532
	A1->Y (RF)	0.06135	0.63996	7.12006
	B0->Y (RF)	0.04010	0.66936	7.84595

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.01014	0.00971	0.01055
	A1	0.00000	0.00000	0.00000
	A1	0.01263	0.01244	0.01259
	B0	0.00857	0.00841	0.00897

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00033	0.00015	0.00033
	A1	0.00000	0.00000	0.00000
	A1	0.00238	0.00200	0.00216
	B0	0.00331	0.00314	0.00343

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00219	-0.00221	-0.00220
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00445	-0.00460	-0.00459
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00469	-0.00471	-0.00469

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00231	0.00232	0.00224
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00457	0.00460	0.00459
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00469	0.00474	0.00470

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00413	-0.00452	-0.00450
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00442	-0.00458	-0.00456
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00464	-0.00465	-0.00465

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00447	0.00456	0.00450
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00453	0.00462	0.00456
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00465	0.00469	0.00466

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00373	-0.00377	-0.00381

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00381	0.00384	0.00382

SKY130_OSU_SC_18T_LS__OAI22

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__oai22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ls__oai22_1	0.00541	0.00571	0.00585	0.00571	1.06321

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai22_1	0.00000	0.00078	0.00106

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__oai22_l	A0->Y (FR)	0.11950	1.09049	11.88450
	A1->Y (FR)	0.09970	1.06650	11.98740
	B0->Y (FR)	0.07062	1.03939	11.97250
	B1->Y (FR)	0.09018	1.06085	11.87150

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__oai22_l	A0->Y (RF)	0.08826	0.69272	7.37285
	A1->Y (RF)	0.07021	0.66597	7.27828
	B0->Y (RF)	0.05894	0.68681	7.85171
	B1->Y (RF)	0.07842	0.72489	8.07656

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.01646	0.01629	0.01643
	A1	0.01397	0.01356	0.01433
	B0	0.01052	0.01017	0.01094
	B1	0.01311	0.01294	0.01309

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.00391	0.00354	0.00367
	A1	0.00202	0.00176	0.00189
	B0	0.00199	0.00184	0.00207
	B1	0.00395	0.00357	0.00385

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00417	-0.00460	-0.00457
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00416	-0.00460	-0.00457
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00441	-0.00459	-0.00457
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00465	-0.00468	-0.00466

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00454	0.00462	0.00457
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00454	0.00462	0.00457
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00454	0.00459	0.00457
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00466	0.00470	0.00467

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00217	-0.00219	-0.00218
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00217	-0.00219	-0.00218
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00440	-0.00454	-0.00455
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00464	-0.00467	-0.00465

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00229	0.00231	0.00222
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00229	0.00231	0.00222
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00453	0.00454	0.00455
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00464	0.00468	0.00466

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00216	-0.00218	-0.00217
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00216	-0.00218	-0.00217
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00488	-0.00504	-0.00501
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00499	-0.00501	-0.00510

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00228	0.00230	0.00221
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00228	0.00230	0.00221
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00500	0.00504	0.00501
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00510	0.00515	0.00512

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00413	-0.00454	-0.00451
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00413	-0.00454	-0.00451
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00495	-0.00512	-0.00509
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00506	-0.00510	-0.00516

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00448	0.00456	0.00451
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00448	0.00454	0.00451
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00507	0.00516	0.00509
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00516	0.00521	0.00518

SKY130_OSU_SC_18T_LS__OR2x

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__or2_1	12.45420
sky130_osu_sc_18T_ls__or2_2	15.38460
sky130_osu_sc_18T_ls__or2_4	21.24540
sky130_osu_sc_18T_ls__or2_8	32.96700
sky130_osu_sc_18T_ls__or2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__or2_1	0.00585	0.00567	2.10078
sky130_osu_sc_18T_ls__or2_2	0.00585	0.00567	4.12680
sky130_osu_sc_18T_ls__or2_4	0.00586	0.00568	7.90053
sky130_osu_sc_18T_ls__or2_8	0.00585	0.00569	14.96546
sky130_osu_sc_18T_ls__or2_l	0.00454	0.00431	1.44174

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__or2_1	0.00000	0.00106	0.00155
sky130_osu_sc_18T_ls__or2_2	0.00000	0.00158	0.00204
sky130_osu_sc_18T_ls__or2_4	0.00000	0.00262	0.00302
sky130_osu_sc_18T_ls__or2_8	0.00000	0.00470	0.00497
sky130_osu_sc_18T_ls__or2_l	0.00000	0.00055	0.00078

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__or2_1	A->Y (RR)	0.08354	0.70471	7.04581
	B->Y (RR)	0.07439	0.66938	6.90487
sky130_osu_sc_18T_ls__or2_2	A->Y (RR)	0.09230	0.63678	7.21473
	B->Y (RR)	0.08263	0.60720	7.09164
sky130_osu_sc_18T_ls__or2_4	A->Y (RR)	0.12079	0.63437	7.57851
	B->Y (RR)	0.11091	0.61251	7.47846
sky130_osu_sc_18T_ls__or2_8	A->Y (RR)	0.17381	0.69478	8.08818
	B->Y (RR)	0.16376	0.67766	8.00740
sky130_osu_sc_18T_ls__or2_l	A->Y (RR)	0.09198	0.78570	7.03733
	B->Y (RR)	0.08335	0.75287	6.90872

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__or2_1	A->Y (FF)	0.14862	0.77671	6.91776
	B->Y (FF)	0.12253	0.73944	6.67998
sky130_osu_sc_18T_ls__or2_2	A->Y (FF)	0.18152	0.77418	7.17656
	B->Y (FF)	0.15577	0.74608	6.96327
sky130_osu_sc_18T_ls__or2_4	A->Y (FF)	0.25852	0.84142	7.61694
	B->Y (FF)	0.23294	0.82263	7.44353
sky130_osu_sc_18T_ls__or2_8	A->Y (FF)	0.41318	1.00844	8.12172
	B->Y (FF)	0.38761	0.98629	8.00628
sky130_osu_sc_18T_ls__or2_l	A->Y (FF)	0.16130	0.82800	6.80134
	B->Y (FF)	0.13570	0.79002	6.57610

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00750	0.00657	0.01035
	B	0.00000	0.00000	0.00000
	B	0.00556	0.00491	0.01016
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01305	0.01249	0.01648
	B	0.00000	0.00000	0.00000
	B	0.01103	0.01085	0.01599
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02485	0.02525	0.03001
	B	0.00000	0.00000	0.00000
	B	0.02282	0.02371	0.02876
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04819	0.04994	0.05490
	B	0.00000	0.00000	0.00000
	B	0.04616	0.04870	0.05543
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00548	0.00473	0.00754
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00376	0.00766

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.01605	0.01596	0.01808
	B	0.00000	0.00000	0.00000
	B	0.01326	0.01352	0.01928
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01966	0.02043	0.02235
	B	0.00000	0.00000	0.00000
	B	0.01690	0.01780	0.02320
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02879	0.03062	0.03273
	B	0.00000	0.00000	0.00000
	B	0.02591	0.02788	0.03313
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04704	0.05012	0.05373
	B	0.00000	0.00000	0.00000
	B	0.04445	0.04729	0.05389
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.01213	0.01197	0.01360
	B	0.00000	0.00000	0.00000
	B	0.01018	0.01027	0.01448

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00423	-0.00461	-0.00459
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00421	-0.00461	-0.00459
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00421	-0.00461	-0.00459
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00421	-0.00461	-0.00459
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00296	-0.00320	-0.00321

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00456	0.00462	0.00459
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00456	0.00461	0.00459
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00456	0.00462	0.00459
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00456	0.00462	0.00459
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00319	0.00320	0.00321

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00219	-0.00221	-0.00220
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00219	-0.00221	-0.00220
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00219	-0.00221	-0.00220
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00219	-0.00221	-0.00220
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00158	-0.00159	-0.00158

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00232	0.00234	0.00224
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00232	0.00234	0.00224
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00232	0.00234	0.00224
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00232	0.00234	0.00224
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00168	0.00168	0.00161

SKY130_OSU_SC_18T_LS__TBUFIx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__tbufi_1	12.45420
sky130_osu_sc_18T_ls__tbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ls__tbufi_1	0.00585	0.00738	1.06942
sky130_osu_sc_18T_ls__tbufi_l	0.00451	0.00571	0.73427

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tbufi_1	0.00000	0.00074	0.00102
sky130_osu_sc_18T_ls__tbufi_l	0.00000	0.00038	0.00070

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__tbufi_1	A->Y (FR)	0.06000	1.02786	11.96980
	OE->Y (FR)	0.06245	0.37425	4.86257
	OE->Y (RR)	0.10433	0.83400	7.04094
sky130_osu_sc_18T_ls__tbufi_l	A->Y (FR)	0.07118	1.13090	11.91030
	OE->Y (FR)	0.06632	0.37385	4.86220
	OE->Y (RR)	0.11457	0.94092	7.03414

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__tbufi_1	A->Y (RF)	0.03537	0.61844	7.31566
	OE->Y (FF)	0.06302	0.37422	4.86256
	OE->Y (RF)	0.03395	0.59634	6.93189
sky130_osu_sc_18T_ls__tbufi_l	A->Y (RF)	0.04043	0.66741	7.22388
	OE->Y (FF)	0.06711	0.37388	4.86235
	OE->Y (RF)	0.03955	0.64130	6.83297

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00701	0.00669	0.00754
	OE	0.00000	0.00000	0.00000
	OE	0.00717	0.00651	0.01245
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00531	0.00518	0.00558
	OE	0.00000	0.00000	0.00000
	OE	0.00514	0.00465	0.00907

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00120	-0.00116	-0.00084
	OE	0.00000	0.00000	0.00000
	OE	0.00489	0.00421	0.01067
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00076	-0.00079	-0.00055
	OE	0.00000	0.00000	0.00000
	OE	0.00341	0.00291	0.00764

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00355	-0.00361	-0.00357
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00314	-0.00318	-0.00316
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00266	-0.00270	-0.00267
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00238	-0.00241	-0.00239

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00355	0.00361	0.00357
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00324	0.00327	0.00321
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00266	0.00270	0.00267
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00245	0.00246	0.00242

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00282	0.00222	0.00863
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00254	0.00212	0.00835
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00193	0.00148	0.00620
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00173	0.00141	0.00599

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00790	0.00752	0.01405
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00818	0.00781	0.01422
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00617	0.00584	0.01061
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00639	0.00606	0.01074

SKY130_OSU_SC_18T_LS__TNBUFIx

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__tnbufi_1	12.45420
sky130_osu_sc_18T_ls__tnbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ls__tnbufi_1	0.00585	0.00921	1.06940
sky130_osu_sc_18T_ls__tnbufi_l	0.00450	0.00683	0.73947

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tnbufi_1	0.00000	0.00073	0.00106
sky130_osu_sc_18T_ls__tnbufi_l	0.00000	0.00043	0.00056

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__tnbufi_1	A->Y (FR)	0.06055	1.02792	11.96970
	OE->Y (RR)	0.03192	0.37397	4.86351
	OE->Y (FR)	0.07747	1.04336	11.87120
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (FR)	0.07182	1.13402	11.96210
	OE->Y (RR)	0.03350	0.37417	4.86376
	OE->Y (FR)	0.08617	1.14873	11.84420

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__tnbufi_1	A->Y (RF)	0.03489	0.61809	7.31543
	OE->Y (RF)	0.03144	0.37392	4.86352
	OE->Y (FF)	0.06789	0.61535	5.29384
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (RF)	0.03984	0.66868	7.25158
	OE->Y (RF)	0.03309	0.37416	4.86370
	OE->Y (FF)	0.07653	0.67172	5.26429

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00718	0.00685	0.00771
	OE	0.00000	0.00000	0.00000
	OE	0.01757	0.01717	0.02505
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00548	0.00535	0.00581
	OE	0.00000	0.00000	0.00000
	OE	0.01300	0.01294	0.01838

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00142	-0.00136	-0.00104
	OE	0.00000	0.00000	0.00000
	OE	0.01555	0.01565	0.02216
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00097	-0.00099	-0.00075
	OE	0.00000	0.00000	0.00000
	OE	0.01147	0.01146	0.01618

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00307	-0.00312	-0.00308
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00270	-0.00274	-0.00271
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00220	-0.00224	-0.00221
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00195	-0.00198	-0.00196

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00307	0.00312	0.00308
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00278	0.00281	0.00276
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00220	0.00224	0.00221
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00200	0.00202	0.00198

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00555	-0.00666	0.00023
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00534	-0.00643	0.00030
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00384	-0.00460	0.00042
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00369	-0.00444	0.00047

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01322	0.01332	0.02060
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01301	0.01305	0.02038
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00982	0.00982	0.01512
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00965	0.00960	0.01495

SKY130_OSU_SC_18T_LS__XNOR2

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__xnor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__xnor2_l	0.01157	0.01057	1.09562

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xnor2_l	0.00000	0.00182	0.00205

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__xnor2_l	A->Y (RR)	B	0.13289	0.88871	7.31590
	A->Y (FR)	!B	0.08015	1.05750	12.12050
	B->Y (RR)	A	0.10527	0.85993	7.27136
	B->Y (FR)	!A	0.10779	1.08149	12.02180

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__xnor2_l	A->Y (FF)	B	0.11801	0.72993	5.82842
	A->Y (RF)	!B	0.05215	0.63005	7.20580
	B->Y (FF)	A	0.10540	0.71750	5.82475
	B->Y (RF)	!A	0.06332	0.64454	7.21475

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00703	0.00623	0.01187
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01716	0.01669	0.02376
	B	A	0.00000	0.00000	0.00000
	B	A	0.00237	0.00177	0.00805
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01903	0.01865	0.02560

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02129	0.02044	0.02649
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00484	0.00395	0.01029
	B	A	0.00000	0.00000	0.00000
	B	A	0.01951	0.01959	0.02612
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00591	0.00486	0.01117

SKY130_OSU_SC_18T_LS__XOR2

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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_18T_ls__xor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__xor2_l	0.01154	0.01062	1.07947

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xor2_l	0.00000	0.00182	0.00209

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__xor2_l	A->Y (RR)	!B	0.12727	0.86945	7.20758
	A->Y (FR)	B	0.09694	1.06830	11.97420
	B->Y (RR)	!A	0.10872	0.85922	7.21532
	B->Y (FR)	A	0.10558	1.07789	11.96680

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__xor2_l	A->Y (FF)	!B	0.10475	0.70446	5.62083
	A->Y (RF)	B	0.04921	0.64515	7.36783
	B->Y (FF)	!A	0.09821	0.69799	5.62096
	B->Y (RF)	A	0.05881	0.62637	6.98746

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02010	0.01983	0.02685
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00357	0.00189	0.00776
	B	A	0.00000	0.00000	0.00000
	B	A	0.02071	0.02040	0.02750
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00204	0.00138	0.00765

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00394	0.00280	0.00927
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02190	0.02183	0.02787
	B	A	0.00000	0.00000	0.00000
	B	A	0.00399	0.00285	0.00919
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01983	0.02004	0.02656

SKY130_OSU_SC_18T_LS_x

sky130_osu_sc_18T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__ant	6.59340
sky130_osu_sc_18T_ls__tiehi	6.59340
sky130_osu_sc_18T_ls__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_ls__ant	0.47289
sky130_osu_sc_18T_ls__tiehi	0.00000
sky130_osu_sc_18T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__ant	0.00000	231360.00000	462719.00000
sky130_osu_sc_18T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_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_18T_ls__ant	0.00000	0.00000	0.00000
	-0.00302	0.05229	0.68204

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ls__ant	0.00000	0.00000	0.00000
	4.02705	3.79420	0.86178