sky130_osu_sc_18T_ls_ff_1P76_-40C.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_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.02005	0.02006	0.01546	2.87619	1.39013	2.77448
sky130_osu_sc_18T_ls__addf_l	0.02005	0.02005	0.01544	1.98848	1.38995	2.00616

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addf_1	0.00000	0.00314	0.00385
sky130_osu_sc_18T_ls__addf_l	0.00000	0.00276	0.00380

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)	0.12057	1.55192	24.47430
	B->CO (RR)	0.10610	1.46737	23.14600
	CI->CO (RR)	0.11512	1.57302	24.82170
	CON->CO (FR)	0.02731	0.77115	11.95430
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.12128	1.45261	20.04190
	B->CO (RR)	0.10708	1.38152	19.14710
	CI->CO (RR)	0.11589	1.47395	20.44160
	CON->CO (FR)	0.03045	0.83184	11.91160

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)	0.17584	2.01177	31.20230
	B->CO (FF)	0.15433	1.90459	29.77470
	CI->CO (FF)	0.15221	1.99088	31.27050
	CON->CO (RF)	0.02001	0.54598	8.53916
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	0.17096	1.79979	24.45270
	B->CO (FF)	0.15002	1.70755	23.46090
	CI->CO (FF)	0.14735	1.77896	24.54290
	CON->CO (RF)	0.02103	0.55766	8.01061

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)	0.14050	1.00479	11.85110
	B->CON (FR)	0.11970	0.94130	11.38740
	CI->CON (FR)	0.11681	0.98429	11.97040
sky130_osu_sc_18T_ls__addf_l	A->CON (FR)	0.13353	0.99801	11.84310
	B->CON (FR)	0.11329	0.93498	11.37920
	CI->CON (FR)	0.10986	0.97703	11.96260

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)	0.06844	0.55253	6.58079
	B->CON (RF)	0.05516	0.52847	6.43959
	CI->CON (RF)	0.06296	0.57687	7.01724
sky130_osu_sc_18T_ls__addf_l	A->CON (RF)	0.06618	0.55006	6.57761
	B->CON (RF)	0.05316	0.52616	6.43664
	CI->CON (RF)	0.06068	0.57447	7.01403

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)	0.25531	1.86795	24.71810
	B->S (-R)	0.25391	1.83836	23.82830
	CI->S (-R)	0.23014	1.84356	24.79240
	CON->S (RR)	0.07302	0.59250	6.88968
sky130_osu_sc_18T_ls__addf_l	A->S (-R)	0.24457	1.75733	21.20390
	B->S (-R)	0.24399	1.73882	20.62340
	CI->S (-R)	0.21946	1.73343	21.28720
	CON->S (RR)	0.07291	0.64313	6.90936

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)	0.19533	1.35988	17.45870
	B->S (-F)	0.19990	1.31792	16.78870
	CI->S (-F)	0.18963	1.37804	17.80930
	CON->S (FF)	0.08549	0.66270	7.16003
sky130_osu_sc_18T_ls__addf_l	A->S (-F)	0.18411	1.24965	14.56920
	B->S (-F)	0.18932	1.21761	14.15900
	CI->S (-F)	0.17838	1.26998	14.96210
	CON->S (FF)	0.08134	0.66967	6.87391

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	0.00380	0.00396	0.00859
	B	0.00573	0.00570	0.00858
	CI	0.00603	0.00629	0.01119
sky130_osu_sc_18T_ls__addf_l	A	0.00287	0.00289	0.00591
	B	0.00482	0.00463	0.00671
	CI	0.00511	0.00521	0.00832

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01587	0.01627	0.02601
	B	0.01663	0.01707	0.02473
	CI	0.01333	0.01370	0.02364
sky130_osu_sc_18T_ls__addf_l	A	0.01496	0.01518	0.02166
	B	0.01570	0.01600	0.02073
	CI	0.01242	0.01263	0.01940

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01585	0.01601	0.01997
	B	0.01660	0.01687	0.01972
	CI	0.01454	0.01508	0.01829
sky130_osu_sc_18T_ls__addf_l	A	0.01494	0.01506	0.01905
	B	0.01569	0.01591	0.01875
	CI	0.01362	0.01412	0.01733

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00379	0.00386	0.00602
	B	0.00567	0.00554	0.00713
	CI	0.00602	0.00617	0.00861
sky130_osu_sc_18T_ls__addf_l	A	0.00286	0.00284	0.00500
	B	0.00477	0.00452	0.00594
	CI	0.00510	0.00516	0.00758

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01587	0.01626	0.02540
	B	0.01662	0.01703	0.02417
	CI	0.01333	0.01370	0.02299
sky130_osu_sc_18T_ls__addf_l	A	0.01495	0.01518	0.02171
	B	0.01570	0.01600	0.02076
	CI	0.01241	0.01263	0.01945

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.03577	0.03598	0.03967
	B	0.03154	0.03097	0.04125
	CI	0.02882	0.02876	0.03310
sky130_osu_sc_18T_ls__addf_l	A	0.03452	0.03444	0.03837
	B	0.03033	0.02970	0.04051
	CI	0.02763	0.02747	0.03205

SKY130_OSU_SC_18T_LS__ADDHx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

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	0.00984	0.01078	2.82666	1.50986	2.86852
sky130_osu_sc_18T_ls__addh_l	0.00984	0.01079	1.62086	1.47921	1.63634

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addh_1	0.00000	0.00312	0.00371
sky130_osu_sc_18T_ls__addh_l	0.00000	0.00559	0.00651

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)	0.08221	0.58313	6.54495
	B->CO (RR)	0.08554	0.59059	6.62887
sky130_osu_sc_18T_ls__addh_l	A->CO (RR)	0.08586	0.67975	6.62370
	B->CO (RR)	0.08923	0.68863	6.70193

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)	0.07508	0.64272	7.20350
	B->CO (FF)	0.08092	0.65556	7.22025
sky130_osu_sc_18T_ls__addh_l	A->CO (FF)	0.07371	0.65130	6.46824
	B->CO (FF)	0.07931	0.66438	6.48679

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	0.11534	0.47970	3.27930
	A->CON (FR)	!B	0.07598	0.92180	11.86450
	B->CON (RR)	A	0.11879	0.48695	3.36313
	B->CON (FR)	!A	0.09493	0.94466	11.88070
sky130_osu_sc_18T_ls__addh_l	A->CON (RR)	B	0.10357	0.45379	3.13963
	A->CON (FR)	!B	0.06761	0.90627	11.70880
	B->CON (RR)	A	0.10707	0.46259	3.21902
	B->CON (FR)	!A	0.08652	0.92902	11.72530

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	0.10975	0.66314	6.05316
	A->CON (RF)	!B	0.04101	0.54965	7.09809
	B->CON (FF)	A	0.11037	0.69851	6.44309
	B->CON (RF)	!A	0.04706	0.52687	6.64370
sky130_osu_sc_18T_ls__addh_l	A->CON (FF)	B	0.10002	0.63186	5.80168
	A->CON (RF)	!B	0.03820	0.54255	7.00663
	B->CON (FF)	A	0.10050	0.66705	6.17989
	B->CON (RF)	!A	0.04438	0.52018	6.55771

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	0.08752	1.49571	24.04440
	A->S (FR)	B	0.15592	1.58038	22.53580
	B->S (RR)	!A	0.09266	1.41884	22.59550
	B->S (FR)	A	0.15804	1.66955	23.93670
	CON->S (FR)	-	0.03092	0.79667	12.32470
sky130_osu_sc_18T_ls__addh_l	A->S (RR)	!B	0.08996	1.39018	18.46340
	A->S (FR)	B	0.15149	1.46165	16.96360
	B->S (RR)	!A	0.09526	1.33125	17.53110
	B->S (FR)	A	0.15352	1.53386	17.86170
	CON->S (FR)	-	0.03654	0.91371	12.52790

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	0.10646	1.80697	28.92740
	A->S (RF)	B	0.14264	1.13346	15.37830
	B->S (FF)	!A	0.12552	1.83473	28.98530
	B->S (RF)	A	0.14607	1.13977	15.46170
	CON->S (RF)	-	0.01856	0.52824	8.26290
sky130_osu_sc_18T_ls__addh_l	A->S (FF)	!B	0.10082	1.53050	20.33400
	A->S (RF)	B	0.13266	0.96287	10.07270
	B->S (FF)	!A	0.11972	1.55775	20.36400
	B->S (RF)	A	0.13614	0.97176	10.14760
	CON->S (RF)	-	0.02055	0.54758	7.52004

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	0.00739	0.00700	0.00811
	B	0.00000	0.00000	0.00000
	B	0.00667	0.00617	0.00690
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00610	0.00568	0.00880
	B	0.00000	0.00000	0.00000
	B	0.00538	0.00485	0.00746

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	0.01147	0.01100	0.01425
	B	0.00000	0.00000	0.00000
	B	0.01194	0.01207	0.01556
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.01017	0.00971	0.01354
	B	0.00000	0.00000	0.00000
	B	0.01065	0.01067	0.01451

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	0.00739	0.00704	0.00894
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01004	0.01006	0.01069
	B	A	0.00000	0.00000	0.00000
	B	A	0.00666	0.00623	0.00807
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01122	0.01115	0.01128
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00609	0.00566	0.00859
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00918	0.00915	0.00968
	B	A	0.00000	0.00000	0.00000
	B	A	0.00538	0.00483	0.00773
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01035	0.01024	0.01027

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	0.01146	0.01103	0.01458
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00150	0.00143	0.00100
	B	A	0.00000	0.00000	0.00000
	B	A	0.01194	0.01208	0.01604
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00260	0.00246	0.00274
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01017	0.00972	0.01350
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00040	0.00029	0.00001
	B	A	0.00000	0.00000	0.00000
	B	A	0.01065	0.01068	0.01430
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00150	0.00131	0.00122

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	0.01148	0.01102	0.01441
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00151	0.00151	0.00164
	B	A	0.00000	0.00000	0.00000
	B	A	0.01195	0.01209	0.01581
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00262	0.00250	0.00244
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01018	0.00972	0.01142
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00040	0.00031	0.00033
	B	A	0.00000	0.00000	0.00000
	B	A	0.01065	0.01071	0.01429
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00152	0.00129	0.00028

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	0.00739	0.00701	0.00819
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01006	0.01014	0.01054
	B	A	0.00000	0.00000	0.00000
	B	A	0.00668	0.00618	0.00722
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01122	0.01124	0.01137
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00610	0.00567	0.00898
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00918	0.00915	0.00973
	B	A	0.00000	0.00000	0.00000
	B	A	0.00538	0.00483	0.00767
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01036	0.01025	0.01034

SKY130_OSU_SC_18T_LS__AND2x

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00532	0.00541	2.86872
sky130_osu_sc_18T_ls__and2_2	0.00532	0.00542	5.56174
sky130_osu_sc_18T_ls__and2_4	0.00533	0.00542	10.45047
sky130_osu_sc_18T_ls__and2_6	0.00536	0.00543	15.31131
sky130_osu_sc_18T_ls__and2_8	0.00534	0.00545	19.70141
sky130_osu_sc_18T_ls__and2_l	0.00414	0.00424	1.98762

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__and2_1	0.00000	0.00152	0.00238
sky130_osu_sc_18T_ls__and2_2	0.00000	0.00240	0.00247
sky130_osu_sc_18T_ls__and2_4	0.00000	0.00416	0.00469
sky130_osu_sc_18T_ls__and2_6	0.00000	0.00592	0.00697
sky130_osu_sc_18T_ls__and2_8	0.00000	0.00767	0.00925
sky130_osu_sc_18T_ls__and2_l	0.00000	0.00106	0.00164

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)	0.06287	0.52023	6.33531
	B->Y (RR)	0.06696	0.53344	6.34977
sky130_osu_sc_18T_ls__and2_2	A->Y (RR)	0.07256	0.47314	6.42048
	B->Y (RR)	0.07661	0.48168	6.44371
sky130_osu_sc_18T_ls__and2_4	A->Y (RR)	0.09997	0.48563	6.65731
	B->Y (RR)	0.10405	0.48868	6.68852
sky130_osu_sc_18T_ls__and2_6	A->Y (RR)	0.12565	0.51900	6.91362
	B->Y (RR)	0.12960	0.51742	6.94659
sky130_osu_sc_18T_ls__and2_8	A->Y (RR)	0.15170	0.55682	7.15929
	B->Y (RR)	0.15570	0.55361	7.18700
sky130_osu_sc_18T_ls__and2_l	A->Y (RR)	0.06890	0.58391	6.27854
	B->Y (RR)	0.07317	0.59588	6.29308

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)**	0.05841	0.57510	6.70471
	B->Y (FF)	0.06237	0.58914	6.76004
sky130_osu_sc_18T_ls__and2_2	**A->Y (FF)**	0.06714	0.55266	6.80376
	B->Y (FF)	0.07167	0.56428	6.84378
sky130_osu_sc_18T_ls__and2_4	**A->Y (FF)**	0.09187	0.57492	7.00540
	B->Y (FF)	0.09643	0.58404	7.04610
sky130_osu_sc_18T_ls__and2_6	**A->Y (FF)**	0.11960	0.61222	7.21247
	B->Y (FF)	0.12405	0.61979	7.25161
sky130_osu_sc_18T_ls__and2_8	**A->Y (FF)**	0.14453	0.64370	7.27125
	B->Y (FF)	0.14912	0.65036	7.30790
sky130_osu_sc_18T_ls__and2_l	**A->Y (FF)**	0.06214	0.61063	6.52583
	B->Y (FF)	0.06717	0.62624	6.58962

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	0.00548	0.00501	0.01893
	B	0.00000	0.00000	0.00000
	B	0.00557	0.00470	0.01233
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01102	0.01091	0.02390
	B	0.00000	0.00000	0.00000
	B	0.01112	0.01065	0.01794
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02282	0.02347	0.03424
	B	0.00000	0.00000	0.00000
	B	0.02292	0.02327	0.02916
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03457	0.03578	0.04534
	B	0.00000	0.00000	0.00000
	B	0.03472	0.03591	0.04121
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04646	0.04787	0.05956
	B	0.00000	0.00000	0.00000
	B	0.04658	0.04803	0.05577
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00403	0.00359	0.01438
	B	0.00000	0.00000	0.00000
	B	0.00413	0.00340	0.00957

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	0.01380	0.01427	0.02641
	B	0.00000	0.00000	0.00000
	B	0.01558	0.01579	0.02696
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01771	0.01880	0.03080
	B	0.00000	0.00000	0.00000
	B	0.01955	0.02022	0.03114
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02740	0.02977	0.04145
	B	0.00000	0.00000	0.00000
	B	0.02915	0.03093	0.04138
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03699	0.04060	0.05233
	B	0.00000	0.00000	0.00000
	B	0.03857	0.04155	0.05184
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04689	0.05096	0.06389
	B	0.00000	0.00000	0.00000
	B	0.04842	0.05160	0.06238
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.01075	0.01102	0.02016
	B	0.00000	0.00000	0.00000
	B	0.01210	0.01220	0.02079

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)	-0.00522	-0.00526	-0.00526
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00521	-0.00527	-0.00526
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00521	-0.00527	-0.00526
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00524	-0.00530	-0.00528
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00521	-0.00527	-0.00526
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00385	-0.00387	-0.00388

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)	0.00524	0.00530	0.00527
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00524	0.00530	0.00527
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00524	0.00530	0.00527
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00527	0.00531	0.00530
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00524	0.00530	0.00527
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00386	0.00390	0.00389

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)	-0.00491	-0.00495	-0.00493
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00491	-0.00495	-0.00493
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00491	-0.00495	-0.00493
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00491	-0.00495	-0.00493
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00491	-0.00495	-0.00493
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00362	-0.00364	-0.00363

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)	0.00494	0.00495	0.00494
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00493	0.00495	0.00494
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00493	0.00495	0.00494
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00493	0.00495	0.00494
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00493	0.00495	0.00494
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00363	0.00364	0.00364

SKY130_OSU_SC_18T_LS__AOI21

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00502	0.00522	0.00508	1.38788

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi21_l	0.00000	0.00066	0.00114

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)	0.07546	0.94190	11.81680
	A1->Y (FR)	0.06427	0.89279	11.34310
	B0->Y (FR)	0.05524	0.92172	11.93450

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)	0.03765	0.49770	6.22674
	A1->Y (RF)	0.03358	0.49752	6.30279
	B0->Y (RF)	0.02440	0.49700	6.45792

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	0.01226	0.01214	0.01242
	A1	0.00000	0.00000	0.00000
	A1	0.01028	0.01016	0.01041
	B0	0.00952	0.00897	0.01051

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	0.00221	0.00182	0.00219
	A1	0.00000	0.00000	0.00000
	A1	0.00225	0.00185	0.00256
	B0	-0.00130	-0.00139	-0.00067

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)	-0.00439	-0.00458	-0.00456
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00463	-0.00465	-0.00464
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00463	-0.00466	-0.00464

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)	0.00454	0.00458	0.00456
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00463	0.00466	0.00466
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00465	0.00466	0.00466

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)	-0.00435	-0.00453	-0.00451
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00457	-0.00459	-0.00459
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00498	-0.00503	-0.00502

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)	0.00448	0.00454	0.00451
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00457	0.00459	0.00460
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00501	0.00505	0.00503

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)	-0.00214	-0.00216	-0.00215

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)	0.00234	0.00235	0.00220

SKY130_OSU_SC_18T_LS__AOI22

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__aoi22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ls__aoi22_l	0.00502	0.00523	0.00542	0.00518	1.32348

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi22_l	0.00000	0.00086	0.00228

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)	0.09614	0.96789	11.73910
	A1->Y (FR)	0.08524	0.93765	11.49220
	B0->Y (FR)	0.05838	0.91187	11.60440
	B1->Y (FR)	0.06940	0.94623	11.91370

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)	0.04875	0.50319	6.06056
	A1->Y (RF)	0.04474	0.50296	6.13278
	B0->Y (RF)	0.02591	0.47948	6.11693
	B1->Y (RF)	0.03004	0.47970	6.04546

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	0.01501	0.01489	0.01515
	A1	0.01306	0.01290	0.01320
	B0	0.01018	0.00996	0.01133
	B1	0.01206	0.01187	0.01327

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.00482	0.00439	0.00476
	A1	0.00487	0.00442	0.00511
	B0	-0.00077	-0.00088	-0.00006
	B1	-0.00064	-0.00079	-0.00032

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)	-0.00440	-0.00457	-0.00455
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00463	-0.00466	-0.00464
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00463	-0.00465	-0.00464
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00463	-0.00466	-0.00464

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)	0.00453	0.00457	0.00455
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00463	0.00466	0.00466
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00465	0.00466	0.00466
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00465	0.00466	0.00466

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)	-0.00435	-0.00452	-0.00450
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00457	-0.00461	-0.00459
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00498	-0.00503	-0.00501
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00498	-0.00503	-0.00501

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)	0.00447	0.00452	0.00450
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00457	0.00461	0.00460
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00500	0.00504	0.00503
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00499	0.00504	0.00503

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)	-0.00215	-0.00217	-0.00216
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00214	-0.00216	-0.00215
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00511	-0.00512	-0.00515
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00511	-0.00513	-0.00515

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)	0.00243	0.00244	0.00223
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00215	0.00216	0.00215
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00513	0.00518	0.00516
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00514	0.00518	0.00516

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)	-0.00216	-0.00218	-0.00217
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00216	-0.00217	-0.00217
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00471	-0.00473	-0.00472
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00471	-0.00473	-0.00472

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)	0.00244	0.00245	0.00224
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00216	0.00217	0.00217
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00473	0.00473	0.00473
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00473	0.00473	0.00473

SKY130_OSU_SC_18T_LS__BUFx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

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	0.00543	2.85043
sky130_osu_sc_18T_ls__buf_2	0.00543	5.52656
sky130_osu_sc_18T_ls__buf_4	0.00542	10.64259
sky130_osu_sc_18T_ls__buf_6	0.00097	1.80000
sky130_osu_sc_18T_ls__buf_8	0.00545	20.12449
sky130_osu_sc_18T_ls__buf_l	0.00428	1.98529

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__buf_1	0.00000	0.00124	0.00124
sky130_osu_sc_18T_ls__buf_2	0.00000	0.00186	0.00238
sky130_osu_sc_18T_ls__buf_4	0.00000	0.00309	0.00466
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ls__buf_8	0.00000	0.00557	0.00922
sky130_osu_sc_18T_ls__buf_l	0.00000	0.00086	0.00086

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)**	0.05133	0.49721	6.24330
sky130_osu_sc_18T_ls__buf_2	**A->Y (RR)**	0.05748	0.44011	6.27331
sky130_osu_sc_18T_ls__buf_4	**A->Y (RR)**	0.07802	0.44454	6.61028
sky130_osu_sc_18T_ls__buf_8	**A->Y (RR)**	0.11676	0.49746	7.00855
sky130_osu_sc_18T_ls__buf_l	**A->Y (RR)**	0.05667	0.55717	6.15951

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)**	0.05547	0.56500	6.63361
sky130_osu_sc_18T_ls__buf_2	**A->Y (FF)**	0.06478	0.54634	6.75955
sky130_osu_sc_18T_ls__buf_4	**A->Y (FF)**	0.08960	0.57134	7.06334
sky130_osu_sc_18T_ls__buf_8	**A->Y (FF)**	0.14209	0.64187	7.36317
sky130_osu_sc_18T_ls__buf_l	**A->Y (FF)**	0.05990	0.60330	6.49736

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	0.00498	0.00438	0.01520
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01056	0.01027	0.02113
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02242	0.02287	0.03223
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.04574	0.04742	0.05596
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00378	0.00327	0.01207

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	0.01327	0.01362	0.02503
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01718	0.01794	0.02915
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02687	0.02873	0.03965
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.04621	0.04964	0.06063
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.01042	0.01059	0.01952

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
	-0.00072	-0.00072	-0.00072

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
	0.00072	0.00072	0.00072

SKY130_OSU_SC_18T_LS__DFFRx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00517	0.00516	0.01498	2.76149	2.74853
sky130_osu_sc_18T_ls__dffr_l	0.00517	0.00516	0.01496	1.99063	1.98889

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffr_1	0.00000	0.00476	0.00633
sky130_osu_sc_18T_ls__dffr_l	0.00000	0.00438	0.00595

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)	0.24497	1.21502	15.02820
	QN->Q (FR)	0.03222	0.86699	13.38790
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RR)	0.23874	1.29032	14.43140
	QN->Q (FR)	0.03372	0.90327	12.96270

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)	0.24768	1.21765	15.01440
	QN->Q (RF)	0.02360	0.65590	10.09560
	RN->Q (FF)	0.18404	1.35047	17.63500
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RF)	0.24991	1.31705	14.64780
	QN->Q (RF)	0.02359	0.64783	9.28582
	RN->Q (FF)	0.18663	1.44959	17.25600

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)	0.22068	0.69242	6.34855
	RN->QN (FR)	0.15698	0.82528	8.96328
sky130_osu_sc_18T_ls__dffr_l	CK->QN (RR)	0.22082	0.74728	6.38175
	RN->QN (FR)	0.15745	0.87989	8.98865

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)**	0.20248	0.56477	4.35241
sky130_osu_sc_18T_ls__dffr_l	**CK->QN (RF)**	0.19343	0.57183	4.05305

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)	-0.04641	-0.07252	-0.27993
	setup	CK (R)	0.19458	0.24101	0.90984
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.04647	-0.07266	-0.28077
	setup	CK (R)	0.19327	0.24258	0.90907

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)	-0.10362	-0.38912	-4.44899
	setup	CK (R)	0.13071	0.40482	4.49422
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.10378	-0.39048	-4.44960
	setup	CK (R)	0.13071	0.40482	4.49409

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)	-0.04641	-0.07252	-0.27993
	setup	CK (R)	0.19458	0.24101	0.90984
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.04647	-0.07266	-0.28077
	setup	CK (R)	0.19327	0.24258	0.90907

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)	-0.10362	-0.38912	-4.44899
	setup	CK (R)	0.13071	0.40482	4.49422
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.10378	-0.39048	-4.44960
	setup	CK (R)	0.13071	0.40482	4.49409

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)	0.16254	0.20201	0.95292
	removal	CK (R)	-0.02739	-0.03210	-0.08917
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.16487	0.20344	0.95192
	removal	CK (R)	-0.02739	-0.03210	-0.08917

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)	0.16254	0.20201	0.95292
	removal	CK (R)	-0.02739	-0.03210	-0.08917
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.16487	0.20344	0.95192
	removal	CK (R)	-0.02739	-0.03210	-0.08917

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 ()	0.11082	0.49194	13.33370
	min_pulse_width	RN ()	0.11082	0.49194	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	RN ()	0.10712	0.49194	13.33370
	min_pulse_width	RN ()	0.10712	0.49194	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 ()	0.10712	0.49194	13.33370
	min_pulse_width	CK ()	0.12562	0.49194	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.10342	0.49194	13.33370
	min_pulse_width	CK ()	0.12192	0.49194	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 ()	0.25143	0.49194	13.33370
	min_pulse_width	CK ()	0.10342	0.49194	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.25143	0.49194	13.33370
	min_pulse_width	CK ()	0.10342	0.49194	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	0.01309	0.00707	0.00000
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01162	0.00725	0.00000

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	0.01532	0.01223	0.00000
	RN	-0.00177	-0.12511	-2.13849
	RN	0.03531	0.03233	-0.00328
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01382	0.01168	0.00000
	RN	-0.00177	-0.10280	-1.54154
	RN	0.03379	0.03179	0.01631

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	0.01532	0.01223	0.00000
	RN	-0.00177	-0.12476	-2.12842
	RN	0.03530	0.03232	-0.00325
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01382	0.01170	0.00000
	RN	-0.00177	-0.10275	-1.54019
	RN	0.03380	0.03178	0.01579

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	0.01306	0.00709	0.00000
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01158	0.00725	0.00000

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	-0.00422	-0.00455	-0.00453
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01631	0.01539	0.02140
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00728	0.00649	0.01259
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00422	-0.00455	-0.00453
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01631	0.01539	0.02140
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00728	0.00649	0.01259

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	0.00450	0.00455	0.00453
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02725	0.02683	0.03223
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01272	0.01241	0.01789
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00450	0.00455	0.00453
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02725	0.02676	0.03223
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01272	0.01241	0.01789

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)	0.00507	0.00445	0.01795
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01450	0.01348	0.02667
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)	0.00507	0.00445	0.01795
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01450	0.01348	0.02667

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)	0.01231	0.01228	0.02685
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02644	0.02587	0.03980
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)	0.01231	0.01228	0.02685
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02644	0.02588	0.03981

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)	-0.00098	-0.00170	0.01144
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00798	0.00584	0.01894
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00156	-0.00230	0.01080
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00098	-0.00170	0.01144
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00798	0.00584	0.01894
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00156	-0.00230	0.01080

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)	0.01910	0.01940	0.03365
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04194	0.04075	0.05527
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03208	0.03126	0.04464
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04085	0.04085	0.06643
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02176	0.02168	0.03544
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01910	0.01930	0.03365
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04193	0.04075	0.05527
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03208	0.03126	0.04464
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04085	0.04084	0.06643
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02176	0.02168	0.03544

SKY130_OSU_SC_18T_LS__DFFSRx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00513	0.00517	0.01107	0.01527	2.88806	2.88574
sky130_osu_sc_18T_ls__dffsr_l	0.00513	0.00517	0.01105	0.01526	1.99742	1.99509

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ls__dffsr_1	0.00000	0.00500	0.00645
sky130_osu_sc_18T_ls__dffsr_l	0.00000	0.00462	0.00607

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)	0.25542	1.21224	14.91750
	QN->Q (FR)	0.03049	0.84398	13.16240
	RN->Q (RR)	0.20392	1.17106	14.93390
	SN->Q (FR)	0.19360	1.37418	17.90840
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RR)	0.25695	1.32019	14.52040
	QN->Q (FR)	0.03360	0.90144	12.94680
	RN->Q (RR)	0.20722	1.28197	14.53890
	SN->Q (FR)	0.19526	1.47953	17.48080

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)	0.27487	1.22849	14.98590
	QN->Q (RF)	0.02135	0.61068	9.49528
	RN->Q (FF)	0.18947	1.34429	17.61740
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RF)	0.28114	1.35221	14.71580
	QN->Q (RF)	0.02354	0.64810	9.29059
	RN->Q (FF)	0.19559	1.46675	17.34120

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)	0.24904	0.72006	6.45171
	RN->QN (FR)	0.16383	0.83621	9.08128
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RR)	0.25183	0.78143	6.43320
	RN->QN (FR)	0.16636	0.89731	9.05553

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)	0.21588	0.57934	4.35163
	RN->QN (RF)	0.16610	0.54082	4.37410
	SN->QN (FF)	0.15455	0.74209	7.32801
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RF)	0.21260	0.60075	4.12472
	RN->QN (RF)	0.16333	0.56359	4.14302
	SN->QN (FF)	0.15154	0.76124	7.08084

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)	-0.05047	-0.08122	-0.32747
	setup	CK (R)	0.19487	0.24067	0.97728
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.05059	-0.08122	-0.32768
	setup	CK (R)	0.19321	0.23974	0.97455

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)	-0.11648	-0.40858	-4.53166
	setup	CK (R)	0.14433	0.42118	4.58490
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.11912	-0.40842	-4.53150
	setup	CK (R)	0.14433	0.42118	4.58451

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)	-0.05047	-0.08122	-0.32747
	setup	CK (R)	0.19487	0.24067	0.97728
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.05059	-0.08122	-0.32768
	setup	CK (R)	0.19321	0.23974	0.97455

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)	-0.11648	-0.40858	-4.53166
	setup	CK (R)	0.14433	0.42118	4.58490
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.11912	-0.40842	-4.53150
	setup	CK (R)	0.14433	0.42118	4.58451

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)	0.15136	0.18648	0.92837
	removal	CK (R)	-0.01723	-0.02122	-0.06274
	hold	SN (R)	-0.14840	-0.32554	-1.58067
	setup	SN (R)	0.17153	0.37754	4.02065
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.15043	0.18549	0.92823
	removal	CK (R)	-0.01723	-0.02122	-0.06274
	hold	SN (R)	-0.14329	-0.31733	-1.53428
	setup	SN (R)	0.17116	0.36935	3.91461

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)	0.15136	0.18648	0.92837
	removal	CK (R)	-0.01723	-0.02122	-0.06274
	hold	SN (R)	-0.14840	-0.32554	-1.58067
	hold	SN (R)	-0.15087	-0.32720	-1.58538
	setup	SN (R)	0.17153	0.37397	3.76943
	setup	SN (R)	0.16508	0.37754	4.02065
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.15043	0.18549	0.92823
	removal	CK (R)	-0.01723	-0.02122	-0.06274
	hold	SN (R)	-0.14731	-0.31733	-1.53428
	hold	SN (R)	-0.14329	-0.31902	-1.54589
	setup	SN (R)	0.17116	0.36601	3.61959
	setup	SN (R)	0.15943	0.36935	3.91461

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 ()	0.12562	0.49194	13.33370
	min_pulse_width	RN ()	0.12932	0.49194	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	RN ()	0.12562	0.49194	13.33370
	min_pulse_width	RN ()	0.12562	0.49194	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)	0.03099	0.06928	4.01033
	removal	CK (R)	-0.01017	-0.05317	-0.28352
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.03050	0.06909	3.92351
	removal	CK (R)	-0.01017	-0.05317	-0.28245

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)	0.03099	0.06928	4.01033
	removal	CK (R)	-0.01017	-0.05317	-0.28352
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.03050	0.06909	3.92351
	removal	CK (R)	-0.01017	-0.05317	-0.28245

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 ()	0.15522	0.49194	13.33370
	min_pulse_width	SN ()	0.15522	0.49194	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	SN ()	0.15522	0.49194	13.33370
	min_pulse_width	SN ()	0.14782	0.49194	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 ()	0.11452	0.49194	13.33370
	min_pulse_width	CK ()	0.14042	0.49194	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.11082	0.49194	13.33370
	min_pulse_width	CK ()	0.13672	0.49194	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 ()	0.25513	0.49194	13.33370
	min_pulse_width	CK ()	0.12192	0.49194	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.25513	0.49194	13.33370
	min_pulse_width	CK ()	0.12192	0.49194	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	0.01645	0.01226	0.00000
	RN	0.03067	0.02665	-0.00276
	SN	-0.00177	-0.12852	-2.23652
	SN	0.03418	0.03014	-0.02978
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01510	0.01085	0.00000
	RN	0.02930	0.02525	-0.01696
	SN	-0.00177	-0.10301	-1.54680
	SN	0.03280	0.02873	-0.01996

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	0.01757	0.01496	0.00000
	RN	-0.00177	-0.12852	-2.23651
	RN	0.03629	0.03363	0.00301
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01622	0.01422	0.00000
	RN	-0.00177	-0.10301	-1.54680
	RN	0.03491	0.03285	0.01800

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	0.01757	0.01496	0.00000
	RN	-0.00177	-0.12846	-2.23471
	RN	0.03628	0.03359	0.00315
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01621	0.01422	0.00000
	RN	-0.00177	-0.10294	-1.54500
	RN	0.03491	0.03282	0.01744

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	0.01641	0.01222	0.00000
	RN	0.03062	0.02665	-0.00289
	SN	-0.00177	-0.12846	-2.23462
	SN	0.03414	0.03009	-0.02824
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01505	0.01084	0.00000
	RN	0.02925	0.02524	-0.01717
	SN	-0.00177	-0.10294	-1.54492
	SN	0.03276	0.02873	-0.01882

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	-0.00439	-0.00455	-0.00453
	(!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)	0.02098	0.02009	0.02605
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00818	0.00741	0.01342
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00813	0.00736	0.01338
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00823	0.00747	0.01347
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00439	-0.00455	-0.00453
	(!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)	0.02097	0.02009	0.02605
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00818	0.00741	0.01342
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00813	0.00735	0.01338
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00823	0.00747	0.01347

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	0.00453	0.00455	0.00453
	(!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)	0.03087	0.03034	0.03525
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01351	0.01320	0.01850
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01356	0.01323	0.01851
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01345	0.01314	0.01845
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00453	0.00455	0.00453
	(!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)	0.03087	0.03033	0.03524
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01350	0.01319	0.01849
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01355	0.01322	0.01850
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01344	0.01313	0.01844

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)	0.00409	0.00356	0.01678
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01723	0.01617	0.02906
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)	0.00410	0.00356	0.01678
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01723	0.01618	0.02907

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)	0.01334	0.01335	0.02816
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02802	0.02732	0.04124
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)	0.01333	0.01334	0.02815
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02800	0.02731	0.04123

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)	-0.01037	-0.01047	-0.01044
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01048	-0.01073	-0.01067
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01018	-0.01030	-0.01026
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00657	0.00576	0.01304
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)	-0.01037	-0.01047	-0.01044
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01050	-0.01071	-0.01065
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01017	-0.01029	-0.01025
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00658	0.00579	0.01305

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)	0.01040	0.01050	0.01047
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01061	0.01073	0.01067
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01022	0.01030	0.01027
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02153	0.02100	0.02582
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)	0.01040	0.01050	0.01047
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01059	0.01071	0.01065
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01022	0.01029	0.01026
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02152	0.02099	0.02583

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)	-0.00098	-0.00173	0.01143
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00904	0.00700	0.02007
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00895	0.00699	0.01995
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00131	-0.00205	0.01105
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00587	0.00444	0.03046
sky130_osu_sc_18T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00098	-0.00173	0.01143
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00903	0.00698	0.02006
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00894	0.00698	0.01994
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00131	-0.00205	0.01105
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00587	0.00444	0.03046

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)	0.04671	0.04566	0.06002
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01916	0.01946	0.03370
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03265	0.03191	0.04524
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03275	0.03206	0.04541
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04440	0.04419	0.06946
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02157	0.02137	0.03524
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02540	0.02563	0.05306
sky130_osu_sc_18T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04672	0.04566	0.06002
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01916	0.01945	0.03370
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03265	0.03192	0.04524
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03275	0.03206	0.04541
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04438	0.04418	0.06945
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02157	0.02137	0.03524
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02538	0.02568	0.05305

SKY130_OSU_SC_18T_LS__DFFSx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00516	0.00888	0.01504	2.77590	2.76947
sky130_osu_sc_18T_ls__dffs_l	0.00516	0.00888	0.01504	1.99342	2.00373

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffs_1	0.00000	0.00473	0.00594
sky130_osu_sc_18T_ls__dffs_l	0.00000	0.00435	0.00556

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)	0.18657	1.14623	14.95190
	QN->Q (FR)	0.03203	0.86190	13.30950
	SN->Q (FR)	0.15040	1.35174	17.78800
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RR)	0.18509	1.22668	14.32970
	QN->Q (FR)	0.03351	0.89776	12.88650
	SN->Q (FR)	0.14865	1.42590	17.14250

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)	0.26649	1.23813	15.03810
	QN->Q (RF)	0.02341	0.65331	10.07220
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RF)	0.26762	1.33484	14.62730
	QN->Q (RF)	0.02343	0.64570	9.25283

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)	0.23895	0.71357	6.37357
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RR)	0.23805	0.76729	6.41689

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)	0.14820	0.50068	4.29849
	SN->QN (FF)	0.11204	0.70457	7.13091
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RF)	0.14378	0.51341	4.00524
	SN->QN (FF)	0.10707	0.71127	6.81555

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)	-0.03446	-0.06158	-0.25159
	setup	CK (R)	0.13374	0.18671	0.82617
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.03625	-0.06164	-0.25170
	setup	CK (R)	0.13341	0.18735	0.82629

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)	-0.10524	-0.39264	-4.47003
	setup	CK (R)	0.13850	0.40491	4.51247
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.10604	-0.39264	-4.47046
	setup	CK (R)	0.13843	0.40491	4.51247

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)	-0.03446	-0.06158	-0.25159
	setup	CK (R)	0.13374	0.18671	0.82617
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.03625	-0.06164	-0.25170
	setup	CK (R)	0.13341	0.18735	0.82629

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)	-0.10524	-0.39264	-4.47003
	setup	CK (R)	0.13850	0.40491	4.51247
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.10604	-0.39264	-4.47046
	setup	CK (R)	0.13843	0.40491	4.51247

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)	0.03180	0.06944	3.20568
	removal	CK (R)	-0.01039	-0.04704	-0.25929
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.03549	0.06944	3.05154
	removal	CK (R)	-0.01039	-0.04704	-0.25929

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)	0.03180	0.06944	3.20568
	removal	CK (R)	-0.01039	-0.04704	-0.25929
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.03549	0.06944	3.05154
	removal	CK (R)	-0.01039	-0.04704	-0.25929

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 ()	0.10342	0.49194	13.33370
	min_pulse_width	SN ()	0.10342	0.49194	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	SN ()	0.10342	0.49194	13.33370
	min_pulse_width	SN ()	0.09972	0.49194	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 ()	0.07751	0.49194	13.33370
	min_pulse_width	CK ()	0.12932	0.49194	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.07381	0.49194	13.33370
	min_pulse_width	CK ()	0.12562	0.49194	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 ()	0.19222	0.49194	13.33370
	min_pulse_width	CK ()	0.11452	0.49194	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.19222	0.49194	13.33370
	min_pulse_width	CK ()	0.11452	0.49194	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	0.01310	0.00704	0.00000
	SN	-0.00177	-0.12550	-2.14966
	SN	0.02908	0.02316	-0.05550
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01160	0.00731	0.00000
	SN	-0.00177	-0.10289	-1.54371
	SN	0.02758	0.02339	-0.01893

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	0.01524	0.01231	0.00000
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01376	0.01174	0.00000

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	0.01525	0.01234	0.00000
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01376	0.01173	0.00000

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	0.01306	0.00704	0.00000
	SN	-0.00177	-0.12532	-2.14447
	SN	0.02905	0.02317	-0.05502
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01156	0.00725	0.00000
	SN	-0.00177	-0.10321	-1.55161
	SN	0.02755	0.02333	-0.01956

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	-0.00445	-0.00461	-0.00459
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01572	0.01473	0.02082
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00709	0.00628	0.01242
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00445	-0.00461	-0.00459
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01572	0.01473	0.02082
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00709	0.00628	0.01242

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	0.00458	0.00461	0.00459
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02666	0.02609	0.03140
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01297	0.01265	0.01815
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00458	0.00461	0.00459
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02666	0.02609	0.03140
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01297	0.01265	0.01815

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)	-0.00767	-0.00774	-0.00772
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00562	0.00504	0.01360
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)	-0.00767	-0.00774	-0.00772
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00562	0.00504	0.01360

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)	0.00771	0.00780	0.00774
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01491	0.01453	0.02410
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)	0.00771	0.00780	0.00774
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01491	0.01453	0.02410

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)	-0.00100	-0.00174	0.01144
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00145	-0.00212	0.01094
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00473	0.00330	0.02983
sky130_osu_sc_18T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00100	-0.00174	0.01144
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00145	-0.00212	0.01094
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00473	0.00330	0.02983

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)	0.04132	0.04023	0.05504
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01911	0.01941	0.03367
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04012	0.03990	0.06548
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02163	0.02147	0.03533
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02475	0.02464	0.05289
sky130_osu_sc_18T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04132	0.04022	0.05504
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01911	0.01941	0.03367
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04012	0.03991	0.06548
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02163	0.02155	0.03533
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02475	0.02464	0.05289

SKY130_OSU_SC_18T_LS__DFFx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

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	0.00531	0.01476	2.91719	2.90427
sky130_osu_sc_18T_ls__dff_l	0.00531	0.01474	1.97601	1.96340

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dff_1	0.00000	0.00455	0.00510
sky130_osu_sc_18T_ls__dff_l	0.00000	0.00417	0.00472

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)	0.16507	1.10801	14.89040
	QN->Q (FR)	0.03025	0.84275	13.17060
sky130_osu_sc_18T_ls__dff_l	CK->Q (RR)	0.17009	1.21649	14.29480
	QN->Q (FR)	0.03423	0.91153	13.05920

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)	0.23290	1.18483	15.03960
	QN->Q (RF)	0.02123	0.61021	9.51285
sky130_osu_sc_18T_ls__dff_l	CK->Q (RF)	0.24072	1.30955	14.62530
	QN->Q (RF)	0.02349	0.64375	9.20761

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)	0.20757	0.67422	6.41414
sky130_osu_sc_18T_ls__dff_l	CK->QN (RR)	0.21174	0.73944	6.36349

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)	0.12985	0.47522	4.22708
sky130_osu_sc_18T_ls__dff_l	CK->QN (RF)	0.12955	0.49771	3.90159

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)	-0.03417	-0.06065	-0.27419
	setup	CK (R)	0.11010	0.16770	0.81843
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.03458	-0.06092	-0.27398
	setup	CK (R)	0.10578	0.16684	0.82298

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)	-0.09537	-0.38864	-4.49929
	setup	CK (R)	0.12057	0.40291	4.53035
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.09590	-0.38864	-4.50045
	setup	CK (R)	0.12057	0.40291	4.53102

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 ()	0.07011	0.49194	13.33370
	min_pulse_width	CK ()	0.11822	0.49194	13.33370
sky130_osu_sc_18T_ls__dff_l	min_pulse_width	CK ()	0.06641	0.49194	13.33370
	min_pulse_width	CK ()	0.11452	0.49194	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 ()**	0.16632	0.49194	13.33370
	min_pulse_width	**CK ()**	0.09232	0.49194	13.33370
sky130_osu_sc_18T_ls__dff_l	**min_pulse_width**	**CK ()**	0.16632	0.49194	13.33370
	min_pulse_width	**CK ()**	0.09232	0.49194	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	0.01377	0.00948	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01241	0.00796	0.00000

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	0.01548	0.01292	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01415	0.01201	0.00000

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	0.01549	0.01293	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01415	0.01203	0.00000

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	0.01373	0.00946	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01236	0.00803	0.00000

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	-0.00422	-0.00454	-0.00452
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01442	0.01369	0.01986
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00422	-0.00454	-0.00452
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01443	0.01370	0.01987

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	0.00449	0.00454	0.00452
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02732	0.02689	0.03233
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00449	0.00454	0.00452
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02733	0.02690	0.03233

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)	-0.00101	-0.00171	0.01145
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00143	-0.00217	0.01097
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00101	-0.00171	0.01145
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00143	-0.00217	0.01097

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)	0.01904	0.01901	0.03361
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04013	0.03913	0.05426
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04063	0.03995	0.06623
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02154	0.02146	0.03524
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01904	0.01901	0.03361
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04014	0.03914	0.05426
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04064	0.03989	0.06624
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02154	0.02146	0.03524

SKY130_OSU_SC_18T_LS__INVx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

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	0.00520	2.79333
sky130_osu_sc_18T_ls__inv_10	0.04899	24.53847
sky130_osu_sc_18T_ls__inv_2	0.00999	5.39976
sky130_osu_sc_18T_ls__inv_3	0.01489	7.68898
sky130_osu_sc_18T_ls__inv_4	0.01971	10.34623
sky130_osu_sc_18T_ls__inv_6	0.02955	15.25928
sky130_osu_sc_18T_ls__inv_8	0.03928	20.15549
sky130_osu_sc_18T_ls__inv_l	0.00403	1.93448

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__inv_1	0.00000	0.00062	0.00114
sky130_osu_sc_18T_ls__inv_10	0.00000	0.00619	0.01140
sky130_osu_sc_18T_ls__inv_2	0.00000	0.00124	0.00228
sky130_osu_sc_18T_ls__inv_3	0.00000	0.00186	0.00342
sky130_osu_sc_18T_ls__inv_4	0.00000	0.00247	0.00456
sky130_osu_sc_18T_ls__inv_6	0.00000	0.00371	0.00684
sky130_osu_sc_18T_ls__inv_8	0.00000	0.00495	0.00912
sky130_osu_sc_18T_ls__inv_l	0.00000	0.00043	0.00079

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)**	0.02837	0.76967	11.85240
sky130_osu_sc_18T_ls__inv_10	**A->Y (FR)**	0.04856	0.56053	11.89820
sky130_osu_sc_18T_ls__inv_2	**A->Y (FR)**	0.02423	0.67118	11.71170
sky130_osu_sc_18T_ls__inv_3	**A->Y (FR)**	0.02734	0.63646	11.75070
sky130_osu_sc_18T_ls__inv_4	**A->Y (FR)**	0.02892	0.60735	11.72020
sky130_osu_sc_18T_ls__inv_6	**A->Y (FR)**	0.03380	0.58110	11.77730
sky130_osu_sc_18T_ls__inv_8	**A->Y (FR)**	0.04072	0.56667	11.83940
sky130_osu_sc_18T_ls__inv_l	**A->Y (FR)**	0.03152	0.83072	11.82050

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)**	0.01864	0.51973	8.08402
sky130_osu_sc_18T_ls__inv_10	**A->Y (RF)**	0.03343	0.32347	7.88067
sky130_osu_sc_18T_ls__inv_2	**A->Y (RF)**	0.01627	0.43993	7.97849
sky130_osu_sc_18T_ls__inv_3	**A->Y (RF)**	0.01813	0.40825	7.98930
sky130_osu_sc_18T_ls__inv_4	**A->Y (RF)**	0.01861	0.38030	7.98343
sky130_osu_sc_18T_ls__inv_6	**A->Y (RF)**	0.02394	0.35156	7.98735
sky130_osu_sc_18T_ls__inv_8	**A->Y (RF)**	0.02862	0.33589	7.98923
sky130_osu_sc_18T_ls__inv_l	**A->Y (RF)**	0.02044	0.55110	7.85612

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	0.00684	0.00692	0.00827
sky130_osu_sc_18T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.05960	0.06232	0.07604
sky130_osu_sc_18T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01236	0.01279	0.01528
sky130_osu_sc_18T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01889	0.01974	0.02329
sky130_osu_sc_18T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02445	0.02495	0.03036
sky130_osu_sc_18T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.03615	0.03786	0.04540
sky130_osu_sc_18T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.04780	0.05072	0.06106
sky130_osu_sc_18T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00529	0.00531	0.00629

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	-0.00155	-0.00149	-0.00087
sky130_osu_sc_18T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.02234	-0.02333	-0.01402
sky130_osu_sc_18T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00475	-0.00445	-0.00308
sky130_osu_sc_18T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00636	-0.00592	-0.00371
sky130_osu_sc_18T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00962	-0.00907	-0.00592
sky130_osu_sc_18T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01458	-0.01375	-0.00877
sky130_osu_sc_18T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01918	-0.01837	-0.01156
sky130_osu_sc_18T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00108	-0.00106	-0.00060

SKY130_OSU_SC_18T_LS__MUX2

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.54073	0.54095	0.01057	0.54307

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__mux2_1	0.00000	0.00187	0.00342

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)	-	0.01337	0.27222	2.88482
	A1->Y (RR)	-	0.01451	0.27336	2.86717
	S0->Y (RR)	(!A0 * A1)	0.04041	0.22846	0.61275
	S0->Y (FR)	(A0 * !A1)	0.04301	0.42256	3.80838

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)	-	0.01221	0.25993	2.73160
	A1->Y (FF)	-	0.01227	0.25814	2.71543
	S0->Y (FF)	(!A0 * A1)	0.06074	0.39739	2.91289
	S0->Y (RF)	(A0 * !A1)	0.02274	0.26286	1.95248

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	-	-0.00739	-0.00741	-0.00741
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00504	-0.00504	-0.00505
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00804	0.00820	0.02414
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00492	-0.00534	0.00921

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	-	0.00739	0.00741	0.00741
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00504	0.00504	0.00505
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00139	0.00094	0.01621
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01869	0.01867	0.03383

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)	-0.00225	-0.00224	-0.00224

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)	0.00225	0.00224	0.00224

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)	-0.00180	-0.00229	0.01274
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00174	-0.00201	0.01284

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)	0.01403	0.01403	0.02925
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01269	0.01282	0.02869

SKY130_OSU_SC_18T_LS__NAND2x

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00522	0.00518	2.74017
sky130_osu_sc_18T_ls__nand2_l	0.00404	0.00401	1.88993

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nand2_1	0.00000	0.00064	0.00228
sky130_osu_sc_18T_ls__nand2_l	0.00000	0.00045	0.00157

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)	0.02907	0.77245	11.83730
	B->Y (FR)	0.03437	0.76858	11.68190
sky130_osu_sc_18T_ls__nand2_l	A->Y (FR)	0.03211	0.83039	11.74150
	B->Y (FR)	0.03863	0.83187	11.67830

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)	0.02461	0.61650	9.58746
	B->Y (RF)	0.02844	0.61782	9.55961
sky130_osu_sc_18T_ls__nand2_l	A->Y (RF)	0.02710	0.65183	9.28884
	B->Y (RF)	0.03069	0.65774	9.24490

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	0.00731	0.00735	0.00867
	B	0.00000	0.00000	0.00000
	B	0.00929	0.00925	0.01040
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00560	0.00563	0.00653
	B	0.00000	0.00000	0.00000
	B	0.00710	0.00704	0.00794

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	-0.00095	-0.00097	-0.00038
	B	0.00000	0.00000	0.00000
	B	-0.00088	-0.00096	-0.00059
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00071	-0.00077	-0.00031
	B	0.00000	0.00000	0.00000
	B	-0.00067	-0.00074	-0.00048

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)	-0.00514	-0.00517	-0.00517
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00375	-0.00377	-0.00377

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)	0.00515	0.00521	0.00518
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00376	0.00380	0.00378

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)	-0.00475	-0.00478	-0.00476
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00345	-0.00348	-0.00347

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)	0.00476	0.00478	0.00477
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00347	0.00348	0.00348

SKY130_OSU_SC_18T_LS__NOR2x

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00520	0.00552	1.50273
sky130_osu_sc_18T_ls__nor2_l	0.00395	0.00431	1.04727

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nor2_1	0.00000	0.00065	0.00114
sky130_osu_sc_18T_ls__nor2_l	0.00000	0.00046	0.00079

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)	0.05660	0.90304	11.79810
	B->Y (FR)	0.04281	0.88508	11.77860
sky130_osu_sc_18T_ls__nor2_l	A->Y (FR)	0.06201	0.98259	11.74660
	B->Y (FR)	0.04993	0.96422	11.74790

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)	0.02485	0.42968	5.58488
	B->Y (RF)	0.01973	0.41904	5.56582
sky130_osu_sc_18T_ls__nor2_l	A->Y (RF)	0.02611	0.45375	5.41807
	B->Y (RF)	0.02156	0.44480	5.40261

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	0.00997	0.00990	0.01022
	B	0.00000	0.00000	0.00000
	B	0.00748	0.00747	0.00884
sky130_osu_sc_18T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00734	0.00719	0.00752
	B	0.00000	0.00000	0.00000
	B	0.00571	0.00532	0.00676

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	0.00082	0.00054	0.00128
	B	0.00000	0.00000	0.00000
	B	-0.00121	-0.00120	-0.00043
sky130_osu_sc_18T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00051	0.00033	0.00094
	B	0.00000	0.00000	0.00000
	B	-0.00080	-0.00081	-0.00020

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)	-0.00424	-0.00457	-0.00455
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00301	-0.00323	-0.00321

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)	0.00453	0.00461	0.00455
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00320	0.00327	0.00321

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)	-0.00215	-0.00217	-0.00216
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00155	-0.00156	-0.00155

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)	0.00226	0.00227	0.00219
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00162	0.00163	0.00158

SKY130_OSU_SC_18T_LS__OAI21

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00526	0.00530	0.00447	1.48011

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai21_l	0.00000	0.00066	0.00193

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)	0.05740	0.89882	11.76670
	A1->Y (FR)	0.07544	0.92349	11.78570
	B0->Y (FR)	0.03897	0.76483	10.17090

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)	0.03539	0.52843	6.82033
	A1->Y (RF)	0.04136	0.52581	6.68370
	B0->Y (RF)	0.02729	0.54905	7.26523

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	0.01026	0.00970	0.01134
	A1	0.00000	0.00000	0.00000
	A1	0.01278	0.01259	0.01287
	B0	0.00863	0.00849	0.00993

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	0.00031	0.00015	0.00055
	A1	0.00000	0.00000	0.00000
	A1	0.00233	0.00196	0.00235
	B0	0.00322	0.00307	0.00363

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)	-0.00215	-0.00216	-0.00217
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00443	-0.00460	-0.00458
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00466	-0.00469	-0.00466

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)	0.00227	0.00228	0.00220
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00456	0.00463	0.00458
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00466	0.00471	0.00468

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)	-0.00418	-0.00448	-0.00447
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00441	-0.00455	-0.00455
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00461	-0.00462	-0.00462

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)	0.00444	0.00448	0.00447
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00452	0.00455	0.00455
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00461	0.00466	0.00463

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)	-0.00383	-0.00387	-0.00389

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)	0.00389	0.00392	0.00390

SKY130_OSU_SC_18T_LS__OAI22

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00508	0.00537	0.00552	0.00538	1.49484

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai22_1	0.00000	0.00099	0.00228

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)	0.08166	0.92902	11.81010
	A1->Y (FR)	0.06782	0.90734	11.79180
	B0->Y (FR)	0.04840	0.89207	11.79310
	B1->Y (FR)	0.06251	0.91058	11.81300

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)	0.05996	0.56752	6.99491
	A1->Y (RF)	0.04779	0.54770	6.90348
	B0->Y (RF)	0.03976	0.56622	7.33515
	B1->Y (RF)	0.05314	0.60012	7.62255

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	0.01665	0.01649	0.01678
	A1	0.01414	0.01353	0.01513
	B0	0.01059	0.01049	0.01168
	B1	0.01320	0.01305	0.01337

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.00379	0.00344	0.00377
	A1	0.00196	0.00170	0.00204
	B0	-0.00042	-0.00052	0.00022
	B1	0.00383	0.00349	0.00407

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)	-0.00423	-0.00457	-0.00455
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00423	-0.00457	-0.00455
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00440	-0.00457	-0.00455
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00462	-0.00462	-0.00463

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)	0.00452	0.00460	0.00455
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00452	0.00460	0.00455
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00453	0.00461	0.00455
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00462	0.00467	0.00464

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)	-0.00214	-0.00215	-0.00215
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00213	-0.00215	-0.00215
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00438	-0.00454	-0.00453
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00461	-0.00462	-0.00462

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)	0.00225	0.00226	0.00218
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00225	0.00226	0.00218
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00451	0.00454	0.00453
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00461	0.00465	0.00463

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)	-0.00212	-0.00215	-0.00213
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00212	-0.00215	-0.00213
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00491	-0.00506	-0.00506
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00504	-0.00510	-0.00513

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)	0.00224	0.00225	0.00217
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00223	0.00225	0.00217
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00509	0.00511	0.00506
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00512	0.00516	0.00515

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)	-0.00419	-0.00450	-0.00448
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00419	-0.00450	-0.00448
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00499	-0.00515	-0.00514
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00511	-0.00514	-0.00519

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)	0.00446	0.00454	0.00448
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00446	0.00450	0.00448
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00516	0.00525	0.00514
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00518	0.00523	0.00522

SKY130_OSU_SC_18T_LS__OR2x

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00553	0.00534	2.85886
sky130_osu_sc_18T_ls__or2_2	0.00553	0.00535	5.49460
sky130_osu_sc_18T_ls__or2_4	0.00553	0.00535	10.48020
sky130_osu_sc_18T_ls__or2_8	0.00554	0.00537	19.77674
sky130_osu_sc_18T_ls__or2_l	0.00436	0.00413	1.95614

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__or2_1	0.00000	0.00101	0.00133
sky130_osu_sc_18T_ls__or2_2	0.00000	0.00137	0.00247
sky130_osu_sc_18T_ls__or2_4	0.00000	0.00208	0.00475
sky130_osu_sc_18T_ls__or2_8	0.00000	0.00351	0.00931
sky130_osu_sc_18T_ls__or2_l	0.00000	0.00071	0.00093

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)	0.05932	0.52817	6.28838
	B->Y (RR)	0.05290	0.50283	6.24305
sky130_osu_sc_18T_ls__or2_2	A->Y (RR)	0.06600	0.46639	6.28971
	B->Y (RR)	0.05925	0.44508	6.24051
sky130_osu_sc_18T_ls__or2_4	A->Y (RR)	0.08686	0.46557	6.61313
	B->Y (RR)	0.08008	0.44862	6.56416
sky130_osu_sc_18T_ls__or2_8	A->Y (RR)	0.12540	0.51473	7.07615
	B->Y (RR)	0.11860	0.50191	7.03193
sky130_osu_sc_18T_ls__or2_l	A->Y (RR)	0.06469	0.58883	6.18405
	B->Y (RR)	0.05884	0.56666	6.15314

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)	0.09785	0.64928	7.02095
	B->Y (FF)	0.07923	0.61175	6.84292
sky130_osu_sc_18T_ls__or2_2	A->Y (FF)	0.11761	0.63392	7.10565
	B->Y (FF)	0.09906	0.60547	6.91295
sky130_osu_sc_18T_ls__or2_4	A->Y (FF)	0.16441	0.67441	7.44282
	B->Y (FF)	0.14594	0.65581	7.22615
sky130_osu_sc_18T_ls__or2_8	A->Y (FF)	0.26045	0.77858	7.78898
	B->Y (FF)	0.24198	0.76276	7.58175
sky130_osu_sc_18T_ls__or2_l	A->Y (FF)	0.10549	0.68459	6.78774
	B->Y (FF)	0.08744	0.65087	6.63002

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	0.00734	0.00645	0.01393
	B	0.00000	0.00000	0.00000
	B	0.00549	0.00522	0.01632
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01293	0.01234	0.02059
	B	0.00000	0.00000	0.00000
	B	0.01099	0.01114	0.02255
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02480	0.02498	0.03228
	B	0.00000	0.00000	0.00000
	B	0.02282	0.02424	0.03430
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04817	0.04999	0.05838
	B	0.00000	0.00000	0.00000
	B	0.04620	0.04874	0.06018
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00540	0.00463	0.01062
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00408	0.01287

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	0.01634	0.01614	0.02062
	B	0.00000	0.00000	0.00000
	B	0.01351	0.01398	0.02697
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.02023	0.02069	0.02484
	B	0.00000	0.00000	0.00000
	B	0.01736	0.01836	0.03033
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02978	0.03135	0.03543
	B	0.00000	0.00000	0.00000
	B	0.02702	0.02874	0.03967
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04991	0.05190	0.05686
	B	0.00000	0.00000	0.00000
	B	0.04705	0.04948	0.05992
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.01249	0.01226	0.01578
	B	0.00000	0.00000	0.00000
	B	0.01051	0.01080	0.02082

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)	-0.00429	-0.00457	-0.00457
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00429	-0.00457	-0.00457
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00429	-0.00457	-0.00457
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00429	-0.00458	-0.00457
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00305	-0.00324	-0.00323

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)	0.00454	0.00457	0.00457
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00454	0.00457	0.00457
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00454	0.00457	0.00457
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00454	0.00458	0.00457
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00321	0.00325	0.00323

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)	-0.00215	-0.00217	-0.00217
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00216	-0.00217	-0.00217
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00216	-0.00217	-0.00217
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00216	-0.00217	-0.00217
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00157	-0.00158	-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)	0.00228	0.00229	0.00220
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00228	0.00229	0.00220
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00228	0.00229	0.00220
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00227	0.00229	0.00220
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00166	0.00166	0.00161

SKY130_OSU_SC_18T_LS__TBUFIx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00552	0.00703	1.50341
sky130_osu_sc_18T_ls__tbufi_l	0.00432	0.00553	1.04372

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tbufi_1	0.00000	0.00068	0.00228
sky130_osu_sc_18T_ls__tbufi_l	0.00000	0.00048	0.00157

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)	0.04102	0.88040	11.77670
	OE->Y (FR)	0.04625	0.35937	5.02029
	OE->Y (RR)	0.07170	0.62634	6.37451
sky130_osu_sc_18T_ls__tbufi_l	A->Y (FR)	0.04807	0.96272	11.74360
	OE->Y (FR)	0.04900	0.35917	5.01997
	OE->Y (RR)	0.07794	0.71071	6.36161

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)	0.02374	0.49819	6.61801
	OE->Y (FF)	0.04635	0.35934	5.02029
	OE->Y (RF)	0.02362	0.49424	6.53332
sky130_osu_sc_18T_ls__tbufi_l	A->Y (RF)	0.02646	0.52852	6.42407
	OE->Y (FF)	0.04939	0.35918	5.02007
	OE->Y (RF)	0.02693	0.52509	6.33473

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	0.00696	0.00654	0.00823
	OE	0.00000	0.00000	0.00000
	OE	0.00711	0.00673	0.01969
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00534	0.00494	0.00630
	OE	0.00000	0.00000	0.00000
	OE	0.00513	0.00486	0.01521

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	-0.00123	-0.00125	-0.00048
	OE	0.00000	0.00000	0.00000
	OE	0.00479	0.00439	0.01961
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00081	-0.00082	-0.00026
	OE	0.00000	0.00000	0.00000
	OE	0.00336	0.00308	0.01478

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)	-0.00359	-0.00362	-0.00361
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00319	-0.00320	-0.00321
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00272	-0.00273	-0.00274
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00245	-0.00249	-0.00247

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)	0.00359	0.00362	0.00361
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00328	0.00331	0.00326
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00272	0.00273	0.00274
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00252	0.00253	0.00249

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)	0.00276	0.00234	0.01792
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00250	0.00218	0.01767
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00189	0.00161	0.01363
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00170	0.00148	0.01344

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	0.00785	0.02355
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00816	0.00810	0.02370
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00627	0.00616	0.01821
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00647	0.00634	0.01834

SKY130_OSU_SC_18T_LS__TNBUFIx

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00552	0.00856	1.50346
sky130_osu_sc_18T_ls__tnbufi_l	0.00431	0.00644	1.04379

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tnbufi_1	0.00000	0.00103	0.00124
sky130_osu_sc_18T_ls__tnbufi_l	0.00000	0.00072	0.00086

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)	0.04129	0.88042	11.77690
	OE->Y (RR)	0.02405	0.36006	5.02105
	OE->Y (FR)	0.05414	0.90092	11.80080
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (FR)	0.04843	0.96554	11.74400
	OE->Y (RR)	0.02494	0.36025	5.02124
	OE->Y (FR)	0.05969	0.98056	11.74720

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)	0.02342	0.49811	6.61806
	OE->Y (RF)	0.02386	0.36001	5.02121
	OE->Y (FF)	0.04774	0.50728	5.30818
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (RF)	0.02608	0.52844	6.42422
	OE->Y (RF)	0.02476	0.36027	5.02144
	OE->Y (FF)	0.05324	0.54529	5.19232

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	0.00715	0.00672	0.00841
	OE	0.00000	0.00000	0.00000
	OE	0.01770	0.01827	0.03502
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00552	0.00546	0.00648
	OE	0.00000	0.00000	0.00000
	OE	0.01327	0.01349	0.02637

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	-0.00147	-0.00146	-0.00070
	OE	0.00000	0.00000	0.00000
	OE	0.01569	0.01623	0.02992
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00103	-0.00103	-0.00048
	OE	0.00000	0.00000	0.00000
	OE	0.01171	0.01204	0.02234

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	-0.00309	-0.00308
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00271	-0.00276	-0.00272
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00223	-0.00223	-0.00224
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00198	-0.00201	-0.00199

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	0.00309	0.00308
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00279	0.00280	0.00276
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00223	0.00223	0.00224
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00204	0.00204	0.00202

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)	-0.00561	-0.00638	0.00992
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00536	-0.00625	0.01000
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00394	-0.00444	0.00809
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00376	-0.00433	0.00815

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)	0.01334	0.01382	0.03063
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01314	0.01358	0.03043
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01002	0.01033	0.02314
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00988	0.01019	0.02298

SKY130_OSU_SC_18T_LS__XNOR2

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.01090	0.00991	1.54297

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xnor2_l	0.00000	0.00199	0.00352

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	0.09130	0.66954	6.60256
	A->Y (FR)	!B	0.05373	0.90068	11.90880
	B->Y (RR)	A	0.07205	0.64876	6.59094
	B->Y (FR)	!A	0.07497	0.92387	11.93290

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	0.07963	0.58891	5.74537
	A->Y (RF)	!B	0.03540	0.52399	6.85066
	B->Y (FF)	A	0.07219	0.58285	5.75064
	B->Y (RF)	!A	0.04264	0.53364	6.84989

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	0.00704	0.00648	0.01881
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01714	0.01709	0.03337
	B	A	0.00000	0.00000	0.00000
	B	A	0.00240	0.00215	0.01708
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01900	0.01893	0.03474

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	0.02147	0.02074	0.03544
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00487	0.00428	0.01910
	B	A	0.00000	0.00000	0.00000
	B	A	0.01976	0.02020	0.03558
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00598	0.00521	0.01996

SKY130_OSU_SC_18T_LS__XOR2

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.01088	0.00996	1.49949

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xor2_l	0.00000	0.00199	0.00254

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	0.08726	0.64829	6.43054
	A->Y (FR)	B	0.06701	0.91225	11.82000
	B->Y (RR)	!A	0.07511	0.64452	6.45308
	B->Y (FR)	A	0.07257	0.91708	11.80000

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	0.07192	0.57110	5.46614
	A->Y (RF)	B	0.03233	0.51194	6.60789
	B->Y (FF)	!A	0.06582	0.56203	5.47489
	B->Y (RF)	A	0.04014	0.51322	6.52765

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	0.02028	0.02048	0.03662
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00358	0.00182	0.01617
	B	A	0.00000	0.00000	0.00000
	B	A	0.02084	0.02109	0.03702
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00206	0.00163	0.01678

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	0.00378	0.00303	0.01854
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02232	0.02269	0.03568
	B	A	0.00000	0.00000	0.00000
	B	A	0.00384	0.00296	0.01796
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02007	0.02070	0.03609

SKY130_OSU_SC_18T_LS_x

sky130_osu_sc_18T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

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	0.67328
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	350477.00000	700953.00000
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
	-0.00242	0.07819	1.07033

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
	6.09844	5.77314	1.33781