sky130_osu_sc_18T_ls_ss_1P60_-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_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.02135	0.02138	0.01658	1.10559	0.49674	1.08398
sky130_osu_sc_18T_ls__addf_l	0.02133	0.02138	0.01659	0.76245	0.49522	0.76153

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addf_1	0.00000	0.00072	0.00082
sky130_osu_sc_18T_ls__addf_l	0.00000	0.00067	0.00081

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)	0.25235	2.11264	21.79860
	B->CO (RR)	0.23007	2.01630	20.97500
	CI->CO (RR)	0.24272	2.13373	22.24420
	CON->CO (FR)	0.06552	1.16457	13.33750
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.25465	2.02250	18.55570
	B->CO (RR)	0.23588	1.93662	18.05440
	CI->CO (RR)	0.24512	2.04504	19.02880
	CON->CO (FR)	0.07605	1.26655	13.29630

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)	0.53159	3.52719	35.08990
	B->CO (FF)	0.49383	3.37737	34.02990
	CI->CO (FF)	0.47789	3.45018	34.98930
	CON->CO (RF)	0.03337	0.65829	7.73006
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	0.51966	3.15046	27.58990
	B->CO (FF)	0.47496	3.03565	26.83310
	CI->CO (FF)	0.46620	3.07269	27.50260
	CON->CO (RF)	0.03641	0.69403	7.67135

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)	0.39796	1.73452	13.51370
	B->CON (FR)	0.35773	1.65225	13.18440
	CI->CON (FR)	0.34445	1.65639	13.44370
sky130_osu_sc_18T_ls__addf_l	A->CON (FR)	0.37632	1.71097	13.47010
	B->CON (FR)	0.33763	1.63045	13.14140
	CI->CON (FR)	0.32309	1.63301	13.39990

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)	0.11850	0.70308	6.25377
	B->CON (RF)	0.10890	0.69668	6.35790
	CI->CON (RF)	0.10896	0.72838	6.70847
sky130_osu_sc_18T_ls__addf_l	A->CON (RF)	0.11385	0.69785	6.24045
	B->CON (RF)	0.10476	0.69217	6.34428
	CI->CON (RF)	0.10429	0.72324	6.69380

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)	0.72762	3.67767	31.67090
	B->S (-R)	0.70686	3.61838	31.19190
	CI->S (-R)	0.67093	3.59499	31.55660
	CON->S (RR)	0.15688	1.11038	9.22857
sky130_osu_sc_18T_ls__addf_l	A->S (-R)	0.69168	3.37248	26.42840
	B->S (-R)	0.67242	3.32567	26.12110
	CI->S (-R)	0.63513	3.28732	26.31670
	CON->S (RR)	0.15910	1.19360	9.11082

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)	0.46995	1.91150	15.30020
	B->S (-F)	0.50512	1.86180	14.86440
	CI->S (-F)	0.45964	1.92698	15.73410
	CON->S (FF)	0.23011	0.98309	7.56545
sky130_osu_sc_18T_ls__addf_l	A->S (-F)	0.43948	1.74466	12.88200
	B->S (-F)	0.43641	1.65370	12.63630
	CI->S (-F)	0.42940	1.76422	13.34410
	CON->S (FF)	0.21713	0.98944	7.39888

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	0.00370	0.00358	0.00343
	B	0.00467	0.00476	0.00466
	CI	0.00512	0.00524	0.00516
sky130_osu_sc_18T_ls__addf_l	A	0.00280	0.00263	0.00246
	B	0.00377	0.00376	0.00357
	CI	0.00421	0.00425	0.00414

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01496	0.01496	0.01485
	B	0.01471	0.01486	0.01478
	CI	0.01286	0.01323	0.01314
sky130_osu_sc_18T_ls__addf_l	A	0.01406	0.01403	0.01391
	B	0.01381	0.01392	0.01380
	CI	0.01194	0.01228	0.01216

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01495	0.01493	0.01483
	B	0.01470	0.01480	0.01471
	CI	0.01285	0.01316	0.01305
sky130_osu_sc_18T_ls__addf_l	A	0.01406	0.01401	0.01388
	B	0.01381	0.01388	0.01377
	CI	0.01194	0.01223	0.01211

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00367	0.00357	0.00339
	B	0.00463	0.00467	0.00441
	CI	0.00511	0.00522	0.00506
sky130_osu_sc_18T_ls__addf_l	A	0.00277	0.00261	0.00237
	B	0.00374	0.00371	0.00342
	CI	0.00421	0.00424	0.00407

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01496	0.01496	0.01489
	B	0.01471	0.01486	0.01477
	CI	0.01286	0.01324	0.01315
sky130_osu_sc_18T_ls__addf_l	A	0.01407	0.01404	0.01395
	B	0.01382	0.01393	0.01380
	CI	0.01195	0.01229	0.01217

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.03155	0.03183	0.03179
	B	0.02833	0.02791	0.02767
	CI	0.02522	0.02541	0.02530
sky130_osu_sc_18T_ls__addf_l	A	0.03038	0.03042	0.03026
	B	0.02716	0.02663	0.02634
	CI	0.02406	0.02410	0.02399

SKY130_OSU_SC_18T_LS__ADDHx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.01058	0.01139	1.09317	0.52127	1.11368
sky130_osu_sc_18T_ls__addh_l	0.01058	0.01140	0.63440	0.52952	0.63418

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addh_1	0.00000	0.00066	0.00078
sky130_osu_sc_18T_ls__addh_l	0.00000	0.00099	0.00107

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)	0.18314	1.11526	8.96042
	B->CO (RR)	0.18799	1.11311	9.09770
sky130_osu_sc_18T_ls__addh_l	A->CO (RR)	0.19229	1.26862	8.99386
	B->CO (RR)	0.19711	1.26883	9.14386

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)	0.19875	0.94225	7.63239
	B->CO (FF)	0.21189	0.95684	7.69713
sky130_osu_sc_18T_ls__addh_l	A->CO (FF)	0.19311	0.96732	7.35967
	B->CO (FF)	0.20558	0.98170	7.43059

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	0.26639	0.95096	5.21651
	A->CON (FR)	!B	0.23540	1.53059	13.32460
	B->CON (RR)	A	0.27148	0.94841	5.35688
	B->CON (FR)	!A	0.27781	1.59399	13.43610
sky130_osu_sc_18T_ls__addh_l	A->CON (RR)	B	0.23674	0.91543	5.13118
	A->CON (FR)	!B	0.20762	1.50994	13.41410
	B->CON (RR)	A	0.24195	0.91520	5.28844
	B->CON (FR)	!A	0.25010	1.57333	13.52270

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	0.25915	0.99072	6.98573
	A->CON (RF)	!B	0.07383	0.68727	6.67004
	B->CON (FF)	A	0.26701	1.02249	7.23268
	B->CON (RF)	!A	0.08282	0.67809	6.45584
sky130_osu_sc_18T_ls__addh_l	A->CON (FF)	B	0.23153	0.95451	6.82290
	A->CON (RF)	!B	0.06798	0.68391	6.70725
	B->CON (FF)	A	0.23903	0.98716	7.07928
	B->CON (RF)	!A	0.07723	0.67442	6.49132

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	0.19066	2.03965	21.89380
	A->S (FR)	B	0.37589	2.30944	21.71030
	B->S (RR)	!A	0.19723	1.97278	21.03070
	B->S (FR)	A	0.38734	2.39861	22.63080
	CON->S (FR)	-	0.07077	1.19057	13.60850
sky130_osu_sc_18T_ls__addh_l	A->S (RR)	!B	0.19650	1.94578	17.66490
	A->S (FR)	B	0.36058	2.20089	17.49670
	B->S (RR)	!A	0.20393	1.89944	17.16800
	B->S (FR)	A	0.37122	2.26897	18.06240
	CON->S (FR)	-	0.08793	1.36444	13.65360

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	0.34480	3.18054	33.61610
	A->S (RF)	B	0.34450	1.96969	17.26500
	B->S (FF)	!A	0.38700	3.24265	33.76450
	B->S (RF)	A	0.34970	1.96707	17.40050
	CON->S (RF)	-	0.03131	0.64833	7.61301
sky130_osu_sc_18T_ls__addh_l	A->S (FF)	!B	0.32435	2.64109	23.46290
	A->S (RF)	B	0.31930	1.68249	11.78170
	B->S (FF)	!A	0.36686	2.71043	23.58540
	B->S (RF)	A	0.32450	1.68156	11.93060
	CON->S (RF)	-	0.03623	0.69508	7.48936

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	0.00654	0.00623	0.00581
	B	0.00000	0.00000	0.00000
	B	0.00601	0.00571	0.00530
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00528	0.00488	0.00463
	B	0.00000	0.00000	0.00000
	B	0.00475	0.00435	0.00414

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	0.01039	0.01006	0.00935
	B	0.00000	0.00000	0.00000
	B	0.01079	0.01082	0.01016
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00912	0.00875	0.00832
	B	0.00000	0.00000	0.00000
	B	0.00953	0.00948	0.00915

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	0.00653	0.00621	0.00625
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00901	0.00896	0.00889
	B	A	0.00000	0.00000	0.00000
	B	A	0.00601	0.00570	0.00568
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00987	0.00984	0.00973
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00527	0.00487	0.00471
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00819	0.00809	0.00803
	B	A	0.00000	0.00000	0.00000
	B	A	0.00474	0.00434	0.00428
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00905	0.00898	0.00891

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	0.01039	0.01010	0.00965
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00146	0.00142	0.00129
	B	A	0.00000	0.00000	0.00000
	B	A	0.01079	0.01081	0.01055
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00235	0.00222	0.00185
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00912	0.00876	0.00834
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00037	0.00032	-0.00001
	B	A	0.00000	0.00000	0.00000
	B	A	0.00953	0.00948	0.00911
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00125	0.00110	0.00077

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	0.01040	0.01007	0.00972
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00147	0.00147	0.00136
	B	A	0.00000	0.00000	0.00000
	B	A	0.01080	0.01083	0.01058
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00237	0.00225	0.00212
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00913	0.00877	0.00835
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00037	0.00031	-0.00003
	B	A	0.00000	0.00000	0.00000
	B	A	0.00954	0.00949	0.00934
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00127	0.00110	0.00070

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	0.00654	0.00622	0.00581
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00900	0.00903	0.00894
	B	A	0.00000	0.00000	0.00000
	B	A	0.00601	0.00571	0.00528
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00986	0.00988	0.00981
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00527	0.00487	0.00463
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00819	0.00815	0.00808
	B	A	0.00000	0.00000	0.00000
	B	A	0.00474	0.00435	0.00416
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00905	0.00899	0.00894

SKY130_OSU_SC_18T_LS__AND2x

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00567	0.00574	1.10022
sky130_osu_sc_18T_ls__and2_2	0.00567	0.00574	2.17743
sky130_osu_sc_18T_ls__and2_4	0.00567	0.00574	4.21059
sky130_osu_sc_18T_ls__and2_6	0.00570	0.00574	6.22303
sky130_osu_sc_18T_ls__and2_8	0.00568	0.00575	8.14609
sky130_osu_sc_18T_ls__and2_l	0.00430	0.00438	0.76123

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__and2_1	0.00000	0.00031	0.00045
sky130_osu_sc_18T_ls__and2_2	0.00000	0.00047	0.00050
sky130_osu_sc_18T_ls__and2_4	0.00000	0.00079	0.00088
sky130_osu_sc_18T_ls__and2_6	0.00000	0.00112	0.00128
sky130_osu_sc_18T_ls__and2_8	0.00000	0.00144	0.00168
sky130_osu_sc_18T_ls__and2_l	0.00000	0.00024	0.00035

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)	0.14113	1.02971	8.54355
	B->Y (RR)	0.14725	1.03708	8.73511
sky130_osu_sc_18T_ls__and2_2	A->Y (RR)	0.15942	0.94024	8.85983
	B->Y (RR)	0.16554	0.93997	9.00295
sky130_osu_sc_18T_ls__and2_4	A->Y (RR)	0.21933	0.94529	9.35747
	B->Y (RR)	0.22552	0.93488	9.45496
sky130_osu_sc_18T_ls__and2_6	A->Y (RR)	0.27696	0.98751	9.73578
	B->Y (RR)	0.28300	0.97062	9.79947
sky130_osu_sc_18T_ls__and2_8	A->Y (RR)	0.33515	1.04170	10.09010
	B->Y (RR)	0.34131	1.02339	10.12940
sky130_osu_sc_18T_ls__and2_l	A->Y (RR)	0.16210	1.15971	8.74496
	B->Y (RR)	0.16899	1.16510	8.92722

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)**	0.14682	0.85551	7.11557
	B->Y (FF)	0.15852	0.87432	7.22777
sky130_osu_sc_18T_ls__and2_2	**A->Y (FF)**	0.18152	0.85947	7.44207
	B->Y (FF)	0.19414	0.87565	7.53154
sky130_osu_sc_18T_ls__and2_4	**A->Y (FF)**	0.26537	0.93195	7.95683
	B->Y (FF)	0.27803	0.94612	8.01892
sky130_osu_sc_18T_ls__and2_6	**A->Y (FF)**	0.35163	1.02011	8.32859
	B->Y (FF)	0.36434	1.03419	8.37868
sky130_osu_sc_18T_ls__and2_8	**A->Y (FF)**	0.43370	1.10667	8.58182
	B->Y (FF)	0.44721	1.12207	8.63527
sky130_osu_sc_18T_ls__and2_l	**A->Y (FF)**	0.15943	0.90455	7.12024
	B->Y (FF)	0.17297	0.92484	7.23120

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	0.00533	0.00462	0.00444
	B	0.00000	0.00000	0.00000
	B	0.00540	0.00474	0.00451
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01047	0.01006	0.00999
	B	0.00000	0.00000	0.00000
	B	0.01054	0.01022	0.01001
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02149	0.02175	0.02206
	B	0.00000	0.00000	0.00000
	B	0.02157	0.02197	0.02210
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03239	0.03328	0.03367
	B	0.00000	0.00000	0.00000
	B	0.03249	0.03353	0.03373
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04330	0.04467	0.04546
	B	0.00000	0.00000	0.00000
	B	0.04338	0.04469	0.04544
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00388	0.00339	0.00322
	B	0.00000	0.00000	0.00000
	B	0.00397	0.00347	0.00332

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	0.01258	0.01242	0.01226
	B	0.00000	0.00000	0.00000
	B	0.01408	0.01388	0.01375
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01589	0.01641	0.01640
	B	0.00000	0.00000	0.00000
	B	0.01741	0.01787	0.01783
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02396	0.02582	0.02621
	B	0.00000	0.00000	0.00000
	B	0.02545	0.02723	0.02747
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03209	0.03536	0.03615
	B	0.00000	0.00000	0.00000
	B	0.03358	0.03655	0.03721
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03994	0.04439	0.04594
	B	0.00000	0.00000	0.00000
	B	0.04142	0.04550	0.04675
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00958	0.00938	0.00926
	B	0.00000	0.00000	0.00000
	B	0.01068	0.01048	0.01034

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)	-0.00470	-0.00472	-0.00474
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00470	-0.00471	-0.00474
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00470	-0.00471	-0.00474
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00472	-0.00474	-0.00476
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00469	-0.00470	-0.00474
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00339	-0.00340	-0.00342

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)	0.00473	0.00478	0.00475
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00473	0.00478	0.00475
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00473	0.00478	0.00475
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00475	0.00480	0.00477
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00472	0.00478	0.00475
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00342	0.00345	0.00343

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)	-0.00447	-0.00450	-0.00448
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00447	-0.00450	-0.00448
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00447	-0.00450	-0.00448
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00447	-0.00449	-0.00448
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00447	-0.00450	-0.00448
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00322	-0.00324	-0.00324

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)	0.00447	0.00450	0.00450
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00447	0.00450	0.00450
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00447	0.00450	0.00450
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00447	0.00450	0.00450
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00447	0.00450	0.00450
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00322	0.00325	0.00324

SKY130_OSU_SC_18T_LS__AOI21

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00528	0.00551	0.00540	0.50774

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi21_l	0.00000	0.00015	0.00020

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)	0.20646	1.55861	13.51820
	A1->Y (FR)	0.17540	1.48610	13.19140
	B0->Y (FR)	0.16056	1.48695	13.44340

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)	0.06204	0.63191	6.09009
	A1->Y (RF)	0.05606	0.64780	6.35871
	B0->Y (RF)	0.04204	0.63802	6.53681

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	0.01052	0.01040	0.01036
	A1	0.00000	0.00000	0.00000
	A1	0.00895	0.00880	0.00874
	B0	0.00856	0.00833	0.00828

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	0.00140	0.00109	0.00092
	A1	0.00000	0.00000	0.00000
	A1	0.00143	0.00104	0.00091
	B0	-0.00109	-0.00112	-0.00124

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)	-0.00402	-0.00415	-0.00414
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00423	-0.00426	-0.00425
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00423	-0.00426	-0.00425

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)	0.00412	0.00415	0.00414
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00423	0.00428	0.00426
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00423	0.00428	0.00426

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)	-0.00398	-0.00412	-0.00410
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00419	-0.00421	-0.00420
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00450	-0.00452	-0.00454

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)	0.00407	0.00412	0.00410
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00419	0.00427	0.00421
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00452	0.00458	0.00455

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)	-0.00231	-0.00234	-0.00232

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)	0.00252	0.00253	0.00238

SKY130_OSU_SC_18T_LS__AOI22

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ls__aoi22_1	0.00529	0.00552	0.00577	0.00551	0.49565

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi22_1	0.00000	0.00021	0.00040

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi22_l	A0->Y (FR)	0.26409	1.62740	13.54320
	A1->Y (FR)	0.23392	1.57416	13.37240
	B0->Y (FR)	0.17188	1.48246	13.27070
	B1->Y (FR)	0.20230	1.53658	13.47280

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)	0.07885	0.64734	6.05463
	A1->Y (RF)	0.07291	0.66241	6.31977
	B0->Y (RF)	0.04717	0.63116	6.27688
	B1->Y (RF)	0.05299	0.61418	6.01563

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	0.01286	0.01268	0.01267
	A1	0.01133	0.01108	0.01103
	B0	0.00921	0.00888	0.00879
	B1	0.01070	0.01044	0.01036

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.00344	0.00315	0.00291
	A1	0.00346	0.00311	0.00291
	B0	-0.00061	-0.00064	-0.00077
	B1	-0.00056	-0.00059	-0.00073

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)	-0.00403	-0.00417	-0.00413
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00423	-0.00427	-0.00425
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00423	-0.00427	-0.00425
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00423	-0.00426	-0.00425

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)	0.00411	0.00419	0.00413
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00423	0.00428	0.00426
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00423	0.00428	0.00426
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00423	0.00428	0.00426

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)	-0.00398	-0.00412	-0.00409
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00419	-0.00422	-0.00420
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00449	-0.00452	-0.00454
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00449	-0.00452	-0.00454

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)	0.00407	0.00412	0.00409
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00419	0.00423	0.00422
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00452	0.00458	0.00455
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00452	0.00458	0.00455

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)	-0.00232	-0.00235	-0.00233
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00232	-0.00232	-0.00232
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00460	-0.00461	-0.00465
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00460	-0.00462	-0.00465

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)	0.00258	0.00260	0.00240
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00232	0.00232	0.00232
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00463	0.00472	0.00466
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00463	0.00472	0.00466

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)	-0.00233	-0.00236	-0.00234
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00233	-0.00234	-0.00233
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00430	-0.00433	-0.00431
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00430	-0.00431	-0.00431

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)	0.00260	0.00261	0.00241
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00233	0.00234	0.00233
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00430	0.00433	0.00432
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00430	0.00431	0.00432

SKY130_OSU_SC_18T_LS__BUFx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00577	1.09253
sky130_osu_sc_18T_ls__buf_2	0.00577	2.18847
sky130_osu_sc_18T_ls__buf_4	0.00577	4.25901
sky130_osu_sc_18T_ls__buf_6	0.00099	1.80000
sky130_osu_sc_18T_ls__buf_8	0.00577	8.11151
sky130_osu_sc_18T_ls__buf_l	0.00444	0.75992

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__buf_1	0.00000	0.00025	0.00025
sky130_osu_sc_18T_ls__buf_2	0.00000	0.00038	0.00045
sky130_osu_sc_18T_ls__buf_4	0.00000	0.00063	0.00085
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ls__buf_8	0.00000	0.00113	0.00164
sky130_osu_sc_18T_ls__buf_l	0.00000	0.00020	0.00020

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)**	0.11015	0.98457	8.43441
sky130_osu_sc_18T_ls__buf_2	**A->Y (RR)**	0.11777	0.88398	8.78493
sky130_osu_sc_18T_ls__buf_4	**A->Y (RR)**	0.15759	0.86645	9.24983
sky130_osu_sc_18T_ls__buf_8	**A->Y (RR)**	0.23487	0.91845	9.73555
sky130_osu_sc_18T_ls__buf_l	**A->Y (RR)**	0.12568	1.10822	8.62286

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)**	0.13893	0.84335	7.03741
sky130_osu_sc_18T_ls__buf_2	**A->Y (FF)**	0.17480	0.85242	7.42301
sky130_osu_sc_18T_ls__buf_4	**A->Y (FF)**	0.25894	0.92521	7.95659
sky130_osu_sc_18T_ls__buf_8	**A->Y (FF)**	0.42824	1.09987	8.55382
sky130_osu_sc_18T_ls__buf_l	**A->Y (FF)**	0.15344	0.89045	7.06197

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	0.00490	0.00412	0.00392
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01006	0.00957	0.00929
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02118	0.02132	0.02153
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.04303	0.04429	0.04486
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00368	0.00309	0.00293

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	0.01221	0.01199	0.01189
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01549	0.01588	0.01587
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02357	0.02525	0.02561
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03963	0.04370	0.04499
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00940	0.00911	0.00903

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
	-0.00061	-0.00062	-0.00061

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
	0.00061	0.00062	0.00061

SKY130_OSU_SC_18T_LS__DFFRx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00544	0.00551	0.01615	1.08235	1.08641
sky130_osu_sc_18T_ls__dffr_l	0.00544	0.00551	0.01615	0.75880	0.76490

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffr_1	0.00000	0.00112	0.00139
sky130_osu_sc_18T_ls__dffr_l	0.00000	0.00107	0.00134

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)	0.70264	2.12775	14.72440
	QN->Q (FR)	0.07327	1.24093	14.17140
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RR)	0.68467	2.23949	14.47630
	QN->Q (FR)	0.08075	1.32153	13.84090

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)	0.64013	2.24364	17.22440
	QN->Q (RF)	0.03882	0.74852	8.73873
	RN->Q (FF)	0.45643	2.26529	20.02790
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RF)	0.65371	2.44415	17.16510
	QN->Q (RF)	0.04038	0.76610	8.44242
	RN->Q (FF)	0.46995	2.46660	19.96280

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)	0.56917	1.47742	9.22902
	RN->QN (FR)	0.38488	1.49839	12.03190
sky130_osu_sc_18T_ls__dffr_l	CK->QN (RR)	0.57154	1.56738	9.20856
	RN->QN (FR)	0.38706	1.58969	12.00040

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)**	0.59155	1.16003	4.73748
sky130_osu_sc_18T_ls__dffr_l	**CK->QN (RF)**	0.56385	1.14675	4.58549

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)	-0.09497	-0.12716	-0.68614
	setup	CK (R)	0.54292	0.54096	1.67258
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.09504	-0.12735	-0.68716
	setup	CK (R)	0.54292	0.54177	1.69351

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)	-0.30584	-0.73410	-8.75629
	setup	CK (R)	0.35523	0.75715	8.81222
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.30880	-0.73330	-8.75391
	setup	CK (R)	0.35480	0.75715	8.81204

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)	-0.09497	-0.12716	-0.68614
	setup	CK (R)	0.54292	0.54096	1.67258
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.09504	-0.12735	-0.68716
	setup	CK (R)	0.54292	0.54177	1.69351

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)	-0.30584	-0.73410	-8.75629
	setup	CK (R)	0.35523	0.75715	8.81222
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.30880	-0.73330	-8.75391
	setup	CK (R)	0.35480	0.75715	8.81204

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)	0.47922	0.48494	1.42236
	removal	CK (R)	-0.08102	-0.09234	-0.06924
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.48381	0.48731	1.43682
	removal	CK (R)	-0.08102	-0.09234	-0.06924

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)	0.47922	0.48494	1.42236
	removal	CK (R)	-0.08102	-0.09234	-0.06924
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.48381	0.48731	1.43682
	removal	CK (R)	-0.08102	-0.09234	-0.06924

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 ()	0.28304	0.67995	13.33370
	min_pulse_width	RN ()	0.28048	0.67995	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	RN ()	0.28134	0.67562	13.33370
	min_pulse_width	RN ()	0.27625	0.67562	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 ()	0.29902	0.56519	13.33370
	min_pulse_width	CK ()	0.32860	0.56519	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.27368	0.56519	13.33370
	min_pulse_width	CK ()	0.31804	0.56519	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 ()	0.71047	0.79472	13.33370
	min_pulse_width	CK ()	0.28618	0.66263	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.71240	0.79689	13.33370
	min_pulse_width	CK ()	0.28618	0.66263	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	0.01160	0.00940	-0.00723
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01018	0.00847	-0.00100

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	0.01367	0.01278	0.00723
	RN	-0.00169	-0.06238	-0.69270
	RN	0.03100	0.03032	0.02446
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01220	0.01144	0.00844
	RN	-0.00169	-0.05041	-0.48563
	RN	0.02952	0.02897	0.02558

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	0.01367	0.01278	0.00722
	RN	-0.00169	-0.06252	-0.69530
	RN	0.03101	0.03032	0.02441
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01220	0.01145	0.00844
	RN	-0.00169	-0.05065	-0.48954
	RN	0.02952	0.02897	0.02561

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	0.01157	0.00937	-0.00722
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01014	0.00843	-0.00148

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	-0.00398	-0.00412	-0.00412
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01356	0.01292	0.01250
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00604	0.00544	0.00510
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00398	-0.00412	-0.00412
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01356	0.01292	0.01250
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00604	0.00544	0.00510

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	0.00409	0.00416	0.00412
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02391	0.02361	0.02327
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01106	0.01083	0.01073
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00409	0.00416	0.00412
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02391	0.02361	0.02327
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01106	0.01083	0.01073

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)	0.00469	0.00396	0.00368
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01270	0.01167	0.01120
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)	0.00469	0.00396	0.00368
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01270	0.01167	0.01120

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)	0.01085	0.01047	0.01032
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02351	0.02282	0.02230
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)	0.01085	0.01047	0.01032
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02351	0.02282	0.02230

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)	-0.00086	-0.00169	-0.00200
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00669	0.00524	0.00430
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00128	-0.00217	-0.00251
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00086	-0.00169	-0.00200
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00669	0.00524	0.00430
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00128	-0.00217	-0.00251

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)	0.01779	0.01728	0.01703
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03688	0.03585	0.03463
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02858	0.02806	0.02719
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03695	0.03581	0.03516
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01976	0.01928	0.01912
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01779	0.01728	0.01703
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03688	0.03585	0.03463
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02858	0.02806	0.02719
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03695	0.03581	0.03516
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01976	0.01928	0.01912

SKY130_OSU_SC_18T_LS__DFFSRx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00540	0.00552	0.01160	0.01644	1.10606	1.10545
sky130_osu_sc_18T_ls__dffsr_l	0.00540	0.00552	0.01158	0.01644	0.76369	0.76330

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ls__dffsr_1	0.00000	0.00118	0.00145
sky130_osu_sc_18T_ls__dffsr_l	0.00000	0.00113	0.00140

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)	0.69022	2.09354	14.61570
	QN->Q (FR)	0.07025	1.21454	14.00380
	RN->Q (RR)	0.56193	1.97627	14.64570
	SN->Q (FR)	0.55138	2.14323	18.06540
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RR)	0.69286	2.25996	14.65980
	QN->Q (FR)	0.08062	1.32399	13.86560
	RN->Q (RR)	0.56506	2.14390	14.70230
	SN->Q (FR)	0.55287	2.31184	18.08880

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)	0.69334	2.27710	17.15860
	QN->Q (RF)	0.03531	0.70881	8.33913
	RN->Q (FF)	0.48041	2.26892	20.01990
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RF)	0.71461	2.51558	17.31570
	QN->Q (RF)	0.04029	0.76657	8.45662
	RN->Q (FF)	0.50210	2.50374	20.17100

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)	0.62437	1.53034	9.25630
	RN->QN (FR)	0.41188	1.51903	12.12080
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RR)	0.63170	1.63132	9.25251
	RN->QN (FR)	0.41924	1.62015	12.10920

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)	0.58865	1.14949	4.72038
	RN->QN (RF)	0.46030	1.03477	4.75387
	SN->QN (FF)	0.44953	1.20184	8.16782
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RF)	0.57622	1.16499	4.69985
	RN->QN (RF)	0.44834	1.05129	4.73427
	SN->QN (FF)	0.43728	1.21875	8.11515

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)	-0.10168	-0.13812	-0.77884
	setup	CK (R)	0.51834	0.51156	1.67472
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.10443	-0.13855	-0.77914
	setup	CK (R)	0.51445	0.51081	1.63151

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)	-0.34021	-0.76355	-8.92740
	setup	CK (R)	0.39415	0.78286	8.96076
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.34023	-0.76553	-8.92358
	setup	CK (R)	0.39422	0.78272	8.95961

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)	-0.10168	-0.13812	-0.77884
	setup	CK (R)	0.51834	0.51156	1.67472
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.10443	-0.13855	-0.77914
	setup	CK (R)	0.51445	0.51081	1.63151

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)	-0.34021	-0.76355	-8.92740
	setup	CK (R)	0.39415	0.78286	8.96076
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.34023	-0.76553	-8.92358
	setup	CK (R)	0.39422	0.78272	8.95961

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)	0.42174	0.42473	1.35931
	removal	CK (R)	-0.04514	-0.05105	-0.06354
	hold	SN (R)	-0.44151	-0.73005	-6.11041
	setup	SN (R)	0.46503	0.77886	7.51412
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.42204	0.42485	1.36058
	removal	CK (R)	-0.04514	-0.05105	-0.06354
	hold	SN (R)	-0.41678	-0.71232	-6.04186
	setup	SN (R)	0.46565	0.76348	7.44999

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)	0.42174	0.42473	1.35931
	removal	CK (R)	-0.04514	-0.05105	-0.06354
	hold	SN (R)	-0.44297	-0.73005	-6.11041
	hold	SN (R)	-0.44151	-0.73337	-6.12207
	setup	SN (R)	0.46503	0.77483	7.47675
	setup	SN (R)	0.45401	0.77886	7.51412
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.42204	0.42485	1.36058
	removal	CK (R)	-0.04514	-0.05105	-0.06354
	hold	SN (R)	-0.43407	-0.71527	-6.04186
	hold	SN (R)	-0.41678	-0.71232	-6.06004
	setup	SN (R)	0.46565	0.75369	7.39933
	setup	SN (R)	0.42952	0.76348	7.44999

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 ()	0.31633	0.70377	13.33370
	min_pulse_width	RN ()	0.32429	0.70377	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	RN ()	0.31804	0.70161	13.33370
	min_pulse_width	RN ()	0.31804	0.70161	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)	0.05359	0.08986	1.44940
	removal	CK (R)	-0.01369	-0.05727	-0.56448
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.05526	0.08927	1.31557
	removal	CK (R)	-0.01699	-0.05727	-0.56342

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)	0.05359	0.08986	1.44940
	removal	CK (R)	-0.01369	-0.05727	-0.56448
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.05526	0.08927	1.31557
	removal	CK (R)	-0.01699	-0.05727	-0.56342

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 ()	0.45119	0.83370	13.33370
	min_pulse_width	SN ()	0.44711	0.83803	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	SN ()	0.44824	0.81638	13.33370
	min_pulse_width	SN ()	0.42256	0.82071	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 ()	0.29269	0.56519	13.33370
	min_pulse_width	CK ()	0.34550	0.56519	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.27790	0.56519	13.33370
	min_pulse_width	CK ()	0.33916	0.56519	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 ()	0.68540	0.76657	13.33370
	min_pulse_width	CK ()	0.33157	0.69078	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.68540	0.76657	13.33370
	min_pulse_width	CK ()	0.32897	0.69078	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	0.01433	0.01270	0.00029
	RN	0.02727	0.02594	0.01346
	SN	-0.00169	-0.06319	-0.70788
	SN	0.02986	0.02875	0.01640
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01301	0.01135	0.00193
	RN	0.02593	0.02458	0.01513
	SN	-0.00169	-0.05060	-0.48876
	SN	0.02852	0.02739	0.01797

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	0.01539	0.01467	0.01004
	RN	-0.00169	-0.06319	-0.70788
	RN	0.03198	0.03133	0.02639
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01405	0.01339	0.01047
	RN	-0.00169	-0.05060	-0.48876
	RN	0.03062	0.03002	0.02685

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	0.01540	0.01469	0.01007
	RN	-0.00169	-0.06317	-0.70749
	RN	0.03198	0.03133	0.02647
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01406	0.01340	0.01049
	RN	-0.00169	-0.05059	-0.48851
	RN	0.03062	0.03002	0.02682

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	0.01429	0.01265	-0.00019
	RN	0.02722	0.02589	0.01292
	SN	-0.00169	-0.06317	-0.70745
	SN	0.02982	0.02871	0.01603
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01295	0.01130	0.00152
	RN	0.02588	0.02454	0.01473
	SN	-0.00169	-0.05059	-0.48848
	SN	0.02848	0.02735	0.01767

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	-0.00398	-0.00412	-0.00412
	(!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)	0.01751	0.01693	0.01651
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00696	0.00640	0.00605
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00690	0.00634	0.00599
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00700	0.00645	0.00610
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00398	-0.00412	-0.00412
	(!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)	0.01751	0.01693	0.01651
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00696	0.00640	0.00605
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00690	0.00634	0.00599
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00700	0.00645	0.00610

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	0.00410	0.00416	0.00412
	(!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)	0.02677	0.02649	0.02600
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01175	0.01154	0.01145
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01180	0.01158	0.01148
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01171	0.01149	0.01140
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00410	0.00416	0.00412
	(!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)	0.02676	0.02648	0.02599
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01174	0.01153	0.01144
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01179	0.01157	0.01147
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01170	0.01148	0.01140

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)	0.00449	0.00377	0.00337
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01553	0.01448	0.01383
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)	0.00449	0.00377	0.00337
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01553	0.01449	0.01383

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)	0.01181	0.01142	0.01127
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02500	0.02419	0.02359
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)	0.01180	0.01141	0.01126
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02498	0.02417	0.02358

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)	-0.00932	-0.00935	-0.00941
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00948	-0.00968	-0.00962
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00922	-0.00931	-0.00929
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00534	0.00470	0.00417
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)	-0.00932	-0.00935	-0.00941
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00947	-0.00966	-0.00960
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00922	-0.00930	-0.00929
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00534	0.00471	0.00418

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)	0.00938	0.00950	0.00944
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00955	0.00968	0.00962
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00926	0.00937	0.00931
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01866	0.01833	0.01820
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)	0.00938	0.00950	0.00944
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00954	0.00966	0.00960
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00925	0.00937	0.00930
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01865	0.01832	0.01818

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)	-0.00086	-0.00170	-0.00207
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00762	0.00622	0.00526
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00754	0.00614	0.00521
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00108	-0.00197	-0.00230
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00577	0.00415	0.00348
sky130_osu_sc_18T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00086	-0.00170	-0.00207
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00762	0.00621	0.00525
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00753	0.00613	0.00520
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00108	-0.00197	-0.00230
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00577	0.00415	0.00348

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)	0.04095	0.03997	0.03872
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01784	0.01734	0.01711
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02918	0.02876	0.02790
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02927	0.02887	0.02800
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03974	0.03856	0.03767
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01959	0.01911	0.01898
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02334	0.02229	0.02201
sky130_osu_sc_18T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04095	0.03997	0.03872
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01784	0.01734	0.01711
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02918	0.02876	0.02790
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02927	0.02887	0.02800
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03973	0.03855	0.03766
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01959	0.01911	0.01898
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02333	0.02234	0.02199

SKY130_OSU_SC_18T_LS__DFFSx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00543	0.00919	0.01622	1.08616	1.08226
sky130_osu_sc_18T_ls__dffs_l	0.00543	0.00919	0.01622	0.76873	0.76764

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffs_1	0.00000	0.00108	0.00131
sky130_osu_sc_18T_ls__dffs_l	0.00000	0.00103	0.00126

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)	0.46436	1.85775	14.49170
	QN->Q (FR)	0.07309	1.23571	14.12860
	SN->Q (FR)	0.39381	2.00357	17.88570
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RR)	0.46319	2.00124	14.39940
	QN->Q (FR)	0.08052	1.31756	13.88780
	SN->Q (FR)	0.39120	2.14513	17.74730

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)	0.70062	2.30646	17.28360
	QN->Q (RF)	0.03850	0.74520	8.71794
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RF)	0.70896	2.51017	17.38100
	QN->Q (RF)	0.04012	0.76522	8.46210

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)	0.62732	1.53655	9.23255
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RR)	0.62494	1.62411	9.26851

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)	0.36747	0.89880	4.47652
	SN->QN (FF)	0.29559	1.04585	7.87234
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RF)	0.35578	0.90814	4.37637
	SN->QN (FF)	0.28250	1.05347	7.73049

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)	-0.06998	-0.10613	-0.64836
	setup	CK (R)	0.31995	0.33104	1.52770
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.07049	-0.10750	-0.64861
	setup	CK (R)	0.32246	0.33114	1.53933

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)	-0.31110	-0.73964	-8.79234
	setup	CK (R)	0.38764	0.76297	8.84881
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.31019	-0.73886	-8.79118
	setup	CK (R)	0.38693	0.76297	8.84873

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)	-0.06998	-0.10613	-0.64836
	setup	CK (R)	0.31995	0.33104	1.52770
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.07049	-0.10750	-0.64861
	setup	CK (R)	0.32246	0.33114	1.53933

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)	-0.31110	-0.73964	-8.79234
	setup	CK (R)	0.38764	0.76297	8.84881
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.31019	-0.73886	-8.79118
	setup	CK (R)	0.38693	0.76297	8.84873

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)	0.07620	0.11805	1.34690
	removal	CK (R)	-0.02559	-0.07511	-0.77254
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.07601	0.11786	1.23751
	removal	CK (R)	-0.02559	-0.07511	-0.77254

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)	0.07620	0.11805	1.34690
	removal	CK (R)	-0.02559	-0.07511	-0.77254
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.07601	0.11786	1.23751
	removal	CK (R)	-0.02559	-0.07511	-0.77254

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 ()	0.27516	0.76224	13.33370
	min_pulse_width	SN ()	0.27804	0.76224	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	SN ()	0.26927	0.74492	13.33370
	min_pulse_width	SN ()	0.26225	0.74925	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 ()	0.16594	0.56519	13.33370
	min_pulse_width	CK ()	0.34761	0.56519	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.15749	0.56519	13.33370
	min_pulse_width	CK ()	0.33705	0.56519	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 ()	0.49091	0.67346	13.33370
	min_pulse_width	CK ()	0.32410	0.66913	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.49091	0.67346	13.33370
	min_pulse_width	CK ()	0.32410	0.66913	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	0.01163	0.00927	-0.00752
	SN	-0.00169	-0.06251	-0.69515
	SN	0.02554	0.02355	0.00549
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01018	0.00837	-0.00106
	SN	-0.00169	-0.05080	-0.49199
	SN	0.02407	0.02265	0.01312

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	0.01361	0.01279	0.00752
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01215	0.01147	0.00859

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	0.01362	0.01280	0.00756
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01216	0.01148	0.00861

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	0.01159	0.00924	-0.00756
	SN	-0.00169	-0.06237	-0.69260
	SN	0.02550	0.02351	0.00546
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01013	0.00832	-0.00124
	SN	-0.00169	-0.05076	-0.49126
	SN	0.02403	0.02261	0.01286

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	-0.00403	-0.00417	-0.00417
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01322	0.01258	0.01200
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00589	0.00532	0.00496
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00403	-0.00417	-0.00417
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01322	0.01258	0.01200
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00589	0.00532	0.00496

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	0.00414	0.00420	0.00417
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02360	0.02327	0.02298
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01126	0.01103	0.01093
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00414	0.00420	0.00417
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02359	0.02327	0.02298
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01126	0.01103	0.01093

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)	-0.00679	-0.00685	-0.00683
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00527	0.00474	0.00445
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)	-0.00679	-0.00685	-0.00683
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00527	0.00474	0.00445

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)	0.00682	0.00688	0.00685
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01302	0.01250	0.01237
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)	0.00682	0.00688	0.00685
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01302	0.01250	0.01237

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)	-0.00087	-0.00171	-0.00202
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00119	-0.00208	-0.00241
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00468	0.00304	0.00238
sky130_osu_sc_18T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00087	-0.00171	-0.00202
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00119	-0.00208	-0.00241
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00468	0.00304	0.00238

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)	0.03651	0.03550	0.03424
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01780	0.01727	0.01704
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03654	0.03528	0.03466
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01965	0.01917	0.01901
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02277	0.02172	0.02145
sky130_osu_sc_18T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03651	0.03550	0.03425
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01780	0.01727	0.01704
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03654	0.03528	0.03466
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01965	0.01917	0.01901
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02277	0.02172	0.02142

SKY130_OSU_SC_18T_LS__DFFx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00558	0.01609	1.11259	1.10639
sky130_osu_sc_18T_ls__dff_l	0.00558	0.01610	0.75696	0.75912

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dff_1	0.00000	0.00102	0.00111
sky130_osu_sc_18T_ls__dff_l	0.00000	0.00097	0.00106

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)	0.39992	1.76657	14.31330
	QN->Q (FR)	0.06979	1.21683	14.00880
sky130_osu_sc_18T_ls__dff_l	CK->Q (RR)	0.41280	1.94620	14.27500
	QN->Q (FR)	0.08171	1.32506	13.91040

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)	0.61130	2.19506	17.11700
	QN->Q (RF)	0.03514	0.70694	8.33694
sky130_osu_sc_18T_ls__dff_l	CK->Q (RF)	0.63726	2.43339	17.17610
	QN->Q (RF)	0.04026	0.76252	8.41350

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)	0.54380	1.44300	9.15155
sky130_osu_sc_18T_ls__dff_l	CK->QN (RR)	0.55493	1.55300	9.17867

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)	0.31103	0.82845	4.37635
sky130_osu_sc_18T_ls__dff_l	CK->QN (RF)	0.30824	0.85762	4.35400

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)	-0.07066	-0.11163	-0.70715
	setup	CK (R)	0.25328	0.26582	1.51898
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.07124	-0.10966	-0.70717
	setup	CK (R)	0.25242	0.26401	1.50916

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)	-0.30112	-0.74133	-8.84455
	setup	CK (R)	0.34819	0.77048	8.92038
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.30217	-0.74297	-8.84482
	setup	CK (R)	0.34882	0.77048	8.92057

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 ()	0.14905	0.56519	13.33370
	min_pulse_width	CK ()	0.31592	0.56519	13.33370
sky130_osu_sc_18T_ls__dff_l	min_pulse_width	CK ()	0.14271	0.56519	13.33370
	min_pulse_width	CK ()	0.30747	0.56519	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** ()	0.42081	0.66263	13.33370
	min_pulse_width	**CK** ()	0.27795	0.67346	13.33370
sky130_osu_sc_18T_ls__dff_l	**min_pulse_width**	**CK** ()	0.42081	0.66263	13.33370
	min_pulse_width	**CK** ()	0.27795	0.67346	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	0.01232	0.01044	-0.00188
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01097	0.00911	-0.00017

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	0.01390	0.01316	0.00864
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01258	0.01185	0.00874

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	0.01391	0.01317	0.00870
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01258	0.01185	0.00872

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	0.01228	0.01044	-0.00197
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01093	0.00909	-0.00047

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	-0.00398	-0.00411	-0.00411
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01261	0.01211	0.01160
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00398	-0.00411	-0.00411
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01262	0.01212	0.01161

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	0.00409	0.00415	0.00411
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02446	0.02408	0.02365
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00409	0.00415	0.00411
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02446	0.02409	0.02366

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)	-0.00088	-0.00172	-0.00202
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00118	-0.00206	-0.00239
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00088	-0.00172	-0.00202
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00118	-0.00206	-0.00239

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)	0.01774	0.01725	0.01701
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03594	0.03496	0.03380
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03718	0.03592	0.03520
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01958	0.01910	0.01893
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01774	0.01725	0.01701
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03595	0.03496	0.03381
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03719	0.03593	0.03520
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01958	0.01910	0.01893

SKY130_OSU_SC_18T_LS__INVx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00556	1.10153
sky130_osu_sc_18T_ls__inv_10	0.05250	10.11549
sky130_osu_sc_18T_ls__inv_2	0.01069	2.18206
sky130_osu_sc_18T_ls__inv_3	0.01595	3.17599
sky130_osu_sc_18T_ls__inv_4	0.02112	4.23155
sky130_osu_sc_18T_ls__inv_6	0.03167	6.29389
sky130_osu_sc_18T_ls__inv_8	0.04209	8.28379
sky130_osu_sc_18T_ls__inv_l	0.00420	0.75882

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__inv_1	0.00000	0.00013	0.00020
sky130_osu_sc_18T_ls__inv_10	0.00000	0.00125	0.00199
sky130_osu_sc_18T_ls__inv_2	0.00000	0.00025	0.00040
sky130_osu_sc_18T_ls__inv_3	0.00000	0.00038	0.00060
sky130_osu_sc_18T_ls__inv_4	0.00000	0.00050	0.00080
sky130_osu_sc_18T_ls__inv_6	0.00000	0.00075	0.00119
sky130_osu_sc_18T_ls__inv_8	0.00000	0.00100	0.00159
sky130_osu_sc_18T_ls__inv_l	0.00000	0.00010	0.00015

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)**	0.06722	1.16750	13.36670
sky130_osu_sc_18T_ls__inv_10	**A->Y (FR)**	0.09383	0.81816	13.36070
sky130_osu_sc_18T_ls__inv_2	**A->Y (FR)**	0.05325	1.00635	13.33050
sky130_osu_sc_18T_ls__inv_3	**A->Y (FR)**	0.05823	0.94784	13.38900
sky130_osu_sc_18T_ls__inv_4	**A->Y (FR)**	0.05954	0.89978	13.32040
sky130_osu_sc_18T_ls__inv_6	**A->Y (FR)**	0.06720	0.85341	13.37280
sky130_osu_sc_18T_ls__inv_8	**A->Y (FR)**	0.07946	0.82930	13.36610
sky130_osu_sc_18T_ls__inv_l	**A->Y (FR)**	0.07760	1.26892	13.31220

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)**	0.03134	0.64474	7.54619
sky130_osu_sc_18T_ls__inv_10	**A->Y (RF)**	0.05232	0.47637	7.51167
sky130_osu_sc_18T_ls__inv_2	**A->Y (RF)**	0.02692	0.57521	7.53204
sky130_osu_sc_18T_ls__inv_3	**A->Y (RF)**	0.02948	0.55058	7.59416
sky130_osu_sc_18T_ls__inv_4	**A->Y (RF)**	0.02989	0.52489	7.55973
sky130_osu_sc_18T_ls__inv_6	**A->Y (RF)**	0.03751	0.50195	7.58495
sky130_osu_sc_18T_ls__inv_8	**A->Y (RF)**	0.04487	0.48726	7.57381
sky130_osu_sc_18T_ls__inv_l	**A->Y (RF)**	0.03554	0.69226	7.64767

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	0.00642	0.00633	0.00641
sky130_osu_sc_18T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.05613	0.05639	0.05759
sky130_osu_sc_18T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01164	0.01156	0.01164
sky130_osu_sc_18T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01781	0.01765	0.01804
sky130_osu_sc_18T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02302	0.02285	0.02328
sky130_osu_sc_18T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.03421	0.03415	0.03499
sky130_osu_sc_18T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.04525	0.04532	0.04637
sky130_osu_sc_18T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00487	0.00477	0.00473

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	-0.00127	-0.00136	-0.00135
sky130_osu_sc_18T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.02249	-0.02145	-0.01936
sky130_osu_sc_18T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00402	-0.00409	-0.00398
sky130_osu_sc_18T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00539	-0.00541	-0.00520
sky130_osu_sc_18T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00835	-0.00836	-0.00783
sky130_osu_sc_18T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01270	-0.01271	-0.01167
sky130_osu_sc_18T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01747	-0.01686	-0.01552
sky130_osu_sc_18T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00086	-0.00094	-0.00096

SKY130_OSU_SC_18T_LS__MUX2

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.70861	0.71412	0.01128	1.02589

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__mux2_1	0.00000	0.00040	0.00060

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)	-	0.03614	0.70924	8.33098
	A1->Y (RR)	-	0.03905	0.71235	8.35490
	S0->Y (RR)	(!A0 * A1)	0.08546	0.81377	7.77049
	S0->Y (FR)	(A0 * !A1)	0.09104	0.96778	9.49758

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)	-	0.02755	0.59932	6.97190
	A1->Y (FF)	-	0.02561	0.59478	6.94519
	S0->Y (FF)	(!A0 * A1)	0.14962	0.82724	7.01850
	S0->Y (RF)	(A0 * !A1)	0.03684	0.63237	6.82141

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	-	-0.00662	-0.00662	-0.00661
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00470	-0.00470	-0.00470
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00775	0.00729	0.00725
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00437	-0.00511	-0.00541

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	-	0.00662	0.00662	0.00661
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00470	0.00470	0.00470
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00143	0.00069	0.00044
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01697	0.01650	0.01643

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)	-0.00179	-0.00178	-0.00178

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)	0.00179	0.00178	0.00178

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)	-0.00214	-0.00214	-0.00214

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)	0.00214	0.00214	0.00214

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)	-0.00150	-0.00225	-0.00249
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00145	-0.00224	-0.00248

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)	0.01282	0.01241	0.01230
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01189	0.01143	0.01134

SKY130_OSU_SC_18T_LS__NAND2x

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00557	0.00551	1.08457
sky130_osu_sc_18T_ls__nand2_l	0.00421	0.00416	0.75478

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nand2_1	0.00000	0.00014	0.00040
sky130_osu_sc_18T_ls__nand2_l	0.00000	0.00012	0.00030

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)	0.07065	1.17171	13.33010
	B->Y (FR)	0.08379	1.17579	13.24130
sky130_osu_sc_18T_ls__nand2_l	A->Y (FR)	0.08061	1.27548	13.32290
	B->Y (FR)	0.09518	1.28482	13.29480

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)	0.04523	0.77111	8.86390
	B->Y (RF)	0.05101	0.75916	8.56950
sky130_osu_sc_18T_ls__nand2_l	A->Y (RF)	0.05335	0.86139	9.16622
	B->Y (RF)	0.05898	0.85037	8.86223

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	0.00687	0.00674	0.00680
	B	0.00000	0.00000	0.00000
	B	0.00842	0.00827	0.00827
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00515	0.00505	0.00506
	B	0.00000	0.00000	0.00000
	B	0.00627	0.00614	0.00616

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	-0.00073	-0.00087	-0.00086
	B	0.00000	0.00000	0.00000
	B	-0.00069	-0.00079	-0.00082
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00054	-0.00062	-0.00066
	B	0.00000	0.00000	0.00000
	B	-0.00052	-0.00059	-0.00064

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)	-0.00462	-0.00467	-0.00466
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00331	-0.00334	-0.00334

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)	0.00465	0.00470	0.00468
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00333	0.00336	0.00334

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)	-0.00433	-0.00436	-0.00435
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00309	-0.00312	-0.00310

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)	0.00433	0.00438	0.00436
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00309	0.00313	0.00311

SKY130_OSU_SC_18T_LS__NOR2x

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00549	0.00588	0.52940
sky130_osu_sc_18T_ls__nor2_l	0.00408	0.00447	0.36583

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nor2_1	0.00000	0.00014	0.00020
sky130_osu_sc_18T_ls__nor2_l	0.00000	0.00012	0.00015

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nor2_1	A->Y (FR)	0.15728	1.48224	13.43390
	B->Y (FR)	0.12765	1.42934	13.33500
sky130_osu_sc_18T_ls__nor2_l	A->Y (FR)	0.17721	1.62132	13.35740
	B->Y (FR)	0.15233	1.57358	13.27410

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)	0.03838	0.55471	5.61771
	B->Y (RF)	0.03282	0.54354	5.59653
sky130_osu_sc_18T_ls__nor2_l	A->Y (RF)	0.04228	0.59554	5.74772
	B->Y (RF)	0.03709	0.58648	5.72935

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	0.00873	0.00862	0.00860
	B	0.00000	0.00000	0.00000
	B	0.00697	0.00675	0.00672
sky130_osu_sc_18T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00633	0.00624	0.00620
	B	0.00000	0.00000	0.00000
	B	0.00522	0.00504	0.00498

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	0.00044	0.00012	0.00002
	B	0.00000	0.00000	0.00000
	B	-0.00109	-0.00115	-0.00126
sky130_osu_sc_18T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00029	0.00008	-0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00069	-0.00074	-0.00085

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)	-0.00400	-0.00416	-0.00413
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00278	-0.00289	-0.00287

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)	0.00410	0.00417	0.00413
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00285	0.00290	0.00287

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)	-0.00232	-0.00235	-0.00233
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00162	-0.00164	-0.00163

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)	0.00239	0.00241	0.00235
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00167	0.00168	0.00164

SKY130_OSU_SC_18T_LS__OAI21

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00559	0.00557	0.00468	0.52961

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai21_l	0.00000	0.00015	0.00035

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)	0.17612	1.48655	13.42710
	A1->Y (FR)	0.21317	1.54494	13.53490
	B0->Y (FR)	0.09863	1.13871	11.12630

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)	0.06229	0.65618	6.36230
	A1->Y (RF)	0.06989	0.65566	6.31656
	B0->Y (RF)	0.04988	0.67673	6.82462

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	0.00920	0.00895	0.00889
	A1	0.00000	0.00000	0.00000
	A1	0.01100	0.01084	0.01077
	B0	0.00749	0.00725	0.00724

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	0.00029	0.00021	0.00007
	A1	0.00000	0.00000	0.00000
	A1	0.00181	0.00153	0.00139
	B0	0.00270	0.00255	0.00245

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)	-0.00232	-0.00235	-0.00233
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00400	-0.00416	-0.00414
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00426	-0.00428	-0.00427

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)	0.00239	0.00241	0.00235
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00412	0.00417	0.00414
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00426	0.00428	0.00428

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)	-0.00393	-0.00410	-0.00407
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00399	-0.00416	-0.00413
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00421	-0.00425	-0.00423

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)	0.00404	0.00410	0.00407
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00410	0.00416	0.00413
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00421	0.00425	0.00424

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)	-0.00336	-0.00338	-0.00343

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)	0.00342	0.00350	0.00345

SKY130_OSU_SC_18T_LS__OAI22

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00535	0.00570	0.00587	0.00567	0.53494

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai22_1	0.00000	0.00023	0.00040

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)	0.23594	1.57159	13.60810
	A1->Y (FR)	0.20557	1.51723	13.50400
	B0->Y (FR)	0.14258	1.44978	13.44680
	B1->Y (FR)	0.17457	1.50657	13.54980

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)	0.09590	0.70499	6.48200
	A1->Y (RF)	0.07921	0.68144	6.42676
	B0->Y (RF)	0.06675	0.69946	6.88398
	B1->Y (RF)	0.08512	0.73061	7.05032

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	0.01402	0.01388	0.01379
	A1	0.01221	0.01194	0.01187
	B0	0.00929	0.00898	0.00895
	B1	0.01118	0.01101	0.01094

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.00277	0.00251	0.00235
	A1	0.00135	0.00125	0.00106
	B0	0.00134	0.00122	0.00104
	B1	0.00280	0.00249	0.00233

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)	-0.00399	-0.00416	-0.00413
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00399	-0.00416	-0.00413
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00400	-0.00417	-0.00413
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00423	-0.00425	-0.00424

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)	0.00410	0.00416	0.00413
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00410	0.00416	0.00413
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00410	0.00417	0.00413
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00424	0.00432	0.00425

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)	-0.00231	-0.00233	-0.00232
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00231	-0.00233	-0.00232
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00396	-0.00410	-0.00410
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00422	-0.00423	-0.00423

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)	0.00238	0.00240	0.00234
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00238	0.00240	0.00234
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00408	0.00410	0.00410
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00422	0.00423	0.00424

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)	-0.00230	-0.00232	-0.00231
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00230	-0.00233	-0.00231
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00437	-0.00452	-0.00451
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00452	-0.00456	-0.00463

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)	0.00237	0.00239	0.00233
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00237	0.00239	0.00233
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00451	0.00452	0.00451
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00462	0.00471	0.00464

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)	-0.00394	-0.00411	-0.00407
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00394	-0.00411	-0.00407
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00445	-0.00462	-0.00459
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00458	-0.00461	-0.00468

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)	0.00404	0.00411	0.00407
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00404	0.00412	0.00407
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00459	0.00462	0.00459
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00469	0.00473	0.00470

SKY130_OSU_SC_18T_LS__OR2x

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00581	0.00569	1.09384
sky130_osu_sc_18T_ls__or2_2	0.00581	0.00569	2.17307
sky130_osu_sc_18T_ls__or2_4	0.00581	0.00569	4.20784
sky130_osu_sc_18T_ls__or2_8	0.00581	0.00570	8.09629
sky130_osu_sc_18T_ls__or2_l	0.00448	0.00429	0.75445

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__or2_1	0.00000	0.00023	0.00030
sky130_osu_sc_18T_ls__or2_2	0.00000	0.00032	0.00050
sky130_osu_sc_18T_ls__or2_4	0.00000	0.00049	0.00090
sky130_osu_sc_18T_ls__or2_8	0.00000	0.00085	0.00170
sky130_osu_sc_18T_ls__or2_l	0.00000	0.00019	0.00025

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)	0.12029	1.01649	8.62349
	B->Y (RR)	0.11255	0.99150	8.46120
sky130_osu_sc_18T_ls__or2_2	A->Y (RR)	0.12886	0.91076	8.87588
	B->Y (RR)	0.12020	0.88818	8.75457
sky130_osu_sc_18T_ls__or2_4	A->Y (RR)	0.16925	0.88826	9.29911
	B->Y (RR)	0.16021	0.87159	9.21042
sky130_osu_sc_18T_ls__or2_8	A->Y (RR)	0.24627	0.93583	9.87807
	B->Y (RR)	0.23695	0.92427	9.81571
sky130_osu_sc_18T_ls__or2_l	A->Y (RR)	0.13673	1.14333	8.80951
	B->Y (RR)	0.12942	1.12010	8.65767

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)	0.28371	1.01066	7.67202
	B->Y (FF)	0.24324	0.94992	7.26287
sky130_osu_sc_18T_ls__or2_2	A->Y (FF)	0.36371	1.06585	8.01656
	B->Y (FF)	0.32324	1.00794	7.68702
sky130_osu_sc_18T_ls__or2_4	A->Y (FF)	0.53891	1.24340	8.57329
	B->Y (FF)	0.49843	1.18461	8.34163
sky130_osu_sc_18T_ls__or2_8	A->Y (FF)	0.88758	1.62424	9.28562
	B->Y (FF)	0.84698	1.56194	9.16790
sky130_osu_sc_18T_ls__or2_l	A->Y (FF)	0.31048	1.06913	7.66684
	B->Y (FF)	0.27053	1.01209	7.27710

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	0.00663	0.00591	0.00553
	B	0.00000	0.00000	0.00000
	B	0.00518	0.00454	0.00430
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01183	0.01138	0.01105
	B	0.00000	0.00000	0.00000
	B	0.01032	0.01006	0.00983
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02295	0.02307	0.02316
	B	0.00000	0.00000	0.00000
	B	0.02141	0.02198	0.02229
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04484	0.04540	0.04627
	B	0.00000	0.00000	0.00000
	B	0.04325	0.04510	0.04607
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00485	0.00435	0.00406
	B	0.00000	0.00000	0.00000
	B	0.00394	0.00347	0.00327

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	0.01439	0.01440	0.01434
	B	0.00000	0.00000	0.00000
	B	0.01232	0.01234	0.01224
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01766	0.01839	0.01837
	B	0.00000	0.00000	0.00000
	B	0.01559	0.01630	0.01629
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02562	0.02759	0.02809
	B	0.00000	0.00000	0.00000
	B	0.02351	0.02548	0.02591
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04144	0.04500	0.04741
	B	0.00000	0.00000	0.00000
	B	0.03924	0.04290	0.04511
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.01084	0.01077	0.01069
	B	0.00000	0.00000	0.00000
	B	0.00938	0.00931	0.00924

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)	-0.00402	-0.00418	-0.00415
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00402	-0.00418	-0.00415
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00402	-0.00418	-0.00415
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00402	-0.00419	-0.00415
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00280	-0.00291	-0.00288

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)	0.00412	0.00418	0.00415
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00412	0.00418	0.00415
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00412	0.00418	0.00415
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00412	0.00419	0.00415
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00286	0.00291	0.00288

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)	-0.00232	-0.00235	-0.00233
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00232	-0.00235	-0.00233
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00232	-0.00235	-0.00233
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00232	-0.00235	-0.00233
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00164	-0.00166	-0.00165

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)	0.00240	0.00243	0.00236
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00240	0.00243	0.00236
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00241	0.00243	0.00236
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00241	0.00243	0.00236
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00170	0.00171	0.00167

SKY130_OSU_SC_18T_LS__TBUFIx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00587	0.00736	0.53330
sky130_osu_sc_18T_ls__tbufi_l	0.00448	0.00564	0.36777

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tbufi_1	0.00000	0.00016	0.00040
sky130_osu_sc_18T_ls__tbufi_l	0.00000	0.00014	0.00030

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)	0.12185	1.42717	13.38170
	OE->Y (FR)	0.10701	0.55528	4.68910
	OE->Y (RR)	0.17894	1.27942	8.76936
sky130_osu_sc_18T_ls__tbufi_l	A->Y (FR)	0.14647	1.57291	13.32010
	OE->Y (FR)	0.11477	0.55944	4.68881
	OE->Y (RR)	0.20101	1.44403	8.94386

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)	0.04330	0.63622	6.47120
	OE->Y (FF)	0.10799	0.55582	4.68900
	OE->Y (RF)	0.04216	0.61469	6.18983
sky130_osu_sc_18T_ls__tbufi_l	A->Y (RF)	0.05185	0.69902	6.67879
	OE->Y (FF)	0.11550	0.56270	4.68883
	OE->Y (RF)	0.05119	0.67750	6.36697

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	0.00653	0.00629	0.00624
	OE	0.00000	0.00000	0.00000
	OE	0.00628	0.00553	0.00533
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00490	0.00472	0.00464
	OE	0.00000	0.00000	0.00000
	OE	0.00452	0.00395	0.00380

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	-0.00109	-0.00117	-0.00127
	OE	0.00000	0.00000	0.00000
	OE	0.00463	0.00390	0.00366
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00069	-0.00075	-0.00085
	OE	0.00000	0.00000	0.00000
	OE	0.00323	0.00268	0.00251

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)	-0.00343	-0.00347	-0.00344
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00319	-0.00325	-0.00320
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00253	-0.00256	-0.00254
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00237	-0.00241	-0.00238

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)	0.00343	0.00347	0.00344
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00326	0.00329	0.00325
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00253	0.00256	0.00254
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00241	0.00244	0.00240

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)	0.00264	0.00189	0.00167
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00235	0.00159	0.00138
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00181	0.00125	0.00109
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00161	0.00103	0.00088

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)	0.00727	0.00680	0.00662
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00759	0.00705	0.00685
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00566	0.00519	0.00511
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00589	0.00543	0.00527

SKY130_OSU_SC_18T_LS__TNBUFIx

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00587	0.00920	0.52916
sky130_osu_sc_18T_ls__tnbufi_l	0.00447	0.00677	0.36551

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tnbufi_1	0.00000	0.00021	0.00025
sky130_osu_sc_18T_ls__tnbufi_l	0.00000	0.00017	0.00020

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)	0.12289	1.42292	13.32310
	OE->Y (RR)	0.03740	0.37623	4.69009
	OE->Y (FR)	0.14539	1.47043	13.41770
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (FR)	0.14761	1.56892	13.27400
	OE->Y (RR)	0.04014	0.37643	4.69035
	OE->Y (FR)	0.16402	1.61021	13.35030

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)	0.04269	0.63473	6.45068
	OE->Y (RF)	0.03726	0.37624	4.69008
	OE->Y (FF)	0.10801	0.77541	5.99665
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (RF)	0.05100	0.69753	6.66105
	OE->Y (RF)	0.03992	0.37643	4.69033
	OE->Y (FF)	0.12374	0.84164	6.09450

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	0.00668	0.00643	0.00639
	OE	0.00000	0.00000	0.00000
	OE	0.01585	0.01551	0.01551
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00506	0.00488	0.00479
	OE	0.00000	0.00000	0.00000
	OE	0.01168	0.01138	0.01135

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	-0.00128	-0.00135	-0.00145
	OE	0.00000	0.00000	0.00000
	OE	0.01440	0.01402	0.01398
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00088	-0.00093	-0.00103
	OE	0.00000	0.00000	0.00000
	OE	0.01054	0.01024	0.01017

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)	-0.00300	-0.00304	-0.00301
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00279	-0.00284	-0.00280
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00213	-0.00215	-0.00214
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00198	-0.00201	-0.00198

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)	0.00300	0.00304	0.00301
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00284	0.00286	0.00283
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00213	0.00215	0.00214
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00201	0.00203	0.00201

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)	-0.00511	-0.00608	-0.00630
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00480	-0.00593	-0.00621
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00348	-0.00417	-0.00434
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00328	-0.00407	-0.00427

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)	0.01221	0.01192	0.01184
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01195	0.01167	0.01161
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00898	0.00872	0.00866
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00882	0.00853	0.00848

SKY130_OSU_SC_18T_LS__XNOR2

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.01158	0.01053	0.53003

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xnor2_l	0.00000	0.00045	0.00065

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	0.23053	1.34260	8.89369
	A->Y (FR)	!B	0.16726	1.47289	13.36100
	B->Y (RR)	A	0.18837	1.29874	8.81238
	B->Y (FR)	!A	0.20631	1.52812	13.45400

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	0.17962	0.88948	6.51846
	A->Y (RF)	!B	0.06461	0.64379	6.29645
	B->Y (FF)	A	0.17066	0.87935	6.50879
	B->Y (RF)	!A	0.07262	0.65414	6.30775

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	0.00590	0.00505	0.00474
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01592	0.01520	0.01499
	B	A	0.00000	0.00000	0.00000
	B	A	0.00250	0.00174	0.00147
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01716	0.01660	0.01645

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	0.01900	0.01818	0.01781
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00442	0.00360	0.00323
	B	A	0.00000	0.00000	0.00000
	B	A	0.01789	0.01770	0.01758
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00493	0.00393	0.00355

SKY130_OSU_SC_18T_LS__XOR2

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.01152	0.01058	0.52997

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xor2_l	0.00000	0.00045	0.00054

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	0.23398	1.33470	8.87019
	A->Y (FR)	B	0.18286	1.50544	13.48150
	B->Y (RR)	!A	0.19317	1.30423	8.85086
	B->Y (FR)	A	0.20284	1.52994	13.48800

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	0.17098	0.87367	6.43899
	A->Y (RF)	B	0.05639	0.65539	6.47681
	B->Y (FF)	!A	0.16240	0.86431	6.41984
	B->Y (RF)	A	0.06639	0.64078	6.19992

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	0.01818	0.01760	0.01744
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00342	0.00197	0.00152
	B	A	0.00000	0.00000	0.00000
	B	A	0.01864	0.01816	0.01805
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00213	0.00133	0.00106

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	0.00328	0.00218	0.00176
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02001	0.01975	0.01960
	B	A	0.00000	0.00000	0.00000
	B	A	0.00329	0.00227	0.00186
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01825	0.01811	0.01803

SKY130_OSU_SC_18T_LS_x

sky130_osu_sc_18T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.17108
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	106609.00000	213218.00000
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
	-0.00395	0.01474	0.22150

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
	1.85731	1.74005	0.30912