sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs Library

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

SKY130_OSU_SC_18T_LS__ADDFx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.01930	0.01936	0.01497	2.13646	0.99093	2.07124
sky130_osu_sc_18T_ls__addf_l	0.01929	0.01935	0.01500	1.47270	0.98931	1.45959

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addf_1	0.00000	0.00094	0.00107
sky130_osu_sc_18T_ls__addf_l	0.00000	0.00085	0.00104

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)	0.14815	1.72467	24.09660
	B->CO (RR)	0.13296	1.63325	22.87900
	CI->CO (RR)	0.14150	1.73543	24.33710
	CON->CO (FR)	0.03443	0.88195	12.57440
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.14920	1.61728	19.84750
	B->CO (RR)	0.13431	1.54194	19.04920
	CI->CO (RR)	0.14239	1.62901	20.13940
	CON->CO (FR)	0.03893	0.94949	12.48280

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)	0.24406	2.42441	33.28470
	B->CO (FF)	0.21836	2.30980	31.86010
	CI->CO (FF)	0.21334	2.37697	33.12820
	CON->CO (RF)	0.02275	0.57863	8.23247
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	0.23689	2.14882	25.88770
	B->CO (FF)	0.21180	2.05324	24.89920
	CI->CO (FF)	0.20632	2.10182	25.75270
	CON->CO (RF)	0.02400	0.58866	7.75038

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)	0.18997	1.20759	12.74820
	B->CON (FR)	0.16594	1.14269	12.30080
	CI->CON (FR)	0.15935	1.16140	12.63570
sky130_osu_sc_18T_ls__addf_l	A->CON (FR)	0.18087	1.19807	12.72820
	B->CON (FR)	0.15768	1.13370	12.28110
	CI->CON (FR)	0.15027	1.15177	12.61510

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)	0.07769	0.59869	6.53345
	B->CON (RF)	0.06396	0.57436	6.41657
	CI->CON (RF)	0.07106	0.61254	6.84029
sky130_osu_sc_18T_ls__addf_l	A->CON (RF)	0.07514	0.59570	6.52482
	B->CON (RF)	0.06169	0.57156	6.40904
	CI->CON (RF)	0.06848	0.61036	6.83145

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)	0.34859	2.35138	27.18680
	B->S (-R)	0.33969	2.29871	26.48060
	CI->S (-R)	0.31582	2.29933	27.02040
	CON->S (RR)	0.09069	0.73752	7.63278
sky130_osu_sc_18T_ls__addf_l	A->S (-R)	0.33408	2.17366	22.86960
	B->S (-R)	0.32609	2.13672	22.42100
	CI->S (-R)	0.30143	2.12254	22.72070
	CON->S (RR)	0.09089	0.78782	7.43389

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)	0.24935	1.52115	16.95730
	B->S (-F)	0.26035	1.47086	16.37440
	CI->S (-F)	0.24238	1.52838	17.16910
	CON->S (FF)	0.11254	0.75615	7.25631
sky130_osu_sc_18T_ls__addf_l	A->S (-F)	0.23423	1.37703	13.96510
	B->S (-F)	0.24620	1.34137	13.62500
	CI->S (-F)	0.22711	1.38811	14.25010
	CON->S (FF)	0.10631	0.75839	6.87095

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	0.00348	0.00334	0.00334
	B	0.00439	0.00438	0.00446
	CI	0.00463	0.00473	0.00498
sky130_osu_sc_18T_ls__addf_l	A	0.00278	0.00258	0.00254
	B	0.00369	0.00358	0.00361
	CI	0.00392	0.00395	0.00407

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01282	0.01280	0.01326
	B	0.01264	0.01281	0.01340
	CI	0.01107	0.01143	0.01203
sky130_osu_sc_18T_ls__addf_l	A	0.01212	0.01205	0.01232
	B	0.01193	0.01205	0.01239
	CI	0.01035	0.01067	0.01100

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01280	0.01280	0.01286
	B	0.01262	0.01276	0.01288
	CI	0.01105	0.01136	0.01153
sky130_osu_sc_18T_ls__addf_l	A	0.01211	0.01207	0.01213
	B	0.01192	0.01203	0.01215
	CI	0.01035	0.01063	0.01079

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00345	0.00331	0.00323
	B	0.00435	0.00427	0.00412
	CI	0.00462	0.00469	0.00471
sky130_osu_sc_18T_ls__addf_l	A	0.00275	0.00253	0.00244
	B	0.00366	0.00352	0.00345
	CI	0.00392	0.00392	0.00396

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01282	0.01280	0.01320
	B	0.01264	0.01280	0.01335
	CI	0.01107	0.01142	0.01196
sky130_osu_sc_18T_ls__addf_l	A	0.01212	0.01205	0.01229
	B	0.01194	0.01205	0.01239
	CI	0.01036	0.01067	0.01101

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.02696	0.02709	0.02714
	B	0.02399	0.02342	0.02437
	CI	0.02176	0.02171	0.02180
sky130_osu_sc_18T_ls__addf_l	A	0.02599	0.02600	0.02602
	B	0.02304	0.02233	0.02327
	CI	0.02082	0.02072	0.02079

SKY130_OSU_SC_18T_LS__ADDHx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00953	0.01041	2.06871	1.05834	2.14092
sky130_osu_sc_18T_ls__addh_l	0.00953	0.01041	1.18145	1.05954	1.18422

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addh_1	0.00000	0.00086	0.00101
sky130_osu_sc_18T_ls__addh_l	0.00000	0.00134	0.00151

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)	0.10317	0.72371	7.15602
	B->CO (RR)	0.10694	0.73393	7.28812
sky130_osu_sc_18T_ls__addh_l	A->CO (RR)	0.10894	0.84522	7.33005
	B->CO (RR)	0.11273	0.85724	7.46238

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)	0.09725	0.73509	7.25245
	B->CO (FF)	0.10421	0.74777	7.30290
sky130_osu_sc_18T_ls__addh_l	A->CO (FF)	0.09464	0.74004	6.57370
	B->CO (FF)	0.10129	0.75289	6.63000

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	0.14472	0.60169	3.76238
	A->CON (FR)	!B	0.10609	1.08544	12.50750
	B->CON (RR)	A	0.14864	0.61209	3.89542
	B->CON (FR)	!A	0.13029	1.12916	12.70860
sky130_osu_sc_18T_ls__addh_l	A->CON (RR)	B	0.12993	0.57780	3.65672
	A->CON (FR)	!B	0.09472	1.07389	12.50360
	B->CON (RR)	A	0.13398	0.58910	3.80199
	B->CON (FR)	!A	0.11884	1.11747	12.70470

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	0.13734	0.76472	6.30538
	A->CON (RF)	!B	0.04756	0.58317	6.85409
	B->CON (FF)	A	0.13994	0.79765	6.64260
	B->CON (RF)	!A	0.05374	0.56454	6.48991
sky130_osu_sc_18T_ls__addh_l	A->CON (FF)	B	0.12500	0.73639	6.12265
	A->CON (RF)	!B	0.04430	0.57956	6.85391
	B->CON (FF)	A	0.12729	0.76987	6.46362
	B->CON (RF)	!A	0.05066	0.56119	6.49008

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	0.10938	1.65114	23.73440
	A->S (FR)	B	0.19855	1.80673	22.67080
	B->S (RR)	!A	0.11403	1.57942	22.43130
	B->S (FR)	A	0.20333	1.89790	23.96750
	CON->S (FR)	-	0.03855	0.90482	12.90800
sky130_osu_sc_18T_ls__addh_l	A->S (RR)	!B	0.11352	1.53951	18.14960
	A->S (FR)	B	0.19367	1.67688	17.12550
	B->S (RR)	!A	0.11844	1.48198	17.37250
	B->S (FR)	A	0.19816	1.74799	17.91410
	CON->S (FR)	-	0.04726	1.04566	13.04530

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	0.15103	2.17105	31.09150
	A->S (RF)	B	0.18146	1.35033	15.97340
	B->S (FF)	!A	0.17520	2.22077	31.32850
	B->S (RF)	A	0.18537	1.36072	16.10400
	CON->S (RF)	-	0.02113	0.56239	8.01971
sky130_osu_sc_18T_ls__addh_l	A->S (FF)	!B	0.14180	1.78695	21.08290
	A->S (RF)	B	0.16825	1.12323	10.12110
	B->S (FF)	!A	0.16582	1.83029	21.29720
	B->S (RF)	A	0.17218	1.13477	10.25630
	CON->S (RF)	-	0.02343	0.57471	7.24103

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	0.00571	0.00537	0.00465
	B	0.00000	0.00000	0.00000
	B	0.00523	0.00487	0.00406
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00472	0.00432	0.00456
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00383	0.00380

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	0.00884	0.00843	0.00804
	B	0.00000	0.00000	0.00000
	B	0.00920	0.00917	0.00880
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00785	0.00742	0.00735
	B	0.00000	0.00000	0.00000
	B	0.00821	0.00811	0.00811

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	0.00571	0.00537	0.00508
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00770	0.00767	0.00761
	B	A	0.00000	0.00000	0.00000
	B	A	0.00522	0.00488	0.00463
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00850	0.00848	0.00833
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00472	0.00432	0.00435
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00703	0.00696	0.00693
	B	A	0.00000	0.00000	0.00000
	B	A	0.00423	0.00382	0.00363
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00784	0.00777	0.00765

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	0.00884	0.00846	0.00818
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00127	0.00121	0.00099
	B	A	0.00000	0.00000	0.00000
	B	A	0.00920	0.00918	0.00905
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00212	0.00199	0.00129
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00784	0.00742	0.00742
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00043	0.00036	0.00016
	B	A	0.00000	0.00000	0.00000
	B	A	0.00821	0.00811	0.00816
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00128	0.00114	0.00065

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	0.00885	0.00843	0.00819
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00127	0.00125	0.00101
	B	A	0.00000	0.00000	0.00000
	B	A	0.00920	0.00918	0.00902
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00213	0.00204	0.00175
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00786	0.00743	0.00703
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00043	0.00040	0.00004
	B	A	0.00000	0.00000	0.00000
	B	A	0.00821	0.00811	0.00787
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00129	0.00114	0.00049

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	0.00571	0.00537	0.00464
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00770	0.00771	0.00755
	B	A	0.00000	0.00000	0.00000
	B	A	0.00523	0.00487	0.00397
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00851	0.00853	0.00826
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00472	0.00432	0.00427
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00704	0.00698	0.00694
	B	A	0.00000	0.00000	0.00000
	B	A	0.00424	0.00382	0.00361
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00784	0.00778	0.00769

SKY130_OSU_SC_18T_LS__AND2x

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00514	0.00522	2.11242
sky130_osu_sc_18T_ls__and2_2	0.00514	0.00523	4.09779
sky130_osu_sc_18T_ls__and2_4	0.00514	0.00523	7.90354
sky130_osu_sc_18T_ls__and2_6	0.00518	0.00523	11.44953
sky130_osu_sc_18T_ls__and2_8	0.00515	0.00524	14.75761
sky130_osu_sc_18T_ls__and2_l	0.00401	0.00411	1.48274

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__and2_1	0.00000	0.00040	0.00060
sky130_osu_sc_18T_ls__and2_2	0.00000	0.00062	0.00067
sky130_osu_sc_18T_ls__and2_4	0.00000	0.00105	0.00115
sky130_osu_sc_18T_ls__and2_6	0.00000	0.00148	0.00168
sky130_osu_sc_18T_ls__and2_8	0.00000	0.00191	0.00221
sky130_osu_sc_18T_ls__and2_l	0.00000	0.00030	0.00044

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)	0.07880	0.65795	6.86193
	B->Y (RR)	0.08351	0.67538	7.01174
sky130_osu_sc_18T_ls__and2_2	A->Y (RR)	0.09075	0.59987	7.03149
	B->Y (RR)	0.09540	0.61165	7.16509
sky130_osu_sc_18T_ls__and2_4	A->Y (RR)	0.12543	0.61218	7.54732
	B->Y (RR)	0.13003	0.61911	7.65728
sky130_osu_sc_18T_ls__and2_6	A->Y (RR)	0.15824	0.64603	7.78364
	B->Y (RR)	0.16278	0.64715	7.87742
sky130_osu_sc_18T_ls__and2_8	A->Y (RR)	0.19130	0.68598	8.05724
	B->Y (RR)	0.19600	0.68606	8.14852
sky130_osu_sc_18T_ls__and2_l	A->Y (RR)	0.08647	0.73257	6.86153
	B->Y (RR)	0.09138	0.74857	7.01382

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)**	0.07427	0.66599	6.76294
	B->Y (FF)	0.07951	0.68157	6.85623
sky130_osu_sc_18T_ls__and2_2	**A->Y (FF)**	0.08734	0.65038	6.95288
	B->Y (FF)	0.09323	0.66323	7.04339
sky130_osu_sc_18T_ls__and2_4	**A->Y (FF)**	0.12243	0.68290	7.39112
	B->Y (FF)	0.12837	0.69258	7.44715
sky130_osu_sc_18T_ls__and2_6	**A->Y (FF)**	0.15996	0.72084	7.61473
	B->Y (FF)	0.16586	0.72989	7.67154
sky130_osu_sc_18T_ls__and2_8	**A->Y (FF)**	0.19473	0.75679	7.73822
	B->Y (FF)	0.20098	0.76488	7.78379
sky130_osu_sc_18T_ls__and2_l	**A->Y (FF)**	0.07936	0.70185	6.63890
	B->Y (FF)	0.08605	0.71933	6.74143

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	0.00440	0.00376	0.00481
	B	0.00000	0.00000	0.00000
	B	0.00448	0.00381	0.00415
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00862	0.00827	0.00921
	B	0.00000	0.00000	0.00000
	B	0.00871	0.00832	0.00886
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01765	0.01788	0.01980
	B	0.00000	0.00000	0.00000
	B	0.01772	0.01796	0.01939
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02653	0.02741	0.02994
	B	0.00000	0.00000	0.00000
	B	0.02662	0.02769	0.02942
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03538	0.03674	0.03896
	B	0.00000	0.00000	0.00000
	B	0.03549	0.03713	0.03839
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00324	0.00282	0.00355
	B	0.00000	0.00000	0.00000
	B	0.00333	0.00277	0.00307

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	0.01068	0.01051	0.01177
	B	0.00000	0.00000	0.00000
	B	0.01204	0.01181	0.01290
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01367	0.01408	0.01527
	B	0.00000	0.00000	0.00000
	B	0.01506	0.01530	0.01633
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02080	0.02244	0.02384
	B	0.00000	0.00000	0.00000
	B	0.02225	0.02352	0.02464
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02805	0.03071	0.03260
	B	0.00000	0.00000	0.00000
	B	0.02941	0.03169	0.03317
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03520	0.03882	0.04121
	B	0.00000	0.00000	0.00000
	B	0.03643	0.03951	0.04137
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00834	0.00816	0.00910
	B	0.00000	0.00000	0.00000
	B	0.00938	0.00915	0.00997

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)	-0.00391	-0.00395	-0.00395
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00391	-0.00395	-0.00395
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00391	-0.00395	-0.00395
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00394	-0.00398	-0.00397
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00391	-0.00395	-0.00395
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00290	-0.00292	-0.00292

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)	0.00394	0.00397	0.00396
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00395	0.00397	0.00396
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00395	0.00397	0.00396
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00397	0.00399	0.00398
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00395	0.00397	0.00396
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00292	0.00295	0.00293

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)	-0.00368	-0.00368	-0.00369
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00371	-0.00369
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00370	-0.00369
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00369	-0.00369
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00371	-0.00369
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00272	-0.00273	-0.00273

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)	0.00369	0.00371	0.00370
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00369	0.00371	0.00370
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00369	0.00371	0.00370
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00369	0.00371	0.00370
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00369	0.00371	0.00370
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00273	0.00277	0.00274

SKY130_OSU_SC_18T_LS__AOI21

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00482	0.00504	0.00491	0.97781

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi21_l	0.00000	0.00019	0.00026

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)	0.10207	1.11798	12.60390
	A1->Y (FR)	0.08681	1.06263	12.17320
	B0->Y (FR)	0.07571	1.07595	12.48820

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)	0.04220	0.53882	6.19584
	A1->Y (RF)	0.03750	0.53413	6.20579
	B0->Y (RF)	0.02743	0.52219	6.23615

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	0.00917	0.00909	0.00908
	A1	0.00000	0.00000	0.00000
	A1	0.00770	0.00759	0.00761
	B0	0.00727	0.00708	0.00716

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	0.00170	0.00142	0.00133
	A1	0.00000	0.00000	0.00000
	A1	0.00171	0.00141	0.00136
	B0	-0.00080	-0.00081	-0.00083

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)	-0.00328	-0.00340	-0.00339
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00346	-0.00348	-0.00347
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00346	-0.00348	-0.00347

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)	0.00337	0.00340	0.00339
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00346	0.00351	0.00348
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00348	0.00352	0.00348

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)	-0.00325	-0.00337	-0.00335
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00341	-0.00344	-0.00342
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00373	-0.00377	-0.00376

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)	0.00333	0.00339	0.00335
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00342	0.00347	0.00343
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00375	0.00378	0.00377

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)	-0.00172	-0.00173	-0.00173

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)	0.00190	0.00191	0.00177

SKY130_OSU_SC_18T_LS__AOI22

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__aoi22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ls__aoi22_l	0.00483	0.00504	0.00523	0.00499	0.94182

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi22_l	0.00000	0.00027	0.00053

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)	0.13052	1.15422	12.56900
	A1->Y (FR)	0.11579	1.11807	12.35420
	B0->Y (FR)	0.08049	1.06553	12.22370
	B1->Y (FR)	0.09544	1.10409	12.49100

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)	0.05368	0.54659	6.08838
	A1->Y (RF)	0.04909	0.54193	6.09440
	B0->Y (RF)	0.03016	0.51736	6.07424
	B1->Y (RF)	0.03482	0.52239	6.06918

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	0.01130	0.01118	0.01117
	A1	0.00987	0.00969	0.00969
	B0	0.00780	0.00753	0.00763
	B1	0.00919	0.00896	0.00906

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.00362	0.00335	0.00320
	A1	0.00366	0.00334	0.00322
	B0	-0.00039	-0.00042	-0.00044
	B1	-0.00032	-0.00037	-0.00042

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)	-0.00329	-0.00337	-0.00339
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00346	-0.00348	-0.00347
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00346	-0.00347	-0.00347
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00346	-0.00347	-0.00347

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)	0.00337	0.00337	0.00339
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00346	0.00351	0.00348
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00347	0.00352	0.00348
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00347	0.00352	0.00348

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)	-0.00325	-0.00337	-0.00335
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00341	-0.00345	-0.00342
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00372	-0.00377	-0.00376
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00372	-0.00377	-0.00376

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)	0.00333	0.00338	0.00335
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00342	0.00345	0.00343
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00375	0.00378	0.00377
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00375	0.00378	0.00377

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)	-0.00173	-0.00174	-0.00173
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00172	-0.00174	-0.00173
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00383	-0.00385	-0.00386
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00383	-0.00385	-0.00386

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)	0.00198	0.00199	0.00180
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00173	0.00174	0.00173
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00385	0.00389	0.00387
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00386	0.00389	0.00387

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)	-0.00174	-0.00175	-0.00174
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00173	-0.00174	-0.00174
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00352	-0.00354	-0.00353
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00352	-0.00354	-0.00353

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)	0.00199	0.00200	0.00181
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00174	0.00174	0.00174
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00353	0.00354	0.00354
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00353	0.00354	0.00354

SKY130_OSU_SC_18T_LS__BUFx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00524	2.10531
sky130_osu_sc_18T_ls__buf_2	0.00524	4.10309
sky130_osu_sc_18T_ls__buf_4	0.00524	7.86550
sky130_osu_sc_18T_ls__buf_6	0.00097	1.80000
sky130_osu_sc_18T_ls__buf_8	0.00526	15.01153
sky130_osu_sc_18T_ls__buf_l	0.00416	1.47738

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__buf_1	0.00000	0.00034	0.00034
sky130_osu_sc_18T_ls__buf_2	0.00000	0.00051	0.00060
sky130_osu_sc_18T_ls__buf_4	0.00000	0.00084	0.00113
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ls__buf_8	0.00000	0.00152	0.00218
sky130_osu_sc_18T_ls__buf_l	0.00000	0.00025	0.00025

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)**	0.06300	0.63069	6.83312
sky130_osu_sc_18T_ls__buf_2	**A->Y (RR)**	0.06999	0.56356	6.97432
sky130_osu_sc_18T_ls__buf_4	**A->Y (RR)**	0.09501	0.56045	7.36329
sky130_osu_sc_18T_ls__buf_8	**A->Y (RR)**	0.14276	0.61581	7.89456
sky130_osu_sc_18T_ls__buf_l	**A->Y (RR)**	0.06987	0.70152	6.77598

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)**	0.07042	0.65616	6.69286
sky130_osu_sc_18T_ls__buf_2	**A->Y (FF)**	0.08418	0.64472	6.93372
sky130_osu_sc_18T_ls__buf_4	**A->Y (FF)**	0.11946	0.67748	7.34362
sky130_osu_sc_18T_ls__buf_8	**A->Y (FF)**	0.19193	0.75420	7.79570
sky130_osu_sc_18T_ls__buf_l	**A->Y (FF)**	0.07643	0.69355	6.57513

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	0.00400	0.00332	0.00423
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00826	0.00782	0.00847
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01735	0.01741	0.01847
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03508	0.03745	0.03906
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00305	0.00251	0.00317

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	0.01033	0.01012	0.01131
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01330	0.01355	0.01465
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02050	0.02181	0.02303
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03476	0.03794	0.04002
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00814	0.00788	0.00880

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
	-0.00056	-0.00057	-0.00056

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
	0.00056	0.00057	0.00056

SKY130_OSU_SC_18T_LS__DFFRx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00497	0.00498	0.01469	2.05645	2.04403
sky130_osu_sc_18T_ls__dffr_l	0.00497	0.00497	0.01469	1.48257	1.47206

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffr_1	0.00000	0.00144	0.00177
sky130_osu_sc_18T_ls__dffr_l	0.00000	0.00135	0.00168

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)	0.33230	1.43871	14.90830
	QN->Q (FR)	0.04018	0.97643	13.82990
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RR)	0.32265	1.51346	14.33310
	QN->Q (FR)	0.04270	1.01281	13.45200

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)	0.32187	1.46620	15.62190
	QN->Q (RF)	0.02674	0.67847	9.58154
	RN->Q (FF)	0.23367	1.59471	18.43390
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RF)	0.32552	1.57943	15.27790
	QN->Q (RF)	0.02681	0.67281	8.88548
	RN->Q (FF)	0.23777	1.70836	18.08310

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)	0.28664	0.88145	7.14586
	RN->QN (FR)	0.19871	1.01052	9.96125
sky130_osu_sc_18T_ls__dffr_l	CK->QN (RR)	0.28720	0.94311	7.14373
	RN->QN (FR)	0.19959	1.07157	9.94942

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)**	0.27470	0.69680	4.22787
sky130_osu_sc_18T_ls__dffr_l	**CK->QN (RF)**	0.26149	0.69470	3.93975

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)	-0.05180	-0.09078	-0.53871
	setup	CK (R)	0.26135	0.30126	2.11803
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.05364	-0.09078	-0.53931
	setup	CK (R)	0.26359	0.30311	2.12473

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)	-0.14207	-0.49567	-5.62444
	setup	CK (R)	0.17243	0.51076	5.99075
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.14029	-0.49760	-5.09492
	setup	CK (R)	0.17243	0.51076	5.99070

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)	-0.05180	-0.09078	-0.53871
	setup	CK (R)	0.26135	0.30126	2.11803
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.05364	-0.09078	-0.53931
	setup	CK (R)	0.26359	0.30311	2.12473

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)	-0.14207	-0.49567	-5.62444
	setup	CK (R)	0.17243	0.51076	5.99075
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.14029	-0.49760	-5.09492
	setup	CK (R)	0.17243	0.51076	5.99070

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)	0.22274	0.25596	1.79083
	removal	CK (R)	-0.03631	-0.04277	-0.09489
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.22746	0.25664	1.83118
	removal	CK (R)	-0.03631	-0.04277	-0.09489

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)	0.22274	0.25596	1.79083
	removal	CK (R)	-0.03631	-0.04277	-0.09489
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.22746	0.25664	1.83118
	removal	CK (R)	-0.03631	-0.04277	-0.09489

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 ()	0.14191	0.50903	13.33370
	min_pulse_width	RN ()	0.14191	0.50903	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	RN ()	0.13808	0.50903	13.33370
	min_pulse_width	RN ()	0.13808	0.50903	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 ()	0.14573	0.50903	13.33370
	min_pulse_width	CK ()	0.16485	0.50903	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.13426	0.50903	13.33370
	min_pulse_width	CK ()	0.16103	0.50903	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 ()	0.33694	0.50903	13.33370
	min_pulse_width	CK ()	0.13808	0.50903	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.33694	0.50903	13.33370
	min_pulse_width	CK ()	0.13426	0.50903	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	0.01028	0.00658	0.00000
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00915	0.00633	-0.00032

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	0.01184	0.01013	0.00000
	RN	-0.00141	-0.08287	-1.25115
	RN	0.02695	0.02534	0.00779
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01068	0.00942	0.00032
	RN	-0.00141	-0.06810	-0.90199
	RN	0.02579	0.02460	0.01528

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	0.01184	0.01014	0.00000
	RN	-0.00141	-0.08257	-1.24359
	RN	0.02695	0.02534	0.00907
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01068	0.00943	0.00050
	RN	-0.00141	-0.06781	-0.89560
	RN	0.02579	0.02460	0.01607

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	0.01025	0.00656	0.00000
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00911	0.00632	-0.00050

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	-0.00319	-0.00338	-0.00337
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01246	0.01181	0.01182
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00558	0.00499	0.00509
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00319	-0.00338	-0.00337
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01246	0.01181	0.01182
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00558	0.00499	0.00509

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	0.00335	0.00341	0.00337
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02051	0.02018	0.01995
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00955	0.00933	0.00936
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00335	0.00341	0.00337
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02051	0.02018	0.01995
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00955	0.00930	0.00936

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)	0.00405	0.00337	0.00412
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01129	0.01028	0.01084
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)	0.00405	0.00337	0.00412
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01129	0.01028	0.01085

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)	0.00947	0.00911	0.01024
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02017	0.01946	0.02021
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)	0.00947	0.00911	0.01024
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02017	0.01946	0.02021

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)	-0.00054	-0.00132	-0.00067
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00615	0.00447	0.00479
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	-0.00185	-0.00114
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00054	-0.00132	-0.00067
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00615	0.00447	0.00479
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	-0.00185	-0.00114

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)	0.01495	0.01447	0.01556
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03203	0.03089	0.03093
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02442	0.02371	0.02409
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03141	0.03031	0.03246
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01666	0.01625	0.01727
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01495	0.01449	0.01556
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03203	0.03089	0.03093
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02442	0.02370	0.02409
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03141	0.03027	0.03246
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01666	0.01625	0.01727

SKY130_OSU_SC_18T_LS__DFFSRx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00493	0.00498	0.01067	0.01497	2.13892	2.14244
sky130_osu_sc_18T_ls__dffsr_l	0.00493	0.00498	0.01065	0.01497	1.46519	1.47520

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ls__dffsr_1	0.00000	0.00151	0.00186
sky130_osu_sc_18T_ls__dffsr_l	0.00000	0.00142	0.00177

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)	0.34190	1.43252	14.80180
	QN->Q (FR)	0.03812	0.95374	13.62440
	RN->Q (RR)	0.27389	1.37606	14.87800
	SN->Q (FR)	0.26287	1.58880	18.31590
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RR)	0.34259	1.53633	14.24640
	QN->Q (FR)	0.04260	1.00668	13.32480
	RN->Q (RR)	0.27530	1.48138	14.32170
	SN->Q (FR)	0.26371	1.69204	17.72210

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)	0.35648	1.48343	15.58880
	QN->Q (RF)	0.02421	0.63684	9.05091
	RN->Q (FF)	0.24241	1.58929	18.44450
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RF)	0.36497	1.61327	15.13430
	QN->Q (RF)	0.02676	0.66910	8.82165
	RN->Q (FF)	0.25097	1.71783	17.98350

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)	0.32257	0.91824	7.27465
	RN->QN (FR)	0.20889	1.02451	10.12140
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RR)	0.32619	0.98547	7.19929
	RN->QN (FR)	0.21246	1.09144	10.03570

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)	0.28896	0.71291	4.26402
	RN->QN (RF)	0.22150	0.65633	4.33962
	SN->QN (FF)	0.21043	0.86957	7.76002
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RF)	0.28332	0.72822	4.04496
	RN->QN (RF)	0.21642	0.67275	4.11734
	SN->QN (FF)	0.20505	0.88418	7.50876

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)	-0.05908	-0.10098	-0.61081
	setup	CK (R)	0.25865	0.29863	1.95858
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.06061	-0.09860	-0.61179
	setup	CK (R)	0.25796	0.29848	1.96671

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)	-0.15992	-0.51745	-5.96462
	setup	CK (R)	0.19600	0.52906	6.13955
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.15798	-0.51651	-5.96202
	setup	CK (R)	0.19585	0.52897	6.14016

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)	-0.05908	-0.10098	-0.61081
	setup	CK (R)	0.25865	0.29863	1.95858
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.06061	-0.09860	-0.61179
	setup	CK (R)	0.25796	0.29848	1.96671

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)	-0.15992	-0.51745	-5.96462
	setup	CK (R)	0.19600	0.52906	6.13955
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.15798	-0.51651	-5.96202
	setup	CK (R)	0.19585	0.52897	6.14016

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)	0.20407	0.22770	1.64354
	removal	CK (R)	-0.01930	-0.02594	-0.06798
	hold	SN (R)	-0.20503	-0.43772	-3.10036
	setup	SN (R)	0.22835	0.48160	6.45255
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.20234	0.22910	1.66894
	removal	CK (R)	-0.01930	-0.02594	-0.06798
	hold	SN (R)	-0.19963	-0.42876	-3.03081
	setup	SN (R)	0.22556	0.47350	6.38851

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)	0.20407	0.22770	1.64354
	removal	CK (R)	-0.01930	-0.02594	-0.06798
	hold	SN (R)	-0.20503	-0.43772	-3.10036
	hold	SN (R)	-0.20593	-0.43786	-3.10759
	setup	SN (R)	0.22835	0.47890	6.30457
	setup	SN (R)	0.22010	0.48160	6.45255
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.20234	0.22910	1.66894
	removal	CK (R)	-0.01930	-0.02594	-0.06798
	hold	SN (R)	-0.20091	-0.42876	-3.03081
	hold	SN (R)	-0.19963	-0.43119	-3.04675
	setup	SN (R)	0.22556	0.47272	6.27329
	setup	SN (R)	0.20923	0.47350	6.38851

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 ()	0.16103	0.50903	13.33370
	min_pulse_width	RN ()	0.16485	0.50903	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	RN ()	0.16103	0.50903	13.33370
	min_pulse_width	RN ()	0.16103	0.50903	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)	0.03796	0.07535	4.84389
	removal	CK (R)	-0.01195	-0.05264	-0.45113
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.03785	0.07517	4.66925
	removal	CK (R)	-0.01195	-0.05264	-0.44607

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)	0.03796	0.07535	4.84389
	removal	CK (R)	-0.01195	-0.05264	-0.45113
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.03785	0.07517	4.66925
	removal	CK (R)	-0.01195	-0.05264	-0.44607

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 ()	0.21199	0.55508	13.33370
	min_pulse_width	SN ()	0.20990	0.55508	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	SN ()	0.21215	0.54412	13.33370
	min_pulse_width	SN ()	0.20061	0.54631	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 ()	0.15338	0.50903	13.33370
	min_pulse_width	CK ()	0.18397	0.50903	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.14573	0.50903	13.33370
	min_pulse_width	CK ()	0.18015	0.50903	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 ()	0.33694	0.50903	13.33370
	min_pulse_width	CK ()	0.16103	0.50903	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.33694	0.50903	13.33370
	min_pulse_width	CK ()	0.16103	0.50903	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	0.01272	0.01006	0.00000
	RN	0.02365	0.02124	-0.00979
	SN	-0.00141	-0.08485	-1.30132
	SN	0.02606	0.02377	-0.00728
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01168	0.00898	-0.00256
	RN	0.02260	0.02015	-0.00542
	SN	-0.00141	-0.06762	-0.89142
	SN	0.02501	0.02270	-0.00330

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	0.01353	0.01209	0.00000
	RN	-0.00141	-0.08485	-1.30132
	RN	0.02776	0.02632	0.01149
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01249	0.01131	0.00256
	RN	-0.00141	-0.06762	-0.89142
	RN	0.02670	0.02553	0.01678

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	0.01353	0.01211	0.00000
	RN	-0.00141	-0.08493	-1.30346
	RN	0.02776	0.02632	0.01121
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01249	0.01132	0.00261
	RN	-0.00141	-0.06789	-0.89751
	RN	0.02670	0.02553	0.01662

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	0.01268	0.01001	0.00000
	RN	0.02361	0.02120	-0.00985
	SN	-0.00141	-0.08493	-1.30340
	SN	0.02602	0.02374	-0.00717
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01164	0.00892	-0.00261
	RN	0.02256	0.02010	-0.00510
	SN	-0.00141	-0.06789	-0.89746
	SN	0.02497	0.02265	-0.00279

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	-0.00326	-0.00339	-0.00337
	(!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)	0.01588	0.01526	0.01530
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00622	0.00566	0.00573
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00619	0.00562	0.00570
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00626	0.00570	0.00577
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00326	-0.00339	-0.00337
	(!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)	0.01588	0.01526	0.01530
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00622	0.00567	0.00573
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00619	0.00562	0.00570
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00626	0.00570	0.00577

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	0.00336	0.00341	0.00337
	(!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)	0.02321	0.02286	0.02249
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01016	0.00995	0.00997
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01020	0.01000	0.01000
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01011	0.00991	0.00992
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00336	0.00341	0.00337
	(!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)	0.02320	0.02286	0.02248
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01015	0.00994	0.00997
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01019	0.00999	0.00999
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01011	0.00990	0.00992

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)	0.00350	0.00286	0.00344
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01347	0.01251	0.01290
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)	0.00350	0.00286	0.00345
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01348	0.01251	0.01291

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)	0.01030	0.00994	0.01110
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02140	0.02057	0.02127
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)	0.01029	0.00993	0.01109
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02139	0.02056	0.02126

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)	-0.00775	-0.00786	-0.00784
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00792	-0.00805	-0.00801
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00762	-0.00768	-0.00769
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00490	0.00422	0.00440
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)	-0.00775	-0.00786	-0.00784
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00790	-0.00803	-0.00800
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00762	-0.00767	-0.00769
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00491	0.00422	0.00441

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)	0.00783	0.00788	0.00786
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00796	0.00809	0.00801
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00767	0.00768	0.00770
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01626	0.01592	0.01595
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)	0.00783	0.00788	0.00786
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00795	0.00808	0.00800
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00766	0.00767	0.00770
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01625	0.01591	0.01594

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)	-0.00054	-0.00131	-0.00067
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00697	0.00540	0.00569
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00690	0.00527	0.00559
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00085	-0.00169	-0.00096
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00480	0.00322	0.00473
sky130_osu_sc_18T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00054	-0.00131	-0.00067
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00696	0.00539	0.00568
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00689	0.00526	0.00558
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00085	-0.00169	-0.00096
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00480	0.00322	0.00475

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)	0.03557	0.03447	0.03451
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01499	0.01454	0.01561
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02481	0.02412	0.02452
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02490	0.02417	0.02456
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03405	0.03289	0.03481
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01650	0.01609	0.01711
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01972	0.01880	0.02109
sky130_osu_sc_18T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03557	0.03447	0.03445
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01499	0.01456	0.01561
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02481	0.02412	0.02452
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02490	0.02417	0.02456
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03404	0.03288	0.03481
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01650	0.01609	0.01711
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01971	0.01880	0.02108

SKY130_OSU_SC_18T_LS__DFFSx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00496	0.00863	0.01468	2.07503	2.07553
sky130_osu_sc_18T_ls__dffs_l	0.00496	0.00863	0.01468	1.49339	1.47804

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffs_1	0.00000	0.00138	0.00169
sky130_osu_sc_18T_ls__dffs_l	0.00000	0.00129	0.00160

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)	0.23951	1.33661	14.87370
	QN->Q (FR)	0.03999	0.97227	13.79270
	SN->Q (FR)	0.19533	1.54494	18.10320
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RR)	0.23724	1.42300	14.29580
	QN->Q (FR)	0.04250	1.00986	13.42870
	SN->Q (FR)	0.19261	1.62541	17.48110

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)	0.34761	1.49463	15.71120
	QN->Q (RF)	0.02652	0.67674	9.57983
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RF)	0.34954	1.60630	15.35820
	QN->Q (RF)	0.02664	0.67150	8.88390

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)	0.31145	0.91165	7.23380
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RR)	0.31043	0.96760	7.16351

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)	0.18876	0.59746	4.17472
	SN->QN (FF)	0.14445	0.80703	7.39116
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RF)	0.18266	0.60456	3.85026
	SN->QN (FF)	0.13750	0.80846	7.02733

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)	-0.04035	-0.07915	-0.49262
	setup	CK (R)	0.16737	0.21480	2.24391
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.04252	-0.07841	-0.49271
	setup	CK (R)	0.17041	0.21571	2.27226

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)	-0.14367	-0.50293	-4.08333
	setup	CK (R)	0.18536	0.51840	6.02452
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.14357	-0.50293	-3.96003
	setup	CK (R)	0.18532	0.51840	6.02433

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)	-0.04035	-0.07915	-0.49262
	setup	CK (R)	0.16737	0.21480	2.24391
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.04252	-0.07841	-0.49271
	setup	CK (R)	0.17041	0.21571	2.27226

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)	-0.14367	-0.50293	-4.08333
	setup	CK (R)	0.18536	0.51840	6.02452
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.14357	-0.50293	-3.96003
	setup	CK (R)	0.18532	0.51840	6.02433

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)	0.04003	0.07687	4.07173
	removal	CK (R)	-0.01286	-0.04843	-0.39081
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.04126	0.07694	4.03789
	removal	CK (R)	-0.01286	-0.04843	-0.39081

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)	0.04003	0.07687	4.07173
	removal	CK (R)	-0.01286	-0.04843	-0.39081
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.04126	0.07694	4.03789
	removal	CK (R)	-0.01286	-0.04843	-0.39081

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 ()	0.13837	0.52658	13.33370
	min_pulse_width	SN ()	0.13837	0.52658	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	SN ()	0.13143	0.51342	13.33370
	min_pulse_width	SN ()	0.13192	0.51561	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 ()	0.09602	0.50903	13.33370
	min_pulse_width	CK ()	0.17250	0.50903	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.09219	0.50903	13.33370
	min_pulse_width	CK ()	0.16868	0.50903	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 ()	0.24516	0.50903	13.33370
	min_pulse_width	CK ()	0.15338	0.50903	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.24516	0.50903	13.33370
	min_pulse_width	CK ()	0.15338	0.50903	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	0.01028	0.00645	0.00000
	SN	-0.00141	-0.08332	-1.26245
	SN	0.02242	0.01884	-0.02517
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00913	0.00625	-0.00078
	SN	-0.00141	-0.06840	-0.90858
	SN	0.02126	0.01861	-0.00665

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	0.01180	0.01020	0.00000
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01065	0.00946	0.00078

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	0.01180	0.01021	0.00000
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01065	0.00949	0.00098

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	0.01025	0.00646	0.00000
	SN	-0.00141	-0.08333	-1.26265
	SN	0.02239	0.01878	-0.02403
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00909	0.00625	-0.00098
	SN	-0.00141	-0.06797	-0.89919
	SN	0.02123	0.01857	-0.00611

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	-0.00331	-0.00343	-0.00342
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01211	0.01141	0.01132
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00543	0.00485	0.00495
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00331	-0.00343	-0.00342
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01211	0.01141	0.01132
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00543	0.00485	0.00495

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	0.00341	0.00345	0.00342
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02014	0.01981	0.01959
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00974	0.00952	0.00956
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00341	0.00345	0.00342
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02014	0.01981	0.01959
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00974	0.00952	0.00956

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)	-0.00579	-0.00581	-0.00582
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00429	0.00373	0.00417
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)	-0.00579	-0.00581	-0.00582
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00429	0.00373	0.00417

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)	0.00581	0.00590	0.00584
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01141	0.01098	0.01160
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)	0.00581	0.00590	0.00584
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01141	0.01098	0.01160

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)	-0.00056	-0.00133	-0.00069
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00096	-0.00176	-0.00105
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00398	0.00239	0.00398
sky130_osu_sc_18T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00056	-0.00133	-0.00069
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00096	-0.00176	-0.00105
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00398	0.00239	0.00398

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)	0.03165	0.03050	0.03053
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01495	0.01448	0.01557
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03095	0.02972	0.03192
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01655	0.01615	0.01716
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01922	0.01836	0.02065
sky130_osu_sc_18T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03165	0.03050	0.03053
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01495	0.01449	0.01557
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03095	0.02971	0.03192
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01655	0.01615	0.01716
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01922	0.01836	0.02065

SKY130_OSU_SC_18T_LS__DFFx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00511	0.01456	2.14893	2.13304
sky130_osu_sc_18T_ls__dff_l	0.00511	0.01454	1.46873	1.45631

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dff_1	0.00000	0.00133	0.00144
sky130_osu_sc_18T_ls__dff_l	0.00000	0.00124	0.00135

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)	0.21038	1.28159	14.63480
	QN->Q (FR)	0.03781	0.94833	13.59830
sky130_osu_sc_18T_ls__dff_l	CK->Q (RR)	0.21646	1.40023	14.15330
	QN->Q (FR)	0.04332	1.02134	13.51560

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)	0.30502	1.42708	15.54420
	QN->Q (RF)	0.02409	0.63541	9.04079
sky130_osu_sc_18T_ls__dff_l	CK->Q (RF)	0.31572	1.56968	15.22000
	QN->Q (RF)	0.02670	0.66758	8.81035

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)	0.27200	0.86004	7.15080
sky130_osu_sc_18T_ls__dff_l	CK->QN (RR)	0.27747	0.93471	7.12903

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)	0.16405	0.56203	4.03912
sky130_osu_sc_18T_ls__dff_l	CK->QN (RF)	0.16305	0.58305	3.79432

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)	-0.03899	-0.07699	-0.52672
	setup	CK (R)	0.13739	0.18981	2.24742
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.04020	-0.07709	-0.52389
	setup	CK (R)	0.13576	0.18614	2.28524

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)	-0.13265	-0.49893	-3.95995
	setup	CK (R)	0.16461	0.51840	6.06710
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.13646	-0.49893	16.23930
	setup	CK (R)	0.16461	0.51840	6.06679

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 ()	0.08454	0.50903	13.33370
	min_pulse_width	CK ()	0.15720	0.50903	13.33370
sky130_osu_sc_18T_ls__dff_l	min_pulse_width	CK ()	0.08454	0.50903	13.33370
	min_pulse_width	CK ()	0.15338	0.50903	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 ()**	0.21457	0.50903	13.33370
	min_pulse_width	**CK ()**	0.12661	0.50903	13.33370
sky130_osu_sc_18T_ls__dff_l	**min_pulse_width**	**CK ()**	0.21074	0.50903	13.33370
	min_pulse_width	**CK ()**	0.12661	0.50903	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	0.01080	0.00788	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00975	0.00679	-0.00018

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	0.01198	0.01057	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01096	0.00971	0.00018

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	0.01198	0.01058	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01096	0.00972	0.00036

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	0.01076	0.00789	0.00000
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00971	0.00681	-0.00036

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	-0.00319	-0.00338	-0.00337
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01117	0.01064	0.01066
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00319	-0.00338	-0.00336
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01118	0.01063	0.01066

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	0.00334	0.00340	0.00337
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02072	0.02030	0.02026
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00334	0.00340	0.00336
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02073	0.02030	0.02027

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)	-0.00057	-0.00135	-0.00068
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00094	-0.00169	-0.00103
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00057	-0.00135	-0.00068
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00094	-0.00169	-0.00103

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)	0.01490	0.01443	0.01552
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03078	0.02969	0.02984
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03137	0.03007	0.03225
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01648	0.01608	0.01709
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01490	0.01447	0.01552
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03078	0.02969	0.02985
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03138	0.03008	0.03228
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01648	0.01608	0.01709

SKY130_OSU_SC_18T_LS__INVx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00502	2.07819
sky130_osu_sc_18T_ls__inv_10	0.04717	18.15015
sky130_osu_sc_18T_ls__inv_2	0.00962	4.07767
sky130_osu_sc_18T_ls__inv_3	0.01435	5.78317
sky130_osu_sc_18T_ls__inv_4	0.01898	7.75883
sky130_osu_sc_18T_ls__inv_6	0.02846	11.41022
sky130_osu_sc_18T_ls__inv_8	0.03782	15.03493
sky130_osu_sc_18T_ls__inv_l	0.00391	1.43801

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__inv_1	0.00000	0.00017	0.00026
sky130_osu_sc_18T_ls__inv_10	0.00000	0.00168	0.00264
sky130_osu_sc_18T_ls__inv_2	0.00000	0.00034	0.00053
sky130_osu_sc_18T_ls__inv_3	0.00000	0.00051	0.00079
sky130_osu_sc_18T_ls__inv_4	0.00000	0.00067	0.00105
sky130_osu_sc_18T_ls__inv_6	0.00000	0.00101	0.00158
sky130_osu_sc_18T_ls__inv_8	0.00000	0.00135	0.00211
sky130_osu_sc_18T_ls__inv_l	0.00000	0.00012	0.00019

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)**	0.03571	0.87843	12.47220
sky130_osu_sc_18T_ls__inv_10	**A->Y (FR)**	0.05864	0.64027	12.39700
sky130_osu_sc_18T_ls__inv_2	**A->Y (FR)**	0.02993	0.76927	12.41860
sky130_osu_sc_18T_ls__inv_3	**A->Y (FR)**	0.03350	0.72446	12.40310
sky130_osu_sc_18T_ls__inv_4	**A->Y (FR)**	0.03516	0.69356	12.35760
sky130_osu_sc_18T_ls__inv_6	**A->Y (FR)**	0.04087	0.66196	12.37790
sky130_osu_sc_18T_ls__inv_8	**A->Y (FR)**	0.04916	0.64745	12.41390
sky130_osu_sc_18T_ls__inv_l	**A->Y (FR)**	0.04017	0.94565	12.40630

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)**	0.02127	0.55421	7.85188
sky130_osu_sc_18T_ls__inv_10	**A->Y (RF)**	0.03666	0.36654	7.64411
sky130_osu_sc_18T_ls__inv_2	**A->Y (RF)**	0.01844	0.47939	7.81711
sky130_osu_sc_18T_ls__inv_3	**A->Y (RF)**	0.02036	0.44695	7.80691
sky130_osu_sc_18T_ls__inv_4	**A->Y (RF)**	0.02079	0.42296	7.78996
sky130_osu_sc_18T_ls__inv_6	**A->Y (RF)**	0.02635	0.39492	7.78132
sky130_osu_sc_18T_ls__inv_8	**A->Y (RF)**	0.03151	0.37779	7.77251
sky130_osu_sc_18T_ls__inv_l	**A->Y (RF)**	0.02334	0.57790	7.63254

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	0.00526	0.00482	0.00538
sky130_osu_sc_18T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.04553	0.04647	0.04872
sky130_osu_sc_18T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00951	0.00956	0.00996
sky130_osu_sc_18T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01453	0.01337	0.01522
sky130_osu_sc_18T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01878	0.01880	0.01981
sky130_osu_sc_18T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02780	0.02730	0.02958
sky130_osu_sc_18T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03671	0.03742	0.03919
sky130_osu_sc_18T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00409	0.00367	0.00415

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	-0.00102	-0.00102	-0.00098
sky130_osu_sc_18T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01778	-0.01716	-0.01439
sky130_osu_sc_18T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00332	-0.00324	-0.00302
sky130_osu_sc_18T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00444	-0.00432	-0.00387
sky130_osu_sc_18T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00690	-0.00659	-0.00592
sky130_osu_sc_18T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01052	-0.01008	-0.00880
sky130_osu_sc_18T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01428	-0.01363	-0.01167
sky130_osu_sc_18T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00072	-0.00076	-0.00072

SKY130_OSU_SC_18T_LS__MUX2

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.11762	0.11744	0.01021	0.10972

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__mux2_1	0.00000	0.00052	0.00079

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)	-	0.01812	0.31653	2.64083
	A1->Y (RR)	-	0.01959	0.31697	2.64306
	S0->Y (RR)	(!A0 * A1)	0.04972	0.23820	0.19244
	S0->Y (FR)	(A0 * !A1)	0.05229	0.46455	3.53190

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)	-	0.01606	0.24329	2.01027
	A1->Y (FF)	-	0.01571	0.24114	2.00391
	S0->Y (FF)	(!A0 * A1)	0.07759	0.44267	2.94274
	S0->Y (RF)	(A0 * !A1)	0.02535	0.23290	1.05367

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	-	-0.00577	-0.00579	-0.00580
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00397	-0.00397	-0.00399
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00628	0.00590	0.00733
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00368	-0.00435	-0.00340

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	-	0.00577	0.00580	0.00580
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00397	0.00397	0.00399
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00124	0.00060	0.00160
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01434	0.01393	0.01517

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)	-0.00151	-0.00150	-0.00150

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)	0.00151	0.00150	0.00150

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)	-0.00180	-0.00179	-0.00179

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)	0.00180	0.00179	0.00179

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)	-0.00125	-0.00190	-0.00090
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00119	-0.00188	-0.00091

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)	0.01073	0.01037	0.01160
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00987	0.00949	0.01092

SKY130_OSU_SC_18T_LS__NAND2x

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00504	0.00499	2.04684
sky130_osu_sc_18T_ls__nand2_l	0.00392	0.00389	1.41656

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nand2_1	0.00000	0.00019	0.00053
sky130_osu_sc_18T_ls__nand2_l	0.00000	0.00014	0.00039

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)	0.03690	0.88247	12.47380
	B->Y (FR)	0.04354	0.87959	12.33540
sky130_osu_sc_18T_ls__nand2_l	A->Y (FR)	0.04113	0.94713	12.37660
	B->Y (FR)	0.04921	0.95185	12.31980

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)	0.02889	0.65524	9.32595
	B->Y (RF)	0.03328	0.66592	9.34333
sky130_osu_sc_18T_ls__nand2_l	A->Y (RF)	0.03184	0.69313	9.05472
	B->Y (RF)	0.03596	0.70457	9.05882

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	0.00563	0.00517	0.00573
	B	0.00000	0.00000	0.00000
	B	0.00710	0.00658	0.00715
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00433	0.00385	0.00438
	B	0.00000	0.00000	0.00000
	B	0.00544	0.00513	0.00545

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	-0.00054	-0.00063	-0.00056
	B	0.00000	0.00000	0.00000
	B	-0.00049	-0.00056	-0.00054
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00042	-0.00049	-0.00047
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00045	-0.00046

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)	-0.00384	-0.00387	-0.00388
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00282	-0.00284	-0.00284

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)	0.00387	0.00390	0.00389
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00284	0.00287	0.00285

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)	-0.00355	-0.00358	-0.00356
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00260	-0.00261	-0.00260

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)	0.00356	0.00361	0.00357
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00260	0.00264	0.00261

SKY130_OSU_SC_18T_LS__NOR2x

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00501	0.00534	1.05267
sky130_osu_sc_18T_ls__nor2_l	0.00383	0.00418	0.74201

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nor2_1	0.00000	0.00019	0.00026
sky130_osu_sc_18T_ls__nor2_l	0.00000	0.00014	0.00019

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)	0.07647	1.07207	12.60940
	B->Y (FR)	0.05917	1.03583	12.40920
sky130_osu_sc_18T_ls__nor2_l	A->Y (FR)	0.08459	1.16903	12.61620
	B->Y (FR)	0.06965	1.13398	12.43120

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)	0.02730	0.46101	5.49427
	B->Y (RF)	0.02236	0.45066	5.47623
sky130_osu_sc_18T_ls__nor2_l	A->Y (RF)	0.02878	0.48051	5.36776
	B->Y (RF)	0.02445	0.47529	5.35257

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	0.00747	0.00740	0.00741
	B	0.00000	0.00000	0.00000
	B	0.00577	0.00564	0.00576
sky130_osu_sc_18T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00552	0.00546	0.00545
	B	0.00000	0.00000	0.00000
	B	0.00442	0.00430	0.00437

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	0.00069	0.00044	0.00040
	B	0.00000	0.00000	0.00000
	B	-0.00082	-0.00086	-0.00087
sky130_osu_sc_18T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00043	0.00026	0.00024
	B	0.00000	0.00000	0.00000
	B	-0.00053	-0.00057	-0.00060

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)	-0.00320	-0.00340	-0.00339
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00228	-0.00240	-0.00240

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)	0.00337	0.00342	0.00339
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00239	0.00243	0.00240

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)	-0.00172	-0.00174	-0.00173
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00124	-0.00125	-0.00125

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)	0.00182	0.00184	0.00176
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00131	0.00132	0.00127

SKY130_OSU_SC_18T_LS__OAI21

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00507	0.00510	0.00434	1.06259

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai21_l	0.00000	0.00020	0.00046

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)	0.08017	1.06654	12.56820
	A1->Y (FR)	0.10244	1.10807	12.77060
	B0->Y (FR)	0.05000	0.86589	10.57420

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)	0.04107	0.57164	6.75351
	A1->Y (RF)	0.04683	0.56908	6.64754
	B0->Y (RF)	0.03213	0.58339	7.07177

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	0.00783	0.00763	0.00770
	A1	0.00000	0.00000	0.00000
	A1	0.00956	0.00942	0.00939
	B0	0.00649	0.00631	0.00635

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	0.00039	0.00029	0.00025
	A1	0.00000	0.00000	0.00000
	A1	0.00187	0.00163	0.00156
	B0	0.00254	0.00242	0.00238

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)	-0.00173	-0.00174	-0.00174
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00329	-0.00340	-0.00341
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00348	-0.00349	-0.00348

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)	0.00183	0.00184	0.00177
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00339	0.00340	0.00341
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00348	0.00355	0.00349

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)	-0.00316	-0.00334	-0.00333
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00328	-0.00340	-0.00338
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00344	-0.00344	-0.00345

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)	0.00330	0.00336	0.00333
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00336	0.00341	0.00338
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00344	0.00351	0.00346

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)	-0.00288	-0.00291	-0.00293

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)	0.00293	0.00296	0.00295

SKY130_OSU_SC_18T_LS__OAI22

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00488	0.00518	0.00534	0.00519	1.06590

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai22_1	0.00000	0.00030	0.00053

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)	0.11171	1.11508	12.75600
	A1->Y (FR)	0.09417	1.07681	12.55640
	B0->Y (FR)	0.06654	1.04975	12.54610
	B1->Y (FR)	0.08468	1.08774	12.74640

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)	0.06577	0.60987	6.87376
	A1->Y (RF)	0.05368	0.59032	6.80078
	B0->Y (RF)	0.04450	0.59902	7.10764
	B1->Y (RF)	0.05797	0.62748	7.34681

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	0.01235	0.01224	0.01220
	A1	0.01062	0.01040	0.01046
	B0	0.00796	0.00777	0.00785
	B1	0.00976	0.00962	0.00961

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.00289	0.00267	0.00257
	A1	0.00153	0.00138	0.00130
	B0	0.00151	0.00136	0.00129
	B1	0.00293	0.00263	0.00258

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)	-0.00320	-0.00340	-0.00338
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00320	-0.00340	-0.00338
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00327	-0.00340	-0.00339
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00345	-0.00347	-0.00346

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)	0.00336	0.00342	0.00338
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00336	0.00342	0.00338
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00336	0.00342	0.00339
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00345	0.00349	0.00347

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)	-0.00171	-0.00173	-0.00172
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00171	-0.00173	-0.00172
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00325	-0.00338	-0.00337
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00344	-0.00345	-0.00345

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)	0.00181	0.00183	0.00175
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00181	0.00183	0.00175
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00335	0.00338	0.00337
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00344	0.00348	0.00346

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)	-0.00170	-0.00172	-0.00171
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00170	-0.00172	-0.00171
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00365	-0.00380	-0.00378
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00377	-0.00378	-0.00384

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)	0.00181	0.00182	0.00174
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00181	0.00182	0.00174
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00380	0.00382	0.00378
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00384	0.00388	0.00386

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)	-0.00315	-0.00335	-0.00333
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00315	-0.00335	-0.00333
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00373	-0.00386	-0.00384
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00382	-0.00385	-0.00390

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)	0.00331	0.00337	0.00333
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00331	0.00337	0.00333
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00385	0.00391	0.00384
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00390	0.00392	0.00392

SKY130_OSU_SC_18T_LS__OR2x

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00534	0.00516	2.10894
sky130_osu_sc_18T_ls__or2_2	0.00535	0.00516	4.15376
sky130_osu_sc_18T_ls__or2_4	0.00535	0.00516	7.88219
sky130_osu_sc_18T_ls__or2_8	0.00533	0.00518	14.71047
sky130_osu_sc_18T_ls__or2_l	0.00423	0.00400	1.45083

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__or2_1	0.00000	0.00031	0.00041
sky130_osu_sc_18T_ls__or2_2	0.00000	0.00043	0.00067
sky130_osu_sc_18T_ls__or2_4	0.00000	0.00067	0.00120
sky130_osu_sc_18T_ls__or2_8	0.00000	0.00115	0.00225
sky130_osu_sc_18T_ls__or2_l	0.00000	0.00023	0.00030

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)	0.07097	0.66018	6.97794
	B->Y (RR)	0.06474	0.63638	6.85031
sky130_osu_sc_18T_ls__or2_2	A->Y (RR)	0.07852	0.59147	7.18396
	B->Y (RR)	0.07187	0.57174	7.08554
sky130_osu_sc_18T_ls__or2_4	A->Y (RR)	0.10390	0.58183	7.51708
	B->Y (RR)	0.09714	0.56739	7.44269
sky130_osu_sc_18T_ls__or2_8	A->Y (RR)	0.15130	0.62986	7.94123
	B->Y (RR)	0.14453	0.61857	7.88745
sky130_osu_sc_18T_ls__or2_l	A->Y (RR)	0.07796	0.72967	6.87658
	B->Y (RR)	0.07233	0.70813	6.76442

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)	0.13293	0.76221	7.29687
	B->Y (FF)	0.10945	0.71399	6.82773
sky130_osu_sc_18T_ls__or2_2	A->Y (FF)	0.16327	0.76011	7.58856
	B->Y (FF)	0.13994	0.72029	7.14245
sky130_osu_sc_18T_ls__or2_4	A->Y (FF)	0.23343	0.81770	7.99070
	B->Y (FF)	0.21013	0.78369	7.57809
sky130_osu_sc_18T_ls__or2_8	A->Y (FF)	0.37409	0.96631	8.40482
	B->Y (FF)	0.35092	0.92693	8.06168
sky130_osu_sc_18T_ls__or2_l	A->Y (FF)	0.14386	0.79775	7.08465
	B->Y (FF)	0.12095	0.75231	6.64788

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	0.00572	0.00491	0.00529
	B	0.00000	0.00000	0.00000
	B	0.00434	0.00378	0.00477
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01000	0.00945	0.01010
	B	0.00000	0.00000	0.00000
	B	0.00854	0.00837	0.00942
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01909	0.01914	0.01948
	B	0.00000	0.00000	0.00000
	B	0.01759	0.01811	0.01935
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03681	0.03814	0.04012
	B	0.00000	0.00000	0.00000
	B	0.03532	0.03721	0.04076
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00422	0.00356	0.00393
	B	0.00000	0.00000	0.00000
	B	0.00335	0.00294	0.00517

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	0.01246	0.01233	0.01238
	B	0.00000	0.00000	0.00000
	B	0.01050	0.01046	0.01164
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01540	0.01586	0.01592
	B	0.00000	0.00000	0.00000
	B	0.01343	0.01391	0.01507
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02251	0.02406	0.02440
	B	0.00000	0.00000	0.00000
	B	0.02049	0.02200	0.02330
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03703	0.03999	0.04140
	B	0.00000	0.00000	0.00000
	B	0.03462	0.03785	0.04009
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00958	0.00940	0.00944
	B	0.00000	0.00000	0.00000
	B	0.00818	0.00810	0.00903

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)	-0.00324	-0.00340	-0.00340
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00325	-0.00340	-0.00340
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00325	-0.00340	-0.00340
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00325	-0.00340	-0.00340
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00230	-0.00242	-0.00241

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)	0.00338	0.00341	0.00340
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00338	0.00344	0.00340
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00338	0.00341	0.00340
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00337	0.00344	0.00340
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00239	0.00244	0.00241

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)	-0.00173	-0.00175	-0.00174
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00173	-0.00175	-0.00174
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00173	-0.00175	-0.00174
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00173	-0.00175	-0.00174
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00126	-0.00127	-0.00127

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)	0.00184	0.00185	0.00177
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00184	0.00185	0.00177
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00184	0.00185	0.00177
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00184	0.00185	0.00177
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00133	0.00134	0.00129

SKY130_OSU_SC_18T_LS__TBUFIx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00534	0.00681	1.05521
sky130_osu_sc_18T_ls__tbufi_l	0.00419	0.00538	0.74598

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tbufi_1	0.00000	0.00021	0.00053
sky130_osu_sc_18T_ls__tbufi_l	0.00000	0.00016	0.00039

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)	0.05636	1.03302	12.42140
	OE->Y (FR)	0.05541	0.37137	4.59531
	OE->Y (RR)	0.09301	0.80573	6.99851
sky130_osu_sc_18T_ls__tbufi_l	A->Y (FR)	0.06683	1.13607	12.48770
	OE->Y (FR)	0.05933	0.37717	4.59512
	OE->Y (RR)	0.10186	0.91032	7.08157

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)	0.02767	0.53256	6.46179
	OE->Y (FF)	0.05570	0.37211	4.59544
	OE->Y (RF)	0.02789	0.53342	6.43974
sky130_osu_sc_18T_ls__tbufi_l	A->Y (RF)	0.03090	0.56435	6.33600
	OE->Y (FF)	0.05939	0.37855	4.59513
	OE->Y (RF)	0.03176	0.56506	6.31210

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	0.00536	0.00522	0.00533
	OE	0.00000	0.00000	0.00000
	OE	0.00538	0.00478	0.00594
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00412	0.00400	0.00405
	OE	0.00000	0.00000	0.00000
	OE	0.00391	0.00346	0.00434

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	-0.00083	-0.00086	-0.00088
	OE	0.00000	0.00000	0.00000
	OE	0.00381	0.00318	0.00427
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00054	-0.00057	-0.00061
	OE	0.00000	0.00000	0.00000
	OE	0.00268	0.00220	0.00306

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)	-0.00280	-0.00282	-0.00281
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00254	-0.00257	-0.00255
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00212	-0.00216	-0.00213
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00195	-0.00197	-0.00196

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)	0.00280	0.00282	0.00281
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00262	0.00264	0.00260
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00212	0.00216	0.00213
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00201	0.00202	0.00199

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)	0.00216	0.00155	0.00261
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00196	0.00133	0.00240
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00149	0.00103	0.00186
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00135	0.00088	0.00172

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)	0.00608	0.00562	0.00689
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00630	0.00586	0.00706
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00485	0.00448	0.00546
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00502	0.00462	0.00556

SKY130_OSU_SC_18T_LS__TNBUFIx

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00533	0.00822	1.05465
sky130_osu_sc_18T_ls__tnbufi_l	0.00419	0.00621	0.73328

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tnbufi_1	0.00000	0.00028	0.00034
sky130_osu_sc_18T_ls__tnbufi_l	0.00000	0.00021	0.00025

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)	0.05693	1.03285	12.41740
	OE->Y (RR)	0.02647	0.33909	4.59618
	OE->Y (FR)	0.07239	1.06822	12.61940
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (FR)	0.06744	1.12854	12.36200
	OE->Y (RR)	0.02745	0.33929	4.59636
	OE->Y (FR)	0.08037	1.16161	12.54960

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)	0.02727	0.53236	6.45978
	OE->Y (RF)	0.02615	0.33907	4.59628
	OE->Y (FF)	0.05991	0.59828	5.37032
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (RF)	0.03044	0.56111	6.27550
	OE->Y (RF)	0.02711	0.33928	4.59636
	OE->Y (FF)	0.06685	0.63458	5.26293

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	0.00550	0.00536	0.00547
	OE	0.00000	0.00000	0.00000
	OE	0.01339	0.01320	0.01484
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00427	0.00414	0.00420
	OE	0.00000	0.00000	0.00000
	OE	0.01008	0.00991	0.01116

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	-0.00101	-0.00104	-0.00105
	OE	0.00000	0.00000	0.00000
	OE	0.01204	0.01185	0.01338
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00072	-0.00074	-0.00077
	OE	0.00000	0.00000	0.00000
	OE	0.00902	0.00883	0.00996

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)	-0.00239	-0.00241	-0.00240
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00216	-0.00218	-0.00217
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00174	-0.00177	-0.00175
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00158	-0.00160	-0.00159

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)	0.00239	0.00241	0.00240
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00223	0.00225	0.00221
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00174	0.00177	0.00175
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00163	0.00164	0.00161

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)	-0.00409	-0.00494	-0.00377
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00387	-0.00478	-0.00372
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00286	-0.00344	-0.00256
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00272	-0.00334	-0.00253

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)	0.01016	0.01002	0.01157
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00999	0.00980	0.01139
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00766	0.00750	0.00870
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00754	0.00732	0.00856

SKY130_OSU_SC_18T_LS__XNOR2

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.01053	0.00953	1.07725

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xnor2_l	0.00000	0.00060	0.00086

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	0.11932	0.85509	7.25871
	A->Y (FR)	!B	0.07496	1.05783	12.53870
	B->Y (RR)	A	0.09451	0.82722	7.18584
	B->Y (FR)	!A	0.10088	1.09857	12.73700

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	0.09681	0.68209	5.85189
	A->Y (RF)	!B	0.04151	0.56177	6.68482
	B->Y (FF)	A	0.09010	0.67579	5.85436
	B->Y (RF)	!A	0.04801	0.57079	6.68674

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	0.00532	0.00460	0.00563
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01318	0.01256	0.01397
	B	A	0.00000	0.00000	0.00000
	B	A	0.00213	0.00155	0.00270
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01439	0.01394	0.01532

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	0.01646	0.01558	0.01665
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00394	0.00322	0.00416
	B	A	0.00000	0.00000	0.00000
	B	A	0.01515	0.01491	0.01629
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00481	0.00400	0.00486

SKY130_OSU_SC_18T_LS__XOR2

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.01051	0.00958	1.06614

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xor2_l	0.00000	0.00060	0.00069

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	0.11543	0.83760	7.16189
	A->Y (FR)	B	0.09053	1.08898	12.74080
	B->Y (RR)	!A	0.09813	0.82881	7.17371
	B->Y (FR)	A	0.09827	1.09737	12.72460

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	0.09100	0.66965	5.72280
	A->Y (RF)	B	0.03691	0.54980	6.50499
	B->Y (FF)	!A	0.08346	0.65838	5.67661
	B->Y (RF)	A	0.04492	0.55493	6.48500

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	0.01545	0.01502	0.01645
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00296	0.00149	0.00241
	B	A	0.00000	0.00000	0.00000
	B	A	0.01581	0.01546	0.01686
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00187	0.00123	0.00238

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	0.00318	0.00223	0.00311
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01716	0.01683	0.01813
	B	A	0.00000	0.00000	0.00000
	B	A	0.00321	0.00233	0.00321
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01541	0.01531	0.01667

SKY130_OSU_SC_18T_LS_x

sky130_osu_sc_18T_ls_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.41614
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	204309.00000	408619.00000
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
	-0.00249	0.03763	0.52195

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
	3.55561	3.35277	0.67984