sky130_osu_sc_18T_ls_tt_1P80_150C.ccs Library

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

SKY130_OSU_SC_18T_LS__ADDFx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.02280	0.02270	0.01738	2.68291	1.25831	2.63225
sky130_osu_sc_18T_ls__addf_l	0.02279	0.02269	0.01740	1.85144	1.25968	1.82753

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addf_1	0.00000	2.16031	2.35657
sky130_osu_sc_18T_ls__addf_l	0.00000	1.87697	2.07323

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)	0.17873	1.92862	28.13730
	B->CO (RR)	0.17608	1.87159	27.05540
	CI->CO (RR)	0.17100	1.97607	28.86880
	CON->CO (FR)	0.03080	0.76017	10.97770
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.17969	1.79502	22.78380
	B->CO (RR)	0.17716	1.75480	22.20640
	CI->CO (RR)	0.17201	1.84392	23.53950
	CON->CO (FR)	0.03461	0.82957	11.01650

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)	0.21430	2.18655	31.66090
	B->CO (FF)	0.19036	2.12093	30.96020
	CI->CO (FF)	0.18559	2.19357	32.18000
	CON->CO (RF)	0.02887	0.69250	10.10540
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	0.20865	1.97237	24.82460
	B->CO (FF)	0.18509	1.92027	24.48840
	CI->CO (FF)	0.17998	1.98006	25.37180
	CON->CO (RF)	0.03104	0.72052	9.61654

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)	0.15832	0.94651	9.95065
	B->CON (FR)	0.13571	0.92519	10.10210
	CI->CON (FR)	0.12960	0.95614	10.52450
sky130_osu_sc_18T_ls__addf_l	A->CON (FR)	0.15016	0.93869	9.94979
	B->CON (FR)	0.12807	0.91780	10.10130
	CI->CON (FR)	0.12148	0.94833	10.52400

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)	0.11901	0.73580	7.81517
	B->CON (RF)	0.11822	0.75200	8.09734
	CI->CON (RF)	0.11133	0.78714	8.61394
sky130_osu_sc_18T_ls__addf_l	A->CON (RF)	0.11445	0.73153	7.81579
	B->CON (RF)	0.11398	0.74608	8.09913
	CI->CON (RF)	0.10673	0.78289	8.61501

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)	0.31700	1.98734	24.89930
	B->S (-R)	0.30417	1.95166	24.26460
	CI->S (-R)	0.28612	1.99092	25.42280
	CON->S (RR)	0.09709	0.67138	7.46968
sky130_osu_sc_18T_ls__addf_l	A->S (-R)	0.30323	1.83091	20.36860
	B->S (-R)	0.29109	1.81210	20.12050
	CI->S (-R)	0.27230	1.83479	20.90200
	CON->S (RR)	0.09678	0.71740	7.34070

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)	0.28744	1.78463	21.66730
	B->S (-F)	0.27598	1.70313	20.86560
	CI->S (-F)	0.27892	1.82811	22.40490
	CON->S (FF)	0.11148	0.74183	7.73225
sky130_osu_sc_18T_ls__addf_l	A->S (-F)	0.27189	1.62558	17.51540
	B->S (-F)	0.26635	1.56848	17.16620
	CI->S (-F)	0.26326	1.67059	18.26960
	CON->S (FF)	0.10758	0.75837	7.35300

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	0.00466	0.00666	0.04645
	B	0.00526	0.00705	0.04295
	CI	0.00772	0.00989	0.04989
sky130_osu_sc_18T_ls__addf_l	A	0.00340	0.00477	0.03116
	B	0.00618	0.00701	0.02977
	CI	0.00646	0.00803	0.03449

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01967	0.02231	0.07484
	B	0.02080	0.02310	0.06968
	CI	0.01632	0.01922	0.07249
sky130_osu_sc_18T_ls__addf_l	A	0.01839	0.02026	0.05490
	B	0.01953	0.02122	0.05192
	CI	0.01506	0.01722	0.05265

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01961	0.02115	0.04751
	B	0.02076	0.02213	0.04549
	CI	0.01629	0.01807	0.04509
sky130_osu_sc_18T_ls__addf_l	A	0.01837	0.01978	0.04476
	B	0.01950	0.02076	0.04290
	CI	0.01504	0.01668	0.04241

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00461	0.00589	0.02677
	B	0.00733	0.00809	0.02667
	CI	0.00767	0.00908	0.03001
sky130_osu_sc_18T_ls__addf_l	A	0.00336	0.00449	0.02409
	B	0.00611	0.00674	0.02443
	CI	0.00641	0.00769	0.02745

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01966	0.02226	0.07341
	B	0.02079	0.02301	0.06886
	CI	0.01631	0.01918	0.07092
sky130_osu_sc_18T_ls__addf_l	A	0.01838	0.02024	0.05451
	B	0.00154	-0.00039	0.04926
	CI	0.00492	0.00536	0.05270

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.04415	0.04507	0.08996
	B	0.03929	0.04079	0.09209
	CI	0.03603	0.03665	0.08143
sky130_osu_sc_18T_ls__addf_l	A	0.04248	0.04320	0.08960
	B	0.03766	0.03924	0.09173
	CI	0.03443	0.03503	0.08094

SKY130_OSU_SC_18T_LS__ADDHx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.01118	0.01216	2.63445	1.35169	2.68966
sky130_osu_sc_18T_ls__addh_l	0.01118	0.01216	1.53468	1.34860	1.55807

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addh_1	0.00000	2.23661	2.51264
sky130_osu_sc_18T_ls__addh_l	0.00000	1.82932	2.11681

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)	0.11837	0.69953	7.38412
	B->CO (RR)	0.12285	0.68204	7.36735
sky130_osu_sc_18T_ls__addh_l	A->CO (RR)	0.11991	0.78024	7.36020
	B->CO (RR)	0.12438	0.76605	7.32094

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)	0.09580	0.69722	7.52530
	B->CO (FF)	0.10251	0.71434	7.60529
sky130_osu_sc_18T_ls__addh_l	A->CO (FF)	0.09553	0.73757	7.00723
	B->CO (FF)	0.10190	0.75494	7.09108

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	0.16186	0.58844	4.06690
	A->CON (FR)	!B	0.08611	0.89257	10.47310
	B->CON (RR)	A	0.16597	0.57023	4.05936
	B->CON (FR)	!A	0.10957	0.88927	10.03840
sky130_osu_sc_18T_ls__addh_l	A->CON (RR)	B	0.14429	0.55818	4.02466
	A->CON (FR)	!B	0.07626	0.88087	10.44760
	B->CON (RR)	A	0.14848	0.54353	3.99235
	B->CON (FR)	!A	0.09971	0.87762	10.01200

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	0.15450	0.77131	6.46628
	A->CON (RF)	!B	0.06959	0.74362	8.74707
	B->CON (FF)	A	0.14918	0.80662	6.90346
	B->CON (RF)	!A	0.08565	0.73655	8.41284
sky130_osu_sc_18T_ls__addh_l	A->CON (FF)	B	0.13998	0.73451	6.26882
	A->CON (RF)	!B	0.06386	0.73680	8.72844
	B->CON (FF)	A	0.13491	0.77073	6.70676
	B->CON (RF)	!A	0.07995	0.73006	8.39676

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	0.12359	1.88470	28.30900
	A->S (FR)	B	0.20990	1.89530	25.80270
	B->S (RR)	!A	0.14077	1.83610	27.17690
	B->S (FR)	A	0.20411	1.97073	27.02870
	CON->S (FR)	-	0.03432	0.78300	11.29750
sky130_osu_sc_18T_ls__addh_l	A->S (RR)	!B	0.12385	1.70405	21.15230
	A->S (FR)	B	0.20183	1.69186	18.55280
	B->S (RR)	!A	0.14144	1.67062	20.43530
	B->S (FR)	A	0.19581	1.75346	19.36680
	CON->S (FR)	-	0.03954	0.88751	11.29620

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	0.13404	2.02002	30.31790
	A->S (RF)	B	0.20406	1.42456	18.27550
	B->S (FF)	!A	0.15748	2.01841	29.95040
	B->S (RF)	A	0.20816	1.40598	18.26740
	CON->S (RF)	-	0.02745	0.67769	9.86521
sky130_osu_sc_18T_ls__addh_l	A->S (FF)	!B	0.12827	1.75934	21.81420
	A->S (RF)	B	0.18957	1.26913	13.12840
	B->S (FF)	!A	0.15180	1.75631	21.39890
	B->S (RF)	A	0.19375	1.25374	13.08750
	CON->S (RF)	-	0.03122	0.72761	9.33351

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	0.00885	0.00957	0.02858
	B	0.00000	0.00000	0.00000
	B	0.00774	0.00819	0.02963
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00717	0.00777	0.02842
	B	0.00000	0.00000	0.00000
	B	0.00606	0.00636	0.02790

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	0.01391	0.01467	0.04169
	B	0.00000	0.00000	0.00000
	B	0.01434	0.01598	0.04469
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.01222	0.01276	0.03600
	B	0.00000	0.00000	0.00000
	B	0.01266	0.01391	0.03785

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	0.00885	0.00957	0.02828
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01215	0.01286	0.02523
	B	A	0.00000	0.00000	0.00000
	B	A	0.00773	0.00817	0.02993
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01400	0.01445	0.02524
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00716	0.00776	0.02780
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01100	0.01142	0.02083
	B	A	0.00000	0.00000	0.00000
	B	A	0.00605	0.00635	0.02791
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01286	0.01307	0.02079

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	0.01391	0.01459	0.03920
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00200	0.00271	0.01305
	B	A	0.00000	0.00000	0.00000
	B	A	0.01434	0.01580	0.04152
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00321	0.00371	0.01379
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01222	0.01276	0.03598
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00056	0.00100	0.00816
	B	A	0.00000	0.00000	0.00000
	B	A	0.01266	0.01389	0.03758
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00177	0.00200	0.00927

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	0.01394	0.01471	0.04200
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00205	0.00301	0.01601
	B	A	0.00000	0.00000	0.00000
	B	A	0.01437	0.01601	0.04519
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00328	0.00392	0.01569
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01224	0.01277	0.03631
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00058	0.00103	0.00807
	B	A	0.00000	0.00000	0.00000
	B	A	0.01267	0.01392	0.03813
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00180	0.00203	0.00864

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	0.00886	0.00960	0.02923
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01218	0.01333	0.02892
	B	A	0.00000	0.00000	0.00000
	B	A	0.00775	0.00823	0.03018
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01405	0.01484	0.02958
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00718	0.00791	0.02831
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01101	0.01168	0.02057
	B	A	0.00000	0.00000	0.00000
	B	A	0.00606	0.00637	0.02821
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01287	0.01313	0.02065

SKY130_OSU_SC_18T_LS__AND2x

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00603	0.00614	2.66768
sky130_osu_sc_18T_ls__and2_2	0.00603	0.00615	5.14423
sky130_osu_sc_18T_ls__and2_4	0.00603	0.00615	9.83576
sky130_osu_sc_18T_ls__and2_6	0.00606	0.00615	14.38427
sky130_osu_sc_18T_ls__and2_8	0.00605	0.00617	18.56983
sky130_osu_sc_18T_ls__and2_l	0.00458	0.00470	1.82630

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__and2_1	0.00000	0.92324	0.98893
sky130_osu_sc_18T_ls__and2_2	0.00000	0.99964	1.18825
sky130_osu_sc_18T_ls__and2_4	0.00000	1.60890	1.75211
sky130_osu_sc_18T_ls__and2_6	0.00000	2.21816	2.31598
sky130_osu_sc_18T_ls__and2_8	0.00000	2.82741	2.87984
sky130_osu_sc_18T_ls__and2_l	0.00000	0.67173	0.73341

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)	0.09060	0.62654	7.26875
	B->Y (RR)	0.09617	0.61522	7.08134
sky130_osu_sc_18T_ls__and2_2	A->Y (RR)	0.10493	0.58533	7.28628
	B->Y (RR)	0.11059	0.56745	7.09251
sky130_osu_sc_18T_ls__and2_4	A->Y (RR)	0.14422	0.61981	7.54343
	B->Y (RR)	0.14985	0.59254	7.34429
sky130_osu_sc_18T_ls__and2_6	A->Y (RR)	0.18341	0.67126	7.73892
	B->Y (RR)	0.18901	0.63714	7.52684
sky130_osu_sc_18T_ls__and2_8	A->Y (RR)	0.22269	0.72374	7.93610
	B->Y (RR)	0.22831	0.68660	7.72125
sky130_osu_sc_18T_ls__and2_l	A->Y (RR)	0.09936	0.69404	7.18351
	B->Y (RR)	0.10535	0.68134	7.00295

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)	0.07524	0.62086	7.07081
	B->Y (FF)	0.07941	0.63715	7.17180
sky130_osu_sc_18T_ls__and2_2	A->Y (FF)	0.08483	0.57922	7.05810
	B->Y (FF)	0.08987	0.59396	7.15757
sky130_osu_sc_18T_ls__and2_4	A->Y (FF)	0.11582	0.60480	7.25587
	B->Y (FF)	0.12094	0.61503	7.34739
sky130_osu_sc_18T_ls__and2_6	A->Y (FF)	0.15049	0.64880	7.40052
	B->Y (FF)	0.15549	0.65814	7.49226
sky130_osu_sc_18T_ls__and2_8	A->Y (FF)	0.18280	0.68932	7.43028
	B->Y (FF)	0.18796	0.69669	7.51339
sky130_osu_sc_18T_ls__and2_l	A->Y (FF)	0.08060	0.67894	6.96561
	B->Y (FF)	0.08592	0.69673	7.07537

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	0.00658	0.00921	0.07738
	B	0.00000	0.00000	0.00000
	B	0.00666	0.00813	0.05997
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01357	0.01632	0.08349
	B	0.00000	0.00000	0.00000
	B	0.01366	0.01532	0.06629
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02927	0.03211	0.09706
	B	0.00000	0.00000	0.00000
	B	0.02929	0.03087	0.08067
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.04717	0.04801	0.11263
	B	0.00000	0.00000	0.00000
	B	0.04753	0.04693	0.09709
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.06692	0.06427	0.12760
	B	0.00000	0.00000	0.00000
	B	0.06694	0.06300	0.11407
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00479	0.00671	0.05758
	B	0.00000	0.00000	0.00000
	B	0.00489	0.00599	0.04643

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	0.01653	0.02043	0.08078
	B	0.00000	0.00000	0.00000
	B	0.01862	0.02200	0.08010
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.02134	0.02554	0.08575
	B	0.00000	0.00000	0.00000
	B	0.02345	0.02709	0.08517
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.03443	0.03821	0.09792
	B	0.00000	0.00000	0.00000
	B	0.03646	0.03985	0.09702
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.04809	0.05134	0.11074
	B	0.00000	0.00000	0.00000
	B	0.04989	0.05229	0.10924
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.06462	0.06453	0.12439
	B	0.00000	0.00000	0.00000
	B	0.06639	0.06651	0.12183
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.01262	0.01533	0.05956
	B	0.00000	0.00000	0.00000
	B	0.01420	0.01667	0.05987

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)	-0.00648	-0.00651	-0.00653
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00648	-0.00651	-0.00653
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00647	-0.00651	-0.00652
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00649	-0.00653	-0.00654
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00646	-0.00649	-0.00651
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00468	-0.00470	-0.00471

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)	0.00653	0.00659	0.00656
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00653	0.00659	0.00656
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00653	0.00660	0.00657
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00657	0.00663	0.00660
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00654	0.00661	0.00658
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00471	0.00476	0.00473

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)	-0.00618	-0.00622	-0.00618
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00618	-0.00622	-0.00619
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00618	-0.00621	-0.00618
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00617	-0.00620	-0.00617
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00617	-0.00620	-0.00617
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00446	-0.00448	-0.00446

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)	0.00635	0.00628	0.00622
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00636	0.00629	0.00623
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00636	0.00629	0.00623
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00637	0.00629	0.00624
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00637	0.00630	0.00624
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00458	0.00452	0.00449

SKY130_OSU_SC_18T_LS__AOI21

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00576	0.00595	0.00577	1.25024

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi21_l	0.00000	0.56303	1.00769

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)	0.08646	0.87287	9.87211
	A1->Y (FR)	0.07486	0.83388	9.55040
	B0->Y (FR)	0.06072	0.88214	10.43570

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)	0.06736	0.65550	7.37907
	A1->Y (RF)	0.06205	0.69611	8.02233
	B0->Y (RF)	0.03774	0.64132	7.64099

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	0.01550	0.01558	0.02634
	A1	0.00000	0.00000	0.00000
	A1	0.01317	0.01326	0.02384
	B0	0.00898	0.00953	0.02402

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	0.00340	0.00333	0.01363
	A1	0.00000	0.00000	0.00000
	A1	0.00346	0.00367	0.01526
	B0	-0.00165	-0.00082	0.01089

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)	-0.00516	-0.00579	-0.00581
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00590	-0.00593	-0.00590
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00589	-0.00592	-0.00589

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)	0.00577	0.00583	0.00581
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00590	0.00596	0.00592
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00606	0.00597	0.00593

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)	-0.00512	-0.00573	-0.00575
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00584	-0.00587	-0.00584
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00621	-0.00624	-0.00628

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)	0.00571	0.00578	0.00575
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00584	0.00592	0.00586
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00627	0.00634	0.00630

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)	-0.00236	-0.00238	-0.00237

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)	0.00261	0.00263	0.00244

SKY130_OSU_SC_18T_LS__AOI22

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__aoi22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ls__aoi22_1	0.00577	0.00595	0.00612	0.00590	1.19834

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi22_1	0.00000	0.60706	1.06276

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)	0.10868	0.89745	9.76800
	A1->Y (FR)	0.09755	0.87191	9.60591
	B0->Y (FR)	0.06420	0.87202	10.17370
	B1->Y (FR)	0.07556	0.90055	10.40490

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)	0.09114	0.67119	7.20382
	A1->Y (RF)	0.08589	0.71117	7.85086
	B0->Y (RF)	0.04273	0.66324	7.80684
	B1->Y (RF)	0.04829	0.62238	7.16140

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	0.01937	0.01934	0.03049
	A1	0.01707	0.01701	0.02808
	B0	0.00977	0.01032	0.02623
	B1	0.01208	0.01310	0.02831

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.00706	0.00690	0.01785
	A1	0.00712	0.00726	0.01961
	B0	-0.00105	-0.00036	0.01203
	B1	-0.00093	-0.00061	0.01037

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)	-0.00510	-0.00577	-0.00581
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00590	-0.00592	-0.00590
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00589	-0.00591	-0.00589
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00589	-0.00591	-0.00589

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)	0.00576	0.00579	0.00581
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00590	0.00596	0.00593
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00606	0.00597	0.00592
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00606	0.00597	0.00592

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)	-0.00505	-0.00574	-0.00575
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00584	-0.00587	-0.00584
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00620	-0.00623	-0.00627
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00620	-0.00623	-0.00627

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)	0.00571	0.00577	0.00575
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00584	0.00593	0.00587
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00627	0.00634	0.00630
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00627	0.00633	0.00630

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)	-0.00237	-0.00240	-0.00238
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00233	-0.00235	-0.00236
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00634	-0.00639	-0.00641
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00634	-0.00639	-0.00641

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)	0.00273	0.00274	0.00248
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00236	0.00239	0.00237
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00641	0.00652	0.00644
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00641	0.00652	0.00644

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)	-0.00239	-0.00241	-0.00240
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00235	-0.00238	-0.00237
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00597	-0.00598	-0.00597
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00597	-0.00600	-0.00597

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)	0.00274	0.00275	0.00249
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00238	0.00240	0.00239
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00614	0.00605	0.00600
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00614	0.00605	0.00600

SKY130_OSU_SC_18T_LS__BUFx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00614	2.63469
sky130_osu_sc_18T_ls__buf_2	0.00614	5.17922
sky130_osu_sc_18T_ls__buf_4	0.00614	9.90610
sky130_osu_sc_18T_ls__buf_6	0.00098	1.80000
sky130_osu_sc_18T_ls__buf_8	0.00615	18.97802
sky130_osu_sc_18T_ls__buf_l	0.00473	1.83397

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__buf_1	0.00000	0.95350	0.95350
sky130_osu_sc_18T_ls__buf_2	0.00000	1.07088	1.15282
sky130_osu_sc_18T_ls__buf_4	0.00000	1.66500	1.71668
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ls__buf_8	0.00000	2.85325	2.86210
sky130_osu_sc_18T_ls__buf_l	0.00000	0.67016	0.67016

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)**	0.06759	0.57485	6.89519
sky130_osu_sc_18T_ls__buf_2	**A->Y (RR)**	0.07573	0.52341	6.98298
sky130_osu_sc_18T_ls__buf_4	**A->Y (RR)**	0.10150	0.53656	7.17439
sky130_osu_sc_18T_ls__buf_8	**A->Y (RR)**	0.15161	0.61105	7.56039
sky130_osu_sc_18T_ls__buf_l	**A->Y (RR)**	0.07476	0.64194	6.87571

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)**	0.07138	0.60954	7.07072
sky130_osu_sc_18T_ls__buf_2	**A->Y (FF)**	0.08193	0.57610	7.20044
sky130_osu_sc_18T_ls__buf_4	**A->Y (FF)**	0.11303	0.60125	7.36738
sky130_osu_sc_18T_ls__buf_8	**A->Y (FF)**	0.17993	0.68831	7.62348
sky130_osu_sc_18T_ls__buf_l	**A->Y (FF)**	0.07760	0.67428	7.05832

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	0.00605	0.00889	0.06738
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01284	0.01608	0.07375
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02770	0.03145	0.08968
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.06032	0.06338	0.11830
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00452	0.00662	0.05319

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	0.01583	0.01989	0.08184
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.02061	0.02477	0.08629
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.03356	0.03727	0.09812
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.06368	0.06313	0.12288
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.01219	0.01512	0.06118

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
	-0.00078	-0.00079	-0.00077

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
	0.00078	0.00079	0.00077

SKY130_OSU_SC_18T_LS__DFFRx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00593	0.00587	0.01679	2.57737	2.57508
sky130_osu_sc_18T_ls__dffr_l	0.00593	0.00587	0.01679	1.85096	1.83856

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffr_1	0.00000	3.57424	4.06777
sky130_osu_sc_18T_ls__dffr_l	0.00000	3.29091	3.78443

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)	0.32439	1.51425	17.57760
	QN->Q (FR)	0.03551	0.84095	12.06590
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RR)	0.31785	1.63695	17.42950
	QN->Q (FR)	0.03766	0.89017	11.84160

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)	0.32943	1.50704	17.52030
	QN->Q (RF)	0.03272	0.78785	11.33780
	RN->Q (FF)	0.24527	1.50090	18.31910
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RF)	0.33226	1.64550	17.42540
	QN->Q (RF)	0.03365	0.80039	10.66440
	RN->Q (FF)	0.24920	1.63942	18.21590

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)	0.28923	0.82749	7.07061
	RN->QN (FR)	0.20503	0.82163	7.86753
sky130_osu_sc_18T_ls__dffr_l	CK->QN (RR)	0.28864	0.88713	7.13716
	RN->QN (FR)	0.20488	0.88132	7.93021

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)**	0.27742	0.80251	6.66853
sky130_osu_sc_18T_ls__dffr_l	**CK->QN (RF)**	0.26606	0.82440	6.43192

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)	-0.09190	-0.09486	0.01519
	setup	CK (R)	0.25758	0.28817	0.80656
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.09042	-0.09497	0.01545
	setup	CK (R)	0.25835	0.28912	0.82345

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)	-0.13099	-0.34060	-2.79487
	setup	CK (R)	0.16149	0.35506	3.05845
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.13107	-0.34007	-2.72960
	setup	CK (R)	0.16136	0.35506	3.05998

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)	-0.09190	-0.09486	0.01519
	setup	CK (R)	0.25758	0.28817	0.80656
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.09042	-0.09497	0.01545
	setup	CK (R)	0.25835	0.28912	0.82345

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)	-0.13099	-0.34060	-2.79487
	setup	CK (R)	0.16149	0.35506	3.05845
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.13107	-0.34007	-2.72960
	setup	CK (R)	0.16136	0.35506	3.05998

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)	0.20113	0.23869	1.04728
	removal	CK (R)	-0.04263	-0.04898	-0.10720
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.20146	0.23991	1.05588
	removal	CK (R)	-0.04263	-0.04898	-0.10720

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)	0.20113	0.23869	1.04728
	removal	CK (R)	-0.04263	-0.04898	-0.10720
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.20146	0.23991	1.05588
	removal	CK (R)	-0.04263	-0.04898	-0.10720

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 ()	0.14061	0.55054	13.33370
	min_pulse_width	RN ()	0.14061	0.55054	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	RN ()	0.13855	0.55054	13.33370
	min_pulse_width	RN ()	0.13649	0.55054	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 ()	0.15503	0.55054	13.33370
	min_pulse_width	CK ()	0.16945	0.55054	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.14473	0.55054	13.33370
	min_pulse_width	CK ()	0.16533	0.55054	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 ()	0.32600	0.55054	13.33370
	min_pulse_width	CK ()	0.13237	0.55054	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.32600	0.55054	13.33370
	min_pulse_width	CK ()	0.13237	0.55054	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	0.01608	0.01476	0.01498
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01416	0.01419	0.04106

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	0.01881	0.01740	0.01553
	RN	-0.00203	-0.13013	-2.08762
	RN	0.04290	0.04183	0.04187
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01691	0.01656	0.03560
	RN	-0.00203	-0.10669	-1.49926
	RN	0.04099	0.04099	0.06132

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	0.01878	0.01738	0.01564
	RN	-0.00203	-0.13006	-2.08425
	RN	0.04287	0.04182	0.04152
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01689	0.01656	0.03559
	RN	-0.00203	-0.10626	-1.48872
	RN	0.04096	0.04098	0.06123

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	0.01601	0.01473	0.01433
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01408	0.01414	0.04026

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	-0.00486	-0.00569	-0.00578
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01994	0.02057	0.07369
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00909	0.00983	0.06293
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00486	-0.00570	-0.00578
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01994	0.02057	0.07369
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00909	0.00983	0.06293

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	0.00579	0.00585	0.00583
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03440	0.03528	0.09058
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01622	0.01709	0.07067
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00579	0.00585	0.00583
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03440	0.03528	0.09058
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01622	0.01709	0.07067

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)	0.00579	0.00839	0.08381
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01681	0.01907	0.09599
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)	0.00579	0.00839	0.08381
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01681	0.01906	0.09599

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)	0.01456	0.01799	0.09355
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.03204	0.03498	0.11209
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)	0.01456	0.01798	0.09355
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.03204	0.03497	0.11209

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)	-0.00139	0.00144	0.07593
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00955	0.01108	0.08860
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00197	0.00047	0.07480
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00139	0.00144	0.07593
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00955	0.01108	0.08860
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00197	0.00047	0.07480

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)	0.02180	0.02545	0.10096
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.05053	0.05253	0.14286
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03883	0.04178	0.11788
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04915	0.05538	0.17796
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02624	0.02953	0.10358
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02180	0.02545	0.10096
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.05053	0.05252	0.14285
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03882	0.04177	0.11788
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04915	0.05538	0.17796
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02624	0.02952	0.10358

SKY130_OSU_SC_18T_LS__DFFSRx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00588	0.00587	0.01254	0.01703	2.70153	2.70044
sky130_osu_sc_18T_ls__dffsr_l	0.00588	0.00587	0.01253	0.01703	1.83613	1.84375

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ls__dffsr_1	0.00000	4.01758	5.23352
sky130_osu_sc_18T_ls__dffsr_l	0.00000	3.73424	4.95018

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)	0.33611	1.51988	17.73530
	QN->Q (FR)	0.03387	0.82445	11.96180
	RN->Q (RR)	0.26563	1.46086	17.71470
	SN->Q (FR)	0.24385	1.50841	18.60590
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RR)	0.33853	1.65762	17.30560
	QN->Q (FR)	0.03760	0.88567	11.75300
	RN->Q (RR)	0.26804	1.59733	17.27780
	SN->Q (FR)	0.24538	1.63991	18.16800

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)	0.38222	1.55682	17.72150
	QN->Q (RF)	0.03019	0.74710	10.90460
	RN->Q (FF)	0.25097	1.50679	18.50230
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RF)	0.38947	1.70415	17.34330
	QN->Q (RF)	0.03358	0.79641	10.59870
	RN->Q (FF)	0.25837	1.65437	18.12260

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)	0.34273	0.88845	7.23911
	RN->QN (FR)	0.21225	0.83887	8.02307
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RR)	0.34501	0.95183	7.21755
	RN->QN (FR)	0.21487	0.90172	7.99719

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)	0.29159	0.81501	6.69701
	RN->QN (RF)	0.22145	0.75591	6.67958
	SN->QN (FF)	0.19852	0.80162	7.57368
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RF)	0.28767	0.85235	6.47702
	RN->QN (RF)	0.21814	0.79418	6.45660
	SN->QN (FF)	0.19500	0.83512	7.33944

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)	-0.09616	-0.10253	-0.02995
	setup	CK (R)	0.25900	0.28732	0.84791
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.09679	-0.10252	-0.02982
	setup	CK (R)	0.25873	0.28656	0.85072

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)	-0.14731	-0.36285	-2.81030
	setup	CK (R)	0.19098	0.37706	3.12082
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.14735	-0.36383	-2.81073
	setup	CK (R)	0.18698	0.37706	3.12082

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)	-0.09616	-0.10253	-0.02995
	setup	CK (R)	0.25900	0.28732	0.84791
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.09679	-0.10252	-0.02982
	setup	CK (R)	0.25873	0.28656	0.85072

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)	-0.14731	-0.36285	-2.81030
	setup	CK (R)	0.19098	0.37706	3.12082
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.14735	-0.36383	-2.81073
	setup	CK (R)	0.18698	0.37706	3.12082

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)	0.18007	0.21188	0.98529
	removal	CK (R)	-0.02242	-0.02739	-0.06058
	hold	SN (R)	-0.18600	-0.35116	-1.26780
	setup	SN (R)	0.21513	0.40501	4.40130
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.18006	0.21120	0.98420
	removal	CK (R)	-0.02242	-0.02739	-0.05658
	hold	SN (R)	-0.18082	-0.34164	-1.22429
	setup	SN (R)	0.21540	0.39620	4.25183

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)	0.18007	0.21188	0.98529
	removal	CK (R)	-0.02242	-0.02739	-0.06058
	hold	SN (R)	-0.18618	-0.35116	-1.26780
	hold	SN (R)	-0.18600	-0.35306	-1.27912
	setup	SN (R)	0.21513	0.40173	4.10989
	setup	SN (R)	0.21446	0.40501	4.40130
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.18006	0.21120	0.98420
	removal	CK (R)	-0.02242	-0.02739	-0.05658
	hold	SN (R)	-0.18082	-0.34164	-1.22429
	hold	SN (R)	-0.18383	-0.34302	-1.23359
	setup	SN (R)	0.21540	0.39156	3.97638
	setup	SN (R)	0.20223	0.39620	4.25183

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 ()	0.16327	0.55054	13.33370
	min_pulse_width	RN ()	0.16533	0.55054	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	RN ()	0.16327	0.55054	13.33370
	min_pulse_width	RN ()	0.15915	0.55054	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)	0.05819	0.09777	4.48816
	removal	CK (R)	-0.02440	-0.07596	-0.33994
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.05781	0.09732	4.34493
	removal	CK (R)	-0.02440	-0.07596	-0.34394

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)	0.05819	0.09777	4.48816
	removal	CK (R)	-0.02440	-0.07596	-0.33994
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.05781	0.09732	4.34493
	removal	CK (R)	-0.02440	-0.07596	-0.34394

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 ()	0.19211	0.55054	13.33370
	min_pulse_width	SN ()	0.19005	0.55054	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	SN ()	0.19211	0.55054	13.33370
	min_pulse_width	SN ()	0.17975	0.55054	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 ()	0.15709	0.55054	13.33370
	min_pulse_width	CK ()	0.19005	0.55054	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.15297	0.55054	13.33370
	min_pulse_width	CK ()	0.18593	0.55054	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 ()	0.32600	0.55054	13.33370
	min_pulse_width	CK ()	0.16739	0.55054	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.32600	0.55054	13.33370
	min_pulse_width	CK ()	0.16533	0.55054	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	0.02051	0.02052	0.04037
	RN	0.03720	0.03631	0.03837
	SN	-0.00203	-0.13385	-2.18824
	SN	0.04218	0.04007	0.04128
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01872	0.01867	0.04562
	RN	0.03541	0.03444	0.04356
	SN	-0.00203	-0.10617	-1.48726
	SN	0.04039	0.03825	0.04747

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	0.02195	0.02114	0.02553
	RN	-0.00203	-0.13385	-2.18821
	RN	0.04403	0.04333	0.04993
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02018	0.02003	0.03963
	RN	-0.00203	-0.10617	-1.48725
	RN	0.04224	0.04220	0.06398

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	0.02191	0.02109	0.02539
	RN	-0.00203	-0.13382	-2.18640
	RN	0.04398	0.04323	0.04956
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02014	0.02000	0.03938
	RN	-0.00203	-0.10644	-1.49293
	RN	0.04220	0.04215	0.06351

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	0.02042	0.02045	0.03936
	RN	0.03712	0.03624	0.03768
	SN	-0.00203	-0.13382	-2.18711
	SN	0.04210	0.03999	0.04188
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01864	0.01861	0.04449
	RN	0.03533	0.03436	0.04292
	SN	-0.00203	-0.10644	-1.49327
	SN	0.04032	0.03815	0.04777

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	-0.00565	-0.00572	-0.00577
	(!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)	0.02584	0.02647	0.07940
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01046	0.01116	0.06388
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01034	0.01108	0.06387
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01043	0.01115	0.06392
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00566	-0.00573	-0.00577
	(!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)	0.02584	0.02646	0.07940
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01045	0.01116	0.06388
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01034	0.01108	0.06387
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01043	0.01115	0.06391

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	0.00593	0.00585	0.00580
	(!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)	0.03929	0.03995	0.09401
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01688	0.01782	0.07106
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01708	0.01790	0.07104
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01681	0.01770	0.07097
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00592	0.00584	0.00580
	(!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)	0.03928	0.03993	0.09400
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01686	0.01780	0.07105
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01706	0.01788	0.07103
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01679	0.01769	0.07096

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)	0.00432	0.00691	0.08212
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01991	0.02205	0.09882
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)	0.00432	0.00691	0.08213
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01991	0.02206	0.09883

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)	0.01539	0.01914	0.09513
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03371	0.03678	0.11411
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)	0.01537	0.01912	0.09512
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03369	0.03677	0.11410

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)	-0.01281	-0.01289	-0.01295
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01208	-0.01319	-0.01324
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01221	-0.01280	-0.01279
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00921	0.01020	0.06467
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)	-0.01281	-0.01289	-0.01295
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01206	-0.01317	-0.01322
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01221	-0.01280	-0.01279
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00922	0.01021	0.06468

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)	0.01298	0.01313	0.01305
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01325	0.01340	0.01333
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01282	0.01296	0.01289
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02645	0.02664	0.07896
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)	0.01299	0.01312	0.01305
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01322	0.01337	0.01331
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01281	0.01295	0.01288
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02644	0.02662	0.07895

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)	-0.00138	0.00143	0.07596
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01064	0.01228	0.08967
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01038	0.01199	0.08956
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00170	0.00073	0.07509
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00702	0.01113	0.14772
sky130_osu_sc_18T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00138	0.00143	0.07596
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01063	0.01226	0.08965
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01037	0.01198	0.08955
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00171	0.00073	0.07509
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00702	0.01113	0.14772

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)	0.05669	0.05876	0.14872
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02187	0.02551	0.10104
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03974	0.04272	0.11878
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03986	0.04290	0.11912
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.05392	0.05960	0.18264
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02606	0.02934	0.10342
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02968	0.03580	0.17319
sky130_osu_sc_18T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.05669	0.05876	0.14872
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02186	0.02550	0.10104
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03974	0.04271	0.11878
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03985	0.04290	0.11912
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.05390	0.05958	0.18261
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02606	0.02933	0.10342
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02966	0.03579	0.17318

SKY130_OSU_SC_18T_LS__DFFSx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00591	0.00978	0.01680	2.61626	2.60035
sky130_osu_sc_18T_ls__dffs_l	0.00591	0.00978	0.01680	1.84544	1.84711

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffs_1	0.00000	2.92177	3.64850
sky130_osu_sc_18T_ls__dffs_l	0.00000	2.63843	3.36516

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)	0.25392	1.43626	17.68300
	QN->Q (FR)	0.03533	0.83927	12.08600
	SN->Q (FR)	0.18689	1.49920	18.68520
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RR)	0.25337	1.55768	17.24920
	QN->Q (FR)	0.03751	0.88479	11.75550
	SN->Q (FR)	0.18726	1.61310	18.21670

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)	0.37018	1.56572	17.76620
	QN->Q (RF)	0.03249	0.78804	11.39700
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RF)	0.37087	1.68894	17.37600
	QN->Q (RF)	0.03347	0.79452	10.60920

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)	0.32846	0.87968	7.14871
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RR)	0.32584	0.93429	7.18880

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)	0.21070	0.72144	6.61905
	SN->QN (FF)	0.14371	0.78459	7.61709
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RF)	0.20535	0.75208	6.36030
	SN->QN (FF)	0.13860	0.80626	7.32650

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)	-0.06742	-0.07639	0.03198
	setup	CK (R)	0.18372	0.22059	0.83978
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.06825	-0.07855	0.03136
	setup	CK (R)	0.18372	0.22064	0.84893

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)	-0.13287	-0.34299	-2.40587
	setup	CK (R)	0.17376	0.35542	3.06939
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.13229	-0.34299	-2.37413
	setup	CK (R)	0.17376	0.35542	3.06939

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)	-0.06742	-0.07639	0.03198
	setup	CK (R)	0.18372	0.22059	0.83978
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.06825	-0.07855	0.03136
	setup	CK (R)	0.18372	0.22064	0.84893

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)	-0.13287	-0.34299	-2.40587
	setup	CK (R)	0.17376	0.35542	3.06939
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.13229	-0.34299	-2.37413
	setup	CK (R)	0.17376	0.35542	3.06939

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)	0.05329	0.08489	2.92487
	removal	CK (R)	-0.02280	-0.06381	-0.28264
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.05316	0.08471	2.80165
	removal	CK (R)	-0.02280	-0.06381	-0.28264

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)	0.05329	0.08489	2.92487
	removal	CK (R)	-0.02280	-0.06381	-0.28264
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.05316	0.08471	2.80165
	removal	CK (R)	-0.02280	-0.06381	-0.28264

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 ()	0.12413	0.55054	13.33370
	min_pulse_width	SN ()	0.12413	0.55054	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	SN ()	0.12413	0.55054	13.33370
	min_pulse_width	SN ()	0.11795	0.55054	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 ()	0.11589	0.55054	13.33370
	min_pulse_width	CK ()	0.18181	0.55054	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.11177	0.55054	13.33370
	min_pulse_width	CK ()	0.17563	0.55054	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 ()	0.25185	0.55054	13.33370
	min_pulse_width	CK ()	0.15297	0.55054	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.25185	0.55054	13.33370
	min_pulse_width	CK ()	0.15297	0.55054	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	0.01601	0.01481	0.01497
	SN	-0.00203	-0.13130	-2.11917
	SN	0.03486	0.03253	0.01703
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01412	0.01428	0.04206
	SN	-0.00203	-0.10649	-1.49480
	SN	0.03297	0.03199	0.04242

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	0.01869	0.01752	0.01772
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01679	0.01662	0.03701

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	0.01866	0.01750	0.01782
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01676	0.01660	0.03692

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	0.01594	0.01483	0.01489
	SN	-0.00203	-0.13082	-2.10592
	SN	0.03480	0.03250	0.01641
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01405	0.01424	0.04064
	SN	-0.00203	-0.10655	-1.49598
	SN	0.03290	0.03194	0.04237

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	-0.00572	-0.00579	-0.00584
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01875	0.01948	0.07408
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00891	0.00966	0.06274
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00573	-0.00580	-0.00584
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01875	0.01947	0.07407
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00891	0.00966	0.06273

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	0.00597	0.00589	0.00584
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.03319	0.03391	0.08870
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01626	0.01721	0.07102
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00597	0.00589	0.00584
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.03318	0.03392	0.08869
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01625	0.01721	0.07102

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)	-0.00934	-0.00940	-0.00938
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00723	0.00833	0.05755
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)	-0.00934	-0.00940	-0.00939
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00723	0.00833	0.05754

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)	0.00954	0.00955	0.00946
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01783	0.01907	0.06890
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)	0.00954	0.00955	0.00946
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01783	0.01907	0.06890

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)	-0.00142	0.00143	0.07599
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00186	0.00059	0.07501
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00541	0.00970	0.14702
sky130_osu_sc_18T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00142	0.00143	0.07598
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00187	0.00059	0.07501
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00541	0.00970	0.14701

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)	0.04951	0.05150	0.14323
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02181	0.02546	0.10105
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04772	0.05361	0.17619
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02610	0.02940	0.10354
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02894	0.03528	0.17343
sky130_osu_sc_18T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04950	0.05151	0.14322
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02180	0.02546	0.10104
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04772	0.05361	0.17619
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02610	0.02940	0.10353
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02894	0.03528	0.17343

SKY130_OSU_SC_18T_LS__DFFx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00607	0.01678	2.70947	2.70449
sky130_osu_sc_18T_ls__dff_l	0.00607	0.01678	1.81412	1.81389

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dff_1	0.00000	3.30152	3.80710
sky130_osu_sc_18T_ls__dff_l	0.00000	3.01818	3.52376

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)	0.22895	1.39606	17.61530
	QN->Q (FR)	0.03364	0.82100	11.93070
sky130_osu_sc_18T_ls__dff_l	CK->Q (RR)	0.23559	1.53619	17.02880
	QN->Q (FR)	0.03816	0.89009	11.81270

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)	0.30953	1.47272	17.64380
	QN->Q (RF)	0.03006	0.74188	10.89140
sky130_osu_sc_18T_ls__dff_l	CK->Q (RF)	0.31874	1.62255	17.16000
	QN->Q (RF)	0.03354	0.78892	10.49620

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)	0.27148	0.80442	7.14169
sky130_osu_sc_18T_ls__dff_l	CK->QN (RR)	0.27541	0.87259	7.09943

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)	0.18823	0.69185	6.55957
sky130_osu_sc_18T_ls__dff_l	CK->QN (RF)	0.18803	0.73114	6.23980

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)	-0.06471	-0.07554	0.01253
	setup	CK (R)	0.15494	0.19712	0.87425
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.06334	-0.07554	0.01492
	setup	CK (R)	0.15753	0.19573	0.87642

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)	-0.12080	-0.34555	-2.24833
	setup	CK (R)	0.14278	0.35708	3.08175
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.12075	-0.34566	-2.24804
	setup	CK (R)	0.14278	0.35708	3.08179

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 ()	0.10559	0.55054	13.33370
	min_pulse_width	CK ()	0.16121	0.55054	13.33370
sky130_osu_sc_18T_ls__dff_l	min_pulse_width	CK ()	0.10353	0.55054	13.33370
	min_pulse_width	CK ()	0.15915	0.55054	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 ()**	0.22507	0.55054	13.33370
	min_pulse_width	**CK ()**	0.11383	0.55054	13.33370
sky130_osu_sc_18T_ls__dff_l	**min_pulse_width**	**CK ()**	0.22507	0.55054	13.33370
	min_pulse_width	**CK ()**	0.11383	0.55054	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	0.01689	0.01715	0.03882
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01514	0.01535	0.04398

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	0.01908	0.01845	0.02433
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01735	0.01712	0.03577

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	0.01905	0.01839	0.02438
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01733	0.01713	0.03522

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	0.01683	0.01711	0.03781
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01508	0.01534	0.04347

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	-0.00486	-0.00570	-0.00577
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01781	0.01864	0.07401
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00487	-0.00570	-0.00578
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01782	0.01865	0.07401

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	0.00578	0.00587	0.00581
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03422	0.03519	0.09064
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00577	0.00586	0.00581
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03422	0.03520	0.09064

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)	-0.00142	0.00142	0.07600
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00185	0.00062	0.07505
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00143	0.00142	0.07600
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00185	0.00062	0.07505

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)	0.02173	0.02540	0.10099
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04864	0.05075	0.14341
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04851	0.05471	0.17923
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02596	0.02931	0.10344
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02173	0.02539	0.10098
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04864	0.05076	0.14341
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04851	0.05471	0.17923
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02596	0.02930	0.10344

SKY130_OSU_SC_18T_LS__INVx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00591	2.55023
sky130_osu_sc_18T_ls__inv_10	0.05607	22.53902
sky130_osu_sc_18T_ls__inv_2	0.01140	5.02052
sky130_osu_sc_18T_ls__inv_3	0.01702	7.19603
sky130_osu_sc_18T_ls__inv_4	0.02254	9.68676
sky130_osu_sc_18T_ls__inv_6	0.03380	14.06727
sky130_osu_sc_18T_ls__inv_8	0.04494	18.57961
sky130_osu_sc_18T_ls__inv_l	0.00448	1.74454

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__inv_1	0.00000	0.47675	0.58896
sky130_osu_sc_18T_ls__inv_10	0.00000	2.97060	3.12192
sky130_osu_sc_18T_ls__inv_2	0.00000	0.59412	0.62438
sky130_osu_sc_18T_ls__inv_3	0.00000	1.07087	1.21334
sky130_osu_sc_18T_ls__inv_4	0.00000	1.18824	1.24877
sky130_osu_sc_18T_ls__inv_6	0.00000	1.78236	1.87315
sky130_osu_sc_18T_ls__inv_8	0.00000	2.37648	2.49754
sky130_osu_sc_18T_ls__inv_l	0.00000	0.33508	0.44642

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)**	0.03183	0.75176	10.71780
sky130_osu_sc_18T_ls__inv_10	**A->Y (FR)**	0.04846	0.51424	10.62570
sky130_osu_sc_18T_ls__inv_2	**A->Y (FR)**	0.02680	0.65069	10.68490
sky130_osu_sc_18T_ls__inv_3	**A->Y (FR)**	0.02977	0.61199	10.68650
sky130_osu_sc_18T_ls__inv_4	**A->Y (FR)**	0.03096	0.58146	10.68270
sky130_osu_sc_18T_ls__inv_6	**A->Y (FR)**	0.03529	0.54292	10.60420
sky130_osu_sc_18T_ls__inv_8	**A->Y (FR)**	0.04146	0.52474	10.63510
sky130_osu_sc_18T_ls__inv_l	**A->Y (FR)**	0.03564	0.81761	10.69830

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)**	0.02739	0.66373	9.49884
sky130_osu_sc_18T_ls__inv_10	**A->Y (RF)**	0.04494	0.42037	9.16112
sky130_osu_sc_18T_ls__inv_2	**A->Y (RF)**	0.02331	0.56743	9.44840
sky130_osu_sc_18T_ls__inv_3	**A->Y (RF)**	0.02561	0.52520	9.42520
sky130_osu_sc_18T_ls__inv_4	**A->Y (RF)**	0.02594	0.49388	9.43403
sky130_osu_sc_18T_ls__inv_6	**A->Y (RF)**	0.03259	0.45616	9.32556
sky130_osu_sc_18T_ls__inv_8	**A->Y (RF)**	0.03854	0.43545	9.31475
sky130_osu_sc_18T_ls__inv_l	**A->Y (RF)**	0.03040	0.70623	9.24856

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	0.00838	0.00974	0.02139
sky130_osu_sc_18T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.07424	0.09647	0.21118
sky130_osu_sc_18T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01518	0.01825	0.04136
sky130_osu_sc_18T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.02317	0.02988	0.06280
sky130_osu_sc_18T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02998	0.03808	0.08264
sky130_osu_sc_18T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.04456	0.05768	0.12541
sky130_osu_sc_18T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.05921	0.07590	0.16613
sky130_osu_sc_18T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00635	0.00726	0.01646

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	-0.00199	-0.00100	0.00832
sky130_osu_sc_18T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.02600	-0.01391	0.08097
sky130_osu_sc_18T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00597	-0.00339	0.01501
sky130_osu_sc_18T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00798	-0.00372	0.02386
sky130_osu_sc_18T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.01184	-0.00644	0.03035
sky130_osu_sc_18T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01808	-0.00919	0.04665
sky130_osu_sc_18T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.02320	-0.01101	0.06289
sky130_osu_sc_18T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00136	-0.00073	0.00668

SKY130_OSU_SC_18T_LS__MUX2

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.02894	0.02873	0.01199	0.01954

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__mux2_1	0.00000	1.23353	1.24356

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)	-	0.01794	0.07000	0.14510
	A1->Y (RR)	-	0.01920	0.07063	0.14506
	S0->Y (RR)	(!A0 * A1)	0.05532	0.17424	0.08609
	S0->Y (FR)	(A0 * !A1)	0.04665	0.20934	1.02029

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)	-	0.01529	0.07720	0.15308
	A1->Y (FF)	-	0.01499	0.07670	0.15278
	S0->Y (FF)	(!A0 * A1)	0.07067	0.24845	0.93472
	S0->Y (RF)	(A0 * !A1)	0.03281	0.13643	0.17761

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	-	-0.00865	-0.00867	-0.00868
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00611	-0.00611	-0.00614
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00912	0.01338	0.09049
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00616	-0.00297	0.07273

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	-	0.00866	0.00868	0.00869
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00613	0.00615	0.00616
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00176	0.00538	0.08231
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.02259	0.02629	0.10199

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)	-0.00217	-0.00216	-0.00216

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)	0.00218	0.00217	0.00217

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)	-0.00257	-0.00257	-0.00256

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)	0.00258	0.00257	0.00257

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)	-0.00223	0.00115	0.07742
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00219	0.00117	0.07770

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)	0.01698	0.02095	0.09672
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01473	0.01920	0.09588

SKY130_OSU_SC_18T_LS__NAND2x

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00593	0.00590	1.87259
sky130_osu_sc_18T_ls__nand2_l	0.00449	0.00447	1.31757

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nand2_1	0.00000	0.39038	0.62438
sky130_osu_sc_18T_ls__nand2_l	0.00000	0.28098	0.50966

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)	0.03290	0.68853	9.05765
	B->Y (FR)	0.03848	0.68792	8.97970
sky130_osu_sc_18T_ls__nand2_l	A->Y (FR)	0.03662	0.74864	9.15559
	B->Y (FR)	0.04334	0.75190	9.12587

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)	0.04063	0.77631	10.29880
	B->Y (RF)	0.04584	0.73608	9.70247
sky130_osu_sc_18T_ls__nand2_l	A->Y (RF)	0.04545	0.84386	10.20250
	B->Y (RF)	0.05058	0.80392	9.60202

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	0.00897	0.01024	0.02296
	B	0.00000	0.00000	0.00000
	B	0.01133	0.01251	0.02548
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00674	0.00756	0.01727
	B	0.00000	0.00000	0.00000
	B	0.00848	0.00923	0.01917

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	-0.00133	-0.00068	0.00934
	B	0.00000	0.00000	0.00000
	B	-0.00126	-0.00092	0.00809
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00095	-0.00051	0.00719
	B	0.00000	0.00000	0.00000
	B	-0.00090	-0.00066	0.00626

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)	-0.00639	-0.00642	-0.00644
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00457	-0.00460	-0.00461

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)	0.00643	0.00649	0.00646
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00460	0.00464	0.00462

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)	-0.00601	-0.00605	-0.00602
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00429	-0.00432	-0.00430

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)	0.00618	0.00611	0.00605
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00441	0.00436	0.00432

SKY130_OSU_SC_18T_LS__NOR2x

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00592	0.00623	1.36811
sky130_osu_sc_18T_ls__nor2_l	0.00441	0.00475	0.92994

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nor2_1	0.00000	0.50881	0.58896
sky130_osu_sc_18T_ls__nor2_l	0.00000	0.35823	0.44641

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)	0.06639	0.84825	10.07400
	B->Y (FR)	0.04828	0.85744	10.51470
sky130_osu_sc_18T_ls__nor2_l	A->Y (FR)	0.07298	0.92839	9.97439
	B->Y (FR)	0.05684	0.94621	10.43390

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)	0.03868	0.55709	6.64452
	B->Y (RF)	0.02943	0.54151	6.62053
sky130_osu_sc_18T_ls__nor2_l	A->Y (RF)	0.04105	0.58517	6.40952
	B->Y (RF)	0.03248	0.57220	6.38819

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	0.01276	0.01301	0.02455
	B	0.00000	0.00000	0.00000
	B	0.00910	0.00951	0.02561
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00920	0.00917	0.01870
	B	0.00000	0.00000	0.00000
	B	0.00681	0.00749	0.01966

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	0.00140	0.00190	0.01466
	B	0.00000	0.00000	0.00000
	B	-0.00148	-0.00049	0.01193
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00090	0.00135	0.01141
	B	0.00000	0.00000	0.00000
	B	-0.00095	-0.00028	0.00951

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)	-0.00493	-0.00577	-0.00581
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00344	-0.00402	-0.00405

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)	0.00577	0.00583	0.00581
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00402	0.00404	0.00405

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)	-0.00236	-0.00239	-0.00237
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00169	-0.00170	-0.00169

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)	0.00250	0.00252	0.00242
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00178	0.00179	0.00173

SKY130_OSU_SC_18T_LS__OAI21

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00598	0.00605	0.00494	1.33218

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai21_l	0.00000	0.60770	1.03537

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)	0.06491	0.86912	10.40150
	A1->Y (FR)	0.08685	0.86523	9.97108
	B0->Y (FR)	0.04526	0.75399	9.14543

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)	0.05692	0.68662	8.07026
	A1->Y (RF)	0.07185	0.68792	7.87701
	B0->Y (RF)	0.04370	0.73005	8.85208

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	0.01257	0.01281	0.02659
	A1	0.00000	0.00000	0.00000
	A1	0.01621	0.01629	0.02676
	B0	0.01098	0.01195	0.02387

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	0.00024	0.00044	0.01013
	A1	0.00000	0.00000	0.00000
	A1	0.00313	0.00303	0.01288
	B0	0.00102	0.00156	0.01112

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)	-0.00236	-0.00239	-0.00238
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00575	-0.00583	-0.00580
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00592	-0.00594	-0.00592

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)	0.00251	0.00253	0.00243
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00577	0.00583	0.00580
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00602	0.00597	0.00594

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)	-0.00483	-0.00566	-0.00574
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00572	-0.00579	-0.00576
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00586	-0.00590	-0.00587

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)	0.00570	0.00571	0.00574
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00574	0.00580	0.00576
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00597	0.00595	0.00590

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)	-0.00463	-0.00466	-0.00472

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)	0.00473	0.00478	0.00475

SKY130_OSU_SC_18T_LS__OAI22

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00583	0.00609	0.00623	0.00610	1.33396

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai22_1	0.00000	0.51981	0.79499

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)	0.09004	0.86924	9.94677
	A1->Y (FR)	0.07628	0.87691	10.38700
	B0->Y (FR)	0.05580	0.85867	10.38080
	B1->Y (FR)	0.07431	0.85294	9.94422

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)	0.10523	0.75263	8.25919
	A1->Y (RF)	0.08154	0.71912	8.13670
	B0->Y (RF)	0.06968	0.76284	8.90475
	B1->Y (RF)	0.09458	0.80681	9.15005

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	0.02148	0.02157	0.03154
	A1	0.01784	0.01805	0.03154
	B0	0.00970	0.00991	0.02469
	B1	0.01716	0.01730	0.02712

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.00547	0.00532	0.01504
	A1	-0.00055	-0.00035	0.00946
	B0	-0.00056	0.00010	0.01157
	B1	0.00224	0.00249	0.01379

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)	-0.00490	-0.00577	-0.00581
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00489	-0.00577	-0.00581
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00570	-0.00580	-0.00578
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00587	-0.00589	-0.00588

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)	0.00577	0.00583	0.00581
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00577	0.00583	0.00581
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00576	0.00580	0.00578
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00599	0.00595	0.00591

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)	-0.00235	-0.00237	-0.00236
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00235	-0.00237	-0.00236
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00570	-0.00574	-0.00575
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00585	-0.00588	-0.00587

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)	0.00248	0.00250	0.00241
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00249	0.00251	0.00241
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00572	0.00574	0.00575
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00598	0.00594	0.00590

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)	-0.00234	-0.00236	-0.00235
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00233	-0.00237	-0.00234
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00622	-0.00631	-0.00630
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00623	-0.00626	-0.00638

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)	0.00247	0.00249	0.00239
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00247	0.00250	0.00239
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00634	0.00639	0.00630
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00639	0.00646	0.00642

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)	-0.00486	-0.00571	-0.00574
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00486	-0.00571	-0.00575
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00632	-0.00642	-0.00639
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00632	-0.00635	-0.00646

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)	0.00570	0.00577	0.00574
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00570	0.00574	0.00575
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00643	0.00648	0.00639
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00646	0.00653	0.00649

SKY130_OSU_SC_18T_LS__OR2x

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00625	0.00606	2.64164
sky130_osu_sc_18T_ls__or2_2	0.00626	0.00606	5.10831
sky130_osu_sc_18T_ls__or2_4	0.00626	0.00606	9.77919
sky130_osu_sc_18T_ls__or2_8	0.00627	0.00608	18.53352
sky130_osu_sc_18T_ls__or2_l	0.00481	0.00457	1.79575

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__or2_1	0.00000	0.93417	1.15282
sky130_osu_sc_18T_ls__or2_2	0.00000	1.09252	1.18825
sky130_osu_sc_18T_ls__or2_4	0.00000	1.67151	1.81265
sky130_osu_sc_18T_ls__or2_8	0.00000	2.82950	3.06144
sky130_osu_sc_18T_ls__or2_l	0.00000	0.64221	0.76575

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)	0.08248	0.61996	6.91484
	B->Y (RR)	0.07003	0.57747	6.77833
sky130_osu_sc_18T_ls__or2_2	A->Y (RR)	0.09116	0.56197	6.92008
	B->Y (RR)	0.07834	0.52481	6.78863
sky130_osu_sc_18T_ls__or2_4	A->Y (RR)	0.11754	0.56948	7.16571
	B->Y (RR)	0.10431	0.53932	7.03835
sky130_osu_sc_18T_ls__or2_8	A->Y (RR)	0.16789	0.63630	7.53312
	B->Y (RR)	0.15411	0.61279	7.41827
sky130_osu_sc_18T_ls__or2_l	A->Y (RR)	0.08962	0.68355	6.80670
	B->Y (RR)	0.07769	0.64486	6.67501

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)	0.12501	0.68537	7.34294
	B->Y (FF)	0.10183	0.67559	7.45965
sky130_osu_sc_18T_ls__or2_2	A->Y (FF)	0.14782	0.65677	7.36060
	B->Y (FF)	0.12480	0.65477	7.47127
sky130_osu_sc_18T_ls__or2_4	A->Y (FF)	0.20707	0.70281	7.58477
	B->Y (FF)	0.18418	0.71230	7.70158
sky130_osu_sc_18T_ls__or2_8	A->Y (FF)	0.33067	0.83374	7.82620
	B->Y (FF)	0.30791	0.84685	7.97013
sky130_osu_sc_18T_ls__or2_l	A->Y (FF)	0.13497	0.74311	7.20298
	B->Y (FF)	0.11235	0.73833	7.35673

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	0.00945	0.01120	0.05975
	B	0.00000	0.00000	0.00000
	B	0.00670	0.00930	0.06378
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01629	0.01843	0.06749
	B	0.00000	0.00000	0.00000
	B	0.01350	0.01655	0.07020
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.03129	0.03394	0.08398
	B	0.00000	0.00000	0.00000
	B	0.02841	0.03231	0.08486
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.06445	0.06579	0.11788
	B	0.00000	0.00000	0.00000
	B	0.06112	0.06457	0.11988
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00684	0.00812	0.04925
	B	0.00000	0.00000	0.00000
	B	0.00508	0.00707	0.04925

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	0.02016	0.02128	0.06946
	B	0.00000	0.00000	0.00000
	B	0.01616	0.01980	0.08401
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.02528	0.02650	0.07403
	B	0.00000	0.00000	0.00000
	B	0.02124	0.02505	0.08710
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.04006	0.03971	0.08528
	B	0.00000	0.00000	0.00000
	B	0.03614	0.03754	0.09623
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.07886	0.06718	0.10916
	B	0.00000	0.00000	0.00000
	B	0.07505	0.06374	0.11819
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.01510	0.01590	0.05163
	B	0.00000	0.00000	0.00000
	B	0.01233	0.01498	0.06319

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)	-0.00495	-0.00576	-0.00584
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00495	-0.00575	-0.00584
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00494	-0.00575	-0.00583
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00493	-0.00574	-0.00582
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00348	-0.00405	-0.00406

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)	0.00579	0.00588	0.00584
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00580	0.00588	0.00584
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00581	0.00588	0.00584
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00582	0.00589	0.00586
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00403	0.00407	0.00406

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)	-0.00236	-0.00239	-0.00238
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00236	-0.00239	-0.00238
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00236	-0.00239	-0.00237
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00235	-0.00238	-0.00236
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00172	-0.00173	-0.00172

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)	0.00254	0.00254	0.00244
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00254	0.00254	0.00244
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00254	0.00255	0.00244
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00256	0.00256	0.00245
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00183	0.00183	0.00176

SKY130_OSU_SC_18T_LS__TBUFIx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00623	0.00780	1.36825
sky130_osu_sc_18T_ls__tbufi_l	0.00476	0.00600	0.93254

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tbufi_1	0.00000	0.77406	1.17792
sky130_osu_sc_18T_ls__tbufi_l	0.00000	0.53655	0.89283

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)	0.04661	0.85298	10.49940
	OE->Y (FR)	0.05553	0.39913	5.09404
	OE->Y (RR)	0.09219	0.70432	6.88008
sky130_osu_sc_18T_ls__tbufi_l	A->Y (FR)	0.05501	0.94510	10.45250
	OE->Y (FR)	0.05852	0.39888	5.09380
	OE->Y (RR)	0.10027	0.78988	6.78231

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)	0.03991	0.69097	8.44146
	OE->Y (FF)	0.05658	0.39908	5.09409
	OE->Y (RF)	0.03608	0.64142	7.77598
sky130_osu_sc_18T_ls__tbufi_l	A->Y (RF)	0.04510	0.73562	8.18817
	OE->Y (FF)	0.05950	0.39884	5.09379
	OE->Y (RF)	0.04186	0.68840	7.50312

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	0.00860	0.00913	0.02300
	OE	0.00000	0.00000	0.00000
	OE	0.00928	0.01251	0.08118
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00647	0.00719	0.01760
	OE	0.00000	0.00000	0.00000
	OE	0.00657	0.00913	0.06211

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	-0.00152	-0.00069	0.01014
	OE	0.00000	0.00000	0.00000
	OE	0.00591	0.00926	0.08599
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00097	-0.00042	0.00805
	OE	0.00000	0.00000	0.00000
	OE	0.00410	0.00664	0.06430

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)	-0.00419	-0.00421	-0.00420
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00348	-0.00352	-0.00350
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00313	-0.00315	-0.00314
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00265	-0.00268	-0.00266

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)	0.00419	0.00421	0.00420
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00358	0.00362	0.00356
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00313	0.00315	0.00314
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00272	0.00274	0.00270

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)	0.00362	0.00724	0.08451
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00315	0.00670	0.08396
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00246	0.00513	0.06338
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00212	0.00483	0.06299

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)	0.00991	0.01367	0.09059
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00999	0.01390	0.09078
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00765	0.01043	0.06824
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00773	0.01058	0.06838

SKY130_OSU_SC_18T_LS__TNBUFIx

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00622	0.00995	1.35760
sky130_osu_sc_18T_ls__tnbufi_l	0.00475	0.00733	0.93205

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tnbufi_1	0.00000	0.84887	0.95350
sky130_osu_sc_18T_ls__tnbufi_l	0.00000	0.61077	0.68593

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)	0.04690	0.85050	10.44720
	OE->Y (RR)	0.03475	0.40034	5.09536
	OE->Y (FR)	0.06260	0.84111	9.96426
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (FR)	0.05547	0.94491	10.44890
	OE->Y (RR)	0.03642	0.40062	5.09561
	OE->Y (FR)	0.06928	0.92791	9.93674

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)	0.03938	0.68886	8.40225
	OE->Y (RF)	0.03453	0.40036	5.09536
	OE->Y (FF)	0.06284	0.58154	5.86229
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (RF)	0.04449	0.73522	8.18514
	OE->Y (RF)	0.03620	0.40063	5.09561
	OE->Y (FF)	0.07086	0.64716	5.80407

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	0.00879	0.00931	0.02325
	OE	0.00000	0.00000	0.00000
	OE	0.02203	0.02685	0.10457
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00666	0.00737	0.01779
	OE	0.00000	0.00000	0.00000
	OE	0.01615	0.01961	0.07832

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	-0.00178	-0.00093	0.00993
	OE	0.00000	0.00000	0.00000
	OE	0.01898	0.02374	0.09375
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00122	-0.00066	0.00782
	OE	0.00000	0.00000	0.00000
	OE	0.01393	0.01734	0.06904

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)	-0.00361	-0.00363	-0.00362
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00297	-0.00300	-0.00298
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00259	-0.00261	-0.00259
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00215	-0.00218	-0.00216

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)	0.00361	0.00363	0.00362
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00306	0.00309	0.00304
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00259	0.00261	0.00259
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00221	0.00223	0.00220

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)	-0.00694	-0.00391	0.07433
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00689	-0.00336	0.07437
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00479	-0.00240	0.05639
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00475	-0.00228	0.05643

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)	0.01631	0.02138	0.09981
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01608	0.02126	0.09964
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01201	0.01577	0.07455
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01185	0.01554	0.07445

SKY130_OSU_SC_18T_LS__XNOR2

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.01233	0.01137	1.39158

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xnor2_l	0.00000	1.56351	1.79250

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	0.11618	0.74693	7.05205
	A->Y (FR)	!B	0.06128	0.87499	10.56350
	B->Y (RR)	A	0.09153	0.72439	7.10959
	B->Y (FR)	!A	0.08550	0.86798	10.14720

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	0.11865	0.69910	6.40838
	A->Y (RF)	!B	0.05681	0.68002	8.11662
	B->Y (FF)	A	0.09926	0.68128	6.40556
	B->Y (RF)	!A	0.07404	0.70096	8.12234

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	0.00931	0.01211	0.08030
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02097	0.02535	0.11383
	B	A	0.00000	0.00000	0.00000
	B	A	0.00233	0.00587	0.08294
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02392	0.02797	0.11182

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	0.02644	0.02922	0.10438
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00575	0.00908	0.09354
	B	A	0.00000	0.00000	0.00000
	B	A	0.02396	0.02819	0.10538
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00734	0.01044	0.09419

SKY130_OSU_SC_18T_LS__XOR2

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.01232	0.01141	1.37641

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xor2_l	0.00000	1.56351	1.70637

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	0.10792	0.72909	7.04490
	A->Y (FR)	B	0.07837	0.86064	10.15210
	B->Y (RR)	!A	0.09406	0.72389	7.06503
	B->Y (FR)	A	0.08439	0.86641	10.13330

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	0.09744	0.66344	6.09561
	A->Y (RF)	B	0.05982	0.71878	8.48280
	B->Y (FF)	!A	0.09290	0.66270	6.19693
	B->Y (RF)	A	0.06930	0.68123	7.87165

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	0.02504	0.02937	0.11595
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00397	0.00597	0.08163
	B	A	0.00000	0.00000	0.00000
	B	A	0.02597	0.03039	0.11583
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00194	0.00530	0.08290

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	0.00485	0.00825	0.09532
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02673	0.03088	0.09966
	B	A	0.00000	0.00000	0.00000
	B	A	0.00490	0.00794	0.09296
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02437	0.02891	0.10603

SKY130_OSU_SC_18T_LS_x

sky130_osu_sc_18T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.81376
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	344886.00000	689772.00000
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
	-0.00230	0.10542	1.33769

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ls__ant	0.00000	0.00000	0.00000
	6.00116	5.66861	1.60255