sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_18T_HS__ADDFx
SKY130_OSU_SC_18T_HS__ADDHx
SKY130_OSU_SC_18T_HS__AND2x
SKY130_OSU_SC_18T_HS__AOI21
SKY130_OSU_SC_18T_HS__AOI22
SKY130_OSU_SC_18T_HS__BUFx
SKY130_OSU_SC_18T_HS__DFFRx
SKY130_OSU_SC_18T_HS__DFFSRx
SKY130_OSU_SC_18T_HS__DFFSx
SKY130_OSU_SC_18T_HS__DFFx
SKY130_OSU_SC_18T_HS__INVx
SKY130_OSU_SC_18T_HS__MUX2
SKY130_OSU_SC_18T_HS__NAND2x
SKY130_OSU_SC_18T_HS__NOR2x
SKY130_OSU_SC_18T_HS__OAI21
SKY130_OSU_SC_18T_HS__OAI22
SKY130_OSU_SC_18T_HS__OR2x
SKY130_OSU_SC_18T_HS__TBUFIx
SKY130_OSU_SC_18T_HS__TNBUFIx
SKY130_OSU_SC_18T_HS__XNOR2
SKY130_OSU_SC_18T_HS__XOR2
SKY130_OSU_SC_18T_HS_x

SKY130_OSU_SC_18T_HS__ADDFx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__addf_1	46.88640
sky130_osu_sc_18T_hs__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_hs__addf_1	0.01838	0.01837	0.01417	2.85333	1.29430	2.71487
sky130_osu_sc_18T_hs__addf_l	0.01837	0.01836	0.01414	2.03193	1.29702	2.02906

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addf_1	0.00000	0.10121	0.14212
sky130_osu_sc_18T_hs__addf_l	0.00000	0.06701	0.10792

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CO (RR)	0.10950	1.47029	23.74960
	B->CO (RR)	0.09721	1.39119	22.49690
	CI->CO (RR)	0.10408	1.49024	24.14220
	CON->CO (FR)	0.02404	0.71631	11.48390
sky130_osu_sc_18T_hs__addf_l	A->CO (RR)	0.10941	1.37353	19.66020
	B->CO (RR)	0.09738	1.30767	18.80950
	CI->CO (RR)	0.10399	1.39714	20.09630
	CON->CO (FR)	0.02677	0.76533	11.39860

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CO (FF)	0.16309	1.98467	31.67910
	B->CO (FF)	0.14470	1.88993	30.24900
	CI->CO (FF)	0.14052	1.92757	31.18630
	CON->CO (RF)	0.01839	0.52184	8.43104
sky130_osu_sc_18T_hs__addf_l	A->CO (FF)	0.15708	1.75709	24.84060
	B->CO (FF)	0.13911	1.67869	23.83680
	CI->CO (FF)	0.13455	1.70090	24.37960
	CON->CO (RF)	0.01874	0.51139	7.64087

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CON (FR)	0.13088	0.96874	11.69020
	B->CON (FR)	0.11246	0.91439	11.24670
	CI->CON (FR)	0.10827	0.91443	11.27740
sky130_osu_sc_18T_hs__addf_l	A->CON (FR)	0.12543	0.96418	11.69910
	B->CON (FR)	0.10746	0.91006	11.25450
	CI->CON (FR)	0.10280	0.90992	11.28050

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CON (RF)	0.06328	0.51352	6.18477
	B->CON (RF)	0.05208	0.49196	6.05763
	CI->CON (RF)	0.05785	0.53948	6.64591
sky130_osu_sc_18T_hs__addf_l	A->CON (RF)	0.06121	0.51137	6.19003
	B->CON (RF)	0.05024	0.49018	6.06303
	CI->CON (RF)	0.05577	0.53766	6.65195

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->S (-R)	0.23673	1.79329	24.85770
	B->S (-R)	0.23306	1.76076	23.88640
	CI->S (-R)	0.21233	1.73233	24.37220
	CON->S (RR)	0.06614	0.54578	6.58207
sky130_osu_sc_18T_hs__addf_l	A->S (-R)	0.22765	1.69531	21.57130
	B->S (-R)	0.22445	1.67363	20.88350
	CI->S (-R)	0.20326	1.63536	21.10740
	CON->S (RR)	0.06560	0.58886	6.63323

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->S (-F)	0.17922	1.28402	16.90530
	B->S (-F)	0.18373	1.23686	16.21690
	CI->S (-F)	0.17333	1.30088	17.30200
	CON->S (FF)	0.07871	0.61509	6.91245
sky130_osu_sc_18T_hs__addf_l	A->S (-F)	0.16861	1.17511	14.16880
	B->S (-F)	0.17383	1.13782	13.71790
	CI->S (-F)	0.16272	1.19582	14.60160
	CON->S (FF)	0.07399	0.60845	6.48818

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00284	0.00311	0.01076
	B	0.00429	0.00434	0.00953
	CI	0.00435	0.00471	0.01240
sky130_osu_sc_18T_hs__addf_l	A	0.00223	0.00243	0.00780
	B	0.00369	0.00369	0.00806
	CI	0.00374	0.00398	0.00967

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01138	0.01174	0.02717
	B	0.01197	0.01233	0.02560
	CI	0.00960	0.01001	0.02611
sky130_osu_sc_18T_hs__addf_l	A	0.01078	0.01103	0.02202
	B	0.01137	0.01164	0.02086
	CI	0.00900	0.00929	0.02096

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01136	0.01151	0.01769
	B	0.01172	0.01186	0.01733
	CI	0.01046	0.01093	0.01671
sky130_osu_sc_18T_hs__addf_l	A	0.01076	0.01090	0.01741
	B	0.01114	0.01125	0.01700
	CI	0.00986	0.01030	0.01639

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00283	0.00298	0.00648
	B	0.00326	0.00336	0.00644
	CI	0.00434	0.00456	0.00855
sky130_osu_sc_18T_hs__addf_l	A	0.00222	0.00232	0.00589
	B	0.00266	0.00271	0.00567
	CI	0.00373	0.00392	0.00799

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01138	0.01173	0.02627
	B	0.01196	0.01231	0.02472
	CI	0.00960	0.01000	0.02519
sky130_osu_sc_18T_hs__addf_l	A	0.01078	0.01103	0.02198
	B	0.01137	0.01164	0.02073
	CI	0.00900	0.00929	0.02094

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.02547	0.02561	0.03014
	B	0.02265	0.02288	0.03913
	CI	0.02058	0.02056	0.02549
sky130_osu_sc_18T_hs__addf_l	A	0.02461	0.02456	0.02920
	B	0.02181	0.02199	0.03876
	CI	0.01972	0.01968	0.02478

SKY130_OSU_SC_18T_HS__ADDHx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__addh_1	27.83880
sky130_osu_sc_18T_hs__addh_l	27.83880

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_18T_hs__addh_1	0.00899	0.00993	2.75844	1.38218	2.81038
sky130_osu_sc_18T_hs__addh_l	0.00899	0.00993	1.64849	1.38691	1.65673

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addh_1	0.00000	0.12159	0.14186
sky130_osu_sc_18T_hs__addh_l	0.00000	0.12940	0.14851

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CO (RR)	0.07517	0.53802	6.18641
	B->CO (RR)	0.07824	0.54615	6.31046
sky130_osu_sc_18T_hs__addh_l	A->CO (RR)	0.07643	0.61531	6.25220
	B->CO (RR)	0.07952	0.62539	6.34446

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CO (FF)	0.06765	0.59272	6.91912
	B->CO (FF)	0.07279	0.60383	6.89476
sky130_osu_sc_18T_hs__addh_l	A->CO (FF)	0.06427	0.58218	6.05070
	B->CO (FF)	0.06913	0.59366	6.03011

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CON (RR)	B	0.10454	0.43074	2.87773
	A->CON (FR)	!B	0.07153	0.85397	11.10530
	B->CON (RR)	A	0.10760	0.43851	3.00059
	B->CON (FR)	!A	0.08915	0.91023	11.63480
sky130_osu_sc_18T_hs__addh_l	A->CON (RR)	B	0.09459	0.41130	2.86845
	A->CON (FR)	!B	0.06409	0.84724	11.12050
	B->CON (RR)	A	0.09765	0.42077	2.96441
	B->CON (FR)	!A	0.08168	0.90391	11.65030

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CON (FF)	B	0.09903	0.60095	5.58508
	A->CON (RF)	!B	0.03824	0.51239	6.66412
	B->CON (FF)	A	0.10039	0.63219	5.88484
	B->CON (RF)	!A	0.04335	0.49137	6.24424
sky130_osu_sc_18T_hs__addh_l	A->CON (FF)	B	0.09053	0.57825	5.47414
	A->CON (RF)	!B	0.03559	0.50950	6.67487
	B->CON (FF)	A	0.09180	0.60989	5.76808
	B->CON (RF)	!A	0.04081	0.48869	6.25456

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->S (RR)	!B	0.07982	1.41375	23.16650
	A->S (FR)	B	0.14046	1.47481	21.59590
	B->S (RR)	!A	0.08423	1.34202	21.81920
	B->S (FR)	A	0.14314	1.55645	22.86280
	CON->S (FR)	-	0.02735	0.73704	11.76250
sky130_osu_sc_18T_hs__addh_l	A->S (RR)	!B	0.08016	1.29506	17.77080
	A->S (FR)	B	0.13503	1.34707	16.25450
	B->S (RR)	!A	0.08478	1.24172	16.91030
	B->S (FR)	A	0.13750	1.41216	17.03150
	CON->S (FR)	-	0.03130	0.82195	11.65800

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->S (FF)	!B	0.09982	1.74536	28.63850
	A->S (RF)	B	0.13010	1.07538	14.98620
	B->S (FF)	!A	0.11751	1.80756	29.23580
	B->S (RF)	A	0.13313	1.08254	15.10430
	CON->S (RF)	-	0.01704	0.50378	8.10912
sky130_osu_sc_18T_hs__addh_l	A->S (FF)	!B	0.09154	1.44295	19.80580
	A->S (RF)	B	0.11943	0.89096	9.69129
	B->S (FF)	!A	0.10913	1.50116	20.35600
	B->S (RF)	A	0.12250	0.89973	9.78284
	CON->S (RF)	-	0.01779	0.48680	6.92936

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00534	0.00507	0.00825
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00455	0.00844
sky130_osu_sc_18T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00444	0.00413	0.00946
	B	0.00000	0.00000	0.00000
	B	0.00398	0.00363	0.00903

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00831	0.00823	0.01507
	B	0.00000	0.00000	0.00000
	B	0.00865	0.00897	0.01596
sky130_osu_sc_18T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00741	0.00733	0.01432
	B	0.00000	0.00000	0.00000
	B	0.00775	0.00800	0.01486

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00533	0.00507	0.00899
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00727	0.00734	0.00886
	B	A	0.00000	0.00000	0.00000
	B	A	0.00488	0.00457	0.00934
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00806	0.00794	0.00823
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00443	0.00412	0.00933
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00665	0.00670	0.00835
	B	A	0.00000	0.00000	0.00000
	B	A	0.00397	0.00368	0.00898
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00745	0.00733	0.00769

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00831	0.00825	0.01530
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00116	0.00116	0.00202
	B	A	0.00000	0.00000	0.00000
	B	A	0.00865	0.00894	0.01590
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00204	0.00195	0.00216
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00741	0.00733	0.01451
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00041	0.00040	0.00105
	B	A	0.00000	0.00000	0.00000
	B	A	0.00775	0.00800	0.01504
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00128	0.00117	0.00142

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00832	0.00824	0.01547
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00118	0.00122	0.00192
	B	A	0.00000	0.00000	0.00000
	B	A	0.00866	0.00897	0.01642
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00206	0.00201	0.00251
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00742	0.00735	0.01486
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00042	0.00038	0.00084
	B	A	0.00000	0.00000	0.00000
	B	A	0.00776	0.00801	0.01531
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00130	0.00119	0.00185

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00535	0.00511	0.00806
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00727	0.00736	0.00854
	B	A	0.00000	0.00000	0.00000
	B	A	0.00488	0.00454	0.00855
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00807	0.00806	0.00833
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00444	0.00413	0.00928
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00665	0.00673	0.00828
	B	A	0.00000	0.00000	0.00000
	B	A	0.00398	0.00361	0.00902
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00745	0.00737	0.00781

SKY130_OSU_SC_18T_HS__AND2x

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__and2_1	12.45420
sky130_osu_sc_18T_hs__and2_2	15.38460
sky130_osu_sc_18T_hs__and2_4	21.24540
sky130_osu_sc_18T_hs__and2_6	27.10620
sky130_osu_sc_18T_hs__and2_8	32.96700
sky130_osu_sc_18T_hs__and2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__and2_1	0.00487	0.00498	2.81353
sky130_osu_sc_18T_hs__and2_2	0.00487	0.00499	5.37012
sky130_osu_sc_18T_hs__and2_4	0.00488	0.00499	10.13218
sky130_osu_sc_18T_hs__and2_6	0.00491	0.00499	14.78955
sky130_osu_sc_18T_hs__and2_8	0.00489	0.00501	18.91167
sky130_osu_sc_18T_hs__and2_l	0.00393	0.00404	2.03189

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__and2_1	0.00000	0.05908	0.09447
sky130_osu_sc_18T_hs__and2_2	0.00000	0.09447	0.09476
sky130_osu_sc_18T_hs__and2_4	0.00000	0.16526	0.18866
sky130_osu_sc_18T_hs__and2_6	0.00000	0.23604	0.28285
sky130_osu_sc_18T_hs__and2_8	0.00000	0.30682	0.37703
sky130_osu_sc_18T_hs__and2_l	0.00000	0.01613	0.02570

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__and2_1	A->Y (RR)	0.05732	0.48002	6.14224
	B->Y (RR)	0.06115	0.49364	6.05444
sky130_osu_sc_18T_hs__and2_2	A->Y (RR)	0.06594	0.43451	6.11531
	B->Y (RR)	0.06975	0.44335	6.05270
sky130_osu_sc_18T_hs__and2_4	A->Y (RR)	0.09086	0.44746	6.30961
	B->Y (RR)	0.09465	0.45100	6.28667
sky130_osu_sc_18T_hs__and2_6	A->Y (RR)	0.11433	0.47906	6.49538
	B->Y (RR)	0.11805	0.47752	6.49579
sky130_osu_sc_18T_hs__and2_8	A->Y (RR)	0.13798	0.51533	6.67812
	B->Y (RR)	0.14180	0.51053	6.68981
sky130_osu_sc_18T_hs__and2_1	A->Y (RR)	0.06058	0.52410	6.13030
	B->Y (RR)	0.06423	0.53000	6.03086

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__and2_1	**A->Y (FF)**	0.05254	0.52989	6.46273
	B->Y (FF)	0.05600	0.54200	6.47340
sky130_osu_sc_18T_hs__and2_2	**A->Y (FF)**	0.05968	0.50436	6.43955
	B->Y (FF)	0.06368	0.51613	6.46188
sky130_osu_sc_18T_hs__and2_4	**A->Y (FF)**	0.08104	0.52666	6.60603
	B->Y (FF)	0.08506	0.53494	6.63416
sky130_osu_sc_18T_hs__and2_6	**A->Y (FF)**	0.10504	0.55875	6.76258
	B->Y (FF)	0.10891	0.56666	6.78979
sky130_osu_sc_18T_hs__and2_8	**A->Y (FF)**	0.12660	0.58767	6.77762
	B->Y (FF)	0.13055	0.59403	6.80988
sky130_osu_sc_18T_hs__and2_l	**A->Y (FF)**	0.05490	0.53713	6.01674
	B->Y (FF)	0.05934	0.55137	6.06072

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00395	0.00368	0.02673
	B	0.00000	0.00000	0.00000
	B	0.00402	0.00345	0.01527
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00782	0.00775	0.02972
	B	0.00000	0.00000	0.00000
	B	0.00790	0.00768	0.01869
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01620	0.01662	0.03567
	B	0.00000	0.00000	0.00000
	B	0.01626	0.01661	0.02574
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02466	0.02546	0.04203
	B	0.00000	0.00000	0.00000
	B	0.02485	0.02543	0.03357
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03330	0.03453	0.04836
	B	0.00000	0.00000	0.00000
	B	0.03340	0.03455	0.04018
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00294	0.00297	0.02745
	B	0.00000	0.00000	0.00000
	B	0.00302	0.00265	0.01797

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.01004	0.01106	0.03168
	B	0.00000	0.00000	0.00000
	B	0.01133	0.01215	0.03121
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01283	0.01416	0.03435
	B	0.00000	0.00000	0.00000
	B	0.01416	0.01521	0.03395
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01981	0.02179	0.04145
	B	0.00000	0.00000	0.00000
	B	0.02111	0.02267	0.04089
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02672	0.02970	0.04893
	B	0.00000	0.00000	0.00000
	B	0.02802	0.03020	0.04808
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03401	0.03723	0.05655
	B	0.00000	0.00000	0.00000
	B	0.03527	0.03774	0.05505
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00802	0.00917	0.02955
	B	0.00000	0.00000	0.00000
	B	0.00904	0.00998	0.02949

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00369	-0.00370	-0.00373
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00369	-0.00371	-0.00373
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00369	-0.00372	-0.00372
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00371	-0.00374	-0.00374
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00369	-0.00371	-0.00372
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00286	-0.00287	-0.00288

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00372	0.00381	0.00373
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00372	0.00381	0.00374
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00372	0.00381	0.00374
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00374	0.00384	0.00376
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00372	0.00381	0.00374
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00287	0.00294	0.00289

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00347	-0.00349	-0.00348
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00347	-0.00349	-0.00348
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00347	-0.00350	-0.00348
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00347	-0.00349	-0.00348
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00347	-0.00349	-0.00348
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00269	-0.00271	-0.00270

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00352	0.00350	0.00349
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00352	0.00350	0.00349
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00352	0.00350	0.00349
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00352	0.00350	0.00349
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00352	0.00350	0.00349
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00274	0.00272	0.00271

SKY130_OSU_SC_18T_HS__AOI21

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__aoi21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_hs__aoi21_l	0.00461	0.00480	0.00467	1.31207

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi21_l	0.00000	0.02104	0.04709

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi21_l	A0->Y (FR)	0.07013	0.91416	11.76200
	A1->Y (FR)	0.05999	0.87117	11.32160
	B0->Y (FR)	0.05064	0.86392	11.34780

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi21_l	A0->Y (RF)	0.03383	0.46406	5.91355
	A1->Y (RF)	0.03003	0.46863	6.03878
	B0->Y (RF)	0.02131	0.44199	5.81396

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00865	0.00845	0.00895
	A1	0.00000	0.00000	0.00000
	A1	0.00722	0.00710	0.00744
	B0	0.00525	0.00546	0.00957

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00194	0.00168	0.00192
	A1	0.00000	0.00000	0.00000
	A1	0.00196	0.00171	0.00230
	B0	-0.00083	-0.00084	-0.00017

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00297	-0.00322	-0.00320
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00325	-0.00327	-0.00326
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00325	-0.00326	-0.00326

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00318	0.00322	0.00320
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00325	0.00327	0.00327
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00330	0.00327	0.00327

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00294	-0.00317	-0.00316
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00321	-0.00323	-0.00321
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00350	-0.00354	-0.00354

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00314	0.00318	0.00316
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00321	0.00323	0.00322
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00353	0.00355	0.00354

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00166	-0.00170	-0.00166

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00182	0.00182	0.00171

SKY130_OSU_SC_18T_HS__AOI22

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__aoi22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_18T_hs__aoi22_l	0.00461	0.00480	0.00497	0.00474	1.23735

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__aoi22_l	0.00000	0.02263	0.09419

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi22_l	A0->Y (FR)	0.08943	0.93273	11.59270
	A1->Y (FR)	0.07960	0.90721	11.38010
	B0->Y (FR)	0.05329	0.84795	10.96580
	B1->Y (FR)	0.06325	0.87908	11.24230

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi22_l	A0->Y (RF)	0.04320	0.46642	5.71133
	A1->Y (RF)	0.03944	0.47107	5.83017
	B0->Y (RF)	0.02389	0.45078	5.81606
	B1->Y (RF)	0.02774	0.44662	5.69836

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.01046	0.01036	0.01075
	A1	0.00903	0.00891	0.00936
	B0	0.00574	0.00585	0.00945
	B1	0.00714	0.00681	0.01058

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.00389	0.00362	0.00383
	A1	0.00392	0.00365	0.00422
	B0	-0.00049	-0.00053	0.00014
	B1	-0.00040	-0.00050	-0.00019

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00302	-0.00321	-0.00320
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00325	-0.00328	-0.00326
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00325	-0.00326	-0.00326
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00325	-0.00327	-0.00326

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00318	0.00321	0.00320
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00325	0.00328	0.00327
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00330	0.00327	0.00327
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00330	0.00327	0.00327

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00298	-0.00316	-0.00316
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00321	-0.00323	-0.00321
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00350	-0.00354	-0.00353
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00350	-0.00353	-0.00353

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00314	0.00317	0.00316
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00321	0.00323	0.00323
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00352	0.00354	0.00354
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00352	0.00353	0.00354

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00166	-0.00170	-0.00167
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00166	-0.00167	-0.00167
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00361	-0.00361	-0.00364
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00360	-0.00361	-0.00364

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00189	0.00190	0.00173
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00166	0.00167	0.00167
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00363	0.00365	0.00364
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00363	0.00365	0.00364

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00167	-0.00172	-0.00168
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00167	-0.00168	-0.00168
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00331	-0.00333	-0.00332
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00331	-0.00333	-0.00332

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00190	0.00190	0.00174
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00167	0.00168	0.00168
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00336	0.00333	0.00333
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00336	0.00333	0.00333

SKY130_OSU_SC_18T_HS__BUFx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__buf_1	9.52380
sky130_osu_sc_18T_hs__buf_2	12.45420
sky130_osu_sc_18T_hs__buf_4	18.31500
sky130_osu_sc_18T_hs__buf_6	24.17580
sky130_osu_sc_18T_hs__buf_8	30.03660
sky130_osu_sc_18T_hs__buf_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_hs__buf_1	0.00498	2.77837
sky130_osu_sc_18T_hs__buf_2	0.00498	5.40451
sky130_osu_sc_18T_hs__buf_4	0.00497	10.31417
sky130_osu_sc_18T_hs__buf_6	0.00095	1.80000
sky130_osu_sc_18T_hs__buf_8	0.00500	19.63597
sky130_osu_sc_18T_hs__buf_l	0.00407	2.02619

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__buf_1	0.00000	0.04738	0.04738
sky130_osu_sc_18T_hs__buf_2	0.00000	0.07107	0.09447
sky130_osu_sc_18T_hs__buf_4	0.00000	0.11845	0.18866
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_hs__buf_8	0.00000	0.21321	0.37703
sky130_osu_sc_18T_hs__buf_l	0.00000	0.01318	0.01318

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__buf_1	**A->Y (RR)**	0.04663	0.45633	5.93441
sky130_osu_sc_18T_hs__buf_2	**A->Y (RR)**	0.05200	0.40553	5.97986
sky130_osu_sc_18T_hs__buf_4	**A->Y (RR)**	0.07053	0.40824	6.19631
sky130_osu_sc_18T_hs__buf_8	**A->Y (RR)**	0.10560	0.45975	6.59610
sky130_osu_sc_18T_hs__buf_l	**A->Y (RR)**	0.05021	0.49919	5.93037

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__buf_1	**A->Y (FF)**	0.05001	0.52026	6.38338
sky130_osu_sc_18T_hs__buf_2	**A->Y (FF)**	0.05776	0.50057	6.47531
sky130_osu_sc_18T_hs__buf_4	**A->Y (FF)**	0.07923	0.52416	6.67317
sky130_osu_sc_18T_hs__buf_8	**A->Y (FF)**	0.12471	0.58777	6.94276
sky130_osu_sc_18T_hs__buf_l	**A->Y (FF)**	0.05305	0.53089	6.00329

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00365	0.00333	0.01902
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00753	0.00736	0.02261
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01588	0.01641	0.03052
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03266	0.03383	0.04450
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00281	0.00280	0.02158

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00965	0.01059	0.03055
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01243	0.01360	0.03319
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01942	0.02114	0.04011
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03368	0.03636	0.05433
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00777	0.00885	0.02902

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00056	-0.00056	-0.00056

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
	0.00056	0.00056	0.00056

SKY130_OSU_SC_18T_HS__DFFRx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dffr_1	63.73620
sky130_osu_sc_18T_hs__dffr_l	63.73620

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_18T_hs__dffr_1	0.00475	0.00471	0.01393	2.69068	2.68611
sky130_osu_sc_18T_hs__dffr_l	0.00475	0.00471	0.01391	2.05889	2.03658

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffr_1	0.00000	0.13237	0.21814
sky130_osu_sc_18T_hs__dffr_l	0.00000	0.09817	0.18394

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->Q (RR)	0.22053	1.12867	14.25140
	QN->Q (FR)	0.02861	0.80827	12.84660
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RR)	0.21225	1.17835	13.71470
	QN->Q (FR)	0.02975	0.83740	12.53180

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->Q (RF)	0.22598	1.14441	14.47920
	QN->Q (RF)	0.02169	0.62222	9.84280
	RN->Q (FF)	0.16593	1.26602	16.89890
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RF)	0.22616	1.21757	14.13300
	QN->Q (RF)	0.02104	0.60194	8.99132
	RN->Q (FF)	0.16642	1.33901	16.54530

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->QN (RR)	0.20068	0.63562	5.97645
	RN->QN (FR)	0.14058	0.75740	8.41144
sky130_osu_sc_18T_hs__dffr_l	CK->QN (RR)	0.20037	0.68639	6.10952
	RN->QN (FR)	0.14058	0.80739	8.51794

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	**CK->QN (RF)**	0.18258	0.52024	4.12961
sky130_osu_sc_18T_hs__dffr_l	**CK->QN (RF)**	0.17305	0.51599	3.74711

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_hs__dffr_1	hold	CK (R)	-0.03724	-0.06623	-0.28560
	setup	CK (R)	0.17289	0.22391	0.76213
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.04025	-0.06623	-0.28572
	setup	CK (R)	0.17598	0.22521	0.75710

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.09716	-0.36591	-4.50614
	setup	CK (R)	0.12003	0.37856	4.55595
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.09687	-0.36513	-4.50681
	setup	CK (R)	0.11912	0.37856	4.55588

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.03724	-0.06623	-0.28560
	setup	CK (R)	0.17289	0.22391	0.76213
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.04025	-0.06623	-0.28572
	setup	CK (R)	0.17598	0.22521	0.75710

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.09716	-0.36591	-4.50614
	setup	CK (R)	0.12003	0.37856	4.55595
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.09687	-0.36513	-4.50681
	setup	CK (R)	0.11912	0.37856	4.55588

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	recovery	CK (R)	0.14674	0.18732	0.88312
	removal	CK (R)	-0.02143	-0.02602	-0.08923
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.14816	0.18940	0.87677
	removal	CK (R)	-0.02143	-0.02602	-0.08923

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	recovery	CK (R)	0.14674	0.18732	0.88312
	removal	CK (R)	-0.02143	-0.02602	-0.08923
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.14816	0.18940	0.87677
	removal	CK (R)	-0.02143	-0.02602	-0.08923

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	min_pulse_width	RN ()	0.09715	0.46265	13.33370
	min_pulse_width	RN ()	0.10063	0.46265	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	RN ()	0.09715	0.46265	13.33370
	min_pulse_width	RN ()	0.09715	0.46265	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_hs__dffr_1	min_pulse_width	CK ()	0.09367	0.46265	13.33370
	min_pulse_width	CK ()	0.11456	0.46265	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.08671	0.46265	13.33370
	min_pulse_width	CK ()	0.11107	0.46265	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_hs__dffr_1	min_pulse_width	CK ()	0.22595	0.46265	13.33370
	min_pulse_width	CK ()	0.09367	0.46265	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.22595	0.46265	13.33370
	min_pulse_width	CK ()	0.09367	0.46265	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00996	0.00573	0.00000
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00897	0.00569	-0.00197

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01117	0.00916	0.00000
	RN	-0.00132	-0.09469	-1.63700
	RN	0.02564	0.02386	0.00733
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01017	0.00862	0.00197
	RN	-0.00132	-0.08064	-1.25263
	RN	0.02463	0.02337	0.01796

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01117	0.00908	0.00000
	RN	-0.00132	-0.09459	-1.63420
	RN	0.02564	0.02383	0.00912
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01017	0.00864	0.00229
	RN	-0.00132	-0.08012	-1.23905
	RN	0.02463	0.02338	0.01813

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00992	0.00575	0.00000
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00893	0.00577	-0.00229

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00317	-0.00319
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01232	0.01169	0.01729
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00561	0.00509	0.01085
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00317	-0.00319
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01232	0.01169	0.01729
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00561	0.00509	0.01085

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00316	0.00318	0.00319
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01956	0.01920	0.02545
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00899	0.00870	0.01477
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00316	0.00318	0.00319
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01956	0.01921	0.02545
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00899	0.00870	0.01477

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00406	0.00371	0.02669
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01099	0.01037	0.03391
sky130_osu_sc_18T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00406	0.00371	0.02669
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01099	0.01037	0.03391

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00911	0.00953	0.03403
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01934	0.01940	0.04436
sky130_osu_sc_18T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00911	0.00953	0.03403
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01933	0.01940	0.04436

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00056	-0.00102	0.02162
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00577	0.00435	0.02763
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00100	-0.00137	0.02099
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00056	-0.00102	0.02162
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00577	0.00435	0.02763
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00100	-0.00137	0.02099

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01421	0.01477	0.03910
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03051	0.03002	0.05855
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02320	0.02296	0.04743
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02989	0.03057	0.07344
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01560	0.01605	0.03994
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01421	0.01477	0.03910
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03050	0.03002	0.05855
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02320	0.02296	0.04743
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02989	0.03056	0.07344
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01560	0.01605	0.03994

SKY130_OSU_SC_18T_HS__DFFSRx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dffsr_1	69.59700
sky130_osu_sc_18T_hs__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_hs__dffsr_1	0.00471	0.00471	0.01021	0.01424	2.80194	2.84410
sky130_osu_sc_18T_hs__dffsr_l	0.00471	0.00471	0.01020	0.01423	2.05203	2.04071

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__dffsr_1	0.00000	0.15471	0.21731
sky130_osu_sc_18T_hs__dffsr_l	0.00000	0.12051	0.18311

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->Q (RR)	0.23826	1.13238	14.13140
	QN->Q (FR)	0.02699	0.78312	12.55360
	RN->Q (RR)	0.19027	1.09265	14.09910
	SN->Q (FR)	0.17999	1.30175	17.03850
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RR)	0.23664	1.21237	13.76860
	QN->Q (FR)	0.02968	0.83372	12.46420
	RN->Q (RR)	0.18883	1.17325	13.73660
	SN->Q (FR)	0.17862	1.37964	16.65820

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->Q (RF)	0.25353	1.15232	14.35740
	QN->Q (RF)	0.01962	0.57968	9.25483
	RN->Q (FF)	0.16876	1.25095	16.74990
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RF)	0.25712	1.24872	14.11150
	QN->Q (RF)	0.02100	0.60029	8.96136
	RN->Q (FF)	0.17281	1.34795	16.50230

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->QN (RR)	0.22923	0.66349	6.09951
	RN->QN (FR)	0.14511	0.76300	8.49316
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RR)	0.23111	0.72013	6.15860
	RN->QN (FR)	0.14701	0.81888	8.54346

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->QN (RF)	0.20269	0.54560	4.24049
	RN->QN (RF)	0.15512	0.50717	4.21262
	SN->QN (FF)	0.14480	0.71559	7.14813
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RF)	0.19792	0.55259	3.87936
	RN->QN (RF)	0.15092	0.51504	3.84897
	SN->QN (FF)	0.14038	0.72021	6.77174

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_hs__dffsr_1	hold	CK (R)	-0.04305	-0.07451	-0.34955
	setup	CK (R)	0.18367	0.22777	0.84394
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.04329	-0.07533	-0.34984
	setup	CK (R)	0.18060	0.22834	0.84353

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.10733	-0.38242	-4.57472
	setup	CK (R)	0.13645	0.39324	4.64785
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.10880	-0.38286	-4.57602
	setup	CK (R)	0.13890	0.39629	4.64713

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.04305	-0.07451	-0.34955
	setup	CK (R)	0.18367	0.22777	0.84394
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.04329	-0.07533	-0.34984
	setup	CK (R)	0.18060	0.22834	0.84353

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.10733	-0.38242	-4.57472
	setup	CK (R)	0.13645	0.39324	4.64785
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.10880	-0.38286	-4.57602
	setup	CK (R)	0.13890	0.39629	4.64713

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.13946	0.17447	0.87974
	removal	CK (R)	-0.01525	-0.02104	-0.08469
	hold	SN (R)	-0.13711	-0.30654	-1.63240
	setup	SN (R)	0.15990	0.35794	4.21551
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.13945	0.17496	0.87835
	removal	CK (R)	-0.01525	-0.02104	-0.08469
	hold	SN (R)	-0.13208	-0.29874	-1.59557
	setup	SN (R)	0.15698	0.34814	4.06990

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.13946	0.17447	0.87974
	removal	CK (R)	-0.01525	-0.02104	-0.08469
	hold	SN (R)	-0.13711	-0.30654	-1.63240
	hold	SN (R)	-0.13956	-0.30782	-1.63561
	setup	SN (R)	0.15990	0.35396	3.99729
	setup	SN (R)	0.15382	0.35794	4.21551
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.13945	0.17496	0.87835
	removal	CK (R)	-0.01525	-0.02104	-0.08469
	hold	SN (R)	-0.13360	-0.29874	-1.59557
	hold	SN (R)	-0.13208	-0.30006	-1.60352
	setup	SN (R)	0.15698	0.34548	3.84123
	setup	SN (R)	0.14803	0.34814	4.06990

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	min_pulse_width	RN ()	0.11107	0.46265	13.33370
	min_pulse_width	RN ()	0.11456	0.46265	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	RN ()	0.11107	0.46265	13.33370
	min_pulse_width	RN ()	0.11107	0.46265	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_hs__dffsr_1	recovery	CK (R)	0.03238	0.06894	3.47361
	removal	CK (R)	-0.00983	-0.05022	-0.18244
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.03264	0.06881	3.35948
	removal	CK (R)	-0.00983	-0.05022	-0.18244

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.03238	0.06894	3.47361
	removal	CK (R)	-0.00983	-0.05022	-0.18244
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.03264	0.06881	3.35948
	removal	CK (R)	-0.00983	-0.05022	-0.18244

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	min_pulse_width	SN ()	0.14588	0.46265	13.33370
	min_pulse_width	SN ()	0.14588	0.46265	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	SN ()	0.14588	0.46265	13.33370
	min_pulse_width	SN ()	0.13892	0.46265	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_hs__dffsr_1	min_pulse_width	CK ()	0.10759	0.46265	13.33370
	min_pulse_width	CK ()	0.13196	0.46265	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.10411	0.46265	13.33370
	min_pulse_width	CK ()	0.12848	0.46265	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_hs__dffsr_1	min_pulse_width	CK ()	0.23639	0.46265	13.33370
	min_pulse_width	CK ()	0.11456	0.46265	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.23639	0.46265	13.33370
	min_pulse_width	CK ()	0.11456	0.46265	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01225	0.00934	0.00000
	RN	0.02250	0.01954	-0.01122
	SN	-0.00132	-0.09702	-1.70470
	SN	0.02489	0.02181	-0.02106
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01137	0.00818	-0.00434
	RN	0.02161	0.01837	-0.01297
	SN	-0.00132	-0.08048	-1.24846
	SN	0.02399	0.02067	-0.01856

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01290	0.01117	0.00000
	RN	-0.00132	-0.09702	-1.70470
	RN	0.02628	0.02477	0.01172
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01201	0.01058	0.00434
	RN	-0.00132	-0.08048	-1.24845
	RN	0.02537	0.02415	0.01898

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01290	0.01116	0.00000
	RN	-0.00132	-0.09789	-1.73034
	RN	0.02628	0.02476	0.01108
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01201	0.01059	0.00464
	RN	-0.00132	-0.08021	-1.24156
	RN	0.02537	0.02416	0.01910

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01220	0.00927	0.00000
	RN	0.02245	0.01943	-0.01081
	SN	-0.00132	-0.09789	-1.73026
	SN	0.02483	0.02176	-0.02109
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01131	0.00817	-0.00464
	RN	0.02154	0.01834	-0.01278
	SN	-0.00132	-0.08021	-1.24147
	SN	0.02392	0.02060	-0.01811

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00309	-0.00318	-0.00318
	(!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)	0.01535	0.01475	0.02028
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00608	0.00554	0.01117
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00604	0.00553	0.01116
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00611	0.00557	0.01122
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00309	-0.00318	-0.00318
	(!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)	0.01535	0.01475	0.02028
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00608	0.00554	0.01116
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00604	0.00553	0.01116
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00611	0.00557	0.01122

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00321	0.00319	0.00318
	(!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)	0.02226	0.02187	0.02749
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00951	0.00929	0.01520
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00958	0.00934	0.01521
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00947	0.00923	0.01515
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00320	0.00319	0.00318
	(!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)	0.02225	0.02186	0.02748
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00950	0.00928	0.01519
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00957	0.00933	0.01520
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00945	0.00924	0.01514

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__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)	0.00337	0.00299	0.02586
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01285	0.01214	0.03577
sky130_osu_sc_18T_hs__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)	0.00337	0.00299	0.02587
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01285	0.01214	0.03577

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__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)	0.00980	0.01035	0.03499
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02034	0.02038	0.04486
sky130_osu_sc_18T_hs__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)	0.00979	0.01034	0.03498
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02033	0.02037	0.04485

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__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)	-0.00733	-0.00740	-0.00739
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00727	-0.00761	-0.00761
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00710	-0.00732	-0.00728
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00500	0.00447	0.01224
sky130_osu_sc_18T_hs__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)	-0.00733	-0.00740	-0.00739
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00725	-0.00759	-0.00760
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00709	-0.00731	-0.00728
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00503	0.00445	0.01225

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__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)	0.00737	0.00740	0.00741
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00757	0.00763	0.00762
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00726	0.00732	0.00730
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01547	0.01507	0.02085
sky130_osu_sc_18T_hs__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)	0.00737	0.00740	0.00741
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00756	0.00762	0.00760
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00725	0.00731	0.00729
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01547	0.01508	0.02081

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00056	-0.00104	0.02162
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00654	0.00518	0.02843
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00644	0.00508	0.02834
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00081	-0.00117	0.02118
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00451	0.00386	0.04724
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00056	-0.00105	0.02162
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00653	0.00518	0.02842
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00643	0.00508	0.02834
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00081	-0.00117	0.02118
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00451	0.00386	0.04725

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_18T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03371	0.03320	0.06158
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01426	0.01481	0.03914
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02339	0.02328	0.04750
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02346	0.02340	0.04760
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03254	0.03305	0.07527
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01544	0.01589	0.03979
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01856	0.01943	0.06532
sky130_osu_sc_18T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03371	0.03320	0.06158
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01426	0.01481	0.03914
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02339	0.02328	0.04750
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02346	0.02340	0.04760
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03253	0.03304	0.07527
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01544	0.01589	0.03979
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01856	0.01941	0.06532

SKY130_OSU_SC_18T_HS__DFFSx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dffs_1	57.87540
sky130_osu_sc_18T_hs__dffs_l	57.87540

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_18T_hs__dffs_1	0.00474	0.00848	0.01401	2.71276	2.69577
sky130_osu_sc_18T_hs__dffs_l	0.00474	0.00848	0.01401	2.03747	2.04881

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffs_1	0.00000	0.11729	0.16962
sky130_osu_sc_18T_hs__dffs_l	0.00000	0.08309	0.13542

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->Q (RR)	0.16830	1.06840	14.22460
	QN->Q (FR)	0.02842	0.80312	12.78690
	SN->Q (FR)	0.13467	1.24179	16.75090
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RR)	0.16478	1.11444	13.43710
	QN->Q (FR)	0.02959	0.82861	12.36650
	SN->Q (FR)	0.13127	1.28326	15.94130

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->Q (RF)	0.24226	1.16335	14.54400
	QN->Q (RF)	0.02151	0.62041	9.83723
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RF)	0.24116	1.22604	13.94370
	QN->Q (RF)	0.02090	0.59698	8.89950

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->QN (RR)	0.21643	0.65272	5.97145
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RR)	0.21503	0.70312	6.13300

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->QN (RF)	0.13399	0.46136	4.05471
	SN->QN (FF)	0.10005	0.63317	6.57778
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RF)	0.12887	0.46296	3.69097
	SN->QN (FF)	0.09506	0.62992	6.19685

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_hs__dffs_1	hold	CK (R)	-0.02841	-0.05266	-0.25654
	setup	CK (R)	0.11683	0.17509	0.69898
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.02882	-0.05264	-0.25654
	setup	CK (R)	0.11688	0.17648	0.69877

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.09612	-0.36579	-4.53199
	setup	CK (R)	0.12737	0.38242	4.57569
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.09797	-0.36549	-4.53161
	setup	CK (R)	0.12740	0.38242	4.57560

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.02841	-0.05266	-0.25654
	setup	CK (R)	0.11683	0.17509	0.69898
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.02882	-0.05264	-0.25654
	setup	CK (R)	0.11688	0.17648	0.69877

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.09612	-0.36579	-4.53199
	setup	CK (R)	0.12737	0.38242	4.57569
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.09797	-0.36549	-4.53161
	setup	CK (R)	0.12740	0.38242	4.57560

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	recovery	CK (R)	0.03143	0.05360	2.26113
	removal	CK (R)	-0.01133	-0.03090	-0.28325
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.02909	0.05604	2.09388
	removal	CK (R)	-0.01133	-0.03090	-0.28325

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	recovery	CK (R)	0.03143	0.05360	2.26113
	removal	CK (R)	-0.01133	-0.03090	-0.28325
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.02909	0.05604	2.09388
	removal	CK (R)	-0.01133	-0.03090	-0.28325

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	min_pulse_width	SN ()	0.09019	0.46265	13.33370
	min_pulse_width	SN ()	0.09367	0.46265	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	SN ()	0.09019	0.46265	13.33370
	min_pulse_width	SN ()	0.09019	0.46265	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_hs__dffs_1	min_pulse_width	CK ()	0.06930	0.46265	13.33370
	min_pulse_width	CK ()	0.12152	0.46265	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.06582	0.46265	13.33370
	min_pulse_width	CK ()	0.11804	0.46265	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_hs__dffs_1	min_pulse_width	CK ()	0.17025	0.46265	13.33370
	min_pulse_width	CK ()	0.10411	0.46265	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.17025	0.46265	13.33370
	min_pulse_width	CK ()	0.10411	0.46265	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01000	0.00570	0.00000
	SN	-0.00132	-0.09516	-1.65044
	SN	0.02171	0.01805	-0.02841
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00899	0.00577	-0.00335
	SN	-0.00132	-0.08014	-1.23960
	SN	0.02071	0.01812	-0.00499

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01109	0.00914	0.00000
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01010	0.00866	0.00335

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01109	0.00915	0.00000
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01010	0.00866	0.00328

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00995	0.00572	0.00000
	SN	-0.00132	-0.09480	-1.63992
	SN	0.02166	0.01802	-0.02773
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00894	0.00572	-0.00328
	SN	-0.00132	-0.08041	-1.24639
	SN	0.02066	0.01806	-0.00520

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00313	-0.00322	-0.00322
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01194	0.01126	0.01739
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00547	0.00493	0.01068
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00313	-0.00322	-0.00322
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01194	0.01126	0.01739
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00547	0.00493	0.01068

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00325	0.00324	0.00322
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01900	0.01858	0.02472
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00913	0.00889	0.01496
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00325	0.00324	0.00322
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01900	0.01858	0.02472
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00913	0.00889	0.01496

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00572	-0.00575	-0.00576
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00383	0.00359	0.02588
sky130_osu_sc_18T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00572	-0.00575	-0.00576
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00383	0.00356	0.02588

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00579	0.00583	0.00577
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01124	0.01144	0.03507
sky130_osu_sc_18T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00579	0.00583	0.00577
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01124	0.01144	0.03506

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00058	-0.00106	0.02164
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00091	-0.00128	0.02111
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00387	0.00325	0.04717
sky130_osu_sc_18T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00058	-0.00106	0.02164
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00091	-0.00128	0.02111
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00387	0.00325	0.04717

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03017	0.02968	0.05862
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01422	0.01478	0.03913
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02922	0.02972	0.07256
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01549	0.01595	0.03987
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01809	0.01903	0.06535
sky130_osu_sc_18T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03017	0.02968	0.05862
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01422	0.01478	0.03913
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02922	0.02977	0.07256
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01549	0.01595	0.03987
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01809	0.01903	0.06535

SKY130_OSU_SC_18T_HS__DFFx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dff_1	48.35160
sky130_osu_sc_18T_hs__dff_l	48.35160

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_18T_hs__dff_1	0.00489	0.01372	2.88297	2.82893
sky130_osu_sc_18T_hs__dff_l	0.00489	0.01372	2.00939	1.99840

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dff_1	0.00000	0.14413	0.18947
sky130_osu_sc_18T_hs__dff_l	0.00000	0.10993	0.15527

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->Q (RR)	0.15084	1.03759	14.30080
	QN->Q (FR)	0.02677	0.78635	12.69660
sky130_osu_sc_18T_hs__dff_l	CK->Q (RR)	0.15335	1.10507	13.35360
	QN->Q (FR)	0.03023	0.84078	12.50270

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->Q (RF)	0.21502	1.12104	14.68330
	QN->Q (RF)	0.01952	0.58265	9.37138
sky130_osu_sc_18T_hs__dff_l	CK->Q (RF)	0.22033	1.20403	13.87530
	QN->Q (RF)	0.02095	0.59389	8.83102

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->QN (RR)	0.19129	0.61839	5.98037
sky130_osu_sc_18T_hs__dff_l	CK->QN (RR)	0.19460	0.68044	6.06140

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->QN (RF)	0.11923	0.44051	4.00277
sky130_osu_sc_18T_hs__dff_l	CK->QN (RF)	0.11789	0.44976	3.58265

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_hs__dff_1	hold	CK (R)	-0.02691	-0.04990	-0.27578
	setup	CK (R)	0.09939	0.15855	0.71475
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.02756	-0.05010	-0.27665
	setup	CK (R)	0.09910	0.16245	0.71292

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	hold	CK (R)	-0.08874	-0.36417	-4.53064
	setup	CK (R)	0.11088	0.37856	4.58933
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.09058	-0.36443	-4.53033
	setup	CK (R)	0.11173	0.37856	4.58921

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	min_pulse_width	CK ()	0.06234	0.46265	13.33370
	min_pulse_width	CK ()	0.11456	0.46265	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.06234	0.46265	13.33370
	min_pulse_width	CK ()	0.11107	0.46265	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_hs__dff_1	**min_pulse_width**	**CK ()**	0.14936	0.46265	13.33370
	min_pulse_width	**CK ()**	0.08671	0.46265	13.33370
sky130_osu_sc_18T_hs__dff_l	**min_pulse_width**	**CK ()**	0.14936	0.46265	13.33370
	min_pulse_width	**CK ()**	0.08671	0.46265	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01040	0.00735	0.00000
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00951	0.00629	-0.00186

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01124	0.00953	0.00000
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01037	0.00884	0.00186

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01124	0.00954	0.00000
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01037	0.00887	0.00201

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01036	0.00723	0.00000
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00946	0.00631	-0.00201

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00316	-0.00318
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01081	0.01032	0.01643
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00316	-0.00318
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01082	0.01033	0.01640

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00315	0.00318	0.00318
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01948	0.01904	0.02516
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00315	0.00318	0.00318
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01949	0.01904	0.02517

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00058	-0.00106	0.02165
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00090	-0.00128	0.02115
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00058	-0.00106	0.02165
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00090	-0.00128	0.02115

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01416	0.01469	0.03909
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02911	0.02867	0.05780
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02959	0.03012	0.07302
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01542	0.01588	0.03981
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01416	0.01469	0.03909
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02912	0.02867	0.05780
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02960	0.03013	0.07302
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01542	0.01588	0.03981

SKY130_OSU_SC_18T_HS__INVx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__inv_1	6.59340
sky130_osu_sc_18T_hs__inv_10	32.96700
sky130_osu_sc_18T_hs__inv_2	9.52380
sky130_osu_sc_18T_hs__inv_3	12.45420
sky130_osu_sc_18T_hs__inv_4	15.38460
sky130_osu_sc_18T_hs__inv_6	21.24540
sky130_osu_sc_18T_hs__inv_8	27.10620
sky130_osu_sc_18T_hs__inv_l	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_hs__inv_1	0.00475	2.65947
sky130_osu_sc_18T_hs__inv_10	0.04448	23.18755
sky130_osu_sc_18T_hs__inv_2	0.00909	5.19033
sky130_osu_sc_18T_hs__inv_3	0.01354	7.38350
sky130_osu_sc_18T_hs__inv_4	0.01790	9.93437
sky130_osu_sc_18T_hs__inv_6	0.02684	14.68884
sky130_osu_sc_18T_hs__inv_8	0.03567	19.09127
sky130_osu_sc_18T_hs__inv_l	0.00382	1.93022

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__inv_1	0.00000	0.02369	0.04709
sky130_osu_sc_18T_hs__inv_10	0.00000	0.23689	0.47093
sky130_osu_sc_18T_hs__inv_2	0.00000	0.04738	0.09419
sky130_osu_sc_18T_hs__inv_3	0.00000	0.07107	0.14128
sky130_osu_sc_18T_hs__inv_4	0.00000	0.09476	0.18837
sky130_osu_sc_18T_hs__inv_6	0.00000	0.14214	0.28256
sky130_osu_sc_18T_hs__inv_8	0.00000	0.18952	0.37675
sky130_osu_sc_18T_hs__inv_l	0.00000	0.00659	0.01252

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__inv_1	**A->Y (FR)**	0.02501	0.70544	11.10680
sky130_osu_sc_18T_hs__inv_10	**A->Y (FR)**	0.04314	0.51050	11.14740
sky130_osu_sc_18T_hs__inv_2	**A->Y (FR)**	0.02117	0.61823	11.08840
sky130_osu_sc_18T_hs__inv_3	**A->Y (FR)**	0.02401	0.58536	11.10410
sky130_osu_sc_18T_hs__inv_4	**A->Y (FR)**	0.02539	0.55903	11.08260
sky130_osu_sc_18T_hs__inv_6	**A->Y (FR)**	0.02982	0.53305	11.13850
sky130_osu_sc_18T_hs__inv_8	**A->Y (FR)**	0.03606	0.51647	11.11820
sky130_osu_sc_18T_hs__inv_l	**A->Y (FR)**	0.02778	0.75774	11.13380

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__inv_1	**A->Y (RF)**	0.01712	0.49125	7.80000
sky130_osu_sc_18T_hs__inv_10	**A->Y (RF)**	0.02978	0.30017	7.55385
sky130_osu_sc_18T_hs__inv_2	**A->Y (RF)**	0.01479	0.41506	7.73655
sky130_osu_sc_18T_hs__inv_3	**A->Y (RF)**	0.01647	0.38468	7.73625
sky130_osu_sc_18T_hs__inv_4	**A->Y (RF)**	0.01683	0.35816	7.73035
sky130_osu_sc_18T_hs__inv_6	**A->Y (RF)**	0.02154	0.33038	7.74305
sky130_osu_sc_18T_hs__inv_8	**A->Y (RF)**	0.02564	0.31263	7.67003
sky130_osu_sc_18T_hs__inv_l	**A->Y (RF)**	0.01814	0.50189	7.38347

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00488	0.00514	0.00351
sky130_osu_sc_18T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.04229	0.04678	0.03423
sky130_osu_sc_18T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00876	0.00954	0.01389
sky130_osu_sc_18T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01339	0.01511	0.01738
sky130_osu_sc_18T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01729	0.01827	0.02237
sky130_osu_sc_18T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02551	0.02847	0.01419
sky130_osu_sc_18T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.03380	0.03853	0.05933
sky130_osu_sc_18T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00392	0.00414	0.00307

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00099	-0.00094	-0.00046
sky130_osu_sc_18T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01592	-0.01575	-0.00885
sky130_osu_sc_18T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00326	-0.00304	-0.00198
sky130_osu_sc_18T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00430	-0.00398	-0.00227
sky130_osu_sc_18T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00662	-0.00608	-0.00380
sky130_osu_sc_18T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01009	-0.00941	-0.00561
sky130_osu_sc_18T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01341	-0.01249	-0.00730
sky130_osu_sc_18T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00077	-0.00071	0.00016

SKY130_OSU_SC_18T_HS__MUX2

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__mux2_1	18.31500

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_18T_hs__mux2_1	0.50631	0.50648	0.00967	0.50816

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__mux2_1	0.00000	0.04767	0.04808

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__mux2_1	A0->Y (RR)	-	0.01147	0.23118	2.26227
	A1->Y (RR)	-	0.01264	0.23292	2.25823
	S0->Y (RR)	(!A0 * A1)	0.03688	0.20382	0.60674
	S0->Y (FR)	(A0 * !A1)	0.03814	0.38566	3.63169

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__mux2_1	A0->Y (FF)	-	0.01130	0.23442	2.44779
	A1->Y (FF)	-	0.01121	0.23285	2.43528
	S0->Y (FF)	(!A0 * A1)	0.05366	0.35446	2.78952
	S0->Y (RF)	(A0 * !A1)	0.02060	0.23476	1.76407

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00553	-0.00553	-0.00554
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00373	-0.00374	-0.00374
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00588	0.00667	0.03230
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00349	-0.00354	0.02062

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00553	0.00553	0.00554
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00373	0.00374	0.00374
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00113	0.00103	0.02600
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01348	0.01415	0.03912

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00142	-0.00141	-0.00142

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00142	0.00141	0.00142

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00169	-0.00168	-0.00169

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00169	0.00168	0.00169

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00120	-0.00131	0.02332
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00117	-0.00132	0.02352

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01002	0.01072	0.03583
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00933	0.01015	0.03561

SKY130_OSU_SC_18T_HS__NAND2x

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__nand2_1	9.52380
sky130_osu_sc_18T_hs__nand2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__nand2_1	0.00477	0.00474	2.61193
sky130_osu_sc_18T_hs__nand2_l	0.00383	0.00382	1.90324

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nand2_1	0.00000	0.02369	0.09419
sky130_osu_sc_18T_hs__nand2_l	0.00000	0.00658	0.02504

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nand2_1	A->Y (FR)	0.02549	0.70877	11.11370
	B->Y (FR)	0.03011	0.70451	10.97750
sky130_osu_sc_18T_hs__nand2_l	A->Y (FR)	0.02814	0.76014	11.13160
	B->Y (FR)	0.03372	0.76025	11.07510

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nand2_1	A->Y (RF)	0.02275	0.58143	9.26079
	B->Y (RF)	0.02632	0.58050	9.16144
sky130_osu_sc_18T_hs__nand2_l	A->Y (RF)	0.02391	0.59654	8.76846
	B->Y (RF)	0.02691	0.58421	8.49010

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00522	0.00544	0.00535
	B	0.00000	0.00000	0.00000
	B	0.00667	0.00681	0.00900
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00415	0.00431	0.00543
	B	0.00000	0.00000	0.00000
	B	0.00527	0.00541	0.00726

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00060	-0.00061	-0.00016
	B	0.00000	0.00000	0.00000
	B	-0.00055	-0.00059	-0.00038
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00053	-0.00053	0.00028
	B	0.00000	0.00000	0.00000
	B	-0.00051	-0.00053	-0.00003

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00362	-0.00364	-0.00366
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00278	-0.00279	-0.00280

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00365	0.00374	0.00366
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00279	0.00286	0.00281

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00334	-0.00335	-0.00335
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00257	-0.00258	-0.00258

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00339	0.00337	0.00336
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00262	0.00261	0.00258

SKY130_OSU_SC_18T_HS__NOR2x

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__nor2_1	9.52380
sky130_osu_sc_18T_hs__nor2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__nor2_1	0.00477	0.00507	1.37857
sky130_osu_sc_18T_hs__nor2_l	0.00376	0.00410	1.04773

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nor2_1	0.00000	0.01534	0.04709
sky130_osu_sc_18T_hs__nor2_l	0.00000	0.00446	0.01252

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nor2_1	A->Y (FR)	0.05216	0.87089	11.55790
	B->Y (FR)	0.03965	0.81934	11.02650
sky130_osu_sc_18T_hs__nor2_l	A->Y (FR)	0.05587	0.91656	11.31610
	B->Y (FR)	0.04479	0.88862	11.12500

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nor2_1	A->Y (RF)	0.02215	0.39884	5.23578
	B->Y (RF)	0.01801	0.39031	5.21834
sky130_osu_sc_18T_hs__nor2_l	A->Y (RF)	0.02270	0.40981	5.00948
	B->Y (RF)	0.01902	0.40234	4.99458

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00696	0.00690	0.00734
	B	0.00000	0.00000	0.00000
	B	0.00534	0.00550	0.00883
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00535	0.00529	0.00636
	B	0.00000	0.00000	0.00000
	B	0.00420	0.00440	0.00853

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00080	0.00064	0.00126
	B	0.00000	0.00000	0.00000
	B	-0.00078	-0.00077	-0.00010
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00052	0.00045	0.00168
	B	0.00000	0.00000	0.00000
	B	-0.00057	-0.00052	0.00072

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00281	-0.00318	-0.00320
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00211	-0.00238	-0.00239

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00318	0.00321	0.00320
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00238	0.00241	0.00239

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00166	-0.00170	-0.00167
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00123	-0.00126	-0.00124

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00175	0.00176	0.00170
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00129	0.00129	0.00126

SKY130_OSU_SC_18T_HS__OAI21

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__oai21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_hs__oai21_l	0.00483	0.00489	0.00423	1.40296

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai21_l	0.00000	0.01246	0.05961

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai21_l	A0->Y (FR)	0.05360	0.84534	11.24800
	A1->Y (FR)	0.07020	0.90114	11.78390
	B0->Y (FR)	0.03461	0.68624	9.36109

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai21_l	A0->Y (RF)	0.03285	0.49400	6.48545
	A1->Y (RF)	0.03753	0.49088	6.36106
	B0->Y (RF)	0.02568	0.51740	6.96477

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00740	0.00743	0.01037
	A1	0.00000	0.00000	0.00000
	A1	0.00905	0.00891	0.00935
	B0	0.00619	0.00629	0.00940

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00038	0.00026	0.00054
	A1	0.00000	0.00000	0.00000
	A1	0.00194	0.00170	0.00195
	B0	0.00077	0.00074	0.00182

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00167	-0.00171	-0.00167
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00313	-0.00322	-0.00322
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00327	-0.00330	-0.00328

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00175	0.00178	0.00170
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00321	0.00322	0.00322
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00328	0.00331	0.00328

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00276	-0.00314	-0.00314
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00310	-0.00320	-0.00319
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00323	-0.00325	-0.00324

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00311	0.00314	0.00314
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00317	0.00320	0.00319
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00324	0.00328	0.00325

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00284	-0.00286	-0.00289

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00289	0.00291	0.00290

SKY130_OSU_SC_18T_HS__OAI22

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__oai22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_hs__oai22_l	0.00467	0.00494	0.00507	0.00495	1.40110

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai22_l	0.00000	0.02300	0.09419

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai22_l	A0->Y (FR)	0.07530	0.90192	11.72090
	A1->Y (FR)	0.06277	0.84953	11.19090
	B0->Y (FR)	0.04494	0.83239	11.19230
	B1->Y (FR)	0.05778	0.88545	11.72510

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai22_l	A0->Y (RF)	0.05311	0.52596	6.59428
	A1->Y (RF)	0.04299	0.50897	6.51438
	B0->Y (RF)	0.03539	0.52975	6.97834
	B1->Y (RF)	0.04668	0.55864	7.24612

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.01167	0.01154	0.01193
	A1	0.01003	0.01004	0.01288
	B0	0.00741	0.00747	0.01034
	B1	0.00913	0.00901	0.00942

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.00302	0.00279	0.00300
	A1	-0.00020	-0.00029	-0.00003
	B0	-0.00024	-0.00027	0.00035
	B1	0.00305	0.00281	0.00332

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00280	-0.00318	-0.00320
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00280	-0.00318	-0.00320
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00311	-0.00320	-0.00319
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00324	-0.00326	-0.00325

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00317	0.00321	0.00320
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00317	0.00321	0.00320
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00317	0.00322	0.00319
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00324	0.00328	0.00326

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00165	-0.00169	-0.00166
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00165	-0.00169	-0.00166
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00309	-0.00319	-0.00318
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00323	-0.00323	-0.00324

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00174	0.00175	0.00169
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00174	0.00175	0.00169
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00317	0.00319	0.00318
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00323	0.00327	0.00325

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00164	-0.00165	-0.00165
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00164	-0.00165	-0.00165
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00348	-0.00359	-0.00357
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00355	-0.00359	-0.00362

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00173	0.00174	0.00168
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00173	0.00174	0.00168
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00358	0.00360	0.00357
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00362	0.00364	0.00363

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00276	-0.00314	-0.00315
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00276	-0.00314	-0.00315
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00354	-0.00364	-0.00363
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00360	-0.00362	-0.00368

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00312	0.00316	0.00315
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00312	0.00316	0.00315
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00363	0.00367	0.00363
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00367	0.00368	0.00369

SKY130_OSU_SC_18T_HS__OR2x

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__or2_1	12.45420
sky130_osu_sc_18T_hs__or2_2	15.38460
sky130_osu_sc_18T_hs__or2_4	21.24540
sky130_osu_sc_18T_hs__or2_8	32.96700
sky130_osu_sc_18T_hs__or2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__or2_1	0.00511	0.00489	2.75844
sky130_osu_sc_18T_hs__or2_2	0.00511	0.00489	5.34873
sky130_osu_sc_18T_hs__or2_4	0.00511	0.00490	10.26946
sky130_osu_sc_18T_hs__or2_8	0.00511	0.00492	19.20753
sky130_osu_sc_18T_hs__or2_l	0.00417	0.00392	1.98924

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__or2_1	0.00000	0.02733	0.04766
sky130_osu_sc_18T_hs__or2_2	0.00000	0.03932	0.09476
sky130_osu_sc_18T_hs__or2_4	0.00000	0.06329	0.18895
sky130_osu_sc_18T_hs__or2_8	0.00000	0.11124	0.37732
sky130_osu_sc_18T_hs__or2_l	0.00000	0.00809	0.01384

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__or2_1	A->Y (RR)	0.05327	0.48122	5.74980
	B->Y (RR)	0.04783	0.45854	5.84700
sky130_osu_sc_18T_hs__or2_2	A->Y (RR)	0.05913	0.42840	5.85114
	B->Y (RR)	0.05344	0.40861	5.90884
sky130_osu_sc_18T_hs__or2_4	A->Y (RR)	0.07799	0.42876	6.20823
	B->Y (RR)	0.07220	0.41348	6.22450
sky130_osu_sc_18T_hs__or2_8	A->Y (RR)	0.11291	0.47554	6.60259
	B->Y (RR)	0.10711	0.46359	6.58784
sky130_osu_sc_18T_hs__or2_l	A->Y (RR)	0.05687	0.52623	5.78783
	B->Y (RR)	0.05193	0.50619	5.84961

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__or2_1	A->Y (FF)	0.09080	0.62071	6.79226
	B->Y (FF)	0.07343	0.56269	6.57693
sky130_osu_sc_18T_hs__or2_2	A->Y (FF)	0.10811	0.60947	6.92506
	B->Y (FF)	0.09093	0.55536	6.62843
sky130_osu_sc_18T_hs__or2_4	A->Y (FF)	0.15022	0.64916	7.27042
	B->Y (FF)	0.13308	0.60201	6.88305
sky130_osu_sc_18T_hs__or2_8	A->Y (FF)	0.23648	0.74595	7.59277
	B->Y (FF)	0.21939	0.70182	7.11898
sky130_osu_sc_18T_hs__or2_l	A->Y (FF)	0.09476	0.61064	6.28117
	B->Y (FF)	0.07787	0.57387	6.22081

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00546	0.00483	0.01184
	B	0.00000	0.00000	0.00000
	B	0.00399	0.00399	0.01861
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00936	0.00898	0.01583
	B	0.00000	0.00000	0.00000
	B	0.00781	0.00810	0.02303
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01773	0.01801	0.02651
	B	0.00000	0.00000	0.00000
	B	0.01615	0.01721	0.03108
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03451	0.03552	0.04264
	B	0.00000	0.00000	0.00000
	B	0.03299	0.03513	0.04628
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00413	0.00376	0.01333
	B	0.00000	0.00000	0.00000
	B	0.00315	0.00349	0.02033

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.01167	0.01150	0.01679
	B	0.00000	0.00000	0.00000
	B	0.00980	0.01070	0.03191
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01446	0.01472	0.01967
	B	0.00000	0.00000	0.00000
	B	0.01256	0.01375	0.03383
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02147	0.02245	0.02685
	B	0.00000	0.00000	0.00000
	B	0.01957	0.02139	0.03952
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03708	0.03733	0.04219
	B	0.00000	0.00000	0.00000
	B	0.03566	0.03627	0.05252
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00925	0.00908	0.01723
	B	0.00000	0.00000	0.00000
	B	0.00782	0.00874	0.03087

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00284	-0.00319	-0.00321
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00284	-0.00321	-0.00321
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00284	-0.00321	-0.00321
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00283	-0.00321	-0.00321
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00213	-0.00239	-0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00319	0.00319	0.00321
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00318	0.00324	0.00321
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00319	0.00325	0.00321
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00319	0.00325	0.00321
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00238	0.00242	0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00167	-0.00171	-0.00168
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00167	-0.00171	-0.00168
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00167	-0.00171	-0.00168
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00167	-0.00171	-0.00168
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00126	-0.00129	-0.00126

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00177	0.00179	0.00170
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00177	0.00179	0.00171
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00177	0.00179	0.00171
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00177	0.00179	0.00171
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00132	0.00133	0.00128

SKY130_OSU_SC_18T_HS__TBUFIx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__tbufi_1	12.45420
sky130_osu_sc_18T_hs__tbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_hs__tbufi_1	0.00507	0.00648	1.37902
sky130_osu_sc_18T_hs__tbufi_l	0.00411	0.00526	1.02903

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tbufi_1	0.00000	0.02382	0.09419
sky130_osu_sc_18T_hs__tbufi_l	0.00000	0.00685	0.02504

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tbufi_1	A->Y (FR)	0.03790	0.81771	11.02320
	OE->Y (FR)	0.04005	0.31367	4.59530
	OE->Y (RR)	0.06663	0.59039	6.12043
sky130_osu_sc_18T_hs__tbufi_l	A->Y (FR)	0.04322	0.88273	11.01920
	OE->Y (FR)	0.04291	0.31329	4.59514
	OE->Y (RR)	0.07038	0.64560	6.06122

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tbufi_1	A->Y (RF)	0.02192	0.46426	6.22678
	OE->Y (FF)	0.04030	0.31361	4.59526
	OE->Y (RF)	0.02200	0.45702	6.09914
sky130_osu_sc_18T_hs__tbufi_l	A->Y (RF)	0.02342	0.47801	5.91871
	OE->Y (FF)	0.04342	0.31323	4.59506
	OE->Y (RF)	0.02360	0.45908	5.64125

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00499	0.00514	0.00820
	OE	0.00000	0.00000	0.00000
	OE	0.00501	0.00490	0.02599
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00396	0.00414	0.00797
	OE	0.00000	0.00000	0.00000
	OE	0.00377	0.00407	0.02745

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00079	-0.00077	-0.00015
	OE	0.00000	0.00000	0.00000
	OE	0.00356	0.00348	0.02821
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00057	-0.00054	0.00062
	OE	0.00000	0.00000	0.00000
	OE	0.00255	0.00288	0.02919

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00272	-0.00276	-0.00273
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00247	-0.00252	-0.00248
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00212	-0.00213	-0.00213
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00194	-0.00197	-0.00195

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00272	0.00276	0.00273
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00254	0.00255	0.00252
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00212	0.00213	0.00213
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00198	0.00199	0.00197

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00202	0.00198	0.02737
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00186	0.00180	0.02720
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00144	0.00183	0.02892
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00130	0.00174	0.02875

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00585	0.00630	0.03205
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00588	0.00642	0.03212
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00478	0.00551	0.03263
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00483	0.00560	0.03270

SKY130_OSU_SC_18T_HS__TNBUFIx

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__tnbufi_1	12.45420
sky130_osu_sc_18T_hs__tnbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_hs__tnbufi_1	0.00507	0.00779	1.37906
sky130_osu_sc_18T_hs__tnbufi_l	0.00410	0.00612	1.02904

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tnbufi_1	0.00000	0.03942	0.04738
sky130_osu_sc_18T_hs__tnbufi_l	0.00000	0.01080	0.01318

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tnbufi_1	A->Y (FR)	0.03828	0.81774	11.02340
	OE->Y (RR)	0.02174	0.31416	4.59616
	OE->Y (FR)	0.04990	0.86850	11.56350
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (FR)	0.04361	0.88270	11.01920
	OE->Y (RR)	0.02181	0.31449	4.59648
	OE->Y (FR)	0.05386	0.91043	11.20930

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tnbufi_1	A->Y (RF)	0.02160	0.46418	6.22680
	OE->Y (RF)	0.02154	0.31415	4.59620
	OE->Y (FF)	0.04341	0.46245	4.96277
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (RF)	0.02308	0.47790	5.91864
	OE->Y (RF)	0.02161	0.31448	4.59654
	OE->Y (FF)	0.04668	0.47038	4.68137

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00513	0.00528	0.00834
	OE	0.00000	0.00000	0.00000
	OE	0.01250	0.01355	0.03999
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00411	0.00428	0.00811
	OE	0.00000	0.00000	0.00000
	OE	0.00974	0.01092	0.03818

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00097	-0.00094	-0.00033
	OE	0.00000	0.00000	0.00000
	OE	0.01127	0.01243	0.03538
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00075	-0.00071	0.00044
	OE	0.00000	0.00000	0.00000
	OE	0.00870	0.00999	0.03250

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00232	-0.00235	-0.00233
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00209	-0.00214	-0.00210
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00173	-0.00174	-0.00174
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00158	-0.00159	-0.00158

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00232	0.00235	0.00233
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00215	0.00216	0.00213
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00173	0.00174	0.00174
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00161	0.00161	0.00160

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00372	-0.00401	0.02209
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00368	-0.00398	0.02209
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00279	-0.00252	0.02500
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00275	-0.00250	0.02502

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00951	0.01070	0.03706
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00938	0.01057	0.03693
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00741	0.00875	0.03634
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00731	0.00863	0.03625

SKY130_OSU_SC_18T_HS__XNOR2

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__xnor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__xnor2_l	0.01002	0.00905	1.45119

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xnor2_l	0.00000	0.07776	0.14157

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xnor2_l	A->Y (RR)	B	0.08478	0.63786	6.47982
	A->Y (FR)	!B	0.04927	0.84009	11.30020
	B->Y (RR)	A	0.06634	0.61434	6.43557
	B->Y (FR)	!A	0.06872	0.89610	11.85070

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xnor2_l	A->Y (FF)	B	0.07067	0.53625	5.46825
	A->Y (RF)	!B	0.03267	0.48846	6.49723
	B->Y (FF)	A	0.06539	0.53183	5.47449
	B->Y (RF)	!A	0.03834	0.49659	6.49501

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00487	0.00457	0.02477
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01219	0.01310	0.04004
	B	A	0.00000	0.00000	0.00000
	B	A	0.00183	0.00189	0.02669
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01333	0.01384	0.03912

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01572	0.01604	0.04032
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00373	0.00347	0.02741
	B	A	0.00000	0.00000	0.00000
	B	A	0.01421	0.01533	0.04040
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00496	0.00459	0.02848

SKY130_OSU_SC_18T_HS__XOR2

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__xor2_1	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__xor2_1	0.01001	0.00909	1.40081

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xor2_1	0.00000	0.07776	0.12049

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xor2_l	A->Y (RR)	!B	0.08065	0.61141	6.23462
	A->Y (FR)	B	0.06190	0.88433	11.70190
	B->Y (RR)	!A	0.06939	0.60889	6.25416
	B->Y (FR)	A	0.06646	0.88829	11.67880

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xor2_l	A->Y (FF)	!B	0.06512	0.52030	5.12486
	A->Y (RF)	B	0.02925	0.48021	6.28995
	B->Y (FF)	!A	0.05977	0.51234	5.19827
	B->Y (RF)	A	0.03604	0.47653	6.16347

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01446	0.01513	0.04128
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00263	0.00154	0.02591
	B	A	0.00000	0.00000	0.00000
	B	A	0.01475	0.01547	0.04122
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00160	0.00149	0.02657

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00327	0.00278	0.02797
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01619	0.01714	0.03929
	B	A	0.00000	0.00000	0.00000
	B	A	0.00330	0.00288	0.02724
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01443	0.01563	0.04095

SKY130_OSU_SC_18T_HS_x

sky130_osu_sc_18T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__ant	6.59340
sky130_osu_sc_18T_hs__tiehi	6.59340
sky130_osu_sc_18T_hs__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_hs__ant	0.73303
sky130_osu_sc_18T_hs__tiehi	0.00000
sky130_osu_sc_18T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__ant	0.00000	296996.00000	593992.00000
sky130_osu_sc_18T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_hs__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_hs__ant	0.00000	0.00000	0.00000
	-0.00180	0.06396	0.91614

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__ant	0.00000	0.00000	0.00000
	5.16815	4.90719	1.14208