sky130_osu_sc_18T_hs_ss_1P28_-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_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.01902	0.01903	0.01493	0.50719	0.19070	0.50668
sky130_osu_sc_18T_hs__addf_l	0.01902	0.01903	0.01493	0.30806	0.19124	0.30788

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addf_1	0.00000	0.00027	0.00028
sky130_osu_sc_18T_hs__addf_l	0.00000	0.00026	0.00027

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)	0.32910	2.16781	17.57780
	B->CO (RR)	0.30414	2.08006	17.18340
	CI->CO (RR)	0.31768	2.17999	17.93380
	CON->CO (FR)	0.10222	1.35879	13.15350
sky130_osu_sc_18T_hs__addf_l	A->CO (RR)	0.35930	2.17698	15.25360
	B->CO (RR)	0.33464	2.11471	15.16340
	CI->CO (RR)	0.34786	2.19018	15.63810
	CON->CO (FR)	0.14057	1.57224	13.38490

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)	1.08265	5.08852	37.64840
	B->CO (FF)	1.00447	4.92966	36.94390
	CI->CO (FF)	0.97814	4.90680	36.83930
	CON->CO (RF)	0.03533	0.61169	6.44412
sky130_osu_sc_18T_hs__addf_l	A->CO (FF)	1.09438	4.41410	27.61990
	B->CO (FF)	1.01271	4.27093	27.14100
	CI->CO (FF)	0.99003	4.23490	26.82080
	CON->CO (RF)	0.04156	0.65635	6.53462

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)	0.79997	2.43524	14.21620
	B->CON (FR)	0.73329	2.33473	13.99890
	CI->CON (FR)	0.69555	2.21203	13.44590
sky130_osu_sc_18T_hs__addf_l	A->CON (FR)	0.76068	2.39727	14.19270
	B->CON (FR)	0.69512	2.29801	13.97900
	CI->CON (FR)	0.65597	2.17535	13.42320

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)	0.12771	0.65948	5.21469
	B->CON (RF)	0.11496	0.65603	5.24346
	CI->CON (RF)	0.11617	0.67446	5.42617
sky130_osu_sc_18T_hs__addf_l	A->CON (RF)	0.12238	0.65440	5.21119
	B->CON (RF)	0.11017	0.65152	5.23974
	CI->CON (RF)	0.11086	0.66761	5.42156

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)	1.42882	5.51327	36.42950
	B->S (-R)	1.35529	5.40288	36.00240
	CI->S (-R)	1.31811	5.32022	35.58930
	CON->S (RR)	0.21618	1.35867	9.45348
sky130_osu_sc_18T_hs__addf_l	A->S (-R)	1.37612	4.88814	28.16850
	B->S (-R)	1.30586	4.79113	27.90250
	CI->S (-R)	1.26500	4.69726	27.34690
	CON->S (RR)	0.24755	1.55031	9.45329

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)	0.76536	2.06906	12.40940
	B->S (-F)	0.86748	2.10493	12.15320
	CI->S (-F)	0.75321	2.07698	12.75220
	CON->S (FF)	0.40776	1.14113	8.02692
sky130_osu_sc_18T_hs__addf_l	A->S (-F)	0.72895	1.85998	10.08630
	B->S (-F)	0.75182	1.80868	10.02730
	CI->S (-F)	0.71643	1.86758	10.46930
	CON->S (FF)	0.39308	1.13892	7.84667

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	0.00224	0.00220	0.00212
	B	0.00262	0.00269	0.00258
	CI	0.00285	0.00290	0.00285
sky130_osu_sc_18T_hs__addf_l	A	0.00175	0.00167	0.00158
	B	0.00213	0.00212	0.00201
	CI	0.00235	0.00236	0.00227

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00843	0.00842	0.00838
	B	0.00827	0.00834	0.00828
	CI	0.00723	0.00741	0.00735
sky130_osu_sc_18T_hs__addf_l	A	0.00793	0.00790	0.00784
	B	0.00779	0.00779	0.00767
	CI	0.00672	0.00686	0.00682

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00843	0.00841	0.00836
	B	0.00827	0.00830	0.00825
	CI	0.00722	0.00733	0.00731
sky130_osu_sc_18T_hs__addf_l	A	0.00794	0.00791	0.00783
	B	0.00778	0.00780	0.00774
	CI	0.00672	0.00682	0.00680

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00221	0.00217	0.00205
	B	0.00259	0.00261	0.00244
	CI	0.00284	0.00289	0.00281
sky130_osu_sc_18T_hs__addf_l	A	0.00171	0.00164	0.00144
	B	0.00209	0.00207	0.00185
	CI	0.00234	0.00235	0.00222

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00844	0.00843	0.00839
	B	0.00828	0.00834	0.00830
	CI	0.00723	0.00742	0.00735
sky130_osu_sc_18T_hs__addf_l	A	0.00794	0.00791	0.00787
	B	0.00778	0.00782	0.00777
	CI	0.00673	0.00687	0.00685

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01756	0.01763	0.01750
	B	0.01603	0.01586	0.01562
	CI	0.01405	0.01408	0.01397
sky130_osu_sc_18T_hs__addf_l	A	0.01685	0.01682	0.01674
	B	0.01532	0.01500	0.01482
	CI	0.01335	0.01330	0.01319

SKY130_OSU_SC_18T_HS__ADDHx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00939	0.01020	0.50933	0.20117	0.51366
sky130_osu_sc_18T_hs__addh_l	0.00940	0.01020	0.32063	0.20214	0.32137

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addh_1	0.00000	0.00021	0.00025
sky130_osu_sc_18T_hs__addh_l	0.00000	0.00021	0.00024

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)	0.25241	1.36218	9.19662
	B->CO (RR)	0.25729	1.35768	9.32970
sky130_osu_sc_18T_hs__addh_l	A->CO (RR)	0.26473	1.52108	9.22846
	B->CO (RR)	0.26969	1.51960	9.37350

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)	0.32683	1.06299	8.01365
	B->CO (FF)	0.34654	1.08235	8.06771
sky130_osu_sc_18T_hs__addh_l	A->CO (FF)	0.32322	1.10292	8.11793
	B->CO (FF)	0.34305	1.12196	8.17340

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	0.38414	1.14371	5.31433
	A->CON (FR)	!B	0.49668	2.03026	13.42100
	B->CON (RR)	A	0.38980	1.13851	5.44311
	B->CON (FR)	!A	0.57295	2.21211	14.15320
sky130_osu_sc_18T_hs__addh_l	A->CON (RR)	B	0.34455	1.09698	5.16788
	A->CON (FR)	!B	0.44322	1.98103	13.39930
	B->CON (RR)	A	0.34986	1.09461	5.33208
	B->CON (FR)	!A	0.51947	2.16068	14.16640

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	0.40715	1.09461	7.50715
	A->CON (RF)	!B	0.08283	0.63855	5.39776
	B->CON (FF)	A	0.42557	1.12497	7.62978
	B->CON (RF)	!A	0.08915	0.63472	5.29167
sky130_osu_sc_18T_hs__addh_l	A->CON (FF)	B	0.35769	1.04566	7.35043
	A->CON (RF)	!B	0.07581	0.63124	5.39346
	B->CON (FF)	A	0.37639	1.07526	7.47880
	B->CON (RF)	!A	0.08235	0.62782	5.28756

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	0.25890	2.09670	17.80610
	A->S (FR)	B	0.59061	2.52851	19.08720
	B->S (RR)	!A	0.26318	2.04866	17.34910
	B->S (FR)	A	0.61339	2.60176	19.60090
	CON->S (FR)	-	0.10824	1.38577	13.38890
sky130_osu_sc_18T_hs__addh_l	A->S (RR)	!B	0.26671	2.07687	15.56760
	A->S (FR)	B	0.55667	2.48168	16.84030
	B->S (RR)	!A	0.27224	2.04448	15.27390
	B->S (FR)	A	0.57831	2.53958	17.16990
	CON->S (FR)	-	0.13357	1.56770	13.44740

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	0.72698	4.53902	36.04190
	A->S (RF)	B	0.52272	2.40767	16.33950
	B->S (FF)	!A	0.80275	4.68981	36.84490
	B->S (RF)	A	0.52791	2.40147	16.47090
	CON->S (RF)	-	0.03328	0.60261	6.38820
sky130_osu_sc_18T_hs__addh_l	A->S (FF)	!B	0.70132	3.94801	27.22280
	A->S (RF)	B	0.49701	2.15840	12.44350
	B->S (FF)	!A	0.77690	4.10043	28.01080
	B->S (RF)	A	0.50219	2.15628	12.59380
	CON->S (RF)	-	0.04169	0.68785	6.89801

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	0.00374	0.00363	0.00348
	B	0.00000	0.00000	0.00000
	B	0.00352	0.00342	0.00330
sky130_osu_sc_18T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00302	0.00286	0.00276
	B	0.00000	0.00000	0.00000
	B	0.00280	0.00265	0.00255

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	0.00599	0.00587	0.00552
	B	0.00000	0.00000	0.00000
	B	0.00624	0.00623	0.00590
sky130_osu_sc_18T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00527	0.00513	0.00491
	B	0.00000	0.00000	0.00000
	B	0.00552	0.00548	0.00530

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	0.00373	0.00361	0.00348
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00522	0.00510	0.00512
	B	A	0.00000	0.00000	0.00000
	B	A	0.00351	0.00339	0.00333
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00557	0.00551	0.00525
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00302	0.00285	0.00273
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00472	0.00458	0.00461
	B	A	0.00000	0.00000	0.00000
	B	A	0.00279	0.00264	0.00252
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00507	0.00500	0.00496

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	0.00599	0.00589	0.00562
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00090	0.00091	0.00084
	B	A	0.00000	0.00000	0.00000
	B	A	0.00624	0.00623	0.00607
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00143	0.00138	0.00132
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00527	0.00514	0.00491
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00031	0.00030	0.00018
	B	A	0.00000	0.00000	0.00000
	B	A	0.00552	0.00549	0.00531
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00084	0.00079	0.00065

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	0.00601	0.00589	0.00577
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00091	0.00093	0.00088
	B	A	0.00000	0.00000	0.00000
	B	A	0.00624	0.00624	0.00617
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00145	0.00142	0.00137
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00529	0.00515	0.00505
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00032	0.00032	0.00029
	B	A	0.00000	0.00000	0.00000
	B	A	0.00553	0.00549	0.00544
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00086	0.00080	0.00077

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	0.00374	0.00363	0.00350
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00521	0.00520	0.00514
	B	A	0.00000	0.00000	0.00000
	B	A	0.00351	0.00341	0.00329
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00557	0.00554	0.00552
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00302	0.00285	0.00271
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00472	0.00469	0.00464
	B	A	0.00000	0.00000	0.00000
	B	A	0.00280	0.00264	0.00253
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00507	0.00501	0.00497

SKY130_OSU_SC_18T_HS__AND2x

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00506	0.00513	0.50664
sky130_osu_sc_18T_hs__and2_2	0.00505	0.00514	1.01898
sky130_osu_sc_18T_hs__and2_4	0.00505	0.00513	1.98537
sky130_osu_sc_18T_hs__and2_6	0.00508	0.00513	2.89092
sky130_osu_sc_18T_hs__and2_8	0.00506	0.00514	3.79488
sky130_osu_sc_18T_hs__and2_l	0.00390	0.00399	0.30141

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__and2_1	0.00000	0.00009	0.00012
sky130_osu_sc_18T_hs__and2_2	0.00000	0.00013	0.00015
sky130_osu_sc_18T_hs__and2_4	0.00000	0.00021	0.00023
sky130_osu_sc_18T_hs__and2_6	0.00000	0.00029	0.00031
sky130_osu_sc_18T_hs__and2_8	0.00000	0.00037	0.00039
sky130_osu_sc_18T_hs__and2_l	0.00000	0.00008	0.00011

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)	0.19618	1.26433	8.73024
	B->Y (RR)	0.20324	1.26935	8.91540
sky130_osu_sc_18T_hs__and2_2	A->Y (RR)	0.21338	1.14798	9.14451
	B->Y (RR)	0.22010	1.14562	9.27899
sky130_osu_sc_18T_hs__and2_4	A->Y (RR)	0.29175	1.13622	9.64077
	B->Y (RR)	0.29867	1.12758	9.72798
sky130_osu_sc_18T_hs__and2_6	A->Y (RR)	0.37007	1.17490	9.90577
	B->Y (RR)	0.37653	1.16286	9.95587
sky130_osu_sc_18T_hs__and2_8	A->Y (RR)	0.44796	1.23836	10.25800
	B->Y (RR)	0.45477	1.22695	10.27130
sky130_osu_sc_18T_hs__and2_l	A->Y (RR)	0.25450	1.51800	9.34744
	B->Y (RR)	0.26230	1.51878	9.51786

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)**	0.23462	0.94264	7.54453
	B->Y (FF)	0.25567	0.96448	7.63604
sky130_osu_sc_18T_hs__and2_2	**A->Y (FF)**	0.29943	0.99497	7.90328
	B->Y (FF)	0.32157	1.01717	7.97538
sky130_osu_sc_18T_hs__and2_4	**A->Y (FF)**	0.44799	1.14711	8.41178
	B->Y (FF)	0.47041	1.17710	8.46882
sky130_osu_sc_18T_hs__and2_6	**A->Y (FF)**	0.59872	1.31779	8.76275
	B->Y (FF)	0.62090	1.34211	8.81080
sky130_osu_sc_18T_hs__and2_8	**A->Y (FF)**	0.74279	1.47648	9.05192
	B->Y (FF)	0.76591	1.50156	9.08960
sky130_osu_sc_18T_hs__and2_l	**A->Y (FF)**	0.29775	1.03492	7.73421
	B->Y (FF)	0.32482	1.06177	7.82148

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	0.00310	0.00289	0.00274
	B	0.00000	0.00000	0.00000
	B	0.00314	0.00295	0.00282
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00597	0.00592	0.00585
	B	0.00000	0.00000	0.00000
	B	0.00600	0.00600	0.00587
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01218	0.01244	0.01248
	B	0.00000	0.00000	0.00000
	B	0.01224	0.01250	0.01255
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01837	0.01872	0.01900
	B	0.00000	0.00000	0.00000
	B	0.01841	0.01899	0.01916
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02451	0.02515	0.02579
	B	0.00000	0.00000	0.00000
	B	0.02455	0.02533	0.02594
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00228	0.00215	0.00203
	B	0.00000	0.00000	0.00000
	B	0.00233	0.00219	0.00208

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	0.00735	0.00715	0.00704
	B	0.00000	0.00000	0.00000
	B	0.00819	0.00802	0.00790
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00931	0.00941	0.00930
	B	0.00000	0.00000	0.00000
	B	0.01016	0.01025	0.01014
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01416	0.01478	0.01478
	B	0.00000	0.00000	0.00000
	B	0.01500	0.01567	0.01561
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01908	0.02029	0.02039
	B	0.00000	0.00000	0.00000
	B	0.01989	0.02108	0.02118
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02379	0.02550	0.02586
	B	0.00000	0.00000	0.00000
	B	0.02463	0.02626	0.02657
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00565	0.00550	0.00540
	B	0.00000	0.00000	0.00000
	B	0.00625	0.00610	0.00600

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)	-0.00261	-0.00263	-0.00265
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00261	-0.00263	-0.00265
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00261	-0.00262	-0.00265
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00263	-0.00266	-0.00266
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00262	-0.00264	-0.00264
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00194	-0.00195	-0.00196

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)	0.00263	0.00268	0.00265
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00263	0.00267	0.00265
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00263	0.00267	0.00265
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00265	0.00268	0.00266
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00263	0.00267	0.00265
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00195	0.00198	0.00196

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)	-0.00247	-0.00248	-0.00248
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00247	-0.00249	-0.00248
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00247	-0.00248	-0.00248
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00247	-0.00249	-0.00248
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00247	-0.00249	-0.00248
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00183	-0.00183	-0.00184

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)	0.00247	0.00249	0.00249
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00247	0.00249	0.00249
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00247	0.00249	0.00249
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00247	0.00249	0.00249
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00247	0.00249	0.00249
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00183	0.00185	0.00184

SKY130_OSU_SC_18T_HS__AOI21

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00468	0.00492	0.00480	0.20332

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi21_l	0.00000	0.00006	0.00009

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)	0.41695	2.10540	14.28010
	A1->Y (FR)	0.35754	2.01170	14.08870
	B0->Y (FR)	0.32632	1.93778	13.54100

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)	0.06223	0.58927	5.15613
	A1->Y (RF)	0.05575	0.59965	5.25698
	B0->Y (RF)	0.04748	0.61136	5.74815

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	0.00569	0.00559	0.00516
	A1	0.00000	0.00000	0.00000
	A1	0.00482	0.00469	0.00466
	B0	0.00483	0.00469	0.00467

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	0.00076	0.00065	0.00052
	A1	0.00000	0.00000	0.00000
	A1	0.00077	0.00065	0.00051
	B0	-0.00055	-0.00055	-0.00063

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)	-0.00222	-0.00228	-0.00226
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00232	-0.00234	-0.00233
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00232	-0.00233	-0.00233

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)	0.00224	0.00229	0.00226
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00232	0.00234	0.00234
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00232	0.00234	0.00234

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)	-0.00219	-0.00225	-0.00223
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00229	-0.00230	-0.00230
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00249	-0.00251	-0.00252

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)	0.00222	0.00227	0.00223
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00229	0.00233	0.00231
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00251	0.00257	0.00252

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)	-0.00150	-0.00152	-0.00151

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)	0.00165	0.00166	0.00155

SKY130_OSU_SC_18T_HS__AOI22

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00469	0.00492	0.00515	0.00490	0.19708

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi22_l	0.00000	0.00008	0.00011

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)	0.53576	2.21921	14.28840
	A1->Y (FR)	0.47866	2.13907	14.15330
	B0->Y (FR)	0.34964	1.90613	13.33900
	B1->Y (FR)	0.40780	2.00980	13.48750

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)	0.07498	0.60215	5.13188
	A1->Y (RF)	0.06854	0.61206	5.23053
	B0->Y (RF)	0.05269	0.58678	5.17963
	B1->Y (RF)	0.05875	0.57661	5.08632

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	0.00701	0.00690	0.00677
	A1	0.00616	0.00600	0.00595
	B0	0.00521	0.00490	0.00494
	B1	0.00603	0.00585	0.00582

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.00181	0.00172	0.00153
	A1	0.00182	0.00173	0.00154
	B0	-0.00030	-0.00029	-0.00038
	B1	-0.00029	-0.00029	-0.00036

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)	-0.00223	-0.00227	-0.00226
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00232	-0.00233	-0.00233
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00232	-0.00234	-0.00233
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00232	-0.00234	-0.00233

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)	0.00224	0.00227	0.00226
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00232	0.00235	0.00234
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00232	0.00234	0.00234
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00232	0.00234	0.00234

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)	-0.00220	-0.00225	-0.00223
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00229	-0.00231	-0.00230
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00248	-0.00250	-0.00252
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00248	-0.00250	-0.00252

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)	0.00222	0.00225	0.00223
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00230	0.00232	0.00231
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00250	0.00254	0.00252
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00250	0.00254	0.00252

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)	-0.00151	-0.00153	-0.00151
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00151	-0.00152	-0.00151
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00255	-0.00257	-0.00259
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00255	-0.00257	-0.00259

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)	0.00165	0.00166	0.00155
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00151	0.00152	0.00151
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00257	0.00262	0.00259
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00257	0.00261	0.00259

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)	-0.00151	-0.00153	-0.00152
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00151	-0.00152	-0.00152
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00236	-0.00237	-0.00237
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00236	-0.00237	-0.00237

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)	0.00166	0.00167	0.00155
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00151	0.00152	0.00152
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00236	0.00237	0.00237
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00236	0.00237	0.00237

SKY130_OSU_SC_18T_HS__BUFx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00515	0.51189
sky130_osu_sc_18T_hs__buf_2	0.00515	1.01722
sky130_osu_sc_18T_hs__buf_4	0.00515	1.97278
sky130_osu_sc_18T_hs__buf_6	0.00097	1.80000
sky130_osu_sc_18T_hs__buf_8	0.00515	3.89236
sky130_osu_sc_18T_hs__buf_l	0.00404	0.30793

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__buf_1	0.00000	0.00008	0.00008
sky130_osu_sc_18T_hs__buf_2	0.00000	0.00012	0.00012
sky130_osu_sc_18T_hs__buf_4	0.00000	0.00019	0.00020
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_hs__buf_8	0.00000	0.00035	0.00037
sky130_osu_sc_18T_hs__buf_l	0.00000	0.00007	0.00007

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)	0.15405	1.21711	8.70095
sky130_osu_sc_18T_hs__buf_2	A->Y (RR)	0.15415	1.07583	8.99068
sky130_osu_sc_18T_hs__buf_4	A->Y (RR)	0.20243	1.03280	9.37990
sky130_osu_sc_18T_hs__buf_8	A->Y (RR)	0.30121	1.07899	10.05760
sky130_osu_sc_18T_hs__buf_l	A->Y (RR)	0.20254	1.46685	9.35603

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)	0.22212	0.92905	7.49721
sky130_osu_sc_18T_hs__buf_2	A->Y (FF)	0.28859	0.98178	7.85859
sky130_osu_sc_18T_hs__buf_4	A->Y (FF)	0.43825	1.14004	8.36553
sky130_osu_sc_18T_hs__buf_8	A->Y (FF)	0.73414	1.46760	9.07409
sky130_osu_sc_18T_hs__buf_l	A->Y (FF)	0.28697	1.02421	7.71307

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	0.00288	0.00264	0.00246
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00576	0.00565	0.00555
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01202	0.01221	0.01231
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02438	0.02505	0.02528
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00220	0.00201	0.00187

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	0.00716	0.00697	0.00686
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00909	0.00917	0.00907
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01397	0.01461	0.01455
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02362	0.02527	0.02559
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00558	0.00540	0.00531

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
	-0.00039	-0.00039	-0.00039

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
	0.00039	0.00039	0.00039

SKY130_OSU_SC_18T_HS__DFFRx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00483	0.00489	0.01498	0.50621	0.50414
sky130_osu_sc_18T_hs__dffr_l	0.00483	0.00489	0.01497	0.30039	0.30630

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffr_1	0.00000	0.00043	0.00047
sky130_osu_sc_18T_hs__dffr_l	0.00000	0.00042	0.00047

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)	1.54120	3.13138	13.58330
	QN->Q (FR)	0.11266	1.44397	13.86400
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RR)	1.54129	3.26453	13.02740
	QN->Q (FR)	0.14716	1.61063	13.60060

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)	1.14219	3.00258	16.72860
	QN->Q (RF)	0.04090	0.68828	7.34140
	RN->Q (FF)	0.74630	2.81310	20.14230
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RF)	1.22721	3.38890	16.60430
	QN->Q (RF)	0.04564	0.69798	7.08769
	RN->Q (FF)	0.83473	3.20438	20.00650

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)	1.02115	2.09842	9.77754
	RN->QN (FR)	0.62373	1.90750	13.19600
sky130_osu_sc_18T_hs__dffr_l	CK->QN (RR)	1.05998	2.29560	9.83405
	RN->QN (FR)	0.66529	2.10621	13.24320

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)**	1.32371	1.97162	5.13338
sky130_osu_sc_18T_hs__dffr_l	**CK->QN (RF)**	1.29259	1.92042	4.89697

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)	-0.13841	-0.17532	-0.88189
	setup	CK (R)	1.23393	1.22819	2.01893
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.13848	-0.17732	-0.88353
	setup	CK (R)	1.23187	1.22777	2.01757

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)	-0.63924	-1.07668	-12.32060
	setup	CK (R)	0.71889	1.13381	12.44570
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.63805	-1.07810	-12.32400
	setup	CK (R)	0.71621	1.13368	12.44520

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)	-0.13841	-0.17532	-0.88189
	setup	CK (R)	1.23393	1.22819	2.01893
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.13848	-0.17732	-0.88353
	setup	CK (R)	1.23187	1.22777	2.01757

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)	-0.63924	-1.07668	-12.32060
	setup	CK (R)	0.71889	1.13381	12.44570
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.63805	-1.07810	-12.32400
	setup	CK (R)	0.71621	1.13368	12.44520

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)	1.15286	1.14811	1.72505
	removal	CK (R)	-0.18659	-0.22148	-0.15873
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	1.15108	1.14768	1.72753
	removal	CK (R)	-0.18659	-0.22148	-0.15873

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)	1.15286	1.14811	1.72505
	removal	CK (R)	-0.18659	-0.22148	-0.15873
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	1.15108	1.14768	1.72753
	removal	CK (R)	-0.18659	-0.22148	-0.15873

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 ()	0.47741	0.87711	13.33370
	min_pulse_width	RN ()	0.47626	0.87495	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	RN ()	0.49259	0.86846	13.33370
	min_pulse_width	RN ()	0.48718	0.87062	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 ()	0.74548	0.78405	13.33370
	min_pulse_width	CK ()	0.65203	0.56763	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.66693	0.71263	13.33370
	min_pulse_width	CK ()	0.63905	0.56763	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 ()	1.53539	1.61296	13.33370
	min_pulse_width	CK ()	0.58755	0.94853	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	1.53329	1.61729	13.33370
	min_pulse_width	CK ()	0.58394	0.94853	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	0.00699	0.00645	0.00212
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00619	0.00576	0.00390

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	0.00783	0.00759	0.00684
	RN	-0.00103	-0.02480	-0.20734
	RN	0.01750	0.01737	0.01641
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00700	0.00677	0.00637
	RN	-0.00103	-0.01813	-0.12304
	RN	0.01666	0.01654	0.01594

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	0.00784	0.00760	0.00684
	RN	-0.00103	-0.02474	-0.20650
	RN	0.01750	0.01738	0.01644
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00701	0.00678	0.00638
	RN	-0.00103	-0.01834	-0.12546
	RN	0.01667	0.01655	0.01596

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	0.00696	0.00641	0.00185
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00616	0.00572	0.00358

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	-0.00219	-0.00226	-0.00225
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00771	0.00752	0.00727
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00348	0.00331	0.00309
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00219	-0.00226	-0.00225
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00771	0.00752	0.00727
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00348	0.00331	0.00309

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	0.00223	0.00226	0.00225
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01313	0.01299	0.01277
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00595	0.00580	0.00577
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00223	0.00226	0.00225
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01313	0.01299	0.01277
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00595	0.00580	0.00577

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)	0.00298	0.00275	0.00255
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00756	0.00718	0.00686
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)	0.00298	0.00275	0.00255
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00756	0.00718	0.00686

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)	0.00633	0.00609	0.00602
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01348	0.01319	0.01294
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)	0.00633	0.00609	0.00602
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01348	0.01319	0.01294

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)	-0.00040	-0.00068	-0.00092
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00365	0.00309	0.00255
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00064	-0.00094	-0.00119
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00040	-0.00068	-0.00092
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00365	0.00309	0.00255
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00064	-0.00094	-0.00119

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)	0.01074	0.01050	0.01032
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02102	0.02068	0.02003
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01622	0.01601	0.01555
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02129	0.02081	0.02036
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01129	0.01104	0.01092
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01074	0.01050	0.01032
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02102	0.02067	0.02001
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01622	0.01601	0.01555
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02129	0.02081	0.02036
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01129	0.01104	0.01092

SKY130_OSU_SC_18T_HS__DFFSRx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00479	0.00490	0.01038	0.01524	0.50322	0.51130
sky130_osu_sc_18T_hs__dffsr_l	0.00479	0.00490	0.01037	0.01523	0.30835	0.30616

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__dffsr_1	0.00000	0.00045	0.00052
sky130_osu_sc_18T_hs__dffsr_l	0.00000	0.00044	0.00051

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)	1.29316	2.81296	13.07680
	QN->Q (FR)	0.10825	1.40859	13.57510
	RN->Q (RR)	1.05891	2.58362	12.94090
	SN->Q (FR)	1.09053	2.80670	17.30520
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RR)	1.33237	3.05927	13.16720
	QN->Q (FR)	0.14700	1.62408	13.76060
	RN->Q (RR)	1.10518	2.83002	13.03250
	SN->Q (FR)	1.13212	3.04804	17.37550

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)	1.20630	3.03588	16.43560
	QN->Q (RF)	0.03734	0.65506	6.97645
	RN->Q (FF)	0.79130	2.81402	19.88010
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RF)	1.30662	3.51019	17.04610
	QN->Q (RF)	0.04554	0.70066	7.13732
	RN->Q (FF)	0.89173	3.28940	20.48410

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)	1.08730	2.16818	9.83334
	RN->QN (FR)	0.67363	1.94527	13.29160
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RR)	1.13669	2.38196	9.91851
	RN->QN (FR)	0.72246	2.15987	13.36860

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)	1.11090	1.71965	4.92235
	RN->QN (RF)	0.87327	1.50019	4.78902
	SN->QN (FF)	0.90485	1.72319	9.14773
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RF)	1.10820	1.71607	4.79691
	RN->QN (RF)	0.87281	1.49711	4.66623
	SN->QN (FF)	0.90450	1.72071	9.00602

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)	-0.14011	-0.17429	-0.95772
	setup	CK (R)	1.00342	0.98941	1.74112
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.14129	-0.17546	-0.95546
	setup	CK (R)	0.99900	0.98614	1.73073

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)	-0.68931	-1.12044	-12.43310
	setup	CK (R)	0.77668	1.17264	12.51730
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.69242	-1.12316	-12.43380
	setup	CK (R)	0.77516	1.17264	12.51820

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)	-0.14011	-0.17429	-0.95772
	setup	CK (R)	1.00342	0.98941	1.74112
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.14129	-0.17546	-0.95546
	setup	CK (R)	0.99900	0.98614	1.73073

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)	-0.68931	-1.12044	-12.43310
	setup	CK (R)	0.77668	1.17264	12.51730
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.69242	-1.12316	-12.43380
	setup	CK (R)	0.77516	1.17264	12.51820

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)	0.85689	0.84790	1.39393
	removal	CK (R)	-0.07228	-0.09053	-0.09542
	hold	SN (R)	-0.86400	-1.14966	-9.07216
	setup	SN (R)	0.90151	1.20701	10.05370
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.84981	0.84484	1.39742
	removal	CK (R)	-0.07165	-0.09141	-0.08987
	hold	SN (R)	-0.80280	-1.08903	-8.98521
	setup	SN (R)	0.90002	1.20412	10.04430

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)	0.85689	0.84790	1.39393
	removal	CK (R)	-0.07228	-0.09053	-0.09542
	hold	SN (R)	-0.87816	-1.15053	-9.07216
	hold	SN (R)	-0.86400	-1.14966	-9.07251
	setup	SN (R)	0.90151	1.19894	10.03290
	setup	SN (R)	0.88203	1.20701	10.05370
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.84981	0.84484	1.39742
	removal	CK (R)	-0.07165	-0.09141	-0.08987
	hold	SN (R)	-0.87750	-1.13867	-9.05228
	hold	SN (R)	-0.80280	-1.08903	-8.98521
	setup	SN (R)	0.90002	1.18375	9.99963
	setup	SN (R)	0.82811	1.20412	10.04430

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 ()	0.54687	0.91607	13.33370
	min_pulse_width	RN ()	0.56559	0.91824	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	RN ()	0.58801	0.90958	13.33370
	min_pulse_width	RN ()	0.58456	0.90958	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)	0.06602	0.08666	0.69923
	removal	CK (R)	-0.01052	-0.04333	-0.48481
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.06070	0.08463	0.68063
	removal	CK (R)	-0.01052	-0.04333	-0.48881

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)	0.06602	0.08666	0.69923
	removal	CK (R)	-0.01052	-0.04333	-0.48481
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.06070	0.08463	0.68063
	removal	CK (R)	-0.01052	-0.04333	-0.48881

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 ()	0.92223	1.30131	13.36630
	min_pulse_width	SN ()	0.91276	1.30563	13.38260
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	SN ()	0.91897	1.28616	13.33370
	min_pulse_width	SN ()	0.86021	1.30563	13.35980

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 ()	0.57139	0.61524	13.33370
	min_pulse_width	CK ()	0.66935	0.56763	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.52996	0.58710	13.33370
	min_pulse_width	CK ()	0.66069	0.56763	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 ()	1.31307	1.37922	13.33370
	min_pulse_width	CK ()	0.65408	0.98965	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	1.30895	1.37489	13.33370
	min_pulse_width	CK ()	0.64515	0.98749	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	0.00837	0.00798	0.00503
	RN	0.01578	0.01544	0.01258
	SN	-0.00103	-0.02471	-0.20612
	SN	0.01695	0.01663	0.01388
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00764	0.00723	0.00529
	RN	0.01505	0.01469	0.01284
	SN	-0.00103	-0.01842	-0.12630
	SN	0.01622	0.01589	0.01414

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	0.00880	0.00862	0.00797
	RN	-0.00103	-0.02471	-0.20612
	RN	0.01820	0.01808	0.01728
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00805	0.00787	0.00746
	RN	-0.00103	-0.01842	-0.12630
	RN	0.01744	0.01732	0.01675

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	0.00882	0.00864	0.00799
	RN	-0.00103	-0.02495	-0.20943
	RN	0.01821	0.01808	0.01728
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00807	0.00789	0.00750
	RN	-0.00103	-0.01834	-0.12540
	RN	0.01745	0.01733	0.01675

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	0.00832	0.00793	0.00467
	RN	0.01573	0.01538	0.01219
	SN	-0.00103	-0.02495	-0.20942
	SN	0.01691	0.01658	0.01346
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00759	0.00718	0.00502
	RN	0.01500	0.01464	0.01255
	SN	-0.00103	-0.01834	-0.12540
	SN	0.01618	0.01584	0.01382

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	-0.00219	-0.00226	-0.00225
	(!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)	0.00977	0.00959	0.00937
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00391	0.00375	0.00353
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00389	0.00373	0.00351
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00394	0.00378	0.00356
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00219	-0.00226	-0.00225
	(!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)	0.00977	0.00959	0.00937
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00391	0.00375	0.00353
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00389	0.00373	0.00351
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00394	0.00378	0.00356

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	0.00223	0.00226	0.00225
	(!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)	0.01473	0.01459	0.01424
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00637	0.00623	0.00619
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00640	0.00625	0.00622
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00634	0.00619	0.00616
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00223	0.00226	0.00225
	(!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)	0.01472	0.01459	0.01423
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00636	0.00623	0.00618
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00640	0.00625	0.00621
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00633	0.00618	0.00615

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)	0.00310	0.00288	0.00258
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00929	0.00891	0.00848
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)	0.00311	0.00288	0.00258
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00930	0.00891	0.00848

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)	0.00691	0.00667	0.00661
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01434	0.01403	0.01371
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)	0.00691	0.00666	0.00660
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01433	0.01402	0.01371

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)	-0.00519	-0.00520	-0.00525
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00532	-0.00540	-0.00537
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00513	-0.00519	-0.00517
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00288	0.00271	0.00236
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)	-0.00519	-0.00521	-0.00525
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00531	-0.00539	-0.00536
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00513	-0.00519	-0.00517
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00289	0.00271	0.00237

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)	0.00523	0.00530	0.00525
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00534	0.00545	0.00537
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00514	0.00519	0.00517
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01042	0.01021	0.01022
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)	0.00523	0.00530	0.00525
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00533	0.00544	0.00536
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00514	0.00519	0.00517
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01042	0.01021	0.01022

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)	-0.00040	-0.00069	-0.00092
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00422	0.00370	0.00319
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00416	0.00364	0.00312
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00051	-0.00080	-0.00106
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00357	0.00311	0.00259
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00040	-0.00069	-0.00092
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00421	0.00369	0.00318
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00415	0.00364	0.00311
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00051	-0.00080	-0.00106
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00357	0.00311	0.00259

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)	0.02319	0.02290	0.02217
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01080	0.01053	0.01035
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01649	0.01630	0.01587
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01651	0.01636	0.01592
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02291	0.02237	0.02177
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01118	0.01092	0.01082
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01373	0.01317	0.01290
sky130_osu_sc_18T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02319	0.02290	0.02217
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01080	0.01053	0.01035
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01649	0.01630	0.01587
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01651	0.01636	0.01592
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02290	0.02236	0.02176
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01118	0.01092	0.01082
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01372	0.01316	0.01290

SKY130_OSU_SC_18T_HS__DFFSx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00482	0.00841	0.01488	0.50788	0.50849
sky130_osu_sc_18T_hs__dffs_l	0.00482	0.00841	0.01488	0.30166	0.30640

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffs_1	0.00000	0.00039	0.00044
sky130_osu_sc_18T_hs__dffs_l	0.00000	0.00038	0.00044

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)	0.80625	2.31059	12.78560
	QN->Q (FR)	0.11241	1.44065	13.83530
	SN->Q (FR)	0.72739	2.42577	17.01710
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RR)	0.83633	2.50109	12.31430
	QN->Q (FR)	0.14684	1.60825	13.59650
	SN->Q (FR)	0.75629	2.61299	16.53070

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)	1.22615	3.08681	16.82800
	QN->Q (RF)	0.04062	0.68436	7.32595
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RF)	1.30489	3.47324	16.71680
	QN->Q (RF)	0.04539	0.70298	7.08051

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)	1.10192	2.18357	9.89860
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RR)	1.13513	2.37080	9.90146

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)	0.63965	1.20600	4.36064
	SN->QN (FF)	0.55319	1.32922	8.58684
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RF)	0.63275	1.19669	4.17302
	SN->QN (FF)	0.54499	1.31531	8.38827

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)	-0.08602	-0.12296	-0.79442
	setup	CK (R)	0.58834	0.57686	1.43601
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.08436	-0.12383	-0.79629
	setup	CK (R)	0.58222	0.57268	1.43249

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)	-0.65057	-1.09056	-12.37650
	setup	CK (R)	0.78697	1.15750	12.51170
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.65212	-1.09013	-12.37720
	setup	CK (R)	0.78141	1.15648	12.50980

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)	-0.08602	-0.12296	-0.79442
	setup	CK (R)	0.58834	0.57686	1.43601
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.08436	-0.12383	-0.79629
	setup	CK (R)	0.58222	0.57268	1.43249

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)	-0.65057	-1.09056	-12.37650
	setup	CK (R)	0.78697	1.15750	12.51170
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.65212	-1.09013	-12.37720
	setup	CK (R)	0.78141	1.15648	12.50980

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)	0.10817	0.15308	1.45278
	removal	CK (R)	-0.03283	-0.09238	-1.22937
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.10448	0.14803	1.44941
	removal	CK (R)	-0.03298	-0.09238	-1.22937

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)	0.10817	0.15308	1.45278
	removal	CK (R)	-0.03283	-0.09238	-1.22937
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.10448	0.14803	1.44941
	removal	CK (R)	-0.03298	-0.09238	-1.22937

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 ()	0.52666	1.06973	13.33370
	min_pulse_width	SN ()	0.53784	1.06757	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	SN ()	0.52042	1.05675	13.33370
	min_pulse_width	SN ()	0.50731	1.06324	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 ()	0.23661	0.56763	13.33370
	min_pulse_width	CK ()	0.66718	0.56763	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.22175	0.56763	13.33370
	min_pulse_width	CK ()	0.65203	0.56763	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 ()	0.89061	0.96801	13.33370
	min_pulse_width	CK ()	0.66276	0.97450	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.88663	0.96368	13.33370
	min_pulse_width	CK ()	0.65390	0.97234	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	0.00700	0.00634	0.00207
	SN	-0.00103	-0.02485	-0.20803
	SN	0.01486	0.01438	0.01010
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00618	0.00570	0.00381
	SN	-0.00103	-0.01818	-0.12356
	SN	0.01404	0.01373	0.01183

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	0.00782	0.00762	0.00689
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00699	0.00680	0.00640

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	0.00782	0.00762	0.00690
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00700	0.00680	0.00642

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	0.00696	0.00631	0.00174
	SN	-0.00103	-0.02486	-0.20827
	SN	0.01482	0.01433	0.00974
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00614	0.00566	0.00352
	SN	-0.00103	-0.01835	-0.12549
	SN	0.01400	0.01368	0.01150

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	-0.00222	-0.00229	-0.00228
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00769	0.00748	0.00715
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00339	0.00323	0.00300
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00222	-0.00229	-0.00228
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00769	0.00748	0.00715
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00339	0.00323	0.00300

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	0.00226	0.00229	0.00228
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01305	0.01289	0.01276
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00607	0.00593	0.00588
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00226	0.00229	0.00228
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01305	0.01289	0.01276
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00607	0.00593	0.00588

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)	-0.00388	-0.00391	-0.00391
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00287	0.00274	0.00254
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)	-0.00388	-0.00391	-0.00391
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00287	0.00274	0.00254

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)	0.00389	0.00394	0.00391
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00759	0.00735	0.00726
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)	0.00389	0.00394	0.00391
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00759	0.00735	0.00726

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)	-0.00041	-0.00066	-0.00093
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00058	-0.00088	-0.00113
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00304	0.00254	0.00206
sky130_osu_sc_18T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00041	-0.00066	-0.00093
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00058	-0.00088	-0.00113
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00304	0.00254	0.00206

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)	0.02097	0.02063	0.01991
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01075	0.01050	0.01033
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02118	0.02062	0.02020
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01122	0.01098	0.01086
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01336	0.01283	0.01258
sky130_osu_sc_18T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02097	0.02063	0.01991
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01075	0.01051	0.01033
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02118	0.02062	0.02020
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01122	0.01098	0.01086
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01336	0.01283	0.01258

SKY130_OSU_SC_18T_HS__DFFx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00497	0.01474	0.51564	0.51354
sky130_osu_sc_18T_hs__dff_l	0.00497	0.01472	0.30129	0.30498

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dff_1	0.00000	0.00037	0.00038
sky130_osu_sc_18T_hs__dff_l	0.00000	0.00036	0.00037

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)	0.62109	2.07891	12.50400
	QN->Q (FR)	0.10761	1.41696	13.71470
sky130_osu_sc_18T_hs__dff_l	CK->Q (RR)	0.67213	2.32443	12.21390
	QN->Q (FR)	0.14862	1.61799	13.67870

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)	1.09176	2.93507	16.59580
	QN->Q (RF)	0.03721	0.65331	7.01474
sky130_osu_sc_18T_hs__dff_l	CK->Q (RF)	1.19785	3.37685	16.65910
	QN->Q (RF)	0.04550	0.70270	7.07816

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)	0.97545	2.04870	9.72021
sky130_osu_sc_18T_hs__dff_l	CK->QN (RR)	1.02931	2.27062	9.80619

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)	0.47449	1.00434	4.14407
sky130_osu_sc_18T_hs__dff_l	CK->QN (RF)	0.47972	1.02153	4.03963

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)	-0.08340	-0.12266	-0.83495
	setup	CK (R)	0.39161	0.38796	1.31587
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.08427	-0.12579	-0.83182
	setup	CK (R)	0.38804	0.38379	1.30167

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)	-0.60938	-1.07279	-12.31550
	setup	CK (R)	0.71557	1.15616	12.51440
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.61203	-1.07346	-12.32690
	setup	CK (R)	0.71175	1.15616	12.51680

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 ()	0.18568	0.56763	13.33370
	min_pulse_width	CK ()	0.63255	0.56763	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.18144	0.56763	13.33370
	min_pulse_width	CK ()	0.62173	0.56763	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 ()	0.70165	0.86196	13.33370
	min_pulse_width	CK ()	0.57603	0.96585	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.69664	0.85980	13.33370
	min_pulse_width	CK ()	0.57603	0.96585	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	0.00738	0.00681	0.00383
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00664	0.00610	0.00420

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	0.00797	0.00781	0.00717
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00724	0.00707	0.00665

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	0.00797	0.00781	0.00717
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00725	0.00708	0.00665

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	0.00734	0.00677	0.00357
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00660	0.00606	0.00391

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	-0.00219	-0.00225	-0.00224
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00735	0.00718	0.00687
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00219	-0.00225	-0.00224
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00735	0.00718	0.00688

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	0.00223	0.00225	0.00224
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01362	0.01343	0.01325
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00223	0.00225	0.00224
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01362	0.01343	0.01326

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)	-0.00041	-0.00066	-0.00093
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00057	-0.00087	-0.00112
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00041	-0.00066	-0.00093
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00057	-0.00087	-0.00112

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)	0.01071	0.01047	0.01029
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02063	0.02034	0.01963
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02162	0.02105	0.02060
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01117	0.01092	0.01080
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01071	0.01047	0.01029
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02063	0.02034	0.01963
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02162	0.02105	0.02060
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01117	0.01092	0.01080

SKY130_OSU_SC_18T_HS__INVx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00494	0.50534
sky130_osu_sc_18T_hs__inv_10	0.04636	4.82197
sky130_osu_sc_18T_hs__inv_2	0.00947	1.01823
sky130_osu_sc_18T_hs__inv_3	0.01410	1.49664
sky130_osu_sc_18T_hs__inv_4	0.01866	1.96184
sky130_osu_sc_18T_hs__inv_6	0.02798	2.92062
sky130_osu_sc_18T_hs__inv_8	0.03718	3.86227
sky130_osu_sc_18T_hs__inv_l	0.00380	0.30193

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__inv_1	0.00000	0.00004	0.00004
sky130_osu_sc_18T_hs__inv_10	0.00000	0.00039	0.00042
sky130_osu_sc_18T_hs__inv_2	0.00000	0.00008	0.00008
sky130_osu_sc_18T_hs__inv_3	0.00000	0.00012	0.00013
sky130_osu_sc_18T_hs__inv_4	0.00000	0.00015	0.00017
sky130_osu_sc_18T_hs__inv_6	0.00000	0.00023	0.00025
sky130_osu_sc_18T_hs__inv_8	0.00000	0.00031	0.00034
sky130_osu_sc_18T_hs__inv_l	0.00000	0.00004	0.00004

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)**	0.10411	1.36126	13.16410
sky130_osu_sc_18T_hs__inv_10	**A->Y (FR)**	0.12096	0.92709	13.29550
sky130_osu_sc_18T_hs__inv_2	**A->Y (FR)**	0.07663	1.16891	13.23710
sky130_osu_sc_18T_hs__inv_3	**A->Y (FR)**	0.08156	1.09570	13.29410
sky130_osu_sc_18T_hs__inv_4	**A->Y (FR)**	0.08023	1.03197	13.13730
sky130_osu_sc_18T_hs__inv_6	**A->Y (FR)**	0.08866	0.97445	13.17390
sky130_osu_sc_18T_hs__inv_8	**A->Y (FR)**	0.10320	0.94042	13.18400
sky130_osu_sc_18T_hs__inv_l	**A->Y (FR)**	0.14255	1.56299	13.27750

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)**	0.03344	0.60120	6.32824
sky130_osu_sc_18T_hs__inv_10	**A->Y (RF)**	0.05269	0.47137	6.37390
sky130_osu_sc_18T_hs__inv_2	**A->Y (RF)**	0.02828	0.54686	6.35172
sky130_osu_sc_18T_hs__inv_3	**A->Y (RF)**	0.03070	0.52744	6.40627
sky130_osu_sc_18T_hs__inv_4	**A->Y (RF)**	0.03100	0.50508	6.34690
sky130_osu_sc_18T_hs__inv_6	**A->Y (RF)**	0.03809	0.48697	6.36440
sky130_osu_sc_18T_hs__inv_8	**A->Y (RF)**	0.04521	0.47701	6.36702
sky130_osu_sc_18T_hs__inv_l	**A->Y (RF)**	0.04080	0.65162	6.48620

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	0.00366	0.00357	0.00356
sky130_osu_sc_18T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.03185	0.03170	0.03247
sky130_osu_sc_18T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00661	0.00649	0.00664
sky130_osu_sc_18T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01010	0.00997	0.01001
sky130_osu_sc_18T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01303	0.01287	0.01297
sky130_osu_sc_18T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01938	0.01918	0.01968
sky130_osu_sc_18T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02566	0.02556	0.02611
sky130_osu_sc_18T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00284	0.00276	0.00272

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	-0.00061	-0.00065	-0.00066
sky130_osu_sc_18T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01134	-0.01095	-0.01050
sky130_osu_sc_18T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00211	-0.00215	-0.00215
sky130_osu_sc_18T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00271	-0.00278	-0.00275
sky130_osu_sc_18T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00429	-0.00432	-0.00425
sky130_osu_sc_18T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00650	-0.00652	-0.00634
sky130_osu_sc_18T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00885	-0.00872	-0.00843
sky130_osu_sc_18T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00046	-0.00048	-0.00050

SKY130_OSU_SC_18T_HS__MUX2

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.42708	0.42946	0.01005	0.47681

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__mux2_1	0.00000	0.00013	0.00013

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)	-	0.05110	0.81396	8.76300
	A1->Y (RR)	-	0.05872	0.81872	8.76558
	S0->Y (RR)	(!A0 * A1)	0.11184	0.94374	7.95570
	S0->Y (FR)	(A0 * !A1)	0.12975	1.17960	10.07520

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)	-	0.03417	0.59697	6.33005
	A1->Y (FF)	-	0.02975	0.58994	6.30716
	S0->Y (FF)	(!A0 * A1)	0.23461	0.91764	7.46473
	S0->Y (RF)	(A0 * !A1)	0.03860	0.60488	6.01542

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	-	-0.00398	-0.00399	-0.00398
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00279	-0.00280	-0.00279
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00466	0.00440	0.00435
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00240	-0.00268	-0.00288

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	-	0.00398	0.00399	0.00398
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00279	0.00280	0.00279
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00094	0.00067	0.00048
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00973	0.00947	0.00941

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)	-0.00112	-0.00112	-0.00112

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)	0.00112	0.00112	0.00112

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)	-0.00133	-0.00133	-0.00133

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)	0.00133	0.00133	0.00133

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)	-0.00074	-0.00102	-0.00120
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00073	-0.00101	-0.00119

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)	0.00730	0.00702	0.00698
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00708	0.00684	0.00677

SKY130_OSU_SC_18T_HS__NAND2x

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00496	0.00490	0.50915
sky130_osu_sc_18T_hs__nand2_l	0.00381	0.00377	0.30555

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nand2_1	0.00000	0.00005	0.00008
sky130_osu_sc_18T_hs__nand2_l	0.00000	0.00005	0.00007

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)	0.11049	1.37521	13.26860
	B->Y (FR)	0.13134	1.39040	13.22290
sky130_osu_sc_18T_hs__nand2_l	A->Y (FR)	0.14868	1.56454	13.39680
	B->Y (FR)	0.17386	1.60307	13.39430

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)	0.05074	0.71998	7.38827
	B->Y (RF)	0.05689	0.71126	7.14517
sky130_osu_sc_18T_hs__nand2_l	A->Y (RF)	0.06415	0.80063	7.56198
	B->Y (RF)	0.07038	0.79342	7.31741

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	0.00391	0.00380	0.00379
	B	0.00000	0.00000	0.00000
	B	0.00476	0.00466	0.00470
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00299	0.00285	0.00291
	B	0.00000	0.00000	0.00000
	B	0.00358	0.00349	0.00346

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	-0.00034	-0.00038	-0.00040
	B	0.00000	0.00000	0.00000
	B	-0.00032	-0.00037	-0.00038
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00029	-0.00032	-0.00035
	B	0.00000	0.00000	0.00000
	B	-0.00029	-0.00031	-0.00033

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)	-0.00257	-0.00258	-0.00260
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00188	-0.00190	-0.00190

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)	0.00259	0.00263	0.00260
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00189	0.00193	0.00190

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)	-0.00238	-0.00239	-0.00239
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00174	-0.00176	-0.00175

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)	0.00238	0.00240	0.00240
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00174	0.00177	0.00176

SKY130_OSU_SC_18T_HS__NOR2x

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00489	0.00526	0.20676
sky130_osu_sc_18T_hs__nor2_l	0.00370	0.00407	0.12320

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nor2_1	0.00000	0.00005	0.00007
sky130_osu_sc_18T_hs__nor2_l	0.00000	0.00005	0.00007

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)	0.31573	1.97995	14.13070
	B->Y (FR)	0.26611	1.85175	13.38440
sky130_osu_sc_18T_hs__nor2_l	A->Y (FR)	0.42677	2.33745	14.28830
	B->Y (FR)	0.38228	2.21481	13.65460

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)	0.03729	0.51418	4.69120
	B->Y (RF)	0.03454	0.50444	4.67133
sky130_osu_sc_18T_hs__nor2_l	A->Y (RF)	0.04450	0.56131	4.95991
	B->Y (RF)	0.04202	0.55384	4.94180

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	0.00468	0.00460	0.00456
	B	0.00000	0.00000	0.00000
	B	0.00397	0.00382	0.00379
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00345	0.00337	0.00335
	B	0.00000	0.00000	0.00000
	B	0.00303	0.00290	0.00288

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	0.00024	0.00013	0.00002
	B	0.00000	0.00000	0.00000
	B	-0.00056	-0.00056	-0.00065
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00012	0.00005	-0.00003
	B	0.00000	0.00000	0.00000
	B	-0.00039	-0.00039	-0.00046

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)	-0.00220	-0.00227	-0.00225
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00157	-0.00161	-0.00160

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)	0.00225	0.00227	0.00225
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00160	0.00161	0.00160

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)	-0.00150	-0.00152	-0.00151
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00110	-0.00111	-0.00110

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)	0.00154	0.00155	0.00152
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00112	0.00113	0.00111

SKY130_OSU_SC_18T_HS__OAI21

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00498	0.00497	0.00426	0.20469

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai21_l	0.00000	0.00006	0.00008

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)	0.37203	1.95960	13.45590
	A1->Y (FR)	0.43345	2.09706	14.20900
	B0->Y (FR)	0.18666	1.38823	11.19770

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)	0.06871	0.60414	5.23793
	A1->Y (RF)	0.07249	0.60642	5.23812
	B0->Y (RF)	0.05657	0.61644	5.45391

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	0.00521	0.00504	0.00501
	A1	0.00000	0.00000	0.00000
	A1	0.00595	0.00584	0.00579
	B0	0.00408	0.00390	0.00375

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	0.00027	0.00026	0.00019
	A1	0.00000	0.00000	0.00000
	A1	0.00109	0.00098	0.00089
	B0	0.00156	0.00153	0.00145

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)	-0.00152	-0.00152	-0.00152
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00222	-0.00227	-0.00226
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00233	-0.00235	-0.00234

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)	0.00154	0.00155	0.00152
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00226	0.00227	0.00226
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00233	0.00236	0.00235

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)	-0.00216	-0.00222	-0.00221
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00220	-0.00226	-0.00225
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00231	-0.00233	-0.00232

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)	0.00220	0.00223	0.00221
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00224	0.00227	0.00225
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00231	0.00233	0.00232

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)	-0.00191	-0.00193	-0.00197

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)	0.00196	0.00199	0.00197

SKY130_OSU_SC_18T_HS__OAI22

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00474	0.00509	0.00526	0.00508	0.20520

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai22_l	0.00000	0.00009	0.00011

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)	0.47839	2.14475	14.25900
	A1->Y (FR)	0.42632	2.01115	13.50870
	B0->Y (FR)	0.29572	1.86034	13.36990
	B1->Y (FR)	0.35227	2.01012	14.12700

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)	0.09164	0.63900	5.30412
	A1->Y (RF)	0.08003	0.62294	5.27263
	B0->Y (RF)	0.06657	0.62979	5.48816
	B1->Y (RF)	0.07983	0.65619	5.59442

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	0.00739	0.00729	0.00724
	A1	0.00663	0.00646	0.00641
	B0	0.00502	0.00485	0.00477
	B1	0.00583	0.00569	0.00563

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.00147	0.00136	0.00123
	A1	0.00069	0.00069	0.00056
	B0	0.00070	0.00070	0.00057
	B1	0.00150	0.00138	0.00125

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)	-0.00220	-0.00227	-0.00225
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00220	-0.00227	-0.00225
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00221	-0.00227	-0.00226
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00232	-0.00233	-0.00232

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)	0.00223	0.00227	0.00225
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00223	0.00227	0.00225
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00224	0.00227	0.00226
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00232	0.00235	0.00233

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)	-0.00150	-0.00152	-0.00150
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00150	-0.00152	-0.00150
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00220	-0.00224	-0.00224
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00231	-0.00232	-0.00232

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)	0.00153	0.00155	0.00151
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00153	0.00155	0.00151
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00222	0.00224	0.00224
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00231	0.00234	0.00232

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)	-0.00149	-0.00151	-0.00150
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00149	-0.00151	-0.00150
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00245	-0.00250	-0.00250
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00250	-0.00251	-0.00257

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)	0.00152	0.00154	0.00151
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00152	0.00154	0.00151
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00248	0.00250	0.00250
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00257	0.00262	0.00258

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)	-0.00217	-0.00223	-0.00222
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00217	-0.00223	-0.00222
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00250	-0.00256	-0.00255
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00253	-0.00256	-0.00261

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)	0.00220	0.00223	0.00222
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00220	0.00224	0.00222
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00253	0.00256	0.00255
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00260	0.00263	0.00262

SKY130_OSU_SC_18T_HS__OR2x

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00521	0.00507	0.51185
sky130_osu_sc_18T_hs__or2_2	0.00522	0.00507	1.01726
sky130_osu_sc_18T_hs__or2_4	0.00517	0.00507	1.98573
sky130_osu_sc_18T_hs__or2_8	0.00517	0.00507	3.79932
sky130_osu_sc_18T_hs__or2_l	0.00409	0.00389	0.30707

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__or2_1	0.00000	0.00009	0.00011
sky130_osu_sc_18T_hs__or2_2	0.00000	0.00012	0.00015
sky130_osu_sc_18T_hs__or2_4	0.00000	0.00020	0.00024
sky130_osu_sc_18T_hs__or2_8	0.00000	0.00035	0.00041
sky130_osu_sc_18T_hs__or2_l	0.00000	0.00008	0.00010

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)	0.16245	1.23984	8.83211
	B->Y (RR)	0.15640	1.22340	8.71846
sky130_osu_sc_18T_hs__or2_2	A->Y (RR)	0.16328	1.09659	9.09557
	B->Y (RR)	0.15630	1.08232	9.00381
sky130_osu_sc_18T_hs__or2_4	A->Y (RR)	0.21209	1.05215	9.53058
	B->Y (RR)	0.20480	1.04113	9.46278
sky130_osu_sc_18T_hs__or2_8	A->Y (RR)	0.31035	1.08844	10.01500
	B->Y (RR)	0.30273	1.08000	9.96921
sky130_osu_sc_18T_hs__or2_l	A->Y (RR)	0.21275	1.49345	9.50212
	B->Y (RR)	0.20659	1.47938	9.40378

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)	0.56307	1.33188	8.55377
	B->Y (FF)	0.49171	1.19089	7.81078
sky130_osu_sc_18T_hs__or2_2	A->Y (FF)	0.73663	1.51894	8.95694
	B->Y (FF)	0.66579	1.37405	8.28880
sky130_osu_sc_18T_hs__or2_4	A->Y (FF)	1.10716	1.93332	9.62338
	B->Y (FF)	1.03675	1.79020	9.02202
sky130_osu_sc_18T_hs__or2_8	A->Y (FF)	1.83964	2.74161	10.68510
	B->Y (FF)	1.76930	2.59747	10.06580
sky130_osu_sc_18T_hs__or2_l	A->Y (FF)	0.73901	1.53531	8.73856
	B->Y (FF)	0.65671	1.38928	8.11759

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	0.00379	0.00360	0.00339
	B	0.00000	0.00000	0.00000
	B	0.00299	0.00283	0.00261
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00669	0.00663	0.00648
	B	0.00000	0.00000	0.00000
	B	0.00585	0.00591	0.00575
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01297	0.01316	0.01317
	B	0.00000	0.00000	0.00000
	B	0.01211	0.01250	0.01258
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02536	0.02606	0.02635
	B	0.00000	0.00000	0.00000
	B	0.02447	0.02539	0.02575
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00281	0.00267	0.00251
	B	0.00000	0.00000	0.00000
	B	0.00228	0.00218	0.00199

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	0.00812	0.00808	0.00802
	B	0.00000	0.00000	0.00000
	B	0.00719	0.00716	0.00707
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01003	0.01030	0.01025
	B	0.00000	0.00000	0.00000
	B	0.00911	0.00935	0.00930
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01479	0.01558	0.01575
	B	0.00000	0.00000	0.00000
	B	0.01387	0.01463	0.01475
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02424	0.02571	0.02674
	B	0.00000	0.00000	0.00000
	B	0.02332	0.02479	0.02567
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00619	0.00613	0.00607
	B	0.00000	0.00000	0.00000
	B	0.00553	0.00549	0.00541

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)	-0.00222	-0.00228	-0.00227
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00222	-0.00228	-0.00227
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00222	-0.00228	-0.00227
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00222	-0.00228	-0.00227
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00158	-0.00162	-0.00161

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)	0.00225	0.00228	0.00227
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00225	0.00228	0.00227
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00225	0.00228	0.00227
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00225	0.00228	0.00227
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00160	0.00162	0.00161

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)	-0.00152	-0.00153	-0.00152
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00153	-0.00152
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00153	-0.00152
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00153	-0.00152
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00112	-0.00112	-0.00112

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)	0.00155	0.00156	0.00153
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00155	0.00156	0.00153
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00155	0.00156	0.00153
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00155	0.00156	0.00153
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00113	0.00114	0.00112

SKY130_OSU_SC_18T_HS__TBUFIx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00526	0.00664	0.20697
sky130_osu_sc_18T_hs__tbufi_l	0.00408	0.00515	0.12324

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tbufi_1	0.00000	0.00006	0.00008
sky130_osu_sc_18T_hs__tbufi_l	0.00000	0.00006	0.00007

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)	0.25318	1.81476	13.37650
	OE->Y (FR)	0.16330	0.67818	5.66631
	OE->Y (RR)	0.32249	1.75216	9.25834
sky130_osu_sc_18T_hs__tbufi_l	A->Y (FR)	0.36653	2.18458	13.64570
	OE->Y (FR)	0.20408	0.71824	5.92188
	OE->Y (RR)	0.42949	2.14971	10.03580

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)	0.04814	0.58709	5.26239
	OE->Y (FF)	0.16348	0.67907	5.66832
	OE->Y (RF)	0.04840	0.57038	5.15126
sky130_osu_sc_18T_hs__tbufi_l	A->Y (RF)	0.06187	0.64881	5.53595
	OE->Y (FF)	0.20500	0.71959	5.92501
	OE->Y (RF)	0.06226	0.63224	5.40371

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	0.00372	0.00344	0.00351
	OE	0.00000	0.00000	0.00000
	OE	0.00337	0.00310	0.00293
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00285	0.00271	0.00266
	OE	0.00000	0.00000	0.00000
	OE	0.00243	0.00223	0.00217

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	-0.00056	-0.00056	-0.00065
	OE	0.00000	0.00000	0.00000
	OE	0.00277	0.00249	0.00231
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00039	-0.00039	-0.00046
	OE	0.00000	0.00000	0.00000
	OE	0.00194	0.00174	0.00161

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)	-0.00214	-0.00216	-0.00215
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00206	-0.00209	-0.00207
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00163	-0.00165	-0.00163
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00157	-0.00159	-0.00158

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)	0.00214	0.00216	0.00215
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00210	0.00212	0.00210
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00163	0.00165	0.00163
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00160	0.00161	0.00159

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)	0.00151	0.00123	0.00107
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00139	0.00111	0.00095
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00105	0.00086	0.00072
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00096	0.00076	0.00062

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)	0.00421	0.00391	0.00382
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00433	0.00404	0.00393
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00335	0.00310	0.00302
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00344	0.00321	0.00311

SKY130_OSU_SC_18T_HS__TNBUFIx

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.00525	0.00811	0.20968
sky130_osu_sc_18T_hs__tnbufi_l	0.00408	0.00608	0.12317

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tnbufi_1	0.00000	0.00007	0.00008
sky130_osu_sc_18T_hs__tnbufi_l	0.00000	0.00006	0.00007

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)	0.25550	1.82382	13.47310
	OE->Y (RR)	0.03844	0.30732	3.77853
	OE->Y (FR)	0.28546	1.96342	14.20230
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (FR)	0.36916	2.18331	13.64250
	OE->Y (RR)	0.04381	0.34052	3.77880
	OE->Y (FR)	0.38394	2.30216	14.25710

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)	0.04724	0.58685	5.28706
	OE->Y (RF)	0.03798	0.30726	3.77856
	OE->Y (FF)	0.16585	0.85487	6.64184
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (RF)	0.06033	0.64694	5.53447
	OE->Y (RF)	0.04338	0.33908	3.77880
	OE->Y (FF)	0.21664	0.93193	6.85952

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	0.00382	0.00354	0.00362
	OE	0.00000	0.00000	0.00000
	OE	0.00875	0.00855	0.00851
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00295	0.00281	0.00277
	OE	0.00000	0.00000	0.00000
	OE	0.00655	0.00639	0.00635

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	-0.00068	-0.00068	-0.00076
	OE	0.00000	0.00000	0.00000
	OE	0.00828	0.00807	0.00803
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00051	-0.00051	-0.00058
	OE	0.00000	0.00000	0.00000
	OE	0.00617	0.00599	0.00594

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)	-0.00188	-0.00190	-0.00188
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00180	-0.00183	-0.00181
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00138	-0.00139	-0.00138
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00132	-0.00134	-0.00133

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)	0.00188	0.00190	0.00188
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00184	0.00186	0.00184
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00138	0.00139	0.00138
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00134	0.00136	0.00134

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)	-0.00269	-0.00307	-0.00326
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00260	-0.00300	-0.00322
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00190	-0.00215	-0.00230
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00183	-0.00212	-0.00228

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)	0.00690	0.00668	0.00667
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00677	0.00658	0.00654
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00517	0.00500	0.00497
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00509	0.00491	0.00489

SKY130_OSU_SC_18T_HS__XNOR2

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.01036	0.00932	0.20952

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xnor2_l	0.00000	0.00017	0.00019

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	0.42076	1.87115	9.56006
	A->Y (FR)	!B	0.34607	1.94949	13.56380
	B->Y (RR)	A	0.35008	1.79512	9.41921
	B->Y (FR)	!A	0.40303	2.07535	14.28950

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	0.26418	0.96059	7.09442
	A->Y (RF)	!B	0.07206	0.60032	5.25179
	B->Y (FF)	A	0.26211	0.95579	7.08507
	B->Y (RF)	!A	0.07587	0.60586	5.26588

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	0.00300	0.00267	0.00242
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00894	0.00850	0.00841
	B	A	0.00000	0.00000	0.00000
	B	A	0.00160	0.00132	0.00105
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00933	0.00899	0.00890

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	0.01087	0.01056	0.01030
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00267	0.00240	0.00214
	B	A	0.00000	0.00000	0.00000
	B	A	0.01023	0.01006	0.00991
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00317	0.00281	0.00250

SKY130_OSU_SC_18T_HS__XOR2

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.01031	0.00937	0.20551

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xor2_1	0.00000	0.00017	0.00019

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	0.44178	1.85927	9.37013
	A->Y (FR)	B	0.36152	2.01469	14.12580
	B->Y (RR)	!A	0.35815	1.78799	9.29426
	B->Y (FR)	A	0.39928	2.06422	14.17380

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	0.26612	0.95376	7.05297
	A->Y (RF)	B	0.05865	0.60194	5.27996
	B->Y (FF)	!A	0.25497	0.94376	7.02336
	B->Y (RF)	A	0.06779	0.59285	5.17363

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	0.01018	0.00980	0.00970
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00197	0.00144	0.00113
	B	A	0.00000	0.00000	0.00000
	B	A	0.01028	0.00995	0.00988
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00138	0.00109	0.00083

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	0.00214	0.00175	0.00142
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01153	0.01133	0.01122
	B	A	0.00000	0.00000	0.00000
	B	A	0.00213	0.00176	0.00145
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01045	0.01033	0.01022

SKY130_OSU_SC_18T_HS_x

sky130_osu_sc_18T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, 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	0.07254
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	38533.00000	77065.90000
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
	-0.00266	0.00245	0.05790

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
	0.67254	0.62844	0.09199