sky130_osu_sc_18T_ms_tt_1P80_100C.ccs Library

Cell Groups
SKY130_OSU_SC_18T_MS__ADDFx
SKY130_OSU_SC_18T_MS__ADDHx
SKY130_OSU_SC_18T_MS__AND2x
SKY130_OSU_SC_18T_MS__AOI21
SKY130_OSU_SC_18T_MS__AOI22
SKY130_OSU_SC_18T_MS__BUFx
SKY130_OSU_SC_18T_MS__DFFRx
SKY130_OSU_SC_18T_MS__DFFSRx
SKY130_OSU_SC_18T_MS__DFFSx
SKY130_OSU_SC_18T_MS__DFFx
SKY130_OSU_SC_18T_MS__INVx
SKY130_OSU_SC_18T_MS__MUX2
SKY130_OSU_SC_18T_MS__NAND2x
SKY130_OSU_SC_18T_MS__NOR2x
SKY130_OSU_SC_18T_MS__OAI21
SKY130_OSU_SC_18T_MS__OAI22
SKY130_OSU_SC_18T_MS__OR2x
SKY130_OSU_SC_18T_MS__TBUFIx
SKY130_OSU_SC_18T_MS__TNBUFIx
SKY130_OSU_SC_18T_MS__XNOR2
SKY130_OSU_SC_18T_MS__XOR2
SKY130_OSU_SC_18T_MS_x

SKY130_OSU_SC_18T_MS__ADDFx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__addf_1	46.88640
sky130_osu_sc_18T_ms__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_ms__addf_1	0.02189	0.02178	0.01663	3.17911	1.49676	3.08904
sky130_osu_sc_18T_ms__addf_l	0.02187	0.02177	0.01663	2.19517	1.49577	2.20311

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	46.96170	59.76540
sky130_osu_sc_18T_ms__addf_l	0.00000	39.53170	52.33540

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.15078	1.78910	28.44980
	B->CO (RR)	0.12535	1.70040	27.23380
	CI->CO (RR)	0.14343	1.83215	29.10850
	CON->CO (FR)	0.02475	0.66358	10.24640
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.15222	1.66603	23.02310
	B->CO (RR)	0.14927	1.61614	22.22760
	CI->CO (RR)	0.14483	1.70799	23.70890
	CON->CO (FR)	0.02765	0.72370	10.25660

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.17308	2.00935	32.00700
	B->CO (FF)	0.15346	1.93756	30.98450
	CI->CO (FF)	0.15082	2.01443	32.36950
	CON->CO (RF)	0.02647	0.70516	10.98270
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.16983	1.82033	25.15940
	B->CO (FF)	0.15047	1.76217	24.55240
	CI->CO (FF)	0.14757	1.82677	25.55920
	CON->CO (RF)	0.02854	0.73037	10.45930

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CON (FR)	0.12189	0.80809	9.27048
	B->CON (FR)	0.10386	0.78553	9.26198
	CI->CON (FR)	0.09961	0.81692	9.72384
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.11586	0.80183	9.26003
	B->CON (FR)	0.09823	0.77978	9.25206
	CI->CON (FR)	0.09355	0.81058	9.71381

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CON (RF)	0.10870	0.74160	8.55449
	B->CON (RF)	0.10672	0.74396	8.64895
	CI->CON (RF)	0.10136	0.78629	9.27712
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.10431	0.73693	8.54648
	B->CON (RF)	0.10268	0.73996	8.64210
	CI->CON (RF)	0.09695	0.78175	9.26908

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->S (-R)	0.25347	1.75484	24.48280
	B->S (-R)	0.27638	1.75572	23.53680
	CI->S (-R)	0.22949	1.75571	24.84720
	CON->S (RR)	0.08074	0.61456	7.63423
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.24333	1.62231	20.18070
	B->S (-R)	0.26659	1.63585	19.58040
	CI->S (-R)	0.21924	1.62544	20.58260
	CON->S (RR)	0.08063	0.65512	7.57131

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->S (-F)	0.24389	1.68881	22.86880
	B->S (-F)	0.23012	1.60739	21.95200
	CI->S (-F)	0.23592	1.72899	23.54600
	CON->S (FF)	0.09436	0.66766	7.89933
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.23247	1.56617	18.94650
	B->S (-F)	0.22382	1.49763	18.33850
	CI->S (-F)	0.22448	1.60527	19.64020
	CON->S (FF)	0.09205	0.69597	7.66353

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00530	0.00890	0.08161
	B	0.00600	0.00916	0.07448
	CI	0.00821	0.01201	0.08497
sky130_osu_sc_18T_ms__addf_l	A	0.00389	0.00646	0.05277
	B	0.00463	0.00679	0.04883
	CI	0.00680	0.00951	0.05595

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01960	0.02326	0.10737
	B	0.02060	0.02352	0.09794
	CI	0.01650	0.02060	0.10620
sky130_osu_sc_18T_ms__addf_l	A	0.01816	0.02084	0.07743
	B	0.01916	0.02131	0.07164
	CI	0.01506	0.01829	0.07683

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01918	0.02137	0.06399
	B	0.01957	0.02157	0.06153
	CI	0.01611	0.01877	0.06393
sky130_osu_sc_18T_ms__addf_l	A	0.01792	0.02003	0.06104
	B	0.01833	0.02022	0.05868
	CI	0.01485	0.01741	0.06102

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00496	0.00732	0.04454
	B	0.00557	0.00755	0.04162
	CI	0.00786	0.01034	0.04796
sky130_osu_sc_18T_ms__addf_l	A	0.00367	0.00574	0.03949
	B	0.00435	0.00605	0.03699
	CI	0.00657	0.00877	0.04285

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01938	0.02295	0.10416
	B	0.02043	0.02326	0.09559
	CI	0.01628	0.02033	0.10306
sky130_osu_sc_18T_ms__addf_l	A	-0.00168	-0.00376	0.06931
	B	-0.00786	-0.00583	0.06344
	CI	0.00636	0.00755	0.07614

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.04333	0.04562	0.11329
	B	0.03826	0.04183	0.12625
	CI	0.03524	0.03708	0.10378
sky130_osu_sc_18T_ms__addf_l	A	0.04158	0.04368	0.11371
	B	0.03635	0.04002	0.12677
	CI	0.03330	0.03531	0.10388

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__addh_1	27.83880
sky130_osu_sc_18T_ms__addh_l	27.83880

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_18T_ms__addh_1	0.01070	0.01170	3.13064	1.59829	3.19636
sky130_osu_sc_18T_ms__addh_l	0.01070	0.01170	1.88576	1.59628	1.90942

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addh_1	0.00000	52.28590	59.74590
sky130_osu_sc_18T_ms__addh_l	0.00000	40.01780	49.92250

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CO (RR)	0.09807	0.63784	7.56202
	B->CO (RR)	0.10240	0.62596	7.63039
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.09779	0.70057	7.52419
	B->CO (RR)	0.10214	0.69007	7.52569

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CO (FF)	0.07972	0.62318	7.74433
	B->CO (FF)	0.08559	0.63944	7.81691
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.08021	0.67646	7.37309
	B->CO (FF)	0.08586	0.69303	7.45164

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CON (RR)	B	0.13268	0.53584	4.32894
	A->CON (FR)	!B	0.06575	0.76344	9.58299
	B->CON (RR)	A	0.13630	0.52337	4.39214
	B->CON (FR)	!A	0.08395	0.76177	9.30018
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.11906	0.51296	4.33138
	A->CON (FR)	!B	0.05861	0.75497	9.56719
	B->CON (RR)	A	0.12277	0.50198	4.34308
	B->CON (FR)	!A	0.07679	0.75337	9.28604

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CON (FF)	B	0.13274	0.68586	6.39215
	A->CON (RF)	!B	0.06329	0.74580	9.37538
	B->CON (FF)	A	0.12837	0.72567	6.89938
	B->CON (RF)	!A	0.07684	0.73064	8.96619
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.12032	0.65197	6.19037
	A->CON (RF)	!B	0.05799	0.73953	9.36123
	B->CON (FF)	A	0.11607	0.69215	6.69404
	B->CON (RF)	!A	0.07163	0.72496	8.95435

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->S (RR)	!B	0.10286	1.75134	28.55460
	A->S (FR)	B	0.17317	1.67973	25.38670
	B->S (RR)	!A	0.11718	1.69833	27.30940
	B->S (FR)	A	0.16850	1.75644	26.72370
	CON->S (FR)	-	0.02776	0.68689	10.60480
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.10162	1.57690	21.47060
	A->S (FR)	B	0.16515	1.48267	18.15630
	B->S (RR)	!A	0.11622	1.53946	20.66080
	B->S (FR)	A	0.16031	1.54543	19.05800
	CON->S (FR)	-	0.03096	0.76402	10.46720

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->S (FF)	!B	0.10886	1.85161	30.35560
	A->S (RF)	B	0.17035	1.35833	19.52710
	B->S (FF)	!A	0.12706	1.85469	30.15600
	B->S (RF)	A	0.17399	1.34526	19.58900
	CON->S (RF)	-	0.02509	0.68699	10.71330
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.10538	1.64545	22.41670
	A->S (RF)	B	0.15958	1.23874	14.68140
	B->S (FF)	!A	0.12358	1.64560	22.16650
	B->S (RF)	A	0.16329	1.22730	14.68370
	CON->S (RF)	-	0.02854	0.74799	10.30700

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00899	0.01004	0.03778
	B	0.00000	0.00000	0.00000
	B	0.00797	0.00880	0.04459
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00731	0.00835	0.04001
	B	0.00000	0.00000	0.00000
	B	0.00629	0.00710	0.04343

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.01371	0.01585	0.06561
	B	0.00000	0.00000	0.00000
	B	0.01420	0.01740	0.07127
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01202	0.01370	0.05400
	B	0.00000	0.00000	0.00000
	B	0.01251	0.01505	0.05740

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00878	0.00987	0.03836
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01214	0.01369	0.03318
	B	A	0.00000	0.00000	0.00000
	B	A	0.00775	0.00860	0.04433
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01377	0.01454	0.03043
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00713	0.00816	0.03958
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01079	0.01205	0.02805
	B	A	0.00000	0.00000	0.00000
	B	A	0.00610	0.00689	0.04290
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01242	0.01291	0.02527

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.01365	0.01557	0.05891
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00266	0.00393	0.02239
	B	A	0.00000	0.00000	0.00000
	B	A	0.01415	0.01706	0.06305
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00375	0.00481	0.02176
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01198	0.01364	0.05338
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00117	0.00196	0.01368
	B	A	0.00000	0.00000	0.00000
	B	A	0.01249	0.01499	0.05649
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00225	0.00281	0.01400

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.01397	0.01612	0.06655
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00324	0.00491	0.03147
	B	A	0.00000	0.00000	0.00000
	B	A	0.01454	0.01779	0.07244
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00422	0.00558	0.02953
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01214	0.01383	0.05419
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00147	0.00228	0.01440
	B	A	0.00000	0.00000	0.00000
	B	A	0.01269	0.01525	0.05769
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00250	0.00307	0.01411

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00917	0.01027	0.04157
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01249	0.01414	0.03584
	B	A	0.00000	0.00000	0.00000
	B	A	0.00814	0.00903	0.04631
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01415	0.01519	0.03435
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00737	0.00843	0.04022
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01088	0.01213	0.02749
	B	A	0.00000	0.00000	0.00000
	B	A	0.00634	0.00714	0.04351
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01253	0.01311	0.02514

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__and2_1	12.45420
sky130_osu_sc_18T_ms__and2_2	15.38460
sky130_osu_sc_18T_ms__and2_4	21.24540
sky130_osu_sc_18T_ms__and2_6	27.10620
sky130_osu_sc_18T_ms__and2_8	32.96700
sky130_osu_sc_18T_ms__and2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__and2_1	0.00577	0.00589	3.18495
sky130_osu_sc_18T_ms__and2_2	0.00577	0.00589	6.00660
sky130_osu_sc_18T_ms__and2_4	0.00577	0.00590	11.43472
sky130_osu_sc_18T_ms__and2_6	0.00581	0.00590	17.01205
sky130_osu_sc_18T_ms__and2_8	0.00579	0.00592	21.56163
sky130_osu_sc_18T_ms__and2_l	0.00444	0.00456	2.19634

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	24.89460	39.81370
sky130_osu_sc_18T_ms__and2_2	0.00000	39.81540	39.84770
sky130_osu_sc_18T_ms__and2_4	0.00000	69.66610	79.59220
sky130_osu_sc_18T_ms__and2_6	0.00000	99.51660	119.36800
sky130_osu_sc_18T_ms__and2_8	0.00000	129.36600	159.14300
sky130_osu_sc_18T_ms__and2_l	0.00000	15.61830	24.97860

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__and2_1	A->Y (RR)	0.07497	0.57858	7.62182
	B->Y (RR)	0.08027	0.56796	7.34768
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.08702	0.53682	7.49906
	B->Y (RR)	0.09239	0.52144	7.21993
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.11997	0.56378	7.67960
	B->Y (RR)	0.12537	0.54058	7.41244
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.15361	0.60979	7.94264
	B->Y (RR)	0.15893	0.58106	7.67838
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.18706	0.65378	8.00598
	B->Y (RR)	0.19247	0.62174	7.73266
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.08284	0.63726	7.45358
	B->Y (RR)	0.08855	0.62573	7.20475

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__and2_1	A->Y (FF)	0.06286	0.55479	7.29404
	B->Y (FF)	0.06601	0.56827	7.35688
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.07000	0.49860	7.06072
	B->Y (FF)	0.07398	0.51083	7.14779
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.09523	0.51156	7.16527
	B->Y (FF)	0.09929	0.52192	7.26679
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.12371	0.54993	7.38776
	B->Y (FF)	0.12765	0.55874	7.47880
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.15028	0.58329	7.23467
	B->Y (FF)	0.15441	0.59131	7.33604
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.06771	0.61930	7.19493
	B->Y (FF)	0.07172	0.63588	7.28516

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.00716	0.01162	0.12406
	B	0.00000	0.00000	0.00000
	B	0.00723	0.00992	0.09175
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01396	0.01816	0.12939
	B	0.00000	0.00000	0.00000
	B	0.01402	0.01663	0.09675
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.02969	0.03313	0.14157
	B	0.00000	0.00000	0.00000
	B	0.02982	0.03189	0.10708
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.04889	0.04972	0.15274
	B	0.00000	0.00000	0.00000
	B	0.04897	0.04795	0.12312
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.06990	0.06664	0.16575
	B	0.00000	0.00000	0.00000
	B	0.07040	0.06535	0.13689
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00513	0.00841	0.08518
	B	0.00000	0.00000	0.00000
	B	0.00523	0.00712	0.06636

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.01620	0.02323	0.12504
	B	0.00000	0.00000	0.00000
	B	0.01820	0.02482	0.12262
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.02124	0.02836	0.12989
	B	0.00000	0.00000	0.00000
	B	0.02325	0.02986	0.12765
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.03531	0.04132	0.14132
	B	0.00000	0.00000	0.00000
	B	0.03720	0.04229	0.13915
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.05030	0.05510	0.15392
	B	0.00000	0.00000	0.00000
	B	0.05205	0.05571	0.15119
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.06885	0.06884	0.16804
	B	0.00000	0.00000	0.00000
	B	0.07052	0.06827	0.16215
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.01245	0.01705	0.08511
	B	0.00000	0.00000	0.00000
	B	0.01397	0.01828	0.08441

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00595	-0.00599	-0.00600
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00578	-0.00581	-0.00583
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00544	-0.00547	-0.00548
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00512	-0.00515	-0.00516
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00474	-0.00478	-0.00479
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00437	-0.00441	-0.00442

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00633	0.00638	0.00636
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00651	0.00656	0.00654
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00685	0.00690	0.00688
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00723	0.00728	0.00726
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00755	0.00760	0.00758
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00463	0.00467	0.00465

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00566	-0.00568	-0.00566
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00548	-0.00551	-0.00549
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00514	-0.00519	-0.00514
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00479	-0.00482	-0.00480
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00445	-0.00447	-0.00445
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00417	-0.00420	-0.00417

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00612	0.00606	0.00602
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00630	0.00623	0.00620
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00664	0.00658	0.00655
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00699	0.00692	0.00689
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00734	0.00727	0.00724
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00447	0.00443	0.00440

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__aoi21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ms__aoi21_l	0.00553	0.00569	0.00550	1.47286

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	9.92431	19.89180

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi21_l	A0->Y (FR)	0.06731	0.74876	9.14681
	A1->Y (FR)	0.05787	0.71577	8.82235
	B0->Y (FR)	0.04780	0.76021	9.58972

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi21_l	A0->Y (RF)	0.06044	0.65807	7.98737
	A1->Y (RF)	0.05533	0.69135	8.53181
	B0->Y (RF)	0.03329	0.64572	8.24384

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.01458	0.01500	0.03405
	A1	0.00000	0.00000	0.00000
	A1	0.01231	0.01288	0.03137
	B0	0.00855	0.01052	0.03828

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00373	0.00380	0.01615
	A1	0.00000	0.00000	0.00000
	A1	0.00378	0.00423	0.01839
	B0	-0.00120	-0.00019	0.01356

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00412	-0.00520	-0.00532
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00537	-0.00539	-0.00537
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00554	-0.00557	-0.00554

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00567	0.00569	0.00571
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00570	0.00576	0.00573
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00566	0.00560	0.00556

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00408	-0.00514	-0.00526
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00530	-0.00532	-0.00531
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00586	-0.00590	-0.00592

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00561	0.00566	0.00565
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00565	0.00571	0.00567
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00590	0.00596	0.00594

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00233	-0.00236	-0.00233

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00273	0.00274	0.00250

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__aoi22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ms__aoi22_l	0.00553	0.00570	0.00586	0.00564	1.39837

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi22_l	0.00000	11.11150	39.76190

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi22_l	A0->Y (FR)	0.08473	0.76672	8.99565
	A1->Y (FR)	0.07555	0.74397	8.83270
	B0->Y (FR)	0.04998	0.74762	9.29564
	B1->Y (FR)	0.05920	0.77696	9.53994

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi22_l	A0->Y (RF)	0.08077	0.66753	7.74679
	A1->Y (RF)	0.07569	0.70059	8.30042
	B0->Y (RF)	0.03788	0.65936	8.26770
	B1->Y (RF)	0.04324	0.62564	7.71561

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.01809	0.01852	0.03884
	A1	0.01584	0.01627	0.03631
	B0	0.00927	0.01166	0.04225
	B1	0.01153	0.01378	0.04423

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.00733	0.00731	0.02060
	A1	0.00740	0.00777	0.02286
	B0	-0.00028	0.00061	0.01545
	B1	-0.00018	0.00031	0.01328

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00382	-0.00505	-0.00514
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00517	-0.00522	-0.00519
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00554	-0.00557	-0.00554
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00554	-0.00557	-0.00554

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00585	0.00591	0.00587
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00588	0.00594	0.00590
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00566	0.00559	0.00556
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00566	0.00559	0.00556

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00377	-0.00499	-0.00509
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00512	-0.00517	-0.00514
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00585	-0.00590	-0.00591
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00585	-0.00590	-0.00591

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00580	0.00585	0.00581
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00582	0.00587	0.00584
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00590	0.00596	0.00593
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00590	0.00596	0.00593

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00234	-0.00237	-0.00235
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00211	-0.00213	-0.00217
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00599	-0.00603	-0.00605
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00599	-0.00603	-0.00606

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00284	0.00285	0.00253
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00246	0.00246	0.00248
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00604	0.00610	0.00607
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00604	0.00611	0.00607

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00236	-0.00238	-0.00236
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00212	-0.00215	-0.00219
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00561	-0.00564	-0.00562
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00561	-0.00564	-0.00562

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00285	0.00286	0.00254
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00248	0.00250	0.00249
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00574	0.00566	0.00563
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00573	0.00566	0.00563

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__buf_1	9.52380
sky130_osu_sc_18T_ms__buf_2	12.45420
sky130_osu_sc_18T_ms__buf_4	18.31500
sky130_osu_sc_18T_ms__buf_6	24.17580
sky130_osu_sc_18T_ms__buf_8	30.03660
sky130_osu_sc_18T_ms__buf_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ms__buf_1	0.00588	3.12043
sky130_osu_sc_18T_ms__buf_2	0.00589	6.06997
sky130_osu_sc_18T_ms__buf_4	0.00588	11.72199
sky130_osu_sc_18T_ms__buf_6	0.00097	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00590	22.13740
sky130_osu_sc_18T_ms__buf_l	0.00460	2.21493

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	19.93320	19.93350
sky130_osu_sc_18T_ms__buf_2	0.00000	29.89190	39.81700
sky130_osu_sc_18T_ms__buf_4	0.00000	49.81660	79.59460
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	89.66570	159.14900
sky130_osu_sc_18T_ms__buf_l	0.00000	12.50320	12.50330

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__buf_1	**A->Y (RR)**	0.05716	0.53142	7.10842
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.06417	0.48374	7.12397
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.08600	0.49529	7.35251
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.12920	0.55986	7.58618
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.06332	0.59199	7.10626

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__buf_1	**A->Y (FF)**	0.05977	0.54534	7.25168
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.06772	0.49923	7.26816
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.09300	0.51199	7.44289
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.14790	0.58474	7.51161
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.06542	0.61983	7.36463

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.00615	0.01064	0.10158
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01268	0.01704	0.10752
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02720	0.03220	0.12155
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.06103	0.06447	0.15098
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00460	0.00783	0.07549

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.01551	0.02300	0.12796
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.02054	0.02799	0.13219
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.03445	0.04074	0.14371
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.06800	0.06742	0.16710
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.01205	0.01700	0.08827

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
	-0.00080	-0.00081	-0.00078

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
	0.00080	0.00081	0.00078

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__dffr_1	63.73620
sky130_osu_sc_18T_ms__dffr_l	63.73620

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	**RN**	**CK**	**Q**	**QN**
sky130_osu_sc_18T_ms__dffr_1	0.00568	0.00560	0.01608	3.06653	3.03751
sky130_osu_sc_18T_ms__dffr_l	0.00568	0.00560	0.01608	2.20218	2.21480

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__dffr_1	0.00000	63.91570	100.04700
sky130_osu_sc_18T_ms__dffr_l	0.00000	56.48570	92.61690

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	CK->Q (RR)	0.26420	1.39065	18.12580
	QN->Q (FR)	0.02889	0.74842	11.52210
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.26095	1.50533	17.90040
	QN->Q (FR)	0.03042	0.78628	11.20670

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	CK->Q (RF)	0.27552	1.42330	18.69370
	QN->Q (RF)	0.03020	0.80599	12.45000
	RN->Q (FF)	0.20659	1.35975	18.58550
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.27828	1.54535	18.38390
	QN->Q (RF)	0.03111	0.81955	11.69300
	RN->Q (FF)	0.20972	1.48185	18.27670

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	CK->QN (RR)	0.23951	0.74083	7.16370
	RN->QN (FR)	0.17051	0.67780	7.05718
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.23896	0.78979	7.20767
	RN->QN (FR)	0.17031	0.72669	7.09659

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	**CK->QN (RF)**	0.22947	0.77083	7.67464
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.22193	0.80319	7.53957

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_ms__dffr_1	hold	CK (R)	-0.07114	-0.07762	0.04186
	setup	CK (R)	0.20835	0.23863	0.43493
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.07396	-0.07762	0.04432
	setup	CK (R)	0.21111	0.23633	0.44129

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	hold	CK (R)	-0.10412	-0.26295	-2.12440
	setup	CK (R)	0.13139	0.27375	2.21066
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.10333	-0.26276	-2.12369
	setup	CK (R)	0.13125	0.27375	2.21066

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	hold	CK (R)	-0.07114	-0.07762	0.04186
	setup	CK (R)	0.20835	0.23863	0.43493
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.07396	-0.07762	0.04432
	setup	CK (R)	0.21111	0.23633	0.44129

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	hold	CK (R)	-0.10412	-0.26295	-2.12440
	setup	CK (R)	0.13139	0.27375	2.21066
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.10333	-0.26276	-2.12369
	setup	CK (R)	0.13125	0.27375	2.21066

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	recovery	CK (R)	0.16635	0.19998	0.82484
	removal	CK (R)	-0.03539	-0.04132	-0.11546
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.16684	0.20072	0.84524
	removal	CK (R)	-0.03539	-0.04132	-0.11546

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	recovery	CK (R)	0.16635	0.19998	0.82484
	removal	CK (R)	-0.03539	-0.04132	-0.11546
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.16684	0.20072	0.84524
	removal	CK (R)	-0.03539	-0.04132	-0.11546

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	min_pulse_width	RN ()	0.11764	0.53223	13.33370
	min_pulse_width	RN ()	0.11764	0.53223	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.11764	0.53223	13.33370
	min_pulse_width	RN ()	0.11764	0.53223	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_ms__dffr_1	min_pulse_width	CK ()	0.12562	0.53223	13.33370
	min_pulse_width	CK ()	0.14156	0.53223	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.12163	0.53223	13.33370
	min_pulse_width	CK ()	0.13758	0.53223	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_ms__dffr_1	min_pulse_width	CK ()	0.26514	0.53223	13.33370
	min_pulse_width	CK ()	0.10967	0.53223	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.26514	0.53223	13.33370
	min_pulse_width	CK ()	0.10967	0.53223	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01700	0.01719	0.03575
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01506	0.01680	0.06732

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01922	0.01799	0.02551
	RN	-0.00194	-0.14190	-2.48381
	RN	0.04181	0.04174	0.05183
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01730	0.01751	0.05402
	RN	-0.00194	-0.11634	-1.78373
	RN	0.03988	0.04124	0.08027

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01884	0.01765	0.02529
	RN	-0.00194	-0.14110	-2.45639
	RN	0.04159	0.04154	0.05183
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01699	0.01719	0.05338
	RN	-0.00194	-0.11674	-1.79226
	RN	0.03972	0.04106	0.07978

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01658	0.01678	0.03529
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01470	0.01641	0.06664

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00352	-0.00448	-0.00458
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02051	0.02212	0.10179
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00922	0.01098	0.08942
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00358	-0.00454	-0.00464
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02045	0.02206	0.10173
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00916	0.01092	0.08935

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00635	0.00640	0.00637
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03345	0.03605	0.11854
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01585	0.01844	0.09888
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00629	0.00632	0.00630
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03339	0.03599	0.11847
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01579	0.01837	0.09881

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00637	0.01117	0.13723
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01732	0.02187	0.15200
sky130_osu_sc_18T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00631	0.01111	0.13716
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01725	0.02181	0.15194

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01467	0.02199	0.14921
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.03144	0.03823	0.16929
sky130_osu_sc_18T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01460	0.02192	0.14915
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.03138	0.03817	0.16922

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00075	0.00379	0.12905
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00975	0.01353	0.14605
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00130	0.00328	0.12762
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00081	0.00372	0.12898
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00969	0.01347	0.14598
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00136	0.00322	0.12755

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02173	0.02908	0.15616
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04935	0.05499	0.21005
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03777	0.04386	0.17516
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04784	0.06078	0.26601
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02555	0.03262	0.15845
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02166	0.02902	0.15610
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04929	0.05493	0.20999
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03771	0.04379	0.17510
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04777	0.06072	0.26595
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02548	0.03256	0.15838

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__dffsr_1	69.59700
sky130_osu_sc_18T_ms__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_ms__dffsr_1	0.00564	0.00561	0.01204	0.01632	3.20377	3.20321
sky130_osu_sc_18T_ms__dffsr_l	0.00564	0.00561	0.01202	0.01632	2.20646	2.21641

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__dffsr_1	0.00000	72.39780	100.07600
sky130_osu_sc_18T_ms__dffsr_l	0.00000	64.96770	92.64600

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->Q (RR)	0.27318	1.38661	18.15810
	QN->Q (FR)	0.02745	0.72965	11.33470
	RN->Q (RR)	0.21861	1.34239	18.16140
	SN->Q (FR)	0.19430	1.32693	18.15460
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.27698	1.52449	17.92930
	QN->Q (FR)	0.03035	0.78523	11.18470
	RN->Q (RR)	0.22291	1.48124	17.94200
	SN->Q (FR)	0.19837	1.46125	17.92320

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->Q (RF)	0.31862	1.45486	18.72400
	QN->Q (RF)	0.02776	0.76207	11.90090
	RN->Q (FF)	0.20968	1.35320	18.60320
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.32554	1.59901	18.46380
	QN->Q (RF)	0.03105	0.81816	11.69390
	RN->Q (FF)	0.21662	1.49730	18.33800

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->QN (RR)	0.28325	0.78971	7.31437
	RN->QN (FR)	0.17508	0.68946	7.19140
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.28541	0.84238	7.25863
	RN->QN (FR)	0.17701	0.74137	7.13237

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->QN (RF)	0.24008	0.77664	7.70952
	RN->QN (RF)	0.18572	0.73284	7.71726
	SN->QN (FF)	0.16147	0.71746	7.70468
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.23850	0.82230	7.55998
	RN->QN (RF)	0.18466	0.77930	7.56453
	SN->QN (FF)	0.16018	0.75931	7.54741

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_ms__dffsr_1	hold	CK (R)	-0.07567	-0.08636	0.01328
	setup	CK (R)	0.21083	0.23960	0.48738
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.07866	-0.08728	0.01319
	setup	CK (R)	0.20987	0.24085	0.49398

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	hold	CK (R)	-0.11666	-0.28119	-2.17618
	setup	CK (R)	0.15468	0.29113	2.26054
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.11724	-0.28052	-2.17592
	setup	CK (R)	0.15431	0.29113	2.26054

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	hold	CK (R)	-0.07567	-0.08636	0.01328
	setup	CK (R)	0.21083	0.23960	0.48738
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.07866	-0.08728	0.01319
	setup	CK (R)	0.20987	0.24085	0.49398

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	hold	CK (R)	-0.11666	-0.28119	-2.17618
	setup	CK (R)	0.15468	0.29113	2.26054
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.11724	-0.28052	-2.17592
	setup	CK (R)	0.15431	0.29113	2.26054

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	recovery	CK (R)	0.14919	0.18272	0.79917
	removal	CK (R)	-0.01867	-0.02554	-0.06366
	hold	SN (R)	-0.15007	-0.29944	-1.14916
	setup	SN (R)	0.18066	0.35620	3.19971
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.14870	0.18220	0.79826
	removal	CK (R)	-0.01867	-0.02554	-0.06366
	hold	SN (R)	-0.14879	-0.29272	-1.11838
	setup	SN (R)	0.17674	0.34719	3.11431

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	recovery	CK (R)	0.14919	0.18272	0.79917
	removal	CK (R)	-0.01867	-0.02554	-0.06366
	hold	SN (R)	-0.15007	-0.29944	-1.14916
	hold	SN (R)	-0.15040	-0.30268	-1.14955
	setup	SN (R)	0.18066	0.35382	2.99524
	setup	SN (R)	0.17373	0.35620	3.19971
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.14870	0.18220	0.79826
	removal	CK (R)	-0.01867	-0.02554	-0.06366
	hold	SN (R)	-0.15065	-0.29272	-1.11973
	hold	SN (R)	-0.14879	-0.29465	-1.11838
	setup	SN (R)	0.17674	0.34312	2.90549
	setup	SN (R)	0.16760	0.34719	3.11431

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	min_pulse_width	RN ()	0.13758	0.53223	13.33370
	min_pulse_width	RN ()	0.13758	0.53223	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.13758	0.53223	13.33370
	min_pulse_width	RN ()	0.13359	0.53223	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_ms__dffsr_1	recovery	CK (R)	0.04819	0.08485	2.97978
	removal	CK (R)	-0.02207	-0.06735	-0.30123
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.04698	0.08446	2.88117
	removal	CK (R)	-0.02207	-0.06735	-0.30123

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	recovery	CK (R)	0.04819	0.08485	2.97978
	removal	CK (R)	-0.02207	-0.06735	-0.30123
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.04698	0.08446	2.88117
	removal	CK (R)	-0.02207	-0.06735	-0.30123

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	min_pulse_width	SN ()	0.15352	0.53223	13.33370
	min_pulse_width	SN ()	0.15352	0.53223	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.15352	0.53223	13.33370
	min_pulse_width	SN ()	0.14555	0.53223	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_ms__dffsr_1	min_pulse_width	CK ()	0.12960	0.53223	13.33370
	min_pulse_width	CK ()	0.15751	0.53223	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.12562	0.53223	13.33370
	min_pulse_width	CK ()	0.15751	0.53223	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_ms__dffsr_1	min_pulse_width	CK ()	0.26514	0.53223	13.33370
	min_pulse_width	CK ()	0.13758	0.53223	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.26514	0.53223	13.33370
	min_pulse_width	CK ()	0.13359	0.53223	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.02105	0.02265	0.06637
	RN	0.03712	0.03709	0.06174
	SN	-0.00194	-0.14568	-2.59503
	SN	0.03462	0.03378	0.05797
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01927	0.02074	0.07028
	RN	0.03533	0.03523	0.06735
	SN	-0.00194	-0.11647	-1.78722
	SN	0.03285	0.03199	0.06340

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.02256	0.02196	0.03761
	RN	-0.00194	-0.14568	-2.59500
	RN	0.04348	0.04378	0.06335
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02076	0.02110	0.05834
	RN	-0.00194	-0.11647	-1.78720
	RN	0.04168	0.04295	0.08405

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.02213	0.02152	0.03714
	RN	-0.00194	-0.14566	-2.59198
	RN	0.04323	0.04351	0.06272
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02037	0.02071	0.05773
	RN	-0.00194	-0.11679	-1.79355
	RN	0.04147	0.04269	0.08349

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.02065	0.02220	0.06506
	RN	0.03671	0.03672	0.06073
	SN	-0.00194	-0.14566	-2.59435
	SN	0.03436	0.03352	0.05737
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01890	0.02037	0.07070
	RN	0.03496	0.03487	0.06656
	SN	-0.00194	-0.11679	-1.79512
	SN	0.03262	0.03174	0.06297

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00458	-0.00463	-0.00463
	(!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)	0.02574	0.02729	0.10704
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01043	0.01210	0.09014
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01043	0.01213	0.09026
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01061	0.01230	0.09031
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00465	-0.00470	-0.00469
	(!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)	0.02568	0.02723	0.10698
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01036	0.01204	0.09008
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01036	0.01207	0.09019
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01054	0.01223	0.09025

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00639	0.00630	0.00629
	(!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)	0.03810	0.04040	0.12214
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01650	0.01907	0.09925
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01707	0.01946	0.09937
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01652	0.01910	0.09933
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00632	0.00623	0.00623
	(!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)	0.03803	0.04030	0.12206
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01642	0.01899	0.09918
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01699	0.01939	0.09930
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01644	0.01902	0.09926

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__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)	0.00508	0.00980	0.13575
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02033	0.02479	0.15623
sky130_osu_sc_18T_ms__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)	0.00502	0.00974	0.13570
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02027	0.02473	0.15617

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__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)	0.01522	0.02284	0.15066
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03276	0.03962	0.17181
sky130_osu_sc_18T_ms__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)	0.01514	0.02276	0.15059
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03268	0.03955	0.17173

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__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)	-0.01143	-0.01145	-0.01156
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00940	-0.01157	-0.01182
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01010	-0.01115	-0.01130
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00958	0.01144	0.09117
sky130_osu_sc_18T_ms__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)	-0.01149	-0.01151	-0.01162
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00949	-0.01161	-0.01187
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01016	-0.01121	-0.01136
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00953	0.01143	0.09111

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__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)	0.01293	0.01305	0.01300
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01323	0.01338	0.01331
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01286	0.01295	0.01293
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02613	0.02772	0.10735
sky130_osu_sc_18T_ms__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)	0.01287	0.01299	0.01293
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01315	0.01330	0.01323
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01279	0.01288	0.01286
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02606	0.02764	0.10728

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00074	0.00380	0.12912
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01119	0.01503	0.14719
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01066	0.01453	0.14698
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00095	0.00364	0.12807
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00731	0.01536	0.24085
sky130_osu_sc_18T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00080	0.00373	0.12905
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01111	0.01495	0.14711
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01059	0.01446	0.14691
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00101	0.00358	0.12800
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00724	0.01530	0.24079

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_18T_ms__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.05517	0.06082	0.21547
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02175	0.02914	0.15629
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03867	0.04490	0.17604
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03883	0.04505	0.17614
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.05246	0.06477	0.27070
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02557	0.03264	0.15852
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02908	0.04187	0.27037
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.05511	0.06076	0.21541
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02168	0.02908	0.15623
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03860	0.04483	0.17598
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03877	0.04498	0.17607
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.05238	0.06470	0.27062
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02551	0.03257	0.15846
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02900	0.04180	0.27030

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__dffs_1	57.87540
sky130_osu_sc_18T_ms__dffs_l	57.87540

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_18T_ms__dffs_1	0.00566	0.00951	0.01609	3.05138	3.06056
sky130_osu_sc_18T_ms__dffs_l	0.00566	0.00951	0.01609	2.22655	2.22442

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	64.50270	89.85400
sky130_osu_sc_18T_ms__dffs_l	0.00000	57.07290	82.42390

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->Q (RR)	0.20963	1.31827	17.87960
	QN->Q (FR)	0.02871	0.74198	11.38350
	SN->Q (FR)	0.15288	1.31350	17.92850
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.21029	1.45098	17.95460
	QN->Q (FR)	0.03026	0.78619	11.21070
	SN->Q (FR)	0.15402	1.43908	17.98310

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->Q (RF)	0.30752	1.45774	18.57170
	QN->Q (RF)	0.02998	0.80028	12.35230
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.30877	1.58773	18.57290
	QN->Q (RF)	0.03094	0.81819	11.72980

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->QN (RR)	0.27003	0.78137	7.21381
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.26815	0.82722	7.24347

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->QN (RF)	0.17703	0.70721	7.61481
	SN->QN (FF)	0.11985	0.70190	7.65753
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.17363	0.74510	7.46737
	SN->QN (FF)	0.11690	0.73313	7.48716

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_ms__dffs_1	hold	CK (R)	-0.05484	-0.06654	0.06211
	setup	CK (R)	0.15349	0.18682	0.46931
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.05767	-0.06524	0.06312
	setup	CK (R)	0.15356	0.18687	0.46590

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	hold	CK (R)	-0.10495	-0.26162	-2.11672
	setup	CK (R)	0.14450	0.27483	2.22883
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.10550	-0.26162	-2.11118
	setup	CK (R)	0.14447	0.27483	2.22883

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	hold	CK (R)	-0.05484	-0.06654	0.06211
	setup	CK (R)	0.15349	0.18682	0.46931
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.05767	-0.06524	0.06312
	setup	CK (R)	0.15356	0.18687	0.46590

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	hold	CK (R)	-0.10495	-0.26162	-2.11672
	setup	CK (R)	0.14450	0.27483	2.22883
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.10550	-0.26162	-2.11118
	setup	CK (R)	0.14447	0.27483	2.22883

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	recovery	CK (R)	0.04860	0.07859	1.87116
	removal	CK (R)	-0.02075	-0.05866	-0.32543
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.04863	0.07857	1.78506
	removal	CK (R)	-0.02075	-0.05866	-0.32543

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	recovery	CK (R)	0.04860	0.07859	1.87116
	removal	CK (R)	-0.02075	-0.05866	-0.32543
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.04863	0.07857	1.78506
	removal	CK (R)	-0.02075	-0.05866	-0.32543

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	min_pulse_width	SN ()	0.10170	0.53223	13.33370
	min_pulse_width	SN ()	0.10170	0.53223	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.10170	0.53223	13.33370
	min_pulse_width	SN ()	0.09373	0.53223	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_ms__dffs_1	min_pulse_width	CK ()	0.09771	0.53223	13.33370
	min_pulse_width	CK ()	0.15352	0.53223	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.09373	0.53223	13.33370
	min_pulse_width	CK ()	0.14954	0.53223	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_ms__dffs_1	min_pulse_width	CK ()	0.20933	0.53223	13.33370
	min_pulse_width	CK ()	0.12562	0.53223	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.20933	0.53223	13.33370
	min_pulse_width	CK ()	0.12562	0.53223	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01653	0.01684	0.03755
	SN	-0.00194	-0.14148	-2.47159
	SN	0.02819	0.02717	0.03047
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01466	0.01642	0.06674
	SN	-0.00194	-0.11711	-1.80349
	SN	0.02633	0.02683	0.05985

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01929	0.01828	0.03131
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01736	0.01771	0.05616

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01888	0.01784	0.02884
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01700	0.01741	0.05546

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01623	0.01653	0.03582
	SN	-0.00194	-0.14174	-2.47867
	SN	0.02802	0.02703	0.02938
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01438	0.01613	0.06685
	SN	-0.00194	-0.11704	-1.80160
	SN	0.02620	0.02669	0.06038

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00470	-0.00475	-0.00475
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01908	0.02093	0.10312
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00890	0.01066	0.08924
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00477	-0.00482	-0.00481
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01902	0.02086	0.10306
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00884	0.01060	0.08918

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00638	0.00629	0.00629
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.03202	0.03447	0.11683
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01572	0.01843	0.09909
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00632	0.00623	0.00622
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.03195	0.03441	0.11677
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01565	0.01837	0.09902

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00847	-0.00848	-0.00851
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00720	0.00937	0.08438
sky130_osu_sc_18T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00853	-0.00854	-0.00858
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00714	0.00931	0.08432

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00965	0.00966	0.00959
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01799	0.02105	0.09849
sky130_osu_sc_18T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00958	0.00960	0.00953
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01792	0.02099	0.09843

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00094	0.00360	0.12904
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00110	0.00350	0.12802
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00572	0.01408	0.24071
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00101	0.00353	0.12898
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00116	0.00344	0.12796
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00565	0.01402	0.24064

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04852	0.05419	0.21063
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02152	0.02893	0.15618
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04621	0.05886	0.26422
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02550	0.03257	0.15859
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02818	0.04127	0.27065
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04845	0.05413	0.21056
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02146	0.02887	0.15612
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04615	0.05880	0.26416
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02544	0.03251	0.15852
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02811	0.04121	0.27058

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__dff_1	48.35160
sky130_osu_sc_18T_ms__dff_l	48.35160

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_18T_ms__dff_1	0.00582	0.01607	3.23018	3.21403
sky130_osu_sc_18T_ms__dff_l	0.00582	0.01607	2.19386	2.18176

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	65.17410	80.16260
sky130_osu_sc_18T_ms__dff_l	0.00000	57.74390	72.73250

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->Q (RR)	0.18977	1.29349	18.13110
	QN->Q (FR)	0.02726	0.72596	11.33550
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.19633	1.43470	17.78790
	QN->Q (FR)	0.03086	0.79498	11.31640

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->Q (RF)	0.25698	1.38659	18.75960
	QN->Q (RF)	0.02763	0.75965	11.92530
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.26528	1.53537	18.41840
	QN->Q (RF)	0.03101	0.81433	11.62870

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->QN (RR)	0.22312	0.71908	7.24231
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.22633	0.77609	7.17279

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->QN (RF)	0.15894	0.68186	7.59138
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.15990	0.72726	7.31805

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_ms__dff_1	hold	CK (R)	-0.05064	-0.06336	0.05461
	setup	CK (R)	0.13054	0.17107	0.48037
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.05191	-0.06155	0.05526
	setup	CK (R)	0.12977	0.16984	0.48324

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dff_1	hold	CK (R)	-0.09345	-0.26072	-2.07629
	setup	CK (R)	0.11482	0.27375	2.22125
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.09527	-0.26072	-2.08790
	setup	CK (R)	0.11482	0.27375	2.22125

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dff_1	min_pulse_width	CK ()	0.08974	0.53223	13.33370
	min_pulse_width	CK ()	0.13758	0.53223	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.08974	0.53223	13.33370
	min_pulse_width	CK ()	0.13359	0.53223	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_ms__dff_1	**min_pulse_width**	**CK ()**	0.18940	0.53223	13.33370
	min_pulse_width	**CK ()**	0.08974	0.53223	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.18940	0.53223	13.33370
	min_pulse_width	**CK ()**	0.08974	0.53223	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01733	0.01927	0.06608
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01559	0.01744	0.07178

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01942	0.01896	0.03693
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01769	0.01784	0.05324

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01906	0.01861	0.03662
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01739	0.01756	0.05304

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01702	0.01894	0.06500
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01531	0.01717	0.07061

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00369	-0.00463	-0.00474
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01802	0.02017	0.10411
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00376	-0.00469	-0.00481
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01796	0.02011	0.10405

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00617	0.00620	0.00618
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03288	0.03552	0.11982
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00610	0.00614	0.00612
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03282	0.03546	0.11976

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00096	0.00360	0.12904
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00117	0.00346	0.12796
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00102	0.00354	0.12898
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00123	0.00339	0.12789

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02145	0.02888	0.15610
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04755	0.05343	0.21081
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04691	0.05992	0.26837
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02532	0.03243	0.15839
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02138	0.02881	0.15604
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04749	0.05337	0.21075
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04686	0.05986	0.26832
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02526	0.03236	0.15833

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__inv_1	6.59340
sky130_osu_sc_18T_ms__inv_10	32.96700
sky130_osu_sc_18T_ms__inv_2	9.52380
sky130_osu_sc_18T_ms__inv_3	12.45420
sky130_osu_sc_18T_ms__inv_4	15.38460
sky130_osu_sc_18T_ms__inv_6	21.24540
sky130_osu_sc_18T_ms__inv_8	27.10620
sky130_osu_sc_18T_ms__inv_l	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ms__inv_1	0.00565	3.01689
sky130_osu_sc_18T_ms__inv_10	0.05344	25.53287
sky130_osu_sc_18T_ms__inv_2	0.01088	5.70785
sky130_osu_sc_18T_ms__inv_3	0.01623	8.24221
sky130_osu_sc_18T_ms__inv_4	0.02149	10.98114
sky130_osu_sc_18T_ms__inv_6	0.03223	16.10016
sky130_osu_sc_18T_ms__inv_8	0.04284	21.03940
sky130_osu_sc_18T_ms__inv_l	0.00434	2.04159

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	9.96648	19.89490
sky130_osu_sc_18T_ms__inv_10	0.00000	99.61990	198.88000
sky130_osu_sc_18T_ms__inv_2	0.00000	19.92480	39.77780
sky130_osu_sc_18T_ms__inv_3	0.00000	29.89070	59.67130
sky130_osu_sc_18T_ms__inv_4	0.00000	39.84900	79.55420
sky130_osu_sc_18T_ms__inv_6	0.00000	59.77300	119.33000
sky130_osu_sc_18T_ms__inv_8	0.00000	79.69690	159.10600
sky130_osu_sc_18T_ms__inv_l	0.00000	6.25151	12.48470

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__inv_1	**A->Y (FR)**	0.02564	0.65675	9.99530
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.03995	0.42460	9.71642
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.02165	0.55937	9.74686
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.02418	0.52175	9.80836
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.02517	0.48811	9.73017
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.02894	0.45398	9.73567
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.03410	0.43414	9.69708
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.02856	0.70890	9.88948

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__inv_1	**A->Y (RF)**	0.02503	0.67120	10.26870
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.04252	0.42439	9.65469
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.02135	0.56833	9.96263
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.02362	0.52883	10.00470
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.02398	0.49660	9.94352
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.03026	0.46108	9.89298
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.03608	0.43899	9.81949
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.02791	0.71076	9.96177

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__inv_1	A	0.00000	0.00000	0.00000
	A	0.00794	0.01063	0.03440
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.07128	0.11215	0.34725
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01433	0.02041	0.06850
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.02193	0.03185	0.10334
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.02834	0.04470	0.12081
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.04232	0.06574	0.20518
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.05649	0.08815	0.24268
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00612	0.00729	0.02413

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00143	-0.00025	0.01091
sky130_osu_sc_18T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01863	-0.00375	0.11013
sky130_osu_sc_18T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00486	-0.00168	0.02080
sky130_osu_sc_18T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00627	-0.00093	0.03229
sky130_osu_sc_18T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00948	-0.00285	0.04153
sky130_osu_sc_18T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01447	-0.00345	0.06382
sky130_osu_sc_18T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01802	-0.00258	0.08606
sky130_osu_sc_18T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00107	0.00005	0.00887

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__mux2_1	18.31500

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_18T_ms__mux2_1	0.07637	0.07617	0.01147	0.06746

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	19.93930	19.93930

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__mux2_1	A0->Y (RR)	-	0.01519	0.09438	0.35348
	A1->Y (RR)	-	0.01606	0.09483	0.35350
	S0->Y (RR)	(!A0 * A1)	0.04895	0.19490	0.61818
	S0->Y (FR)	(A0 * !A1)	0.03807	0.18782	0.88001

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__mux2_1	A0->Y (FF)	-	0.01284	0.09851	0.37328
	A1->Y (FF)	-	0.01277	0.09832	0.37312
	S0->Y (FF)	(!A0 * A1)	0.05706	0.19545	0.55377
	S0->Y (RF)	(A0 * !A1)	0.03026	0.19369	0.98050

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00822	-0.00822	-0.00824
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00530	-0.00531	-0.00531
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00890	0.01711	0.14493
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00578	-0.00002	0.12598

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00822	0.00822	0.00824
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00621	0.00621	0.00622
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00173	0.00814	0.13539
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.02151	0.02903	0.15578

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00186	-0.00185	-0.00185

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00220	0.00220	0.00220

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00238	-0.00238	-0.00238

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00238	0.00238	0.00238

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00202	0.00403	0.13059
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00199	0.00418	0.13106

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01619	0.02367	0.15082
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01425	0.02229	0.15004

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__nand2_1	9.52380
sky130_osu_sc_18T_ms__nand2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__nand2_1	0.00567	0.00564	2.03848
sky130_osu_sc_18T_ms__nand2_l	0.00435	0.00434	1.41748

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	9.96370	39.77570
sky130_osu_sc_18T_ms__nand2_l	0.00000	6.25001	24.96020

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nand2_1	A->Y (FR)	0.02617	0.58343	8.01570
	B->Y (FR)	0.03077	0.58270	7.93699
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.02900	0.63276	8.05619
	B->Y (FR)	0.03452	0.63480	8.02597

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nand2_1	A->Y (RF)	0.03598	0.75173	10.43630
	B->Y (RF)	0.04097	0.71877	9.92583
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.04065	0.81748	10.32160
	B->Y (RF)	0.04555	0.78457	9.80064

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00846	0.01102	0.03812
	B	0.00000	0.00000	0.00000
	B	0.01077	0.01314	0.04139
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00647	0.00783	0.02637
	B	0.00000	0.00000	0.00000
	B	0.00817	0.00913	0.02857

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00034	0.00058	0.01292
	B	0.00000	0.00000	0.00000
	B	-0.00028	0.00022	0.01120
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00038	0.00022	0.00995
	B	0.00000	0.00000	0.00000
	B	-0.00034	0.00004	0.00886

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00603	-0.00606	-0.00608
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00440	-0.00441	-0.00442

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00606	0.00612	0.00610
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00441	0.00445	0.00444

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00566	-0.00569	-0.00566
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00411	-0.00414	-0.00412

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00578	0.00572	0.00568
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00420	0.00416	0.00413

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__nor2_1	9.52380
sky130_osu_sc_18T_ms__nor2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__nor2_1	0.00567	0.00597	1.62906
sky130_osu_sc_18T_ms__nor2_l	0.00428	0.00461	1.11824

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	7.60882	19.88990
sky130_osu_sc_18T_ms__nor2_l	0.00000	5.09132	12.48190

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nor2_1	A->Y (FR)	0.05128	0.73217	9.38416
	B->Y (FR)	0.03760	0.73683	9.67149
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.05627	0.80081	9.27079
	B->Y (FR)	0.04420	0.81777	9.69884

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nor2_1	A->Y (RF)	0.03528	0.56404	7.20903
	B->Y (RF)	0.02692	0.55048	7.18652
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.03770	0.59480	7.04649
	B->Y (RF)	0.02986	0.58563	7.02711

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.01194	0.01277	0.03295
	B	0.00000	0.00000	0.00000
	B	0.00864	0.01083	0.04159
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00869	0.00922	0.02428
	B	0.00000	0.00000	0.00000
	B	0.00657	0.00811	0.02878

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00155	0.00234	0.01796
	B	0.00000	0.00000	0.00000
	B	-0.00109	0.00014	0.01518
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00105	0.00183	0.01415
	B	0.00000	0.00000	0.00000
	B	-0.00074	0.00011	0.01214

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00423	-0.00522	-0.00529
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00307	-0.00371	-0.00376

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00567	0.00566	0.00568
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00400	0.00405	0.00401

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00235	-0.00238	-0.00235
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00175	-0.00177	-0.00176

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00255	0.00257	0.00244
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00190	0.00191	0.00182

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__oai21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ms__oai21_l	0.00572	0.00581	0.00480	1.58003

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	8.50055	32.37190

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai21_l	A0->Y (FR)	0.05035	0.74640	9.54455
	A1->Y (FR)	0.06746	0.74418	9.26591
	B0->Y (FR)	0.03483	0.65552	8.48296

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai21_l	A0->Y (RF)	0.05158	0.69734	8.83031
	A1->Y (RF)	0.06437	0.69284	8.57046
	B0->Y (RF)	0.03946	0.73609	9.54046

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.01199	0.01360	0.03955
	A1	0.00000	0.00000	0.00000
	A1	0.01525	0.01568	0.03386
	B0	0.00707	0.00904	0.03202

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00097	0.00128	0.01258
	A1	0.00000	0.00000	0.00000
	A1	0.00353	0.00358	0.01522
	B0	0.00125	0.00207	0.01403

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00225	-0.00227	-0.00225
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00548	-0.00554	-0.00550
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00555	-0.00557	-0.00556

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00266	0.00268	0.00256
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00548	0.00554	0.00550
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00561	0.00560	0.00558

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00405	-0.00502	-0.00510
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00543	-0.00547	-0.00546
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00550	-0.00554	-0.00551

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00570	0.00575	0.00571
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00543	0.00547	0.00546
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00556	0.00557	0.00553

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00444	-0.00448	-0.00454

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00454	0.00459	0.00456

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__oai22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ms__oai22_1	0.00559	0.00583	0.00597	0.00585	1.59014

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	11.40620	39.76570

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai22_l	A0->Y (FR)	0.07300	0.74732	9.26514
	A1->Y (FR)	0.05940	0.75489	9.55654
	B0->Y (FR)	0.04139	0.73677	9.55217
	B1->Y (FR)	0.05533	0.73053	9.26218

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai22_l	A0->Y (RF)	0.09418	0.76001	9.08117
	A1->Y (RF)	0.07339	0.72802	8.93176
	B0->Y (RF)	0.06203	0.76530	9.61709
	B1->Y (RF)	0.08397	0.80824	9.90779

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.02009	0.02061	0.03724
	A1	0.01682	0.01860	0.04374
	B0	0.00922	0.01131	0.03861
	B1	0.01267	0.01318	0.03105

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.00241	0.00245	0.01428
	A1	-0.00013	0.00019	0.01176
	B0	-0.00011	0.00075	0.01429
	B1	0.00241	0.00288	0.01626

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00422	-0.00522	-0.00528
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00414	-0.00514	-0.00520
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00544	-0.00550	-0.00547
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00551	-0.00555	-0.00552

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00567	0.00571	0.00569
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00575	0.00580	0.00577
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00544	0.00550	0.00547
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00556	0.00557	0.00554

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00233	-0.00236	-0.00233
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00225	-0.00227	-0.00225
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00543	-0.00548	-0.00545
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00550	-0.00552	-0.00551

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00254	0.00256	0.00243
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00262	0.00264	0.00251
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00543	0.00548	0.00545
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00555	0.00556	0.00553

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00232	-0.00234	-0.00232
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00223	-0.00227	-0.00224
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00595	-0.00597	-0.00598
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00589	-0.00591	-0.00603

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00253	0.00254	0.00242
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00261	0.00263	0.00250
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00599	0.00602	0.00598
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00602	0.00608	0.00606

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00419	-0.00515	-0.00522
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00412	-0.00507	-0.00514
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00605	-0.00610	-0.00607
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00598	-0.00601	-0.00610

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00560	0.00566	0.00562
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00569	0.00577	0.00570
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00606	0.00612	0.00607
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00610	0.00615	0.00613

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__or2_1	12.45420
sky130_osu_sc_18T_ms__or2_2	15.38460
sky130_osu_sc_18T_ms__or2_4	21.24540
sky130_osu_sc_18T_ms__or2_8	32.96700
sky130_osu_sc_18T_ms__or2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__or2_1	0.00600	0.00580	3.13205
sky130_osu_sc_18T_ms__or2_2	0.00601	0.00580	6.01383
sky130_osu_sc_18T_ms__or2_4	0.00601	0.00581	11.45922
sky130_osu_sc_18T_ms__or2_8	0.00604	0.00583	21.67646
sky130_osu_sc_18T_ms__or2_l	0.00468	0.00444	2.14091

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	12.61130	19.96730
sky130_osu_sc_18T_ms__or2_2	0.00000	17.60760	39.85080
sky130_osu_sc_18T_ms__or2_4	0.00000	27.60590	79.62840
sky130_osu_sc_18T_ms__or2_8	0.00000	47.60240	159.18300
sky130_osu_sc_18T_ms__or2_l	0.00000	8.22638	12.51820

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__or2_1	A->Y (RR)	0.07018	0.56849	7.03709
	B->Y (RR)	0.05934	0.53265	6.96504
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.07773	0.51711	7.01273
	B->Y (RR)	0.06656	0.48442	6.92522
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.10005	0.52308	7.20546
	B->Y (RR)	0.08853	0.49646	7.11785
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.14361	0.58271	7.53348
	B->Y (RR)	0.13160	0.56192	7.45288
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.07661	0.62385	6.89419
	B->Y (RR)	0.06591	0.59023	6.79789

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__or2_1	A->Y (FF)	0.10101	0.61854	7.53917
	B->Y (FF)	0.08304	0.60346	7.68260
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.11800	0.57519	7.46403
	B->Y (FF)	0.10016	0.56702	7.59186
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.16458	0.60443	7.62061
	B->Y (FF)	0.14679	0.60584	7.72361
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.26227	0.70882	7.75442
	B->Y (FF)	0.24457	0.71765	7.85210
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.11005	0.68048	7.39206
	B->Y (FF)	0.09264	0.67300	7.57785

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.00925	0.01200	0.07816
	B	0.00000	0.00000	0.00000
	B	0.00682	0.01099	0.09505
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01589	0.01893	0.08484
	B	0.00000	0.00000	0.00000
	B	0.01333	0.01867	0.09977
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.03064	0.03410	0.10103
	B	0.00000	0.00000	0.00000
	B	0.02789	0.03283	0.11297
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.06488	0.06685	0.13492
	B	0.00000	0.00000	0.00000
	B	0.06190	0.06554	0.14028
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00681	0.00879	0.05856
	B	0.00000	0.00000	0.00000
	B	0.00516	0.00821	0.06843

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.01950	0.02242	0.09407
	B	0.00000	0.00000	0.00000
	B	0.01588	0.02252	0.12835
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.02494	0.02769	0.09851
	B	0.00000	0.00000	0.00000
	B	0.02129	0.02749	0.13128
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.04135	0.04064	0.10914
	B	0.00000	0.00000	0.00000
	B	0.03768	0.04041	0.13951
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.08520	0.06883	0.13147
	B	0.00000	0.00000	0.00000
	B	0.08152	0.06822	0.15905
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01469	0.01667	0.06748
	B	0.00000	0.00000	0.00000
	B	0.01219	0.01655	0.08970

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00424	-0.00524	-0.00531
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00423	-0.00524	-0.00531
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00423	-0.00524	-0.00531
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00423	-0.00524	-0.00531
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00306	-0.00372	-0.00377

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00570	0.00574	0.00570
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00570	0.00574	0.00570
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00570	0.00575	0.00570
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00570	0.00575	0.00571
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00401	0.00406	0.00402

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00236	-0.00238	-0.00236
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00235	-0.00238	-0.00236
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00235	-0.00238	-0.00236
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00235	-0.00238	-0.00236
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00178	-0.00180	-0.00179

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00258	0.00258	0.00245
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00259	0.00258	0.00245
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00259	0.00259	0.00245
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00259	0.00259	0.00245
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00195	0.00195	0.00185

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__tbufi_1	12.45420
sky130_osu_sc_18T_ms__tbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ms__tbufi_1	0.00597	0.00753	1.62069
sky130_osu_sc_18T_ms__tbufi_l	0.00462	0.00586	1.11591

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	9.99170	39.78290
sky130_osu_sc_18T_ms__tbufi_l	0.00000	6.26419	24.96570

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tbufi_1	A->Y (FR)	0.03639	0.73383	9.61473
	OE->Y (FR)	0.04560	0.38832	5.09399
	OE->Y (RR)	0.07449	0.63259	6.95791
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.04286	0.81609	9.68054
	OE->Y (FR)	0.04814	0.38811	5.09377
	OE->Y (RR)	0.08119	0.70851	6.87347

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tbufi_1	A->Y (RF)	0.03560	0.69116	9.01944
	OE->Y (FF)	0.04629	0.38829	5.09398
	OE->Y (RF)	0.03323	0.65016	8.45886
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.04062	0.74534	8.86128
	OE->Y (FF)	0.04889	0.38812	5.09376
	OE->Y (RF)	0.03863	0.70485	8.28616

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00869	0.01080	0.03684
	OE	0.00000	0.00000	0.00000
	OE	0.00901	0.01449	0.12484
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00656	0.00794	0.02544
	OE	0.00000	0.00000	0.00000
	OE	0.00636	0.01030	0.08981

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00056	0.00046	0.01333
	OE	0.00000	0.00000	0.00000
	OE	0.00638	0.01238	0.13888
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00041	0.00030	0.01059
	OE	0.00000	0.00000	0.00000
	OE	0.00438	0.00855	0.09584

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00407	-0.00407	-0.00408
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00342	-0.00346	-0.00343
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00312	-0.00318	-0.00313
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00269	-0.00270	-0.00270

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00407	0.00407	0.00408
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00356	0.00359	0.00351
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00312	0.00318	0.00313
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00279	0.00281	0.00275

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00380	0.01031	0.13857
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00312	0.00977	0.13786
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00257	0.00705	0.09572
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00210	0.00675	0.09526

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00973	0.01735	0.14600
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00942	0.01726	0.14587
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00759	0.01258	0.10147
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00740	0.01252	0.10136

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__tnbufi_1	12.45420
sky130_osu_sc_18T_ms__tnbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ms__tnbufi_1	0.00596	0.00944	1.62085
sky130_osu_sc_18T_ms__tnbufi_l	0.00462	0.00706	1.11609

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	16.61090	19.92770
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	10.41980	12.50110

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tnbufi_1	A->Y (FR)	0.03652	0.73389	9.61430
	OE->Y (RR)	0.03193	0.38975	5.09539
	OE->Y (FR)	0.04848	0.72486	9.27166
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.04311	0.81611	9.68129
	OE->Y (RR)	0.03365	0.39008	5.09573
	OE->Y (FR)	0.05366	0.79678	9.19199

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tnbufi_1	A->Y (RF)	0.03515	0.69102	9.01989
	OE->Y (RF)	0.03173	0.38976	5.09536
	OE->Y (FF)	0.05419	0.52504	5.89025
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.04006	0.74516	8.86204
	OE->Y (RF)	0.03347	0.39009	5.09573
	OE->Y (FF)	0.06138	0.59445	5.83791

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00833	0.01044	0.03645
	OE	0.00000	0.00000	0.00000
	OE	0.02080	0.02949	0.15866
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00641	0.00778	0.02531
	OE	0.00000	0.00000	0.00000
	OE	0.01543	0.02119	0.11067

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00128	-0.00025	0.01263
	OE	0.00000	0.00000	0.00000
	OE	0.01849	0.02728	0.14461
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00096	-0.00024	0.01006
	OE	0.00000	0.00000	0.00000
	OE	0.01370	0.01955	0.09851

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00368	-0.00368	-0.00369
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00274	-0.00276	-0.00275
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00270	-0.00274	-0.00270
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00208	-0.00210	-0.00209

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00368	0.00368	0.00369
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00321	0.00323	0.00317
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00270	0.00274	0.00270
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00239	0.00241	0.00236

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00616	-0.00006	0.12931
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00648	-0.00016	0.12923
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00439	-0.00015	0.08929
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00460	-0.00021	0.08921

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01589	0.02491	0.15473
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01537	0.02447	0.15431
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01183	0.01779	0.10751
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01148	0.01767	0.10722

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__xnor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__xnor2_l	0.01181	0.01087	1.65387

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	34.86450	59.69830

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xnor2_l	A->Y (RR)	B	0.09367	0.66939	7.12796
	A->Y (FR)	!B	0.04707	0.74393	9.67173
	B->Y (RR)	A	0.07473	0.65278	7.23462
	B->Y (FR)	!A	0.06671	0.74429	9.41405

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xnor2_l	A->Y (FF)	B	0.10043	0.62324	6.42904
	A->Y (RF)	!B	0.05120	0.68942	8.86318
	B->Y (FF)	A	0.08386	0.60906	6.43981
	B->Y (RF)	!A	0.06658	0.70697	8.86101

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00954	0.01436	0.12402
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01999	0.02854	0.17798
	B	A	0.00000	0.00000	0.00000
	B	A	0.00319	0.00933	0.13712
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02259	0.03008	0.16938

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02613	0.03250	0.15733
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00667	0.01248	0.14630
	B	A	0.00000	0.00000	0.00000
	B	A	0.02398	0.03194	0.16009
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00803	0.01372	0.14656

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

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_ms__xor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__xor2_l	0.01180	0.01091	1.65880

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	34.86470	59.61400

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xor2_l	A->Y (RR)	!B	0.08805	0.66013	7.25739
	A->Y (FR)	B	0.06031	0.74406	9.53746
	B->Y (RR)	!A	0.07680	0.65608	7.28258
	B->Y (FR)	A	0.06538	0.74808	9.50900

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xor2_l	A->Y (FF)	!B	0.08285	0.59468	6.13125
	A->Y (RF)	B	0.05310	0.71719	9.14834
	B->Y (FF)	!A	0.07833	0.59399	6.27885
	B->Y (RF)	A	0.06225	0.68918	8.64568

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02434	0.03244	0.17745
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00430	0.00887	0.13487
	B	A	0.00000	0.00000	0.00000
	B	A	0.02520	0.03329	0.17572
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00236	0.00834	0.13755

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00603	0.01194	0.15176
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02622	0.03424	0.15068
	B	A	0.00000	0.00000	0.00000
	B	A	0.00606	0.01176	0.14735
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02391	0.03238	0.16164

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__ant	6.59340
sky130_osu_sc_18T_ms__tiehi	6.59340
sky130_osu_sc_18T_ms__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_ms__ant	1.10228
sky130_osu_sc_18T_ms__tiehi	0.00000
sky130_osu_sc_18T_ms__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__ant	0.00000	430373.00000	860746.00000
sky130_osu_sc_18T_ms__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__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_ms__ant	0.00000	0.00000	0.00000
	-0.00125	0.13997	1.81082

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__ant	0.00000	0.00000	0.00000
	7.48770	7.09312	2.13825