sky130_osu_sc_18T_ms_tt_1P20_25C.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_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.01881	0.01893	0.01465	1.07021	0.45144	1.04251
sky130_osu_sc_18T_ms__addf_l	0.01883	0.01893	0.01463	0.74909	0.45242	0.74112

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	0.06921	0.09043
sky130_osu_sc_18T_ms__addf_l	0.00000	0.06539	0.08662

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)	0.34724	2.80528	28.55270
	B->CO (RR)	0.31727	2.69430	27.57830
	CI->CO (RR)	0.33078	2.79351	28.62650
	CON->CO (FR)	0.05993	1.12112	12.43200
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.34947	2.63118	23.78850
	B->CO (RR)	0.32079	2.53633	23.10440
	CI->CO (RR)	0.33327	2.61957	23.88080
	CON->CO (FR)	0.07075	1.22859	12.57340

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)	0.57247	4.08751	40.82390
	B->CO (FF)	0.53126	3.96834	39.76810
	CI->CO (FF)	0.51227	3.96370	40.16820
	CON->CO (RF)	0.04632	0.89261	9.92924
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.56009	3.63874	31.97810
	B->CO (FF)	0.52035	3.54103	31.22390
	CI->CO (FF)	0.49999	3.51568	31.34170
	CON->CO (RF)	0.05068	0.92738	9.67624

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)	0.37648	1.71250	13.02530
	B->CON (FR)	0.33782	1.63745	12.75580
	CI->CON (FR)	0.31623	1.58933	12.42380
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.35968	1.69649	13.02350
	B->CON (FR)	0.32202	1.62223	12.75400
	CI->CON (FR)	0.29939	1.57328	12.42210

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)	0.19138	1.04901	8.69230
	B->CON (RF)	0.16202	0.99846	8.53462
	CI->CON (RF)	0.17509	1.03858	8.82336
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.18438	1.04254	8.69317
	B->CON (RF)	0.15560	0.99248	8.53616
	CI->CON (RF)	0.16807	1.03220	8.82417

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)	0.80155	4.02237	33.60280
	B->S (-R)	0.80848	3.99135	33.26210
	CI->S (-R)	0.73634	3.88654	32.90210
	CON->S (RR)	0.18939	1.19514	9.63273
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.76917	3.67360	27.95050
	B->S (-R)	0.77614	3.65839	27.74310
	CI->S (-R)	0.70385	3.53981	27.27510
	CON->S (RR)	0.19086	1.27678	9.63066

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)	0.61640	2.76567	22.13930
	B->S (-F)	0.61984	2.64320	21.31770
	CI->S (-F)	0.59749	2.74600	22.19500
	CON->S (FF)	0.25363	1.17843	8.50803
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.58635	2.52604	18.53710
	B->S (-F)	0.58853	2.41855	17.95230
	CI->S (-F)	0.56733	2.50604	18.61810
	CON->S (FF)	0.24457	1.19896	8.27556

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	0.00228	0.00217	0.00214
	B	0.00274	0.00273	0.00273
	CI	0.00277	0.00282	0.00287
sky130_osu_sc_18T_ms__addf_l	A	0.00185	0.00172	0.00165
	B	0.00231	0.00227	0.00222
	CI	0.00235	0.00237	0.00238

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00758	0.00758	0.00761
	B	0.00749	0.00759	0.00762
	CI	0.00657	0.00679	0.00682
sky130_osu_sc_18T_ms__addf_l	A	0.00716	0.00714	0.00715
	B	0.00707	0.00713	0.00715
	CI	0.00615	0.00634	0.00636

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00756	0.00755	0.00707
	B	0.00747	0.00756	0.00749
	CI	0.00656	0.00674	0.00673
sky130_osu_sc_18T_ms__addf_l	A	0.00715	0.00711	0.00664
	B	0.00706	0.00713	0.00706
	CI	0.00614	0.00632	0.00630

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00223	0.00212	0.00205
	B	0.00269	0.00265	0.00258
	CI	0.00276	0.00280	0.00277
sky130_osu_sc_18T_ms__addf_l	A	0.00182	0.00168	0.00160
	B	0.00227	0.00221	0.00213
	CI	0.00234	0.00235	0.00231

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00757	0.00757	0.00761
	B	0.00749	0.00759	0.00762
	CI	0.00657	0.00679	0.00682
sky130_osu_sc_18T_ms__addf_l	A	0.00716	0.00714	0.00715
	B	0.00707	0.00713	0.00715
	CI	0.00615	0.00635	0.00636

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01557	0.01572	0.01563
	B	0.01411	0.01397	0.01398
	CI	0.01264	0.01275	0.01265
sky130_osu_sc_18T_ms__addf_l	A	0.01498	0.01503	0.01490
	B	0.01354	0.01326	0.01337
	CI	0.01207	0.01211	0.01200

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00936	0.01016	1.06373	0.46661	1.06781
sky130_osu_sc_18T_ms__addh_l	0.00936	0.01016	0.66045	0.46865	0.67909

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addh_1	0.00000	0.07848	0.09021
sky130_osu_sc_18T_ms__addh_l	0.00000	0.05340	0.07009

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)	0.24138	1.24392	9.69693
	B->CO (RR)	0.24898	1.25401	9.95838
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.23775	1.33401	9.52128
	B->CO (RR)	0.24530	1.34789	9.76420

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)	0.20816	1.09066	8.41288
	B->CO (FF)	0.21819	1.10314	8.47224
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.20451	1.14220	8.19654
	B->CO (FF)	0.21421	1.15584	8.26123

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	0.31421	1.06855	5.99319
	A->CON (FR)	!B	0.22462	1.47813	12.28430
	B->CON (RR)	A	0.32169	1.07818	6.22160
	B->CON (FR)	!A	0.26888	1.58615	12.90500
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.28287	1.02925	5.85107
	A->CON (FR)	!B	0.20193	1.45699	12.29160
	B->CON (RR)	A	0.29048	1.04230	6.09985
	B->CON (FR)	!A	0.24615	1.56466	12.90650

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	0.30869	1.22275	7.66178
	A->CON (RF)	!B	0.11935	0.97284	8.76398
	B->CON (FF)	A	0.31165	1.25180	7.90934
	B->CON (RF)	!A	0.13843	0.97515	8.60108
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.27953	1.17960	7.45458
	A->CON (RF)	!B	0.11001	0.96385	8.76970
	B->CON (FF)	A	0.28223	1.21060	7.71243
	B->CON (RF)	!A	0.12933	0.96686	8.60651

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	0.25330	2.64854	27.97020
	A->S (FR)	B	0.44304	2.87514	26.63600
	B->S (RR)	!A	0.27177	2.59934	27.09870
	B->S (FR)	A	0.44737	2.95982	27.59120
	CON->S (FR)	-	0.06417	1.14183	12.62060
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.24738	2.42229	22.22160
	A->S (FR)	B	0.41808	2.62489	20.80390
	B->S (RR)	!A	0.26637	2.39050	21.67470
	B->S (FR)	A	0.42153	2.69247	21.44530
	CON->S (FR)	-	0.07534	1.26775	12.62250

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	0.38549	3.68073	38.53220
	A->S (RF)	B	0.42326	2.37673	21.04000
	B->S (FF)	!A	0.43004	3.79473	39.21180
	B->S (RF)	A	0.43072	2.38644	21.26940
	CON->S (RF)	-	0.04391	0.87387	9.74525
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.36699	3.19183	28.68370
	A->S (RF)	B	0.39502	2.14709	16.15090
	B->S (FF)	!A	0.41124	3.30286	29.33660
	B->S (RF)	A	0.40255	2.15890	16.39030
	CON->S (RF)	-	0.05102	0.95218	9.77766

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	0.00337	0.00324	0.00305
	B	0.00000	0.00000	0.00000
	B	0.00312	0.00301	0.00278
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00277	0.00260	0.00252
	B	0.00000	0.00000	0.00000
	B	0.00252	0.00237	0.00224

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	0.00532	0.00516	0.00495
	B	0.00000	0.00000	0.00000
	B	0.00548	0.00547	0.00528
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00472	0.00453	0.00446
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00483	0.00479

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	0.00337	0.00323	0.00310
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00456	0.00456	0.00456
	B	A	0.00000	0.00000	0.00000
	B	A	0.00312	0.00300	0.00293
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00500	0.00499	0.00495
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00277	0.00259	0.00249
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00416	0.00415	0.00413
	B	A	0.00000	0.00000	0.00000
	B	A	0.00252	0.00236	0.00226
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00459	0.00456	0.00451

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	0.00532	0.00517	0.00510
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00086	0.00085	0.00080
	B	A	0.00000	0.00000	0.00000
	B	A	0.00548	0.00546	0.00543
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00143	0.00137	0.00131
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00472	0.00453	0.00447
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00036	0.00034	0.00029
	B	A	0.00000	0.00000	0.00000
	B	A	0.00488	0.00483	0.00481
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00092	0.00086	0.00080

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	0.00533	0.00517	0.00509
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00087	0.00088	0.00085
	B	A	0.00000	0.00000	0.00000
	B	A	0.00548	0.00548	0.00544
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00144	0.00139	0.00136
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00472	0.00454	0.00450
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00036	0.00035	0.00032
	B	A	0.00000	0.00000	0.00000
	B	A	0.00488	0.00484	0.00484
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00094	0.00087	0.00084

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	0.00337	0.00324	0.00306
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00456	0.00459	0.00460
	B	A	0.00000	0.00000	0.00000
	B	A	0.00312	0.00301	0.00284
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00500	0.00501	0.00499
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00277	0.00259	0.00248
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00416	0.00416	0.00412
	B	A	0.00000	0.00000	0.00000
	B	A	0.00252	0.00236	0.00225
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00459	0.00457	0.00454

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00500	0.00509	1.06692
sky130_osu_sc_18T_ms__and2_2	0.00500	0.00509	2.09342
sky130_osu_sc_18T_ms__and2_4	0.00500	0.00509	4.09401
sky130_osu_sc_18T_ms__and2_6	0.00504	0.00509	6.01939
sky130_osu_sc_18T_ms__and2_8	0.00501	0.00510	7.70898
sky130_osu_sc_18T_ms__and2_l	0.00394	0.00403	0.75430

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	0.03757	0.06005
sky130_osu_sc_18T_ms__and2_2	0.00000	0.06006	0.06029
sky130_osu_sc_18T_ms__and2_4	0.00000	0.10504	0.11986
sky130_osu_sc_18T_ms__and2_6	0.00000	0.15002	0.17968
sky130_osu_sc_18T_ms__and2_8	0.00000	0.19500	0.23949
sky130_osu_sc_18T_ms__and2_l	0.00000	0.03288	0.05257

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)	0.18174	1.14643	9.22635
	B->Y (RR)	0.19207	1.16379	9.50974
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.21448	1.08302	9.57181
	B->Y (RR)	0.22473	1.09219	9.81200
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.30198	1.12000	10.23520
	B->Y (RR)	0.31217	1.12506	10.42090
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.38795	1.18876	10.65320
	B->Y (RR)	0.39813	1.19556	10.79300
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.47205	1.27146	10.90720
	B->Y (RR)	0.48206	1.28045	11.03030
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.20389	1.26878	9.45313
	B->Y (RR)	0.21481	1.28576	9.73091

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)	0.15585	0.99164	7.75888
	B->Y (FF)	0.16450	1.01097	7.87515
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.18625	0.96774	8.12718
	B->Y (FF)	0.19602	0.98355	8.21404
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.26676	1.02110	8.75413
	B->Y (FF)	0.27689	1.03300	8.82007
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.34937	1.09672	9.14987
	B->Y (FF)	0.35965	1.10809	9.20425
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.42744	1.17292	9.32869
	B->Y (FF)	0.43830	1.18458	9.37728
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.17147	1.06373	7.73959
	B->Y (FF)	0.18259	1.08282	7.87469

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	0.00278	0.00248	0.00255
	B	0.00000	0.00000	0.00000
	B	0.00282	0.00253	0.00248
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.00526	0.00515	0.00521
	B	0.00000	0.00000	0.00000
	B	0.00531	0.00521	0.00512
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.01067	0.01039	0.01099
	B	0.00000	0.00000	0.00000
	B	0.01072	0.01063	0.01125
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.01604	0.01608	0.01737
	B	0.00000	0.00000	0.00000
	B	0.01608	0.01669	0.01743
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.02137	0.02205	0.02308
	B	0.00000	0.00000	0.00000
	B	0.02142	0.02238	0.02304
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00206	0.00182	0.00186
	B	0.00000	0.00000	0.00000
	B	0.00211	0.00187	0.00181

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	0.00643	0.00628	0.00642
	B	0.00000	0.00000	0.00000
	B	0.00720	0.00706	0.00718
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.00812	0.00829	0.00843
	B	0.00000	0.00000	0.00000
	B	0.00889	0.00904	0.00916
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.01225	0.01308	0.01335
	B	0.00000	0.00000	0.00000
	B	0.01303	0.01383	0.01404
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.01642	0.01792	0.01838
	B	0.00000	0.00000	0.00000
	B	0.01719	0.01860	0.01897
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.02042	0.02258	0.02327
	B	0.00000	0.00000	0.00000
	B	0.02121	0.02319	0.02379
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00503	0.00490	0.00497
	B	0.00000	0.00000	0.00000
	B	0.00560	0.00548	0.00553

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)	-0.00226	-0.00227	-0.00229
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00226	-0.00227	-0.00229
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00226	-0.00227	-0.00229
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00227	-0.00228	-0.00230
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00226	-0.00226	-0.00229
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00170	-0.00171	-0.00172

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)	0.00229	0.00234	0.00230
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00229	0.00234	0.00230
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00229	0.00233	0.00230
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00230	0.00235	0.00231
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00229	0.00233	0.00230
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00172	0.00176	0.00173

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)	-0.00214	-0.00215	-0.00214
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00214	-0.00215	-0.00214
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00215	-0.00214
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00215	-0.00214
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00214	-0.00214
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00161	-0.00162	-0.00161

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)	0.00215	0.00215	0.00215
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00215	0.00215
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00215	0.00215
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00215	0.00215
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00215	0.00215
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00162	0.00163	0.00162

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00470	0.00493	0.00478	0.46202

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	0.01451	0.02991

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)	0.20374	1.55552	13.04550
	A1->Y (FR)	0.17801	1.49562	12.78850
	B0->Y (FR)	0.15082	1.43937	12.44730

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)	0.10284	0.93832	8.47023
	A1->Y (RF)	0.09336	0.92714	8.53188
	B0->Y (RF)	0.05824	0.82694	8.08105

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	0.00531	0.00526	0.00524
	A1	0.00000	0.00000	0.00000
	A1	0.00452	0.00445	0.00442
	B0	0.00431	0.00423	0.00423

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	0.00126	0.00112	0.00102
	A1	0.00000	0.00000	0.00000
	A1	0.00127	0.00110	0.00101
	B0	-0.00040	-0.00042	-0.00047

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)	-0.00186	-0.00197	-0.00196
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00201	-0.00201	-0.00201
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00201	-0.00201	-0.00201

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)	0.00196	0.00197	0.00196
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00201	0.00201	0.00202
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00202	0.00201	0.00202

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)	-0.00184	-0.00195	-0.00194
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00198	-0.00199	-0.00198
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00214	-0.00216	-0.00218

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)	0.00193	0.00195	0.00194
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00198	0.00202	0.00199
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00218	0.00222	0.00219

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)	-0.00113	-0.00115	-0.00114

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)	0.00130	0.00131	0.00119

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ms__aoi22_1	0.00470	0.00493	0.00510	0.00486	0.44495

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi22_1	0.00000	0.01613	0.05981

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)	0.25840	1.61135	12.95840
	A1->Y (FR)	0.23321	1.56712	12.81000
	B0->Y (FR)	0.16004	1.42778	12.19320
	B1->Y (FR)	0.18516	1.47288	12.35170

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)	0.12984	0.95912	8.37230
	A1->Y (RF)	0.12039	0.94761	8.43989
	B0->Y (RF)	0.07582	0.89177	8.38323
	B1->Y (RF)	0.08503	0.90346	8.32023

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	0.00652	0.00646	0.00641
	A1	0.00574	0.00566	0.00560
	B0	0.00463	0.00451	0.00451
	B1	0.00538	0.00529	0.00529

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.00248	0.00234	0.00221
	A1	0.00249	0.00233	0.00219
	B0	-0.00018	-0.00021	-0.00026
	B1	-0.00016	-0.00018	-0.00024

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)	-0.00188	-0.00198	-0.00196
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00201	-0.00201	-0.00201
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00201	-0.00201	-0.00201
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00201	-0.00201	-0.00201

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)	0.00195	0.00199	0.00196
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00201	0.00201	0.00202
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00202	0.00201	0.00202
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00202	0.00201	0.00202

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)	-0.00186	-0.00195	-0.00194
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00198	-0.00199	-0.00199
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00214	-0.00216	-0.00218
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00214	-0.00216	-0.00218

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)	0.00192	0.00197	0.00194
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00199	0.00200	0.00199
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00218	0.00222	0.00218
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00218	0.00222	0.00218

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)	-0.00114	-0.00116	-0.00114
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00114	-0.00115	-0.00114
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00220	-0.00223	-0.00224
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00220	-0.00221	-0.00224

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)	0.00138	0.00138	0.00121
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00114	0.00115	0.00114
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00224	0.00225	0.00224
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00224	0.00225	0.00224

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)	-0.00115	-0.00117	-0.00115
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00115	-0.00115	-0.00115
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00204	-0.00205	-0.00205
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00204	-0.00205	-0.00205

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)	0.00139	0.00139	0.00121
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00115	0.00115	0.00115
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00205	0.00205	0.00205
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00205	0.00205	0.00205

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00511	1.05137
sky130_osu_sc_18T_ms__buf_2	0.00511	2.09686
sky130_osu_sc_18T_ms__buf_4	0.00509	4.06921
sky130_osu_sc_18T_ms__buf_6	0.00096	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00511	7.88951
sky130_osu_sc_18T_ms__buf_l	0.00408	0.75192

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	0.03015	0.03015
sky130_osu_sc_18T_ms__buf_2	0.00000	0.04522	0.06005
sky130_osu_sc_18T_ms__buf_4	0.00000	0.07537	0.11986
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	0.13566	0.23949
sky130_osu_sc_18T_ms__buf_l	0.00000	0.02633	0.02633

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)**	0.12548	1.07964	9.01494
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.14012	0.99975	9.43134
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.19150	0.99847	9.95047
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.29191	1.07315	10.66450
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.14288	1.20003	9.29793

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)**	0.14822	0.97941	7.62565
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.17993	0.96177	8.09446
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.26090	1.01281	8.69379
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.42218	1.16915	9.40275
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.16607	1.05319	7.65810

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	0.00260	0.00223	0.00228
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00511	0.00490	0.00499
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01055	0.01070	0.01076
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.02128	0.02212	0.02310
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00200	0.00169	0.00172

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	0.00628	0.00611	0.00624
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00794	0.00806	0.00820
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01209	0.01283	0.01307
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.02029	0.02230	0.02291
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00496	0.00479	0.00486

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
	-0.00034	-0.00034	-0.00034

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
	0.00034	0.00034	0.00034

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00483	0.00484	0.01450	1.04045	1.05309
sky130_osu_sc_18T_ms__dffr_l	0.00483	0.00484	0.01448	0.75099	0.75287

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffr_1	0.00000	0.09926	0.14674
sky130_osu_sc_18T_ms__dffr_l	0.00000	0.09544	0.14293

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)	0.80730	2.55456	18.38720
	QN->Q (FR)	0.06679	1.19825	13.19960
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.79131	2.70066	18.29170
	QN->Q (FR)	0.07521	1.28911	13.16820

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)	0.74042	2.69008	21.02830
	QN->Q (RF)	0.05281	0.97861	10.81030
	RN->Q (FF)	0.51375	2.55092	21.85530
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.75457	2.91200	21.06740
	QN->Q (RF)	0.05527	0.99989	10.39930
	RN->Q (FF)	0.52927	2.77403	21.88350

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)	0.64319	1.63631	9.99207
	RN->QN (FR)	0.41563	1.49676	10.82420
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.64522	1.72723	10.08980
	RN->QN (FR)	0.41854	1.58817	10.90980

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)**	0.68987	1.51047	7.52833
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.66217	1.50879	7.30588

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)	-0.14380	-0.18877	-1.10325
	setup	CK (R)	0.63911	0.62928	1.84254
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.14716	-0.18851	-1.10308
	setup	CK (R)	0.64131	0.63103	1.84244

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)	-0.30793	-0.77350	-7.21104
	setup	CK (R)	0.37466	0.80870	7.30109
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.30760	-0.77373	-7.21006
	setup	CK (R)	0.37427	0.80870	7.30093

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)	-0.14380	-0.18877	-1.10325
	setup	CK (R)	0.63911	0.62928	1.84254
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.14716	-0.18851	-1.10308
	setup	CK (R)	0.64131	0.63103	1.84244

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)	-0.30793	-0.77350	-7.21104
	setup	CK (R)	0.37466	0.80870	7.30109
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.30760	-0.77373	-7.21006
	setup	CK (R)	0.37427	0.80870	7.30093

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)	0.53499	0.53379	1.45979
	removal	CK (R)	-0.07665	-0.08357	-0.13818
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.53628	0.53522	1.46912
	removal	CK (R)	-0.07665	-0.08357	-0.13818

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)	0.53499	0.53379	1.45979
	removal	CK (R)	-0.07665	-0.08357	-0.13818
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.53628	0.53522	1.46912
	removal	CK (R)	-0.07665	-0.08357	-0.13818

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 ()	0.31622	0.72710	13.33370
	min_pulse_width	RN ()	0.31350	0.72710	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.30907	0.72283	13.33370
	min_pulse_width	RN ()	0.30907	0.72283	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 ()	0.36600	0.63110	13.33370
	min_pulse_width	CK ()	0.44811	0.63110	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.34020	0.63110	13.33370
	min_pulse_width	CK ()	0.43638	0.63110	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 ()	0.79317	0.82096	13.33370
	min_pulse_width	CK ()	0.31516	0.69297	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.79626	0.82096	13.33370
	min_pulse_width	CK ()	0.31258	0.69297	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	0.00654	0.00571	-0.00017
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00587	0.00516	0.00185

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	0.00709	0.00665	0.00399
	RN	-0.00090	-0.03360	-0.37456
	RN	0.01594	0.01555	0.01280
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00639	0.00603	0.00457
	RN	-0.00090	-0.02763	-0.27036
	RN	0.01524	0.01492	0.01331

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	0.00709	0.00665	0.00395
	RN	-0.00090	-0.03384	-0.37911
	RN	0.01594	0.01555	0.01274
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00639	0.00603	0.00455
	RN	-0.00090	-0.02767	-0.27103
	RN	0.01524	0.01492	0.01329

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	0.00651	0.00567	-0.00010
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00583	0.00512	0.00192

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	-0.00174	-0.00194	-0.00196
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00738	0.00709	0.00683
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00337	0.00310	0.00293
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00174	-0.00194	-0.00196
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00738	0.00709	0.00683
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00337	0.00310	0.00293

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	0.00194	0.00196	0.00196
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01209	0.01193	0.01173
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00560	0.00547	0.00540
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00194	0.00196	0.00196
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01209	0.01193	0.01173
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00560	0.00547	0.00540

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)	0.00263	0.00226	0.00220
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00683	0.00633	0.00615
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)	0.00263	0.00226	0.00220
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00683	0.00633	0.00615

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)	0.00565	0.00541	0.00551
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01194	0.01152	0.01140
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)	0.00565	0.00541	0.00551
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01194	0.01152	0.01140

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)	-0.00015	-0.00060	-0.00076
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00351	0.00292	0.00248
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00048	-0.00092	-0.00107
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00015	-0.00060	-0.00076
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00351	0.00292	0.00248
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00048	-0.00092	-0.00107

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)	0.00921	0.00892	0.00891
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01903	0.01845	0.01796
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01446	0.01416	0.01395
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01900	0.01839	0.01836
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01000	0.00974	0.00980
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00921	0.00892	0.00891
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01903	0.01845	0.01796
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01446	0.01416	0.01395
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01900	0.01839	0.01836
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00999	0.00974	0.00980

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00479	0.00485	0.01043	0.01479	1.06539	1.07975
sky130_osu_sc_18T_ms__dffsr_l	0.00479	0.00485	0.01042	0.01479	0.74856	0.75372

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffsr_1	0.00000	0.10628	0.14698
sky130_osu_sc_18T_ms__dffsr_l	0.00000	0.10246	0.14316

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)	0.80338	2.52699	18.30040
	QN->Q (FR)	0.06411	1.17670	12.99990
	RN->Q (RR)	0.64080	2.38594	18.32790
	SN->Q (FR)	0.60659	2.42641	20.07250
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.80856	2.72321	18.40070
	QN->Q (FR)	0.07516	1.28379	13.11810
	RN->Q (RR)	0.64712	2.58203	18.42480
	SN->Q (FR)	0.61172	2.62358	20.12740

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)	0.84529	2.78055	21.03670
	QN->Q (RF)	0.04857	0.93653	10.41360
	RN->Q (FF)	0.53522	2.54785	21.85900
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.86727	3.02823	21.12220
	QN->Q (RF)	0.05515	0.99773	10.38180
	RN->Q (FF)	0.55909	2.79955	21.94040

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)	0.74790	1.74705	10.12030
	RN->QN (FR)	0.44053	1.51567	10.94970
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.75448	1.84666	10.21830
	RN->QN (FR)	0.44841	1.61695	11.03790

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)	0.69505	1.50824	7.56655
	RN->QN (RF)	0.53250	1.36987	7.59013
	SN->QN (FF)	0.49863	1.40998	9.33601
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.68398	1.53596	7.47240
	RN->QN (RF)	0.52192	1.39832	7.49747
	SN->QN (FF)	0.48760	1.43869	9.20171

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)	-0.16392	-0.20537	-1.20977
	setup	CK (R)	0.61257	0.59542	1.77808
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.16183	-0.20508	-1.20750
	setup	CK (R)	0.61106	0.59506	1.78018

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)	-0.35628	-0.80915	-7.49281
	setup	CK (R)	0.45124	0.84269	7.55758
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.35409	-0.80810	-7.48978
	setup	CK (R)	0.44948	0.84269	7.55755

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)	-0.16392	-0.20537	-1.20977
	setup	CK (R)	0.61257	0.59542	1.77808
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.16183	-0.20508	-1.20750
	setup	CK (R)	0.61106	0.59506	1.78018

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)	-0.35628	-0.80915	-7.49281
	setup	CK (R)	0.45124	0.84269	7.55758
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.35409	-0.80810	-7.48978
	setup	CK (R)	0.44948	0.84269	7.55755

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)	0.46567	0.46061	1.32072
	removal	CK (R)	-0.04224	-0.05045	-0.11876
	hold	SN (R)	-0.48940	-0.85898	-6.66916
	setup	SN (R)	0.52215	0.92988	8.34585
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.46391	0.45995	1.32197
	removal	CK (R)	-0.04350	-0.05045	-0.11477
	hold	SN (R)	-0.47153	-0.84229	-6.58063
	setup	SN (R)	0.51945	0.91719	8.26660

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)	0.46567	0.46061	1.32072
	removal	CK (R)	-0.04224	-0.05045	-0.11876
	hold	SN (R)	-0.49183	-0.85898	-6.66916
	hold	SN (R)	-0.48940	-0.85971	-6.67919
	setup	SN (R)	0.52215	0.92411	8.28903
	setup	SN (R)	0.51428	0.92988	8.34585
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.46391	0.45995	1.32197
	removal	CK (R)	-0.04350	-0.05045	-0.11477
	hold	SN (R)	-0.48151	-0.84229	-6.58063
	hold	SN (R)	-0.47153	-0.84452	-6.59742
	setup	SN (R)	0.51945	0.90971	8.21064
	setup	SN (R)	0.49439	0.91719	8.26660

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 ()	0.34460	0.74843	13.33370
	min_pulse_width	RN ()	0.35582	0.74843	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.34647	0.74630	13.33370
	min_pulse_width	RN ()	0.34647	0.74630	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)	0.09070	0.12315	1.09399
	removal	CK (R)	-0.02003	-0.07027	-0.73684
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.08867	0.12319	1.04946
	removal	CK (R)	-0.02207	-0.07027	-0.73982

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)	0.09070	0.12315	1.09399
	removal	CK (R)	-0.02003	-0.07027	-0.73684
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.08867	0.12319	1.04946
	removal	CK (R)	-0.02207	-0.07027	-0.73982

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 ()	0.48631	0.92123	13.33370
	min_pulse_width	SN ()	0.48391	0.92336	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.48099	0.90416	13.33370
	min_pulse_width	SN ()	0.46710	0.91056	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 ()	0.36835	0.63110	13.33370
	min_pulse_width	CK ()	0.47392	0.63110	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.35427	0.63110	13.33370
	min_pulse_width	CK ()	0.46688	0.63110	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 ()	0.76549	0.79536	13.33370
	min_pulse_width	CK ()	0.39848	0.73350	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.76642	0.79323	13.33370
	min_pulse_width	CK ()	0.39574	0.73350	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	0.00788	0.00725	0.00343
	RN	0.01428	0.01380	0.00971
	SN	-0.00090	-0.03408	-0.38354
	SN	0.01551	0.01512	0.01118
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00727	0.00660	0.00333
	RN	0.01366	0.01314	0.00976
	SN	-0.00090	-0.02757	-0.26948
	SN	0.01489	0.01446	0.01116

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	0.00818	0.00786	0.00567
	RN	-0.00090	-0.03408	-0.38354
	RN	0.01637	0.01598	0.01371
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00757	0.00726	0.00585
	RN	-0.00090	-0.02757	-0.26948
	RN	0.01574	0.01538	0.01387

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	0.00818	0.00785	0.00560
	RN	-0.00090	-0.03435	-0.38871
	RN	0.01637	0.01598	0.01365
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00756	0.00726	0.00582
	RN	-0.00090	-0.02769	-0.27134
	RN	0.01574	0.01537	0.01383

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	0.00784	0.00721	0.00334
	RN	0.01424	0.01376	0.00974
	SN	-0.00090	-0.03435	-0.38869
	SN	0.01547	0.01508	0.01105
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00723	0.00655	0.00338
	RN	0.01362	0.01310	0.00977
	SN	-0.00090	-0.02769	-0.27132
	SN	0.01485	0.01442	0.01108

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	-0.00190	-0.00195	-0.00195
	(!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)	0.00925	0.00898	0.00877
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00371	0.00345	0.00326
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00369	0.00343	0.00325
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00373	0.00347	0.00329
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00190	-0.00195	-0.00195
	(!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)	0.00925	0.00898	0.00877
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00371	0.00345	0.00326
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00369	0.00343	0.00325
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00373	0.00347	0.00329

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	0.00195	0.00197	0.00195
	(!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)	0.01374	0.01359	0.01327
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00592	0.00581	0.00577
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00596	0.00584	0.00579
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00589	0.00578	0.00574
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00195	0.00197	0.00195
	(!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)	0.01374	0.01359	0.01327
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00591	0.00580	0.00576
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00595	0.00583	0.00578
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00589	0.00577	0.00573

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)	0.00252	0.00215	0.00195
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00820	0.00770	0.00738
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)	0.00252	0.00215	0.00195
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00820	0.00770	0.00738

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)	0.00608	0.00587	0.00600
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01260	0.01216	0.01202
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)	0.00608	0.00586	0.00599
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01260	0.01215	0.01201

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)	-0.00447	-0.00450	-0.00454
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00451	-0.00467	-0.00467
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00440	-0.00449	-0.00447
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00311	0.00281	0.00251
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)	-0.00447	-0.00451	-0.00454
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00450	-0.00466	-0.00466
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00440	-0.00448	-0.00447
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00311	0.00281	0.00252

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)	0.00455	0.00463	0.00456
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00464	0.00467	0.00467
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00446	0.00449	0.00448
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00943	0.00926	0.00920
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)	0.00455	0.00463	0.00456
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00463	0.00466	0.00466
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00446	0.00449	0.00448
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00942	0.00926	0.00920

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)	-0.00016	-0.00059	-0.00076
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00398	0.00342	0.00300
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00392	0.00338	0.00297
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00036	-0.00081	-0.00095
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00316	0.00234	0.00212
sky130_osu_sc_18T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00016	-0.00059	-0.00076
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00397	0.00341	0.00299
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00391	0.00337	0.00296
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00036	-0.00081	-0.00095
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00316	0.00234	0.00212

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)	0.02101	0.02047	0.01993
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00923	0.00894	0.00894
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01465	0.01437	0.01417
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01469	0.01443	0.01416
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02065	0.02002	0.01986
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00990	0.00965	0.00970
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01202	0.01150	0.01166
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02101	0.02047	0.01993
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00923	0.00894	0.00894
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01465	0.01437	0.01417
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01469	0.01443	0.01416
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02064	0.02001	0.01986
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00990	0.00965	0.00970
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01201	0.01150	0.01165

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00482	0.00849	0.01452	1.03143	1.06051
sky130_osu_sc_18T_ms__dffs_l	0.00482	0.00849	0.01452	0.74625	0.75811

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	0.10485	0.16571
sky130_osu_sc_18T_ms__dffs_l	0.00000	0.10103	0.16190

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)	0.53940	2.24909	17.95670
	QN->Q (FR)	0.06659	1.18865	13.04930
	SN->Q (FR)	0.41027	2.23549	19.42010
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.54163	2.41921	17.93260
	QN->Q (FR)	0.07502	1.27341	13.07160
	SN->Q (FR)	0.41047	2.40256	19.34410

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)	0.83777	2.78009	20.91450
	QN->Q (RF)	0.05236	0.97049	10.73300
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.84507	2.99725	21.00350
	QN->Q (RF)	0.05491	0.99546	10.35300

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)	0.73433	1.73840	10.10780
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.73082	1.82159	10.20630

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)**	0.43889	1.22450	7.30073
	SN->QN (FF)	0.30768	1.21116	8.75563
sky130_osu_sc_18T_ms__dffs_l	**CK->QN (RF)**	0.42861	1.24410	7.10170
	SN->QN (FF)	0.29601	1.22814	8.50254

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)	-0.11715	-0.16234	-1.01376
	setup	CK (R)	0.37975	0.37620	1.65644
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.11821	-0.16369	-1.01244
	setup	CK (R)	0.38044	0.37552	1.65700

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)	-0.31990	-0.78291	-7.29533
	setup	CK (R)	0.44355	0.82083	7.38905
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.32049	-0.78454	-7.29373
	setup	CK (R)	0.44270	0.82083	7.38916

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)	-0.11715	-0.16234	-1.01376
	setup	CK (R)	0.37975	0.37620	1.65644
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.11821	-0.16369	-1.01244
	setup	CK (R)	0.38044	0.37552	1.65700

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)	-0.31990	-0.78291	-7.29533
	setup	CK (R)	0.44355	0.82083	7.38905
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.32049	-0.78454	-7.29373
	setup	CK (R)	0.44270	0.82083	7.38916

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)	0.11222	0.14200	1.06736
	removal	CK (R)	-0.02603	-0.07244	-0.68234
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.11260	0.14134	1.03667
	removal	CK (R)	-0.02603	-0.07244	-0.68234

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)	0.11222	0.14200	1.06736
	removal	CK (R)	-0.02603	-0.07244	-0.68234
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.11260	0.14134	1.03667
	removal	CK (R)	-0.02603	-0.07244	-0.68234

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 ()	0.28195	0.80603	13.33370
	min_pulse_width	SN ()	0.28498	0.80603	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.27346	0.78896	13.33370
	min_pulse_width	SN ()	0.27117	0.79110	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 ()	0.22289	0.63110	13.33370
	min_pulse_width	CK ()	0.47626	0.63110	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.21351	0.63110	13.33370
	min_pulse_width	CK ()	0.46453	0.63110	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 ()	0.53375	0.70150	13.33370
	min_pulse_width	CK ()	0.39302	0.70790	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.53375	0.70150	13.33370
	min_pulse_width	CK ()	0.39302	0.70790	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	0.00655	0.00567	0.00013
	SN	-0.00090	-0.03342	-0.37132
	SN	0.01351	0.01275	0.00705
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00586	0.00514	0.00184
	SN	-0.00090	-0.02752	-0.26865
	SN	0.01283	0.01222	0.00897

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	0.00705	0.00667	0.00417
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00637	0.00604	0.00467

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	0.00705	0.00667	0.00408
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00637	0.00604	0.00462

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	0.00651	0.00562	-0.00008
	SN	-0.00090	-0.03398	-0.38176
	SN	0.01348	0.01271	0.00687
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00582	0.00509	0.00188
	SN	-0.00090	-0.02779	-0.27290
	SN	0.01278	0.01217	0.00885

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	-0.00192	-0.00196	-0.00198
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00720	0.00689	0.00655
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00328	0.00301	0.00282
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00192	-0.00196	-0.00198
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00720	0.00689	0.00655
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00328	0.00301	0.00282

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	0.00197	0.00196	0.00198
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01176	0.01159	0.01143
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00568	0.00556	0.00551
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00197	0.00196	0.00198
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01176	0.01159	0.01143
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00568	0.00556	0.00551

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)	-0.00342	-0.00342	-0.00344
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00249	0.00222	0.00212
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)	-0.00342	-0.00342	-0.00344
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00249	0.00222	0.00212

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)	0.00344	0.00347	0.00345
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00678	0.00654	0.00651
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)	0.00344	0.00347	0.00345
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00678	0.00654	0.00651

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)	-0.00016	-0.00060	-0.00077
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00042	-0.00087	-0.00101
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00273	0.00189	0.00169
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00016	-0.00060	-0.00077
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00042	-0.00087	-0.00101
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00273	0.00189	0.00169

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)	0.01884	0.01827	0.01774
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00921	0.00893	0.00892
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01864	0.01797	0.01796
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00994	0.00968	0.00974
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01174	0.01122	0.01139
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01884	0.01827	0.01774
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00921	0.00893	0.00892
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01864	0.01797	0.01796
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00994	0.00968	0.00974
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01174	0.01122	0.01139

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00497	0.01422	1.07376	1.08305
sky130_osu_sc_18T_ms__dff_l	0.00497	0.01420	0.73886	0.74867

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	0.09659	0.12059
sky130_osu_sc_18T_ms__dff_l	0.00000	0.09277	0.11677

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)	0.47649	2.16725	17.97220
	QN->Q (FR)	0.06368	1.17685	13.03210
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.49409	2.36979	17.84220
	QN->Q (FR)	0.07607	1.28931	13.13580

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)	0.70201	2.63173	20.96880
	QN->Q (RF)	0.04832	0.93431	10.42770
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.73024	2.87589	20.82960
	QN->Q (RF)	0.05501	0.99330	10.30980

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)	0.60996	1.59636	9.95996
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.62096	1.70541	10.07180

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)	0.38357	1.15193	7.16616
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.38342	1.19410	7.04740

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)	-0.11615	-0.16224	-1.04767
	setup	CK (R)	0.31926	0.31534	1.64959
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.11403	-0.16276	-1.04637
	setup	CK (R)	0.32041	0.31082	1.64857

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)	-0.30026	-0.77600	-7.29692
	setup	CK (R)	0.36714	0.81771	7.41103
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.30144	-0.77742	-7.29434
	setup	CK (R)	0.36700	0.81763	7.41151

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 ()	0.20647	0.63110	13.33370
	min_pulse_width	CK ()	0.42700	0.63110	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.20178	0.63110	13.33370
	min_pulse_width	CK ()	0.41761	0.63110	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 ()**	0.47274	0.68870	13.33370
	min_pulse_width	**CK ()**	0.30134	0.70363	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.47016	0.68870	13.33370
	min_pulse_width	**CK ()**	0.30134	0.70363	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	0.00686	0.00614	0.00215
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00624	0.00549	0.00224

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	0.00719	0.00684	0.00466
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00658	0.00624	0.00471

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	0.00719	0.00684	0.00465
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00658	0.00624	0.00468

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	0.00682	0.00609	0.00224
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00620	0.00545	0.00225

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	-0.00174	-0.00196	-0.00195
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00685	0.00656	0.00622
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00174	-0.00196	-0.00195
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00685	0.00656	0.00622

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	0.00194	0.00196	0.00195
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01219	0.01200	0.01180
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00194	0.00196	0.00195
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01220	0.01200	0.01180

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)	-0.00017	-0.00060	-0.00077
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00042	-0.00086	-0.00100
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00017	-0.00060	-0.00077
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00042	-0.00086	-0.00100

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)	0.00918	0.00889	0.00888
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01850	0.01795	0.01742
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01896	0.01826	0.01822
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00989	0.00964	0.00969
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00918	0.00889	0.00888
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01851	0.01796	0.01738
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01896	0.01826	0.01823
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00989	0.00964	0.00969

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00489	1.06449
sky130_osu_sc_18T_ms__inv_10	0.04587	9.79110
sky130_osu_sc_18T_ms__inv_2	0.00936	2.09953
sky130_osu_sc_18T_ms__inv_3	0.01395	3.00903
sky130_osu_sc_18T_ms__inv_4	0.01846	4.05911
sky130_osu_sc_18T_ms__inv_6	0.02768	5.99516
sky130_osu_sc_18T_ms__inv_8	0.03678	7.84930
sky130_osu_sc_18T_ms__inv_l	0.00384	0.73677

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	0.01507	0.02991
sky130_osu_sc_18T_ms__inv_10	0.00000	0.15073	0.29906
sky130_osu_sc_18T_ms__inv_2	0.00000	0.03015	0.05981
sky130_osu_sc_18T_ms__inv_3	0.00000	0.04522	0.08972
sky130_osu_sc_18T_ms__inv_4	0.00000	0.06029	0.11962
sky130_osu_sc_18T_ms__inv_6	0.00000	0.09044	0.17944
sky130_osu_sc_18T_ms__inv_8	0.00000	0.12059	0.23925
sky130_osu_sc_18T_ms__inv_l	0.00000	0.01317	0.02624

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)**	0.06110	1.12364	12.44770
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.07951	0.79934	12.41730
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.04820	0.97586	12.40390
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.05194	0.91584	12.33770
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.05233	0.86975	12.32940
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.05827	0.83186	12.36060
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.06795	0.80627	12.31780
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.07214	1.22724	12.48380

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)**	0.04406	0.86781	9.70465
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.06279	0.65588	9.61801
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.03634	0.77602	9.66793
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.03885	0.74174	9.65314
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.03879	0.71507	9.66653
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.04616	0.68533	9.65882
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.05408	0.66685	9.61445
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.04981	0.92067	9.59531

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	0.00322	0.00318	0.00323
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.02793	0.02816	0.01035
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.00579	0.00579	0.00592
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.00886	0.00882	0.00908
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.01142	0.01086	0.00392
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.01696	0.01703	0.01760
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.02247	0.02258	0.02339
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00252	0.00249	0.00132

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	-0.00049	-0.00053	-0.00052
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	-0.01006	-0.00960	-0.00851
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00181	-0.00182	-0.00176
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00233	-0.00234	-0.00222
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00374	-0.00369	-0.00346
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00571	-0.00565	-0.00515
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	-0.00779	-0.00759	-0.00679
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00037	-0.00040	-0.00041

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.47395	0.47616	0.00995	0.93431

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	0.03020	0.03020

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)	-	0.04232	0.81536	8.95170
	A1->Y (RR)	-	0.04573	0.81840	8.97655
	S0->Y (RR)	(!A0 * A1)	0.11099	0.93896	8.13194
	S0->Y (FR)	(A0 * !A1)	0.07931	1.00663	9.59427

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)	-	0.03764	0.74889	8.24484
	A1->Y (FF)	-	0.03393	0.74385	8.22195
	S0->Y (FF)	(!A0 * A1)	0.14919	0.91909	7.27294
	S0->Y (RF)	(A0 * !A1)	0.05015	0.82323	8.32161

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	-	-0.00347	-0.00347	-0.00348
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00248	-0.00248	-0.00248
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00391	0.00368	0.00386
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00211	-0.00251	-0.00253

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	-	0.00347	0.00347	0.00348
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00248	0.00248	0.00248
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00091	0.00053	0.00052
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00856	0.00833	0.00848

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)	-0.00096	-0.00096	-0.00096

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)	0.00096	0.00096	0.00096

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)	-0.00113	-0.00113	-0.00113

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)	0.00113	0.00113	0.00113

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)	-0.00062	-0.00102	-0.00102
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00059	-0.00101	-0.00102

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)	0.00645	0.00622	0.00636
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00603	0.00580	0.00598

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00491	0.00486	1.03212
sky130_osu_sc_18T_ms__nand2_l	0.00385	0.00381	0.72729

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	0.01508	0.05981
sky130_osu_sc_18T_ms__nand2_l	0.00000	0.01318	0.05247

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)	0.06371	1.12139	12.31270
	B->Y (FR)	0.07333	1.12379	12.23500
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.07412	1.22884	12.44300
	B->Y (FR)	0.08547	1.23706	12.41640

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)	0.07201	1.15409	12.62000
	B->Y (RF)	0.08129	1.16839	12.60100
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.08255	1.26050	12.61320
	B->Y (RF)	0.09157	1.27346	12.59900

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	0.00342	0.00338	0.00344
	B	0.00000	0.00000	0.00000
	B	0.00420	0.00414	0.00420
sky130_osu_sc_18T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00265	0.00262	0.00130
	B	0.00000	0.00000	0.00000
	B	0.00323	0.00318	0.00185

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	-0.00024	-0.00030	-0.00030
	B	0.00000	0.00000	0.00000
	B	-0.00022	-0.00026	-0.00028
sky130_osu_sc_18T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00026	-0.00027
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00024	-0.00026

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)	-0.00222	-0.00222	-0.00225
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00165	-0.00166	-0.00168

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)	0.00224	0.00229	0.00226
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00167	0.00171	0.00168

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)	-0.00206	-0.00207	-0.00207
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00154	-0.00155	-0.00154

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)	0.00207	0.00209	0.00207
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00154	0.00156	0.00155

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00490	0.00521	0.47085
sky130_osu_sc_18T_ms__nor2_l	0.00377	0.00411	0.33475

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	0.01100	0.02991
sky130_osu_sc_18T_ms__nor2_l	0.00000	0.01020	0.02624

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)	0.15629	1.47659	12.84900
	B->Y (FR)	0.12518	1.38269	12.23980
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.17833	1.62171	12.84810
	B->Y (FR)	0.15143	1.54224	12.44550

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)	0.05477	0.74023	7.27283
	B->Y (RF)	0.04619	0.72623	7.25132
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.06004	0.77429	7.26478
	B->Y (RF)	0.05202	0.76367	7.24555

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	0.00437	0.00431	0.00430
	B	0.00000	0.00000	0.00000
	B	0.00353	0.00344	0.00347
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00326	0.00322	0.00272
	B	0.00000	0.00000	0.00000
	B	0.00272	0.00265	0.00265

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	0.00057	0.00043	0.00036
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00044	-0.00049
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00036	0.00027	0.00022
	B	0.00000	0.00000	0.00000
	B	-0.00028	-0.00031	-0.00036

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)	-0.00176	-0.00196	-0.00196
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00128	-0.00142	-0.00142

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)	0.00195	0.00197	0.00196
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00142	0.00143	0.00142

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)	-0.00114	-0.00116	-0.00114
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00084	-0.00086	-0.00084

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)	0.00123	0.00124	0.00117
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00090	0.00091	0.00086

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00494	0.00498	0.00427	0.47928

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	0.01543	0.05614

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)	0.16662	1.44134	12.45370
	A1->Y (FR)	0.20413	1.54270	13.07510
	B0->Y (FR)	0.09114	1.08260	10.16780

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)	0.09874	0.97098	8.81918
	A1->Y (RF)	0.11378	0.96922	8.70804
	B0->Y (RF)	0.07966	0.95476	8.94862

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	0.00463	0.00454	0.00453
	A1	0.00000	0.00000	0.00000
	A1	0.00550	0.00543	0.00539
	B0	0.00382	0.00365	0.00373

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	0.00034	0.00029	0.00023
	A1	0.00000	0.00000	0.00000
	A1	0.00132	0.00119	0.00112
	B0	0.00170	0.00163	0.00157

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)	-0.00115	-0.00116	-0.00114
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00192	-0.00198	-0.00196
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00202	-0.00203	-0.00202

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)	0.00123	0.00124	0.00118
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00196	0.00198	0.00196
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00202	0.00206	0.00203

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)	-0.00172	-0.00192	-0.00193
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00191	-0.00196	-0.00195
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00199	-0.00200	-0.00200

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)	0.00191	0.00193	0.00193
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00194	0.00197	0.00195
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00200	0.00201	0.00201

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)	-0.00167	-0.00168	-0.00173

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)	0.00173	0.00173	0.00174

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00476	0.00505	0.00521	0.00508	0.47364

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	0.01649	0.05981

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)	0.22259	1.55379	12.97990
	A1->Y (FR)	0.19027	1.45579	12.36800
	B0->Y (FR)	0.13861	1.40011	12.31690
	B1->Y (FR)	0.17253	1.49898	12.92920

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)	0.15105	1.04201	8.92422
	A1->Y (RF)	0.12586	1.00402	8.83305
	B0->Y (RF)	0.10526	0.98319	8.94010
	B1->Y (RF)	0.13269	1.02882	9.09605

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	0.00705	0.00698	0.00693
	A1	0.00616	0.00605	0.00605
	B0	0.00464	0.00455	0.00457
	B1	0.00557	0.00550	0.00546

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.00196	0.00183	0.00174
	A1	0.00103	0.00097	0.00088
	B0	0.00102	0.00096	0.00087
	B1	0.00197	0.00182	0.00173

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)	-0.00175	-0.00196	-0.00197
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00175	-0.00196	-0.00197
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00191	-0.00198	-0.00196
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00200	-0.00201	-0.00201

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)	0.00195	0.00197	0.00197
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00195	0.00197	0.00197
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00195	0.00198	0.00196
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00200	0.00204	0.00201

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)	-0.00113	-0.00115	-0.00114
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00113	-0.00115	-0.00114
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00190	-0.00196	-0.00194
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00200	-0.00201	-0.00200

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)	0.00122	0.00123	0.00117
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00122	0.00123	0.00117
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00194	0.00196	0.00194
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00200	0.00204	0.00200

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)	-0.00112	-0.00115	-0.00113
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00112	-0.00115	-0.00113
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00213	-0.00218	-0.00217
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00214	-0.00217	-0.00222

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)	0.00122	0.00123	0.00116
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00122	0.00122	0.00116
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00217	0.00218	0.00217
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00223	0.00224	0.00224

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)	-0.00173	-0.00193	-0.00193
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00173	-0.00193	-0.00193
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00217	-0.00224	-0.00222
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00218	-0.00219	-0.00226

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)	0.00192	0.00195	0.00193
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00192	0.00194	0.00193
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00221	0.00224	0.00222
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00226	0.00231	0.00227

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00523	0.00502	1.05788
sky130_osu_sc_18T_ms__or2_2	0.00523	0.00502	2.10965
sky130_osu_sc_18T_ms__or2_4	0.00523	0.00502	4.05926
sky130_osu_sc_18T_ms__or2_8	0.00523	0.00503	7.89602
sky130_osu_sc_18T_ms__or2_l	0.00417	0.00393	0.73455

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	0.01866	0.03039
sky130_osu_sc_18T_ms__or2_2	0.00000	0.02632	0.06029
sky130_osu_sc_18T_ms__or2_4	0.00000	0.04163	0.12011
sky130_osu_sc_18T_ms__or2_8	0.00000	0.07226	0.23973
sky130_osu_sc_18T_ms__or2_l	0.00000	0.01684	0.02643

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)	0.14136	1.12111	9.31797
	B->Y (RR)	0.12868	1.08859	9.10353
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.15659	1.03441	9.66617
	B->Y (RR)	0.14350	1.00861	9.50565
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.20845	1.02353	10.10940
	B->Y (RR)	0.19493	1.00524	9.99227
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.30882	1.09416	10.85180
	B->Y (RR)	0.29470	1.08047	10.73190
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.15941	1.23485	9.43392
	B->Y (RR)	0.14644	1.20398	9.24052

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)	0.31232	1.19207	8.62932
	B->Y (FF)	0.27003	1.10057	7.84597
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.38979	1.22116	9.07525
	B->Y (FF)	0.34777	1.12556	8.36529
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.56734	1.38579	9.68988
	B->Y (FF)	0.52544	1.28691	9.06062
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.91754	1.76914	10.53180
	B->Y (FF)	0.87589	1.66513	9.99261
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.34549	1.26147	8.48023
	B->Y (FF)	0.30318	1.18075	7.79019

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	0.00371	0.00339	0.00333
	B	0.00000	0.00000	0.00000
	B	0.00271	0.00239	0.00242
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.00622	0.00607	0.00599
	B	0.00000	0.00000	0.00000
	B	0.00521	0.00510	0.00515
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.01167	0.01185	0.01179
	B	0.00000	0.00000	0.00000
	B	0.01066	0.01095	0.01097
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.02241	0.02298	0.02417
	B	0.00000	0.00000	0.00000
	B	0.02139	0.02249	0.02350
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00277	0.00250	0.00244
	B	0.00000	0.00000	0.00000
	B	0.00209	0.00184	0.00186

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	0.00737	0.00735	0.00729
	B	0.00000	0.00000	0.00000
	B	0.00634	0.00630	0.00647
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.00899	0.00936	0.00932
	B	0.00000	0.00000	0.00000
	B	0.00796	0.00827	0.00843
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.01305	0.01411	0.01424
	B	0.00000	0.00000	0.00000
	B	0.01202	0.01299	0.01328
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.02111	0.02319	0.02408
	B	0.00000	0.00000	0.00000
	B	0.02010	0.02207	0.02303
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00569	0.00565	0.00558
	B	0.00000	0.00000	0.00000
	B	0.00495	0.00491	0.00500

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)	-0.00177	-0.00196	-0.00197
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00177	-0.00196	-0.00197
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00177	-0.00196	-0.00197
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00177	-0.00196	-0.00197
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00129	-0.00143	-0.00143

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)	0.00195	0.00198	0.00197
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00195	0.00198	0.00197
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00195	0.00198	0.00197
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00195	0.00198	0.00197
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00142	0.00143	0.00143

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)	-0.00115	-0.00116	-0.00115
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00115	-0.00116	-0.00115
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00115	-0.00116	-0.00115
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00115	-0.00116	-0.00115
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00086	-0.00087	-0.00086

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)	0.00125	0.00125	0.00118
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00125	0.00125	0.00118
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00125	0.00125	0.00118
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00125	0.00125	0.00118
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00093	0.00093	0.00088

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00521	0.00661	0.47641
sky130_osu_sc_18T_ms__tbufi_l	0.00412	0.00524	0.33392

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	0.01524	0.05982
sky130_osu_sc_18T_ms__tbufi_l	0.00000	0.01324	0.05247

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)	0.11804	1.38123	12.31480
	OE->Y (FR)	0.08807	0.51511	3.47443
	OE->Y (RR)	0.19509	1.39584	9.46563
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.14409	1.53663	12.43150
	OE->Y (FR)	0.09723	0.53027	3.47464
	OE->Y (RR)	0.21981	1.55251	9.59130

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)	0.06901	0.90418	8.60240
	OE->Y (FF)	0.08947	0.51886	3.47454
	OE->Y (RF)	0.06801	0.90412	8.53456
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.08047	0.96896	8.57207
	OE->Y (FF)	0.09806	0.53308	3.47459
	OE->Y (RF)	0.07954	0.96939	8.50697

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	0.00327	0.00318	0.00320
	OE	0.00000	0.00000	0.00000
	OE	0.00320	0.00282	0.00286
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00253	0.00247	0.00245
	OE	0.00000	0.00000	0.00000
	OE	0.00234	0.00203	0.00205

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	-0.00040	-0.00044	-0.00049
	OE	0.00000	0.00000	0.00000
	OE	0.00241	0.00202	0.00204
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00029	-0.00031	-0.00037
	OE	0.00000	0.00000	0.00000
	OE	0.00170	0.00140	0.00141

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)	-0.00174	-0.00177	-0.00175
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00160	-0.00163	-0.00161
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00134	-0.00136	-0.00135
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00125	-0.00127	-0.00125

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)	0.00174	0.00177	0.00175
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00167	0.00169	0.00165
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00134	0.00136	0.00135
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00130	0.00131	0.00128

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)	0.00135	0.00097	0.00101
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00124	0.00084	0.00086
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00095	0.00065	0.00067
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00086	0.00055	0.00055

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)	0.00377	0.00345	0.00356
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00382	0.00353	0.00363
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00302	0.00276	0.00282
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00307	0.00282	0.00287

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.00520	0.00805	0.47581
sky130_osu_sc_18T_ms__tnbufi_l	0.00411	0.00615	0.33285

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	0.02513	0.03015
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	0.02196	0.02634

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)	0.11955	1.38071	12.30590
	OE->Y (RR)	0.04962	0.36564	3.47469
	OE->Y (FR)	0.14332	1.46841	12.90980
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.14569	1.53469	12.40900
	OE->Y (RR)	0.05262	0.37596	3.47497
	OE->Y (FR)	0.16360	1.60490	12.82660

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)	0.06787	0.90340	8.59766
	OE->Y (RF)	0.04900	0.36318	3.47465
	OE->Y (FF)	0.13205	0.96637	6.44912
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.07899	0.96747	8.56022
	OE->Y (RF)	0.05220	0.37438	3.47490
	OE->Y (FF)	0.15107	1.04317	6.43064

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	0.00335	0.00327	0.00328
	OE	0.00000	0.00000	0.00000
	OE	0.00791	0.00773	0.00795
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00262	0.00256	0.00254
	OE	0.00000	0.00000	0.00000
	OE	0.00601	0.00585	0.00585

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	-0.00051	-0.00054	-0.00059
	OE	0.00000	0.00000	0.00000
	OE	0.00724	0.00709	0.00730
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00039	-0.00042	-0.00047
	OE	0.00000	0.00000	0.00000
	OE	0.00546	0.00531	0.00545

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)	-0.00151	-0.00153	-0.00151
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00137	-0.00140	-0.00138
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00112	-0.00113	-0.00112
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00103	-0.00105	-0.00103

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)	0.00151	0.00153	0.00151
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00144	0.00145	0.00142
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00112	0.00113	0.00112
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00107	0.00108	0.00105

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)	-0.00219	-0.00276	-0.00275
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00219	-0.00273	-0.00273
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00159	-0.00201	-0.00201
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00158	-0.00198	-0.00199

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)	0.00605	0.00590	0.00609
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00594	0.00578	0.00599
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00462	0.00446	0.00460
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00454	0.00439	0.00451

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.01027	0.00928	0.47827

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	0.05177	0.08996

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	0.25079	1.46890	9.69886
	A->Y (FR)	!B	0.15595	1.42527	12.36330
	B->Y (RR)	A	0.20326	1.41338	9.54692
	B->Y (FR)	!A	0.19517	1.52149	12.97500

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	0.21234	1.09717	7.04506
	A->Y (RF)	!B	0.10142	0.94488	8.67207
	B->Y (FF)	A	0.19489	1.07336	7.02365
	B->Y (RF)	!A	0.11577	0.96583	8.69537

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	0.00311	0.00267	0.00262
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00804	0.00772	0.00785
	B	A	0.00000	0.00000	0.00000
	B	A	0.00148	0.00112	0.00109
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00860	0.00834	0.00849

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	0.01004	0.00965	0.00965
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00241	0.00199	0.00192
	B	A	0.00000	0.00000	0.00000
	B	A	0.00899	0.00882	0.00896
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00326	0.00277	0.00267

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.01028	0.00933	0.47397

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	0.05177	0.08556

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	0.24117	1.44316	9.55096
	A->Y (FR)	B	0.18134	1.50025	12.92570
	B->Y (RR)	!A	0.20731	1.41412	9.52801
	B->Y (FR)	A	0.19451	1.51969	12.93850

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	0.20326	1.07261	6.96958
	A->Y (RF)	B	0.09319	0.93697	8.62054
	B->Y (FF)	!A	0.18870	1.05498	6.88591
	B->Y (RF)	A	0.10588	0.94640	8.55807

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	0.00921	0.00891	0.00907
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00194	0.00130	0.00118
	B	A	0.00000	0.00000	0.00000
	B	A	0.00940	0.00916	0.00930
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00132	0.00093	0.00092

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	0.00235	0.00181	0.00168
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01013	0.00992	0.01000
	B	A	0.00000	0.00000	0.00000
	B	A	0.00235	0.00185	0.00176
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00918	0.00905	0.00918

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

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	0.21075
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	66982.20000	133964.00000
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
	-0.00184	0.01220	0.15424

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
	1.16615	1.08643	0.20829