sky130_osu_sc_12T_ms_tt_2P10_25C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_MS__ADDFx
SKY130_OSU_SC_12T_MS__ADDHx
SKY130_OSU_SC_12T_MS__AND2x
SKY130_OSU_SC_12T_MS__AOI21
SKY130_OSU_SC_12T_MS__AOI22
SKY130_OSU_SC_12T_MS__BUFx
SKY130_OSU_SC_12T_MS__DFFNRx
SKY130_OSU_SC_12T_MS__DFFRx
SKY130_OSU_SC_12T_MS__DFFSRx
SKY130_OSU_SC_12T_MS__DFFSx
SKY130_OSU_SC_12T_MS__DFFx
SKY130_OSU_SC_12T_MS__INVx
SKY130_OSU_SC_12T_MS__MUX2
SKY130_OSU_SC_12T_MS__NAND2x
SKY130_OSU_SC_12T_MS__NOR2x
SKY130_OSU_SC_12T_MS__OAI21
SKY130_OSU_SC_12T_MS__OAI22
SKY130_OSU_SC_12T_MS__OR2x
SKY130_OSU_SC_12T_MS__TBUFIx
SKY130_OSU_SC_12T_MS__TNBUFIx
SKY130_OSU_SC_12T_MS__XNOR2
SKY130_OSU_SC_12T_MS__XOR2
SKY130_OSU_SC_12T_MS_x

SKY130_OSU_SC_12T_MS__ADDFx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__addf_1	31.25760
sky130_osu_sc_12T_ms__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_12T_ms__addf_1	0.01134	0.01138	0.00875	1.60178	0.71572	1.39895
sky130_osu_sc_12T_ms__addf_l	0.01134	0.01138	0.00876	1.06823	0.71593	1.39894

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addf_1	0.00000	0.15134	0.19314
sky130_osu_sc_12T_ms__addf_l	0.00000	0.69447	1.27964

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CO (RR)	0.11255	1.38518	22.57430
	B->CO (RR)	0.11005	1.36476	22.22910
	CI->CO (RR)	0.10562	1.42438	23.36140
	CON->CO (FR)	0.01895	0.61148	10.38690
sky130_osu_sc_12T_ms__addf_1	A->CO (RR)	0.11213	1.26786	17.80720
	B->CO (RR)	0.10983	1.26087	17.84330
	CI->CO (RR)	0.10521	1.30847	18.63250
	CON->CO (FR)	0.02237	0.65484	10.02760

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CO (FF)	0.15804	1.78273	28.82230
	B->CO (FF)	0.13983	1.69955	27.57050
	CI->CO (FF)	0.13872	1.79780	29.44050
	CON->CO (RF)	0.01721	0.49423	8.42734
sky130_osu_sc_12T_ms__addf_1	A->CO (FF)	0.15531	1.58608	22.05870
	B->CO (FF)	0.13599	1.50352	21.24320
	CI->CO (FF)	0.13596	1.60240	22.70470
	CON->CO (RF)	0.01942	0.52134	7.99199

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CON (FR)	0.12757	0.79247	9.44272
	B->CON (FR)	0.10816	0.75049	9.37089
	CI->CON (FR)	0.10827	0.81092	10.12620
sky130_osu_sc_12T_ms__addf_l	A->CON (FR)	0.12082	0.78607	9.43836
	B->CON (FR)	0.10224	0.74503	9.36696
	CI->CON (FR)	0.10150	0.80451	10.12170

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CON (RF)	0.07522	0.49142	5.87025
	B->CON (RF)	0.07352	0.51444	6.34115
	CI->CON (RF)	0.06830	0.53365	6.71524
sky130_osu_sc_12T_ms__addf_l	A->CON (RF)	0.07269	0.48888	5.86868
	B->CON (RF)	0.07112	0.51218	6.33969
	CI->CON (RF)	0.06576	0.53120	6.71360

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->S (-R)	0.23194	1.59910	22.19540
	B->S (-R)	0.23948	1.57826	21.38040
	CI->S (-R)	0.21108	1.61225	22.82320
	CON->S (RR)	0.06329	0.53098	6.61582
sky130_osu_sc_12T_ms__addf_l	A->S (-R)	0.22342	1.59240	22.18880
	B->S (-R)	0.23094	1.57209	21.37430
	CI->S (-R)	0.20255	1.60547	22.81910
	CON->S (RR)	0.06331	0.53096	6.61543

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->S (-F)	0.19001	1.21381	15.93490
	B->S (-F)	0.18480	1.17460	15.72300
	CI->S (-F)	0.18272	1.25089	16.73730
	CON->S (FF)	0.07847	0.54379	6.33635
sky130_osu_sc_12T_ms__addf_l	A->S (-F)	0.18527	1.21028	15.93110
	B->S (-F)	0.18034	1.17151	15.71980
	CI->S (-F)	0.17797	1.24739	16.73330
	CON->S (FF)	0.07850	0.54374	6.33642

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00350	0.00533	0.04499
	B	0.00508	0.00648	0.04133
	CI	0.00514	0.00712	0.04654
sky130_osu_sc_12T_ms__addf_l	A	0.00310	0.00456	0.03339
	B	0.00468	0.00577	0.03232
	CI	0.00474	0.00633	0.03553

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.01269	0.01609	0.08875
	B	0.01319	0.01599	0.08029
	CI	0.01077	0.01439	0.08811
sky130_osu_sc_12T_ms__addf_l	A	0.01233	0.01467	0.06146
	B	0.01282	0.01473	0.05641
	CI	0.01040	0.01297	0.06104

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.01267	0.01460	0.05095
	B	0.01317	0.01471	0.04708
	CI	0.01075	0.01293	0.05029
sky130_osu_sc_12T_ms__addf_l	A	0.01231	0.01406	0.04837
	B	0.01282	0.01421	0.04476
	CI	0.01040	0.01239	0.04775

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00348	0.00468	0.02685
	B	0.00505	0.00593	0.02832
	CI	0.00513	0.00645	0.03007
sky130_osu_sc_12T_ms__addf_l	A	0.00309	0.00426	0.02658
	B	0.00465	0.00553	0.02825
	CI	0.00472	0.00603	0.02991

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.01268	0.01579	0.07961
	B	0.00270	0.00186	0.06475
	CI	0.01076	0.01409	0.07895
sky130_osu_sc_12T_ms__addf_l	A	0.01233	0.01515	0.07502
	B	0.00270	0.00186	0.06475
	CI	0.00464	0.00532	0.06625

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.02737	0.02851	0.08642
	B	0.02481	0.02613	0.08686
	CI	0.02062	0.02199	0.07567
sky130_osu_sc_12T_ms__addf_l	A	0.02739	0.02852	0.08643
	B	0.02483	0.02615	0.08688
	CI	0.02062	0.02200	0.07568

SKY130_OSU_SC_12T_MS__ADDHx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__addh_1	18.55920
sky130_osu_sc_12T_ms__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ms__addh_1	0.00555	0.00586	1.54551	1.58486	1.60984
sky130_osu_sc_12T_ms__addh_l	0.00554	0.00587	1.05514	1.58533	1.09232

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addh_1	0.00000	0.18028	0.19275
sky130_osu_sc_12T_ms__addh_l	0.00000	1.26612	1.27881

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CO (RR)	0.07492	0.53379	6.64600
	B->CO (RR)	0.07746	0.52537	6.72099
sky130_osu_sc_12T_ms__addh_l	A->CO (RR)	0.07412	0.57626	6.52212
	B->CO (RR)	0.07672	0.56846	6.53820

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CO (FF)	0.06487	0.52128	6.64331
	B->CO (FF)	0.06920	0.53538	6.74970
sky130_osu_sc_12T_ms__addh_l	A->CO (FF)	0.06475	0.54696	6.36111
	B->CO (FF)	0.06897	0.56221	6.48628

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CON (RR)	0.10635	0.54897	6.62181
	B->CON (RR)	0.10847	0.53911	6.68125
sky130_osu_sc_12T_ms__addh_l	A->CON (RR)	0.09856	0.53663	6.61249
	B->CON (RR)	0.10072	0.52774	6.65323

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CON (FF)	0.09106	0.54210	6.75605
	B->CON (FF)	0.08933	0.55011	6.84037
sky130_osu_sc_12T_ms__addh_l	A->CON (FF)	0.08463	0.52466	6.63362
	B->CON (FF)	0.08290	0.53313	6.71998

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->S (FR)	0.12338	1.14175	16.94640
	B->S (FR)	0.12138	1.15173	17.08320
	CON->S (FR)	0.02044	0.62248	10.59180
sky130_osu_sc_12T_ms__addh_l	A->S (FR)	0.11826	1.06771	13.73090
	B->S (FR)	0.11641	1.07684	13.83720
	CON->S (FR)	0.02311	0.66309	10.21730

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->S (RF)	0.13290	1.08666	15.78990
	B->S (RF)	0.13503	1.07683	15.84810
	CON->S (RF)	0.01686	0.49857	8.49069
sky130_osu_sc_12T_ms__addh_l	A->S (RF)	0.12742	0.99581	12.32630
	B->S (RF)	0.12958	0.98705	12.35310
	CON->S (RF)	0.01897	0.52753	8.14475

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00631	0.00713	0.03255
	B	0.00000	0.00000	0.00000
	B	0.00572	0.00641	0.03903
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00556	0.00626	0.03279
	B	0.00000	0.00000	0.00000
	B	0.00497	0.00556	0.03724

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00883	0.00984	0.04222
	B	0.00000	0.00000	0.00000
	B	0.00931	0.01085	0.04550
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00808	0.00909	0.04135
	B	0.00000	0.00000	0.00000
	B	0.00856	0.01002	0.04386

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00630	0.00714	0.03286
	B	0.00000	0.00000	0.00000
	B	0.00571	0.00640	0.03905
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00555	0.00628	0.03303
	B	0.00000	0.00000	0.00000
	B	0.00496	0.00557	0.03755

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00882	0.00984	0.04233
	B	0.00000	0.00000	0.00000
	B	0.00931	0.01086	0.04571
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00808	0.00911	0.04204
	B	0.00000	0.00000	0.00000
	B	0.00855	0.01008	0.04467

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00883	0.00985	0.04234
	B	0.00000	0.00000	0.00000
	B	0.00932	0.01087	0.04581
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00809	0.00911	0.04134
	B	0.00000	0.00000	0.00000
	B	0.00856	0.01004	0.04421

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00631	0.00715	0.03359
	B	0.00000	0.00000	0.00000
	B	0.00572	0.00643	0.03988
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00555	0.00626	0.03275
	B	0.00000	0.00000	0.00000
	B	0.00496	0.00556	0.03733

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	2.53887	2.43937	0.85317
sky130_osu_sc_12T_ms__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	2.53903	2.43955	0.85334

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	2.53879	2.44241	0.92426
sky130_osu_sc_12T_ms__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	2.53895	2.44255	0.92442

SKY130_OSU_SC_12T_MS__AND2x

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__and2_1	8.30280
sky130_osu_sc_12T_ms__and2_2	10.25640
sky130_osu_sc_12T_ms__and2_4	14.16360
sky130_osu_sc_12T_ms__and2_6	18.07080
sky130_osu_sc_12T_ms__and2_8	21.97800
sky130_osu_sc_12T_ms__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__and2_1	0.00298	0.00309	1.54342
sky130_osu_sc_12T_ms__and2_2	0.00298	0.00309	3.02046
sky130_osu_sc_12T_ms__and2_4	0.00298	0.00309	5.92381
sky130_osu_sc_12T_ms__and2_6	0.00301	0.00309	8.64242
sky130_osu_sc_12T_ms__and2_8	0.00298	0.00309	11.27779
sky130_osu_sc_12T_ms__and2_l	0.00225	0.00233	1.07161

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__and2_1	0.00000	0.08021	0.12820
sky130_osu_sc_12T_ms__and2_2	0.00000	0.12822	0.12874
sky130_osu_sc_12T_ms__and2_4	0.00000	0.22423	0.25587
sky130_osu_sc_12T_ms__and2_6	0.00000	0.32025	0.38353
sky130_osu_sc_12T_ms__and2_8	0.00000	0.41627	0.51119
sky130_osu_sc_12T_ms__and2_l	0.00000	1.43821	2.30102

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__and2_1	A->Y (RR)	0.05701	0.48443	6.60121
	B->Y (RR)	0.06087	0.47891	6.35412
sky130_osu_sc_12T_ms__and2_2	A->Y (RR)	0.06441	0.42806	6.56147
	B->Y (RR)	0.06829	0.41770	6.31371
sky130_osu_sc_12T_ms__and2_4	A->Y (RR)	0.08864	0.43037	6.80535
	B->Y (RR)	0.09252	0.41468	6.55897
sky130_osu_sc_12T_ms__and2_6	A->Y (RR)	0.11409	0.45533	6.84865
	B->Y (RR)	0.11790	0.43426	6.61720
sky130_osu_sc_12T_ms__and2_8	A->Y (RR)	0.13900	0.48596	6.96880
	B->Y (RR)	0.14286	0.46142	6.72976
sky130_osu_sc_12T_ms__and2_l	A->Y (RR)	0.06111	0.54961	6.79582
	B->Y (RR)	0.06498	0.53852	6.50164

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__and2_1	A->Y (FF)	0.05225	0.46641	6.09274
	B->Y (FF)	0.05360	0.47355	6.14208
sky130_osu_sc_12T_ms__and2_2	A->Y (FF)	0.05916	0.43111	6.10832
	B->Y (FF)	0.06024	0.43548	6.16536
sky130_osu_sc_12T_ms__and2_4	A->Y (FF)	0.08250	0.44700	6.34965
	B->Y (FF)	0.08171	0.44652	6.40821
sky130_osu_sc_12T_ms__and2_6	A->Y (FF)	0.10786	0.47735	6.42154
	B->Y (FF)	0.10507	0.47295	6.47107
sky130_osu_sc_12T_ms__and2_8	A->Y (FF)	0.13189	0.50635	6.48082
	B->Y (FF)	0.12739	0.50044	6.51640
sky130_osu_sc_12T_ms__and2_l	A->Y (FF)	0.05311	0.48808	5.84546
	B->Y (FF)	0.05719	0.50231	5.95474

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.00410	0.00701	0.09845
	B	0.00000	0.00000	0.00000
	B	0.00415	0.00593	0.07067
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.00815	0.01087	0.10201
	B	0.00000	0.00000	0.00000
	B	0.00821	0.00998	0.07493
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.01798	0.02045	0.10805
	B	0.00000	0.00000	0.00000
	B	0.01804	0.01952	0.08241
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.02972	0.03059	0.11657
	B	0.00000	0.00000	0.00000
	B	0.02990	0.03002	0.09069
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.04308	0.04149	0.12526
	B	0.00000	0.00000	0.00000
	B	0.04305	0.04011	0.09800
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00322	0.00654	0.10218
	B	0.00000	0.00000	0.00000
	B	0.00329	0.00544	0.08043

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.01094	0.01513	0.09353
	B	0.00000	0.00000	0.00000
	B	0.01239	0.01617	0.09220
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01410	0.01832	0.09696
	B	0.00000	0.00000	0.00000
	B	0.01557	0.01936	0.09598
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.02319	0.02680	0.10461
	B	0.00000	0.00000	0.00000
	B	0.02436	0.02735	0.10397
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.03413	0.03527	0.11314
	B	0.00000	0.00000	0.00000
	B	0.03487	0.03603	0.11231
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.04712	0.04437	0.12170
	B	0.00000	0.00000	0.00000
	B	0.04735	0.04480	0.12059
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00825	0.01285	0.09700
	B	0.00000	0.00000	0.00000
	B	0.00931	0.01361	0.09631

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00386	-0.00387	-0.00389
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00386	-0.00387	-0.00389
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00386	-0.00387	-0.00389
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00389	-0.00391	-0.00393
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00385	-0.00387	-0.00389
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00270	-0.00270	-0.00271

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00389	0.00393	0.00390
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00389	0.00394	0.00390
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00389	0.00393	0.00391
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00393	0.00397	0.00394
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00389	0.00393	0.00391
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00273	0.00276	0.00274

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00370	-0.00368
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00370	-0.00368
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00370	-0.00368
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00370	-0.00368
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00368	-0.00370	-0.00368
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00257	-0.00259	-0.00258

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00375	0.00371	0.00369
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00375	0.00371	0.00369
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00375	0.00371	0.00370
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00375	0.00371	0.00370
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00375	0.00371	0.00370
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00265	0.00264	0.00261

SKY130_OSU_SC_12T_MS__AOI21

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ms__aoi21_l	0.00274	0.00292	0.00286	0.65644

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__aoi21_l	0.00000	0.03178	0.06383

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi21_l	A0->Y (FR)	0.06539	0.73113	9.12459
	A1->Y (FR)	0.05102	0.66406	8.52407
	B0->Y (FR)	0.04925	0.76070	9.96350

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi21_l	A0->Y (RF)	0.03818	0.43180	5.39686
	A1->Y (RF)	0.03512	0.46292	5.95530
	B0->Y (RF)	0.02315	0.44053	5.85516

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00952	0.00983	0.02986
	A1	0.00000	0.00000	0.00000
	A1	0.00798	0.00827	0.02777
	B0	0.00573	0.00692	0.03344

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00185	0.00198	0.01663
	A1	0.00000	0.00000	0.00000
	A1	0.00192	0.00234	0.01893
	B0	-0.00089	-0.00007	0.01648

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00263	-0.00321	-0.00320
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00322	-0.00324	-0.00323
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00323	-0.00325	-0.00323

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00319	0.00321	0.00320
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00322	0.00327	0.00324
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00330	0.00327	0.00324

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00262	-0.00321	-0.00320
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00323	-0.00325	-0.00324
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00355	-0.00356	-0.00357

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00317	0.00322	0.00320
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00323	0.00327	0.00325
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00356	0.00362	0.00358

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00140	-0.00141	-0.00140

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00151	0.00152	0.00143

SKY130_OSU_SC_12T_MS__AOI22

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_12T_ms__aoi22_l	0.00274	0.00291	0.00304	0.00285	0.64104

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__aoi22_l	0.00000	0.03646	0.12766

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi22_l	A0->Y (FR)	0.08391	0.74813	9.04824
	A1->Y (FR)	0.07440	0.73350	8.98919
	B0->Y (FR)	0.05205	0.75742	9.83543
	B1->Y (FR)	0.06199	0.77302	9.91381

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi22_l	A0->Y (RF)	0.04996	0.44156	5.32887
	A1->Y (RF)	0.04681	0.47267	5.88166
	B0->Y (RF)	0.02546	0.44430	5.85152
	B1->Y (RF)	0.02928	0.41567	5.30110

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	A0	0.01161	0.01182	0.03265
	A1	0.01008	0.01021	0.03076
	B0	0.00624	0.00746	0.03520
	B1	0.00786	0.00894	0.03563

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	A0	0.00385	0.00397	0.01957
	A1	0.00391	0.00430	0.02170
	B0	-0.00064	0.00046	0.01713
	B1	-0.00054	-0.00010	0.01488

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00264	-0.00319	-0.00319
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00322	-0.00324	-0.00323
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00323	-0.00324	-0.00323
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00323	-0.00325	-0.00323

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00318	0.00321	0.00319
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00322	0.00325	0.00324
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00330	0.00325	0.00324
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00330	0.00326	0.00324

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00263	-0.00321	-0.00320
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00323	-0.00326	-0.00324
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00353	-0.00355	-0.00356
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00353	-0.00355	-0.00356

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00318	0.00321	0.00320
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00323	0.00328	0.00325
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00355	0.00361	0.00357
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00355	0.00361	0.00357

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00139	-0.00141	-0.00140
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00139	-0.00140	-0.00139
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00369	-0.00371	-0.00372
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00369	-0.00371	-0.00372

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00156	0.00156	0.00143
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00139	0.00140	0.00139
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00371	0.00374	0.00373
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00371	0.00374	0.00373

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00142	-0.00143	-0.00142
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00141	-0.00142	-0.00142
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00340	-0.00342	-0.00340
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00340	-0.00342	-0.00340

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00158	0.00158	0.00146
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00141	0.00142	0.00142
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00347	0.00343	0.00341
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00347	0.00343	0.00341

SKY130_OSU_SC_12T_MS__BUFx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__buf_1	6.34920
sky130_osu_sc_12T_ms__buf_2	8.30280
sky130_osu_sc_12T_ms__buf_4	12.21000
sky130_osu_sc_12T_ms__buf_6	16.11720
sky130_osu_sc_12T_ms__buf_8	20.02440
sky130_osu_sc_12T_ms__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ms__buf_1	0.00309	1.42330
sky130_osu_sc_12T_ms__buf_2	0.00309	2.95046
sky130_osu_sc_12T_ms__buf_4	0.00309	5.79644
sky130_osu_sc_12T_ms__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ms__buf_8	0.00310	11.49901
sky130_osu_sc_12T_ms__buf_l	0.00230	1.06280

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__buf_1	0.00000	0.06437	0.06437
sky130_osu_sc_12T_ms__buf_2	0.00000	0.09656	0.12820
sky130_osu_sc_12T_ms__buf_4	0.00000	0.16093	0.25587
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ms__buf_8	0.00000	0.28967	0.51119
sky130_osu_sc_12T_ms__buf_l	0.00000	1.15065	1.15065

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__buf_1	**A->Y (RR)**	0.04549	0.46359	6.13002
sky130_osu_sc_12T_ms__buf_2	**A->Y (RR)**	0.04878	0.39352	6.16816
sky130_osu_sc_12T_ms__buf_4	**A->Y (RR)**	0.06544	0.38095	6.29204
sky130_osu_sc_12T_ms__buf_8	**A->Y (RR)**	0.09957	0.41909	6.62890
sky130_osu_sc_12T_ms__buf_l	**A->Y (RR)**	0.04800	0.51106	6.30749

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__buf_1	**A->Y (FF)**	0.04857	0.44699	5.77763
sky130_osu_sc_12T_ms__buf_2	**A->Y (FF)**	0.05575	0.42339	6.09527
sky130_osu_sc_12T_ms__buf_4	**A->Y (FF)**	0.07880	0.44004	6.33766
sky130_osu_sc_12T_ms__buf_8	**A->Y (FF)**	0.12724	0.50442	6.66101
sky130_osu_sc_12T_ms__buf_l	**A->Y (FF)**	0.05117	0.48663	5.95299

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.00389	0.00643	0.06675
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00778	0.01048	0.07229
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01693	0.01991	0.08331
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.03815	0.04042	0.10172
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00305	0.00634	0.08994

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.01042	0.01430	0.09127
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01352	0.01735	0.09447
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02236	0.02542	0.10169
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.04587	0.04237	0.11704
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00805	0.01286	0.10197

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
	-0.00093	-0.00093	-0.00088

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
	0.00093	0.00093	0.00088

SKY130_OSU_SC_12T_MS__DFFNRx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffnr_1	42.49080
sky130_osu_sc_12T_ms__dffnr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	**RN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_ms__dffnr_1	0.00286	0.00284	0.00909	1.53139	1.52998
sky130_osu_sc_12T_ms__dffnr_l	0.00286	0.00284	0.00909	1.07234	1.07245

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__dffnr_1	0.00000	0.78548	1.70948
sky130_osu_sc_12T_ms__dffnr_l	0.00000	1.87175	2.79575

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->Q (FR)	0.27518	1.25733	15.67680
	QN->Q (FR)	0.02229	0.68887	11.57690
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FR)	0.27278	1.34555	15.26730
	QN->Q (FR)	0.02433	0.70871	10.86260

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->Q (FF)	0.18066	1.16270	16.14820
	QN->Q (RF)	0.01875	0.54057	9.06938
	RN->Q (FF)	0.17400	1.17237	16.18270
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FF)	0.18312	1.28164	16.00630
	QN->Q (RF)	0.02045	0.56109	8.62918
	RN->Q (FF)	0.17652	1.29062	16.04400

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->QN (FR)	0.15674	0.66066	7.72999
	RN->QN (FR)	0.15010	0.67021	7.76800
sky130_osu_sc_12T_ms__dffnr_l	CK->QN (FR)	0.15568	0.71382	7.73341
	RN->QN (FR)	0.14906	0.72327	7.76987

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	**CK->QN (FF)**	0.24399	0.69909	6.34055
sky130_osu_sc_12T_ms__dffnr_l	**CK->QN (FF)**	0.23922	0.72516	6.23583

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.08726	-0.14833	-0.61854
	setup	CK (F)	0.12921	0.16156	0.67251
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.08757	-0.14833	-0.61899
	setup	CK (F)	0.12947	0.16156	0.67253

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.05714	-0.06323	-0.06834
	setup	CK (F)	0.13781	0.16237	0.18358
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.06023	-0.06281	-0.06612
	setup	CK (F)	0.13750	0.16194	0.18525

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.08726	-0.14833	-0.61854
	setup	CK (F)	0.12921	0.16156	0.67251
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.08757	-0.14833	-0.61899
	setup	CK (F)	0.12947	0.16156	0.67253

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.05714	-0.06323	-0.06834
	setup	CK (F)	0.13781	0.16237	0.18358
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.06023	-0.06281	-0.06612
	setup	CK (F)	0.13750	0.16194	0.18525

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	recovery	CK (F)	0.10790	0.08456	-1.21076
	removal	CK (F)	-0.08036	-0.07298	1.23330
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.10798	0.08456	-1.20762
	removal	CK (F)	-0.08036	-0.07298	1.23330

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	recovery	CK (F)	0.10790	0.08456	-1.21076
	removal	CK (F)	-0.08036	-0.07298	1.23330
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.10798	0.08456	-1.20762
	removal	CK (F)	-0.08036	-0.07298	1.23330

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	min_pulse_width	RN ()	0.10864	0.39795	13.33370
	min_pulse_width	RN ()	0.10563	0.39795	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	RN ()	0.10261	0.39795	13.33370
	min_pulse_width	RN ()	0.10261	0.39795	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_12T_ms__dffnr_1	min_pulse_width	CK ()	0.12371	0.39795	13.33370
	min_pulse_width	CK ()	0.16892	0.39795	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.12371	0.39795	13.33370
	min_pulse_width	CK ()	0.16892	0.39795	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_12T_ms__dffnr_1	min_pulse_width	CK ()	0.12070	0.39795	13.33370
	min_pulse_width	CK ()	0.09056	0.39795	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.11768	0.39795	13.33370
	min_pulse_width	CK ()	0.08755	0.39795	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.02067	0.02050	0.03704
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01953	0.02034	0.05809

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.02045	0.02181	0.06608
	RN	-0.00135	-0.09728	-1.68835
	RN	0.02715	0.02677	0.04471
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01935	0.02175	0.08666
	RN	-0.00135	-0.07855	-1.18225
	RN	0.02604	0.02667	0.06488

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.02044	0.02181	0.06606
	RN	-0.00135	-0.09723	-1.68678
	RN	0.02714	0.02675	0.04443
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01934	0.02171	0.08649
	RN	-0.00135	-0.07856	-1.18237
	RN	0.02603	0.02666	0.06493

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.02063	0.02044	0.03733
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01948	0.02030	0.05845

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.01329	0.01465	0.08753
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00425	0.00575	0.07687
	!CK	0.00000	0.00000	0.00000
	!CK	-0.00295	-0.00353	-0.00355
sky130_osu_sc_12T_ms__dffnr_l	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.01330	0.01466	0.08754
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00426	0.00576	0.07688
	!CK	0.00000	0.00000	0.00000
	!CK	-0.00294	-0.00352	-0.00354

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.02129	0.02311	0.09700
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.01156	0.01339	0.08476
	!CK	0.00000	0.00000	0.00000
	!CK	0.00354	0.00357	0.00357
sky130_osu_sc_12T_ms__dffnr_l	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.02130	0.02312	0.09701
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.01157	0.01340	0.08477
	!CK	0.00000	0.00000	0.00000
	!CK	0.00355	0.00358	0.00358

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.01330	0.01620	0.12332
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00408	0.00705	0.10922
sky130_osu_sc_12T_ms__dffnr_l	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.01330	0.01621	0.12333
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00409	0.00706	0.10923

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.02095	0.02473	0.13102
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.01091	0.01489	0.11715
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.02096	0.02474	0.13103
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.01092	0.01490	0.11716

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00071	0.00177	0.10571
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01409	0.01891	0.16638
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00359	0.00883	0.19362
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01756	0.01957	0.16577
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00059	0.00222	0.10556
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00070	0.00178	0.10572
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01410	0.01892	0.16639
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00360	0.00884	0.19363
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01757	0.01958	0.16578
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00058	0.00223	0.10557

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01662	0.02058	0.12493
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02187	0.02912	0.21399
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01811	0.02183	0.12546
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01662	0.02059	0.12494
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02188	0.02913	0.21401
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01811	0.02184	0.12547

SKY130_OSU_SC_12T_MS__DFFRx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__dffr_1	42.49080
sky130_osu_sc_12T_ms__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ms__dffr_1	0.00286	0.00284	0.00882	1.54057	1.52995
sky130_osu_sc_12T_ms__dffr_l	0.00286	0.00284	0.00881	1.06205	1.06788

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffr_1	0.00000	0.78548	1.70993
sky130_osu_sc_12T_ms__dffr_l	0.00000	1.87175	2.79620

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->Q (RR)	0.22177	1.11267	14.19580
	QN->Q (FR)	0.02229	0.69041	11.62080
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RR)	0.21921	1.19264	13.56940
	QN->Q (FR)	0.02433	0.70597	10.79640

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->Q (RF)	0.23171	1.14347	14.87400
	QN->Q (RF)	0.01874	0.54169	9.10156
	RN->Q (FF)	0.17421	1.17578	16.27520
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RF)	0.23405	1.25388	14.50780
	QN->Q (RF)	0.02045	0.55909	8.57916
	RN->Q (FF)	0.17672	1.28563	15.90090

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->QN (RR)	0.20782	0.63819	6.36592
	RN->QN (FR)	0.15027	0.67071	7.76906
sky130_osu_sc_12T_ms__dffr_l	CK->QN (RR)	0.20661	0.69065	6.34928
	RN->QN (FR)	0.14925	0.72261	7.74337

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	**CK->QN (RF)**	0.19055	0.55126	4.77144
sky130_osu_sc_12T_ms__dffr_l	**CK->QN (RF)**	0.18562	0.57655	4.64026

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.04937	-0.05358	0.12015
	setup	CK (R)	0.17011	0.19533	0.61290
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.04990	-0.05189	0.12099
	setup	CK (R)	0.16994	0.19557	0.60261

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.09160	-0.23988	-3.10197
	setup	CK (R)	0.11498	0.24995	3.53891
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.09268	-0.23764	-3.15254
	setup	CK (R)	0.11099	0.24995	3.53891

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.04937	-0.05358	0.12015
	setup	CK (R)	0.17011	0.19533	0.61290
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.04990	-0.05189	0.12099
	setup	CK (R)	0.16994	0.19557	0.60261

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.09160	-0.23988	-3.10197
	setup	CK (R)	0.11498	0.24995	3.53891
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.09268	-0.23764	-3.15254
	setup	CK (R)	0.11099	0.24995	3.53891

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	recovery	CK (R)	0.14639	0.17833	0.92804
	removal	CK (R)	-0.03098	-0.03586	-0.04667
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.14642	0.17859	0.92662
	removal	CK (R)	-0.03098	-0.03586	-0.04667

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	recovery	CK (R)	0.14639	0.17833	0.92804
	removal	CK (R)	-0.03098	-0.03586	-0.04667
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.14642	0.17859	0.92662
	removal	CK (R)	-0.03098	-0.03586	-0.04667

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	min_pulse_width	RN ()	0.10563	0.39795	13.33370
	min_pulse_width	RN ()	0.10864	0.39795	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	RN ()	0.10261	0.39795	13.33370
	min_pulse_width	RN ()	0.10563	0.39795	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_12T_ms__dffr_1	min_pulse_width	CK ()	0.10261	0.39795	13.33370
	min_pulse_width	CK ()	0.12070	0.39795	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.09659	0.39795	13.33370
	min_pulse_width	CK ()	0.11768	0.39795	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_12T_ms__dffr_1	min_pulse_width	CK ()	0.22015	0.39795	13.33370
	min_pulse_width	CK ()	0.09357	0.39795	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.22015	0.39795	13.33370
	min_pulse_width	CK ()	0.09357	0.39795	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01088	0.01125	0.04714
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00973	0.01114	0.06956

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01236	0.01137	0.02709
	RN	-0.00135	-0.09763	-1.69848
	RN	0.02833	0.02792	0.04534
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01125	0.01128	0.04838
	RN	-0.00135	-0.07810	-1.17091
	RN	0.02721	0.02783	0.06608

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01235	0.01137	0.02747
	RN	-0.00135	-0.09722	-1.68675
	RN	0.02832	0.02793	0.04557
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01125	0.01129	0.04817
	RN	-0.00135	-0.07836	-1.17733
	RN	0.02721	0.02782	0.06606

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01084	0.01122	0.04787
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00969	0.01111	0.06867

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00261	-0.00320	-0.00323
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01368	0.01500	0.08791
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00539	0.00688	0.07798
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00260	-0.00319	-0.00322
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01369	0.01501	0.08792
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00540	0.00689	0.07799

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00321	0.00323	0.00323
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02092	0.02273	0.09666
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01042	0.01225	0.08365
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00322	0.00324	0.00324
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02093	0.02273	0.09667
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01043	0.01226	0.08366

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00408	0.00705	0.10922
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01262	0.01552	0.12265
sky130_osu_sc_12T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00408	0.00706	0.10923
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01263	0.01553	0.12266

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01091	0.01489	0.11715
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02163	0.02541	0.13170
sky130_osu_sc_12T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01092	0.01490	0.11716
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02164	0.02542	0.13171

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00100	0.00166	0.10571
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00704	0.00907	0.11811
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00101	0.00171	0.10546
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00099	0.00167	0.10572
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00705	0.00906	0.11813
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00100	0.00173	0.10547

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01627	0.02069	0.12487
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03401	0.03737	0.16852
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02549	0.02901	0.13764
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03298	0.04077	0.20592
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01792	0.02211	0.12554
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01628	0.02065	0.12488
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03401	0.03738	0.16853
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02550	0.02901	0.13765
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03299	0.04071	0.20593
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01793	0.02212	0.12555

SKY130_OSU_SC_12T_MS__DFFSRx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__dffsr_1	46.39800
sky130_osu_sc_12T_ms__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_ms__dffsr_1	0.00282	0.00286	0.00663	0.00893	1.60363	1.60838
sky130_osu_sc_12T_ms__dffsr_l	0.00282	0.00286	0.00663	0.00892	1.05826	1.07074

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__dffsr_1	0.00000	0.23328	0.32039
sky130_osu_sc_12T_ms__dffsr_l	0.00000	1.31955	1.40666

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->Q (RR)	0.23718	1.13783	14.53920
	QN->Q (FR)	0.02085	0.66245	11.26600
	RN->Q (RR)	0.19196	1.10481	14.64890
	SN->Q (FR)	0.17547	1.16143	16.09150
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RR)	0.23825	1.21633	13.56670
	QN->Q (FR)	0.02427	0.70515	10.76750
	RN->Q (RR)	0.19368	1.18499	13.66710
	SN->Q (FR)	0.17669	1.23815	15.09470

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->Q (RF)	0.26441	1.18435	15.20940
	QN->Q (RF)	0.01859	0.54912	9.32258
	RN->Q (FF)	0.18312	1.19454	16.60980
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RF)	0.26829	1.29013	14.49350
	QN->Q (RF)	0.02033	0.55772	8.55198
	RN->Q (FF)	0.18702	1.29991	15.88490

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->QN (RR)	0.24020	0.67224	6.46829
	RN->QN (FR)	0.15899	0.68265	7.86801
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RR)	0.24064	0.73011	6.40946
	RN->QN (FR)	0.15954	0.74001	7.80025

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->QN (RF)	0.20725	0.58206	5.06476
	RN->QN (RF)	0.16285	0.55033	5.17875
	SN->QN (FF)	0.14599	0.60588	6.61105
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RF)	0.20508	0.60254	4.69565
	RN->QN (RF)	0.16084	0.57157	4.80631
	SN->QN (FF)	0.14393	0.62469	6.23502

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.05465	-0.06293	0.09583
	setup	CK (R)	0.17999	0.20342	0.70475
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.05494	-0.06293	0.09579
	setup	CK (R)	0.17993	0.20307	0.70250

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.10592	-0.25411	-2.79015
	setup	CK (R)	0.12783	0.26140	3.57388
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.10494	-0.25084	-2.79153
	setup	CK (R)	0.12783	0.26140	3.57388

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.05465	-0.06293	0.09583
	setup	CK (R)	0.17999	0.20342	0.70475
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.05494	-0.06293	0.09579
	setup	CK (R)	0.17993	0.20307	0.70250

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.10592	-0.25411	-2.79015
	setup	CK (R)	0.12783	0.26140	3.57388
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.10494	-0.25084	-2.79153
	setup	CK (R)	0.12783	0.26140	3.57388

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.14234	0.16899	0.96601
	removal	CK (R)	-0.02288	-0.02886	-0.03846
	hold	SN (R)	-0.14031	-0.24410	-1.00176
	setup	SN (R)	0.16248	0.27449	5.20554
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.14197	0.16914	0.96199
	removal	CK (R)	-0.02288	-0.02886	-0.03846
	hold	SN (R)	-0.13387	-0.23669	-0.97283
	setup	SN (R)	0.16084	0.26729	5.11364

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.14234	0.16899	0.96601
	removal	CK (R)	-0.02288	-0.02886	-0.03846
	hold	SN (R)	-0.14140	-0.24410	-1.00176
	hold	SN (R)	-0.14031	-0.24410	-1.00654
	setup	SN (R)	0.16117	0.27343	4.80200
	setup	SN (R)	0.16248	0.27449	5.20554
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.14197	0.16914	0.96199
	removal	CK (R)	-0.02288	-0.02886	-0.03846
	hold	SN (R)	-0.13767	-0.23669	-0.97889
	hold	SN (R)	-0.13387	-0.23884	-0.97283
	setup	SN (R)	0.16084	0.26729	4.65362
	setup	SN (R)	0.15596	0.26729	5.11364

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	min_pulse_width	RN ()	0.12371	0.39795	13.33370
	min_pulse_width	RN ()	0.12672	0.39795	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	RN ()	0.12371	0.39795	13.33370
	min_pulse_width	RN ()	0.12371	0.39795	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.03344	0.06064	6.56590
	removal	CK (R)	-0.01540	-0.04803	-0.30990
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.03322	0.06026	6.30870
	removal	CK (R)	-0.01540	-0.04803	-0.30990

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.03344	0.06064	6.56590
	removal	CK (R)	-0.01540	-0.04803	-0.30990
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.03322	0.06026	6.30870
	removal	CK (R)	-0.01540	-0.04803	-0.30990

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	min_pulse_width	SN ()	0.14179	0.39795	13.33370
	min_pulse_width	SN ()	0.14481	0.39795	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	SN ()	0.14179	0.39795	13.33370
	min_pulse_width	SN ()	0.13878	0.39795	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_12T_ms__dffsr_1	min_pulse_width	CK ()	0.10563	0.39795	13.33370
	min_pulse_width	CK ()	0.13576	0.39795	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.10261	0.39795	13.33370
	min_pulse_width	CK ()	0.13275	0.39795	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_12T_ms__dffsr_1	min_pulse_width	CK ()	0.23220	0.39795	13.33370
	min_pulse_width	CK ()	0.11166	0.39795	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.23220	0.39795	13.33370
	min_pulse_width	CK ()	0.11166	0.39795	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01362	0.01375	0.04779
	RN	0.02471	0.02396	0.04049
	SN	-0.00135	-0.10001	-1.76800
	SN	0.02422	0.02279	0.04362
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01254	0.01377	0.07146
	RN	0.02363	0.02395	0.06367
	SN	-0.00135	-0.07793	-1.16674
	SN	0.02316	0.02283	0.06627

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01436	0.01407	0.04012
	RN	-0.00135	-0.10001	-1.76800
	RN	0.02995	0.03015	0.05827
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01326	0.01334	0.05074
	RN	-0.00135	-0.07793	-1.16673
	RN	0.02834	0.02896	0.06933

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01435	0.01406	0.04005
	RN	-0.00135	-0.10018	-1.77320
	RN	0.02944	0.02966	0.05835
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01325	0.01333	0.05038
	RN	-0.00135	-0.07848	-1.18049
	RN	0.02833	0.02894	0.06861

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01357	0.01376	0.04764
	RN	0.02466	0.02391	0.04098
	SN	-0.00135	-0.10018	-1.77314
	SN	0.02419	0.02277	0.04295
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01249	0.01371	0.07056
	RN	0.02358	0.02391	0.06384
	SN	-0.00135	-0.07848	-1.18045
	SN	0.02312	0.02281	0.06616

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00320	-0.00325	-0.00325
	(!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)	0.01736	0.01862	0.09074
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00593	0.00733	0.07806
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00590	0.00731	0.07811
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00595	0.00736	0.07809
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00319	-0.00324	-0.00325
	(!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)	0.01737	0.01863	0.09075
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00594	0.00734	0.07807
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00591	0.00732	0.07812
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00596	0.00737	0.07810

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00330	0.00326	0.00325
	(!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)	0.02411	0.02577	0.09865
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01130	0.01307	0.08422
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01142	0.01313	0.08421
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01126	0.01303	0.08418
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00331	0.00327	0.00326
	(!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)	0.02412	0.02578	0.09866
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01131	0.01308	0.08423
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01143	0.01314	0.08422
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01127	0.01304	0.08419

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00303	0.00590	0.10796
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01486	0.01746	0.12320
sky130_osu_sc_12T_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)	0.00304	0.00591	0.10797
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01487	0.01747	0.12321

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.01178	0.01587	0.11836
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02286	0.02649	0.13244
sky130_osu_sc_12T_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)	0.01179	0.01588	0.11837
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02287	0.02650	0.13245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	-0.00818	-0.00820	-0.00821
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00764	-0.00883	-0.00884
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00763	-0.00823	-0.00823
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00397	0.00552	0.07602
sky130_osu_sc_12T_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)	-0.00817	-0.00819	-0.00820
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00763	-0.00884	-0.00883
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00762	-0.00822	-0.00822
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00398	0.00547	0.07603

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00820	0.00833	0.00824
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00879	0.00883	0.00885
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00820	0.00828	0.00825
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01885	0.01973	0.08902
sky130_osu_sc_12T_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)	0.00821	0.00834	0.00825
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00880	0.00884	0.00886
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00821	0.00829	0.00826
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01886	0.01974	0.08903

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00109	0.00155	0.10559
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00825	0.01029	0.11915
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00810	0.01018	0.11908
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00083	0.00189	0.10561
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00369	0.00860	0.19341
sky130_osu_sc_12T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00108	0.00156	0.10559
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00826	0.01033	0.11915
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00811	0.01019	0.11908
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00082	0.00190	0.10561
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00370	0.00861	0.19342

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_ms__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03812	0.04157	0.17187
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01658	0.02096	0.12514
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02591	0.02954	0.13755
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02596	0.02958	0.13748
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03630	0.04363	0.20923
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01792	0.02207	0.12552
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02242	0.02997	0.21465
sky130_osu_sc_12T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03813	0.04157	0.17188
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01659	0.02097	0.12515
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02592	0.02955	0.13756
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02597	0.02959	0.13748
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03631	0.04364	0.20924
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01793	0.02208	0.12553
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02243	0.02998	0.21466

SKY130_OSU_SC_12T_MS__DFFSx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__dffs_1	38.58360
sky130_osu_sc_12T_ms__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ms__dffs_1	0.00284	0.00541	0.00880	1.52887	1.53550
sky130_osu_sc_12T_ms__dffs_l	0.00284	0.00541	0.00880	1.06626	1.07463

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffs_1	0.00000	1.69008	4.73135
sky130_osu_sc_12T_ms__dffs_l	0.00000	2.77635	5.81763

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->Q (RR)	0.17240	1.04602	13.95880
	QN->Q (FR)	0.02224	0.68539	11.51390
	SN->Q (FR)	0.13396	1.11335	15.41590
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RR)	0.17339	1.13849	13.51790
	QN->Q (FR)	0.02428	0.70525	10.78850
	SN->Q (FR)	0.13513	1.20145	14.94610

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->Q (RF)	0.25469	1.16681	14.75900
	QN->Q (RF)	0.01866	0.53797	9.03201
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RF)	0.25536	1.28042	14.56990
	QN->Q (RF)	0.02039	0.55835	8.57927

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->QN (RR)	0.23025	0.66635	6.39913
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RR)	0.22748	0.71682	6.40257

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->QN (RF)	0.14398	0.49172	4.68819
	SN->QN (FF)	0.10521	0.55878	6.14030
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RF)	0.14229	0.52310	4.57879
	SN->QN (FF)	0.10366	0.58613	6.01036

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.03814	-0.04388	0.13798
	setup	CK (R)	0.12577	0.15702	0.53946
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.03903	-0.04376	0.13792
	setup	CK (R)	0.12554	0.15683	0.52931

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.09519	-0.24162	-3.39760
	setup	CK (R)	0.11995	0.25159	3.56209
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.09404	-0.24171	-3.40621
	setup	CK (R)	0.11995	0.25159	3.56209

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.03814	-0.04388	0.13798
	setup	CK (R)	0.12577	0.15702	0.53946
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.03903	-0.04376	0.13792
	setup	CK (R)	0.12554	0.15683	0.52931

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.09519	-0.24162	-3.39760
	setup	CK (R)	0.11995	0.25159	3.56209
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.09404	-0.24171	-3.40621
	setup	CK (R)	0.11995	0.25159	3.56209

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	recovery	CK (R)	0.03370	0.06161	4.68256
	removal	CK (R)	-0.01943	-0.05146	-0.47377
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.03352	0.06176	4.48441
	removal	CK (R)	-0.01943	-0.05146	-0.47377

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	recovery	CK (R)	0.03370	0.06161	4.68256
	removal	CK (R)	-0.01943	-0.05146	-0.47377
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.03352	0.06176	4.48441
	removal	CK (R)	-0.01943	-0.05146	-0.47377

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	min_pulse_width	SN ()	0.09056	0.39795	13.33370
	min_pulse_width	SN ()	0.09659	0.39795	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	SN ()	0.09056	0.39795	13.33370
	min_pulse_width	SN ()	0.09056	0.39795	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_12T_ms__dffs_1	min_pulse_width	CK ()	0.07549	0.39795	13.33370
	min_pulse_width	CK ()	0.12672	0.39795	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.07248	0.39795	13.33370
	min_pulse_width	CK ()	0.12371	0.39795	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_12T_ms__dffs_1	min_pulse_width	CK ()	0.17796	0.39795	13.33370
	min_pulse_width	CK ()	0.10261	0.39795	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.17494	0.39795	13.33370
	min_pulse_width	CK ()	0.10261	0.39795	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01076	0.01123	0.04868
	SN	-0.00135	-0.09718	-1.68557
	SN	0.01970	0.02100	0.06851
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00965	0.01118	0.06964
	SN	-0.00135	-0.07829	-1.17555
	SN	0.01859	0.02091	0.08918

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01232	0.01144	0.02883
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01122	0.01130	0.04901

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01231	0.01141	0.02875
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01121	0.01128	0.04880

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01073	0.01127	0.04828
	SN	-0.00135	-0.09744	-1.69279
	SN	0.01968	0.02099	0.06821
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00960	0.01115	0.06882
	SN	-0.00135	-0.07865	-1.18474
	SN	0.01856	0.02088	0.08825

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00321	-0.00325	-0.00326
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01326	0.01481	0.08992
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00534	0.00681	0.07790
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00320	-0.00324	-0.00325
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01327	0.01482	0.09022
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00535	0.00682	0.07791

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00338	0.00335	0.00333
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02062	0.02234	0.09627
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01041	0.01227	0.08385
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00339	0.00335	0.00334
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02063	0.02235	0.09628
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01042	0.01228	0.08386

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00597	-0.00599	-0.00600
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00393	0.00571	0.09443
sky130_osu_sc_12T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00596	-0.00598	-0.00599
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00394	0.00571	0.09444

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00604	0.00604	0.00602
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01296	0.01625	0.10648
sky130_osu_sc_12T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00605	0.00605	0.00603
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01297	0.01626	0.10649

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00100	0.00166	0.10580
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00088	0.00186	0.10569
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00319	0.00837	0.19383
sky130_osu_sc_12T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00099	0.00167	0.10581
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00087	0.00187	0.10569
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00319	0.00838	0.19384

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03380	0.03725	0.16953
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01629	0.02071	0.12497
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03247	0.03993	0.20555
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01784	0.02205	0.12556
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02120	0.02905	0.21433
sky130_osu_sc_12T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03381	0.03726	0.16953
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01630	0.02072	0.12498
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03248	0.03994	0.20556
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01785	0.02204	0.12557
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02121	0.02905	0.21434

SKY130_OSU_SC_12T_MS__DFFx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dff_1	32.23440
sky130_osu_sc_12T_ms__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ms__dff_1	0.00299	0.00862	1.35670
sky130_osu_sc_12T_ms__dff_l	0.00299	0.00860	0.99521

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dff_1	0.00000	0.21146	0.25750
sky130_osu_sc_12T_ms__dff_l	0.00000	1.29773	1.34378

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dff_1	**CK->Q (RR)**	0.14644	0.57900	6.02421
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RR)**	0.14675	0.63473	6.12335

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dff_1	**CK->Q (RF)**	0.21477	0.54198	4.34318
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RF)**	0.21552	0.58456	4.46131

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dff_1	hold	CK (R)	-0.03400	-0.04316	0.10924
	setup	CK (R)	0.10199	0.14026	0.50061
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.03401	-0.04316	0.10904
	setup	CK (R)	0.10201	0.14011	0.49900

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dff_1	hold	CK (R)	-0.08642	-0.23832	-3.39506
	setup	CK (R)	0.10222	0.24879	3.55579
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.08671	-0.23832	-3.41068
	setup	CK (R)	0.10213	0.24879	3.55579

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dff_1	min_pulse_width	CK ()	0.06645	0.39795	13.33370
	min_pulse_width	CK ()	0.11467	0.39795	13.33370
sky130_osu_sc_12T_ms__dff_l	min_pulse_width	CK ()	0.06344	0.39795	13.33370
	min_pulse_width	CK ()	0.11166	0.39795	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_12T_ms__dff_1	**min_pulse_width**	**CK ()**	0.15083	0.39795	13.33370
	min_pulse_width	**CK ()**	0.08152	0.39795	13.33370
sky130_osu_sc_12T_ms__dff_l	**min_pulse_width**	**CK ()**	0.15083	0.39795	13.33370
	min_pulse_width	**CK ()**	0.08152	0.39795	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.02258	0.02736	0.17810
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02028	0.02513	0.17572

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.02496	0.02715	0.13661
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02280	0.02508	0.13474

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00260	-0.00317	-0.00321
	!CK	0.00000	0.00000	0.00000
	!CK	0.01196	0.01351	0.08748
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00259	-0.00316	-0.00320
	!CK	0.00000	0.00000	0.00000
	!CK	0.01197	0.01352	0.08749

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00319	0.00321	0.00321
	!CK	0.00000	0.00000	0.00000
	!CK	0.02128	0.02303	0.09806
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00320	0.00322	0.00322
	!CK	0.00000	0.00000	0.00000
	!CK	0.02129	0.02304	0.09807

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00105	0.00163	0.10579
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00091	0.00183	0.10569
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00105	0.00164	0.10580
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00090	0.00185	0.10570

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01624	0.02071	0.12495
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.03250	0.03608	0.16883
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.03296	0.04076	0.20842
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01770	0.02193	0.12544
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01625	0.02072	0.12496
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.03251	0.03609	0.16884
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.03297	0.04078	0.20843
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01771	0.02194	0.12545

SKY130_OSU_SC_12T_MS__INVx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__inv_1	4.39560
sky130_osu_sc_12T_ms__inv_10	21.97800
sky130_osu_sc_12T_ms__inv_2	6.34920
sky130_osu_sc_12T_ms__inv_3	8.30280
sky130_osu_sc_12T_ms__inv_4	10.25640
sky130_osu_sc_12T_ms__inv_6	14.16360
sky130_osu_sc_12T_ms__inv_8	18.07080
sky130_osu_sc_12T_ms__inv_l	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ms__inv_1	0.00288	1.37234
sky130_osu_sc_12T_ms__inv_10	0.02582	13.38069
sky130_osu_sc_12T_ms__inv_2	0.00536	2.78130
sky130_osu_sc_12T_ms__inv_3	0.00793	4.08808
sky130_osu_sc_12T_ms__inv_4	0.01045	5.50222
sky130_osu_sc_12T_ms__inv_6	0.01564	8.19311
sky130_osu_sc_12T_ms__inv_8	0.02073	10.83332
sky130_osu_sc_12T_ms__inv_l	0.00226	0.92614

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__inv_1	0.00000	0.03219	0.06383
sky130_osu_sc_12T_ms__inv_10	0.00000	0.32185	0.63832
sky130_osu_sc_12T_ms__inv_2	0.00000	0.06437	0.12766
sky130_osu_sc_12T_ms__inv_3	0.00000	0.09656	0.19150
sky130_osu_sc_12T_ms__inv_4	0.00000	0.12874	0.25533
sky130_osu_sc_12T_ms__inv_6	0.00000	0.19311	0.38299
sky130_osu_sc_12T_ms__inv_8	0.00000	0.25748	0.51065
sky130_osu_sc_12T_ms__inv_l	0.00000	0.57532	1.15039

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__inv_1	**A->Y (FR)**	0.02133	0.62043	10.12850
sky130_osu_sc_12T_ms__inv_10	**A->Y (FR)**	0.02578	0.38725	9.95307
sky130_osu_sc_12T_ms__inv_2	**A->Y (FR)**	0.01595	0.51723	9.94012
sky130_osu_sc_12T_ms__inv_3	**A->Y (FR)**	0.01730	0.48153	9.98961
sky130_osu_sc_12T_ms__inv_4	**A->Y (FR)**	0.01722	0.45092	9.93934
sky130_osu_sc_12T_ms__inv_6	**A->Y (FR)**	0.01928	0.41865	9.94313
sky130_osu_sc_12T_ms__inv_8	**A->Y (FR)**	0.02226	0.39887	9.93322
sky130_osu_sc_12T_ms__inv_l	**A->Y (FR)**	0.02438	0.64758	9.54928

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__inv_1	**A->Y (RF)**	0.01719	0.46916	7.64497
sky130_osu_sc_12T_ms__inv_10	**A->Y (RF)**	0.02270	0.28204	7.82949
sky130_osu_sc_12T_ms__inv_2	**A->Y (RF)**	0.01364	0.39804	7.73775
sky130_osu_sc_12T_ms__inv_3	**A->Y (RF)**	0.01483	0.36848	7.85204
sky130_osu_sc_12T_ms__inv_4	**A->Y (RF)**	0.01463	0.34234	7.85256
sky130_osu_sc_12T_ms__inv_6	**A->Y (RF)**	0.01738	0.31346	7.88105
sky130_osu_sc_12T_ms__inv_8	**A->Y (RF)**	0.01997	0.29481	7.87453
sky130_osu_sc_12T_ms__inv_l	**A->Y (RF)**	0.01948	0.49334	7.29173

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__inv_1	A	0.00000	0.00000	0.00000
	A	0.00536	0.00701	0.03017
sky130_osu_sc_12T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.04448	0.07190	0.28680
sky130_osu_sc_12T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.00919	0.01395	0.05807
sky130_osu_sc_12T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.01417	0.02113	0.08673
sky130_osu_sc_12T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.01804	0.02742	0.11490
sky130_osu_sc_12T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.02676	0.04114	0.17197
sky130_osu_sc_12T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.03549	0.05891	0.22937
sky130_osu_sc_12T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00419	0.00598	0.03677

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00106	-0.00017	0.01359
sky130_osu_sc_12T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01631	-0.00180	0.13085
sky130_osu_sc_12T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00334	-0.00105	0.02591
sky130_osu_sc_12T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00441	-0.00074	0.03941
sky130_osu_sc_12T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00672	-0.00175	0.05192
sky130_osu_sc_12T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01030	-0.00200	0.07768
sky130_osu_sc_12T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01365	-0.00110	0.10415
sky130_osu_sc_12T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00074	-0.00012	0.01153

SKY130_OSU_SC_12T_MS__MUX2

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ms__mux2_1	0.01345	0.01334	0.00593	0.00922

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__mux2_1	0.00000	0.06890	0.08159

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__mux2_1	A0->Y (RR)	-	0.00934	0.03141	0.06102
	A1->Y (RR)	-	0.01066	0.03206	0.06105
	S0->Y (RR)	(!A0 * A1)	0.03519	0.09235	-0.40221
	S0->Y (FR)	(A0 * !A1)	0.02374	0.14726	1.06124

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__mux2_1	A0->Y (FF)	-	0.01057	0.03693	0.06241
	A1->Y (FF)	-	0.00966	0.03612	0.06225
	S0->Y (FF)	(!A0 * A1)	0.04485	0.17924	1.05808
	S0->Y (RF)	(A0 * !A1)	0.01914	0.06121	-0.35875

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00519	-0.00519	-0.00521
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00329	-0.00330	-0.00331
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00702	0.01183	0.11530
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00346	0.00002	0.10272

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00519	0.00520	0.00521
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00329	0.00331	0.00331
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00072	0.00462	0.10818
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01452	0.01882	0.12141

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00119	-0.00119	-0.00119

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00119	0.00119	0.00119

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00143	-0.00143	-0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00143	0.00143	0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00140	0.00235	0.10536
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00134	0.00233	0.10552

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01126	0.01586	0.11857
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01028	0.01517	0.11826

SKY130_OSU_SC_12T_MS__NAND2x

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__nand2_1	6.34920
sky130_osu_sc_12T_ms__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__nand2_1	0.00287	0.00287	1.35627
sky130_osu_sc_12T_ms__nand2_l	0.00221	0.00224	0.92757

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nand2_1	0.00000	0.03220	0.12766
sky130_osu_sc_12T_ms__nand2_l	0.00000	0.57534	2.30076

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nand2_1	A->Y (FR)	0.02221	0.62041	10.08420
	B->Y (FR)	0.02552	0.59382	9.58361
sky130_osu_sc_12T_ms__nand2_l	A->Y (FR)	0.02456	0.64802	9.55118
	B->Y (FR)	0.02980	0.65172	9.53842

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nand2_1	A->Y (RF)	0.02443	0.58912	9.56383
	B->Y (RF)	0.02782	0.56289	9.00819
sky130_osu_sc_12T_ms__nand2_l	A->Y (RF)	0.02749	0.63402	9.22746
	B->Y (RF)	0.03078	0.60189	8.60273

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00570	0.00707	0.02676
	B	0.00000	0.00000	0.00000
	B	0.00736	0.00856	0.02963
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00426	0.00569	0.03085
	B	0.00000	0.00000	0.00000
	B	0.00542	0.00678	0.03294

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00075	-0.00017	0.01173
	B	0.00000	0.00000	0.00000
	B	-0.00075	-0.00038	0.01065
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00044	-0.00005	0.00964
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00015	0.00881

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00372	-0.00373	-0.00375
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00262	-0.00263	-0.00264

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00375	0.00379	0.00376
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00264	0.00266	0.00265

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00346	-0.00347	-0.00346
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00246	-0.00247	-0.00247

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00353	0.00349	0.00347
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00251	0.00249	0.00247

SKY130_OSU_SC_12T_MS__NOR2x

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__nor2_1	6.34920
sky130_osu_sc_12T_ms__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__nor2_1	0.00283	0.00310	0.77476
sky130_osu_sc_12T_ms__nor2_l	0.00213	0.00234	0.55125

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nor2_1	0.00000	0.02528	0.06383
sky130_osu_sc_12T_ms__nor2_l	0.00000	0.38045	1.15034

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nor2_1	A->Y (FR)	0.04539	0.70334	9.51934
	B->Y (FR)	0.03499	0.71924	10.02850
sky130_osu_sc_12T_ms__nor2_l	A->Y (FR)	0.04811	0.75011	9.19068
	B->Y (FR)	0.03978	0.76383	9.62679

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nor2_1	A->Y (RF)	0.02346	0.38951	5.28816
	B->Y (RF)	0.01844	0.38129	5.27064
sky130_osu_sc_12T_ms__nor2_l	A->Y (RF)	0.02487	0.41577	5.18260
	B->Y (RF)	0.02059	0.40887	5.16563

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00772	0.00819	0.02887
	B	0.00000	0.00000	0.00000
	B	0.00588	0.00684	0.03379
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00556	0.00621	0.02934
	B	0.00000	0.00000	0.00000
	B	0.00439	0.00606	0.03914

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00076	0.00131	0.01926
	B	0.00000	0.00000	0.00000
	B	-0.00080	0.00009	0.01705
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00053	0.00099	0.01619
	B	0.00000	0.00000	0.00000
	B	-0.00049	0.00016	0.01439

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00260	-0.00323	-0.00324
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00169	-0.00213	-0.00219

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00321	0.00327	0.00324
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00220	0.00224	0.00222

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00141	-0.00142	-0.00141
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00099	-0.00100	-0.00099

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00146	0.00147	0.00143
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00103	0.00103	0.00100

SKY130_OSU_SC_12T_MS__OAI21

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ms__oai21_l	0.00287	0.00297	0.00251	0.75212

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai21_l	0.00000	0.44423	1.21422

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai21_l	A0->Y (FR)	0.05074	0.73114	9.87919
	A1->Y (FR)	0.06337	0.71649	9.37312
	B0->Y (FR)	0.03018	0.60054	8.41661

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai21_l	A0->Y (RF)	0.03416	0.45852	6.03206
	A1->Y (RF)	0.04096	0.45674	5.93544
	B0->Y (RF)	0.02622	0.49758	6.88202

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00832	0.00926	0.03206
	A1	0.00000	0.00000	0.00000
	A1	0.01021	0.01053	0.02933
	B0	0.00485	0.00676	0.04433

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00023	0.00059	0.01379
	A1	0.00000	0.00000	0.00000
	A1	0.00181	0.00189	0.01562
	B0	0.00067	0.00133	0.01648

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00141	-0.00141	-0.00141
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00326	-0.00330	-0.00329
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00332	-0.00334	-0.00333

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00148	0.00149	0.00144
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00327	0.00331	0.00329
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00336	0.00336	0.00334

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00249	-0.00313	-0.00313
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00322	-0.00328	-0.00326
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00328	-0.00330	-0.00329

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00313	0.00316	0.00315
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00324	0.00328	0.00326
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00331	0.00330	0.00330

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00276	-0.00277	-0.00281

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00280	0.00285	0.00282

SKY130_OSU_SC_12T_MS__OAI22

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ms__oai22_1	0.00271	0.00283	0.00301	0.00297	0.81019

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai22_1	0.00000	0.03792	0.12766

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai22_l	A0->Y (FR)	0.06663	0.71425	9.48852
	A1->Y (FR)	0.05696	0.73385	10.03390
	B0->Y (FR)	0.03603	0.71225	10.01860
	B1->Y (FR)	0.04684	0.69517	9.47399

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai22_l	A0->Y (RF)	0.05658	0.50017	6.41366
	A1->Y (RF)	0.04575	0.48645	6.37249
	B0->Y (RF)	0.03875	0.52604	7.23659
	B1->Y (RF)	0.05005	0.54264	7.31164

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	A0	0.01310	0.01341	0.03095
	A1	0.01123	0.01215	0.03441
	B0	0.00617	0.00719	0.03146
	B1	0.00820	0.00861	0.02692

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	A0	0.00114	0.00129	0.01522
	A1	-0.00029	0.00005	0.01331
	B0	-0.00037	0.00036	0.01560
	B1	0.00114	0.00152	0.01703

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00257	-0.00314	-0.00317
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00257	-0.00314	-0.00317
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00312	-0.00316	-0.00317
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00320	-0.00320	-0.00319

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00315	0.00318	0.00318
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00315	0.00318	0.00318
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00316	0.00318	0.00317
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00320	0.00323	0.00320

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00137	-0.00138	-0.00137
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00137	-0.00138	-0.00137
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00312	-0.00316	-0.00315
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00318	-0.00320	-0.00319

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00143	0.00144	0.00139
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00143	0.00144	0.00139
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00313	0.00316	0.00315
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00319	0.00323	0.00320

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00139	-0.00140	-0.00139
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00139	-0.00140	-0.00139
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00365	-0.00370	-0.00369
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00364	-0.00366	-0.00371

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00144	0.00145	0.00141
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00144	0.00146	0.00141
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00371	0.00373	0.00369
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00371	0.00377	0.00373

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00255	-0.00312	-0.00315
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00254	-0.00312	-0.00315
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00370	-0.00375	-0.00376
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00370	-0.00372	-0.00378

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00313	0.00319	0.00315
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00313	0.00317	0.00315
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00377	0.00382	0.00376
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00378	0.00383	0.00379

SKY130_OSU_SC_12T_MS__OR2x

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__or2_1	8.30280
sky130_osu_sc_12T_ms__or2_2	10.25640
sky130_osu_sc_12T_ms__or2_4	14.16360
sky130_osu_sc_12T_ms__or2_8	21.97800
sky130_osu_sc_12T_ms__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__or2_1	0.00319	0.00295	1.43613
sky130_osu_sc_12T_ms__or2_2	0.00319	0.00295	2.92971
sky130_osu_sc_12T_ms__or2_4	0.00319	0.00295	5.74738
sky130_osu_sc_12T_ms__or2_8	0.00319	0.00296	11.17051
sky130_osu_sc_12T_ms__or2_l	0.00238	0.00224	0.98200

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__or2_1	0.00000	0.04165	0.06491
sky130_osu_sc_12T_ms__or2_2	0.00000	0.05801	0.12874
sky130_osu_sc_12T_ms__or2_4	0.00000	0.09073	0.25641
sky130_osu_sc_12T_ms__or2_8	0.00000	0.15618	0.51173
sky130_osu_sc_12T_ms__or2_l	0.00000	0.66824	1.15090

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__or2_1	A->Y (RR)	0.05418	0.49060	6.13682
	B->Y (RR)	0.04671	0.46698	5.98988
sky130_osu_sc_12T_ms__or2_2	A->Y (RR)	0.05802	0.41602	6.08923
	B->Y (RR)	0.05024	0.39471	5.93972
sky130_osu_sc_12T_ms__or2_4	A->Y (RR)	0.07493	0.39994	6.23123
	B->Y (RR)	0.06696	0.38215	6.08398
sky130_osu_sc_12T_ms__or2_8	A->Y (RR)	0.10923	0.43339	6.47650
	B->Y (RR)	0.10104	0.41904	6.34361
sky130_osu_sc_12T_ms__or2_l	A->Y (RR)	0.05728	0.53794	5.97671
	B->Y (RR)	0.05045	0.51663	5.88059

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__or2_1	A->Y (FF)	0.08561	0.50009	6.05379
	B->Y (FF)	0.07094	0.50298	6.30586
sky130_osu_sc_12T_ms__or2_2	A->Y (FF)	0.10067	0.48046	6.30225
	B->Y (FF)	0.08617	0.48905	6.54356
sky130_osu_sc_12T_ms__or2_4	A->Y (FF)	0.14253	0.51128	6.56788
	B->Y (FF)	0.12807	0.52773	6.78967
sky130_osu_sc_12T_ms__or2_8	A->Y (FF)	0.22960	0.60312	6.82203
	B->Y (FF)	0.21515	0.62503	7.04160
sky130_osu_sc_12T_ms__or2_l	A->Y (FF)	0.09074	0.52998	5.86000
	B->Y (FF)	0.07732	0.53157	6.09339

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.00573	0.00731	0.05609
	B	0.00000	0.00000	0.00000
	B	0.00426	0.00671	0.06066
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.00970	0.01171	0.06237
	B	0.00000	0.00000	0.00000
	B	0.00813	0.01086	0.06613
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.01896	0.02135	0.07427
	B	0.00000	0.00000	0.00000
	B	0.01732	0.02062	0.07757
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.04050	0.04131	0.09576
	B	0.00000	0.00000	0.00000
	B	0.03868	0.04129	0.09909
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00435	0.00608	0.05538
	B	0.00000	0.00000	0.00000
	B	0.00335	0.00582	0.06635

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.01291	0.01423	0.07048
	B	0.00000	0.00000	0.00000
	B	0.01063	0.01399	0.09177
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01645	0.01751	0.07373
	B	0.00000	0.00000	0.00000
	B	0.01415	0.01716	0.09379
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02758	0.02578	0.08064
	B	0.00000	0.00000	0.00000
	B	0.02534	0.02542	0.09882
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.06078	0.04405	0.09595
	B	0.00000	0.00000	0.00000
	B	0.05848	0.04347	0.11216
sky130_osu_sc_12T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.00957	0.01143	0.06845
	B	0.00000	0.00000	0.00000
	B	0.00802	0.01172	0.08977

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00263	-0.00327	-0.00327
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00263	-0.00327	-0.00327
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00263	-0.00327	-0.00327
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00263	-0.00328	-0.00327
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00167	-0.00217	-0.00220

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00325	0.00329	0.00327
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00325	0.00329	0.00327
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00325	0.00329	0.00327
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00325	0.00329	0.00327
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00223	0.00225	0.00224

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00141	-0.00142	-0.00142
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00141	-0.00142	-0.00142
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00141	-0.00142	-0.00142
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00141	-0.00142	-0.00142
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00097	-0.00098	-0.00097

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00147	0.00149	0.00143
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00147	0.00149	0.00143
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00147	0.00149	0.00143
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00147	0.00149	0.00144
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00102	0.00098

SKY130_OSU_SC_12T_MS__TBUFIx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__tbufi_1	8.30280
sky130_osu_sc_12T_ms__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ms__tbufi_1	0.00308	0.00404	0.81080
sky130_osu_sc_12T_ms__tbufi_l	0.00235	0.00307	0.55300

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tbufi_1	0.00000	0.03253	0.12767
sky130_osu_sc_12T_ms__tbufi_l	0.00000	0.57551	2.30072

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tbufi_1	A->Y (FR)	0.03251	0.70940	10.01030
	OE->Y (FR)	0.03810	0.33486	5.55623
	OE->Y (RR)	0.05841	0.55849	6.16119
sky130_osu_sc_12T_ms__tbufi_l	A->Y (FR)	0.03852	0.76182	9.59983
	OE->Y (FR)	0.03880	0.33481	5.55614
	OE->Y (RR)	0.06342	0.63231	6.19007

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tbufi_1	A->Y (RF)	0.02411	0.48513	6.83404
	OE->Y (FF)	0.03850	0.33485	5.55620
	OE->Y (RF)	0.02251	0.44894	6.19973
sky130_osu_sc_12T_ms__tbufi_l	A->Y (RF)	0.02747	0.51542	6.56938
	OE->Y (FF)	0.03932	0.33481	5.55615
	OE->Y (RF)	0.02526	0.47571	5.87098

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00551	0.00661	0.02928
	OE	0.00000	0.00000	0.00000
	OE	0.00542	0.00909	0.09896
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00418	0.00554	0.03317
	OE	0.00000	0.00000	0.00000
	OE	0.00395	0.00778	0.10201

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00082	-0.00003	0.01413
	OE	0.00000	0.00000	0.00000
	OE	0.00318	0.00712	0.11197
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00045	0.00010	0.01182
	OE	0.00000	0.00000	0.00000
	OE	0.00227	0.00642	0.10941

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00254	-0.00255	-0.00255
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00220	-0.00223	-0.00221
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00183	-0.00184	-0.00184
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00160	-0.00161	-0.00160

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00254	0.00255	0.00255
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00224	0.00226	0.00222
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00183	0.00184	0.00184
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00163	0.00163	0.00161

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00193	0.00620	0.11265
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00169	0.00592	0.11241
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00139	0.00583	0.11018
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00115	0.00559	0.10992

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00662	0.01121	0.11760
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00666	0.01134	0.11770
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00503	0.01014	0.11450
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00500	0.01017	0.11454

SKY130_OSU_SC_12T_MS__TNBUFIx

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__tnbufi_1	8.30280
sky130_osu_sc_12T_ms__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ms__tnbufi_1	0.00307	0.00457	0.81079
sky130_osu_sc_12T_ms__tnbufi_l	0.00225	0.00344	0.55209

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tnbufi_1	0.00000	0.05363	0.06437
sky130_osu_sc_12T_ms__tnbufi_l	0.00000	0.95890	1.15067

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tnbufi_1	A->Y (FR)	0.03266	0.70925	10.01010
	OE->Y (RR)	0.02344	0.33509	5.55644
	OE->Y (FR)	0.04077	0.68762	9.38286
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (FR)	0.03771	0.76001	9.58604
	OE->Y (RR)	0.02579	0.33489	5.55619
	OE->Y (FR)	0.04460	0.74196	9.00100

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tnbufi_1	A->Y (RF)	0.02365	0.48495	6.83399
	OE->Y (RF)	0.02324	0.33507	5.55644
	OE->Y (FF)	0.04197	0.42807	4.94757
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (RF)	0.02626	0.51434	6.56143
	OE->Y (RF)	0.02559	0.33487	5.55621
	OE->Y (FF)	0.04609	0.45697	4.72114

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00571	0.00680	0.02947
	OE	0.00000	0.00000	0.00000
	OE	0.01384	0.01902	0.12446
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00426	0.00562	0.03329
	OE	0.00000	0.00000	0.00000
	OE	0.01042	0.01575	0.11958

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00109	-0.00028	0.01388
	OE	0.00000	0.00000	0.00000
	OE	0.01182	0.01695	0.10969
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00075	-0.00018	0.01158
	OE	0.00000	0.00000	0.00000
	OE	0.00895	0.01436	0.11056

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00207	-0.00209	-0.00208
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00177	-0.00179	-0.00178
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00144	-0.00145	-0.00144
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00121	-0.00121	-0.00121

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00207	0.00209	0.00208
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00180	0.00181	0.00178
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00144	0.00145	0.00144
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00124	0.00126	0.00124

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00361	0.00026	0.10725
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00366	0.00029	0.10727
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00239	0.00167	0.10626
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00255	0.00163	0.10627

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01033	0.01600	0.12288
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01020	0.01568	0.12276
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00790	0.01364	0.11829
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00779	0.01352	0.11823

SKY130_OSU_SC_12T_MS__XNOR2

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__xnor2_l	0.00615	0.00528	0.83715

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xnor2_l	0.00000	0.11021	0.19204

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xnor2_l	A->Y (RR)	B	0.07387	0.58501	6.30781
	A->Y (FR)	!B	0.04386	0.71823	10.07140
	B->Y (RR)	A	0.06047	0.57588	6.43028
	B->Y (FR)	!A	0.05577	0.70251	9.54221

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xnor2_l	A->Y (FF)	B	0.07189	0.48624	5.31043
	A->Y (RF)	!B	0.03266	0.46600	6.41215
	B->Y (FF)	A	0.06235	0.47844	5.31675
	B->Y (RF)	!A	0.04060	0.47527	6.40855

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00576	0.00908	0.10409
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01397	0.01923	0.14751
	B	A	0.00000	0.00000	0.00000
	B	A	0.00224	0.00644	0.11474
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01495	0.01995	0.14062

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01636	0.02037	0.12546
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00350	0.00761	0.12577
	B	A	0.00000	0.00000	0.00000
	B	A	0.01495	0.01988	0.12759
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00454	0.00857	0.12530

SKY130_OSU_SC_12T_MS__XOR2

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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_12T_ms__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__xor2_l	0.00618	0.00532	0.78837

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xor2_l	0.00000	0.11021	0.18127

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xor2_l	A->Y (RR)	!B	0.07764	0.59776	6.42175
	A->Y (FR)	B	0.05743	0.72180	9.68792
	B->Y (RR)	!A	0.06408	0.59344	6.43962
	B->Y (FR)	A	0.06346	0.72694	9.66789

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xor2_l	A->Y (FF)	!B	0.06732	0.47550	4.97723
	A->Y (RF)	B	0.03469	0.49329	6.69994
	B->Y (FF)	!A	0.06435	0.47590	5.13838
	B->Y (RF)	A	0.03995	0.46507	6.13303

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01633	0.02096	0.13751
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00337	0.00589	0.10819
	B	A	0.00000	0.00000	0.00000
	B	A	0.01667	0.02133	0.13575
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00218	0.00599	0.11053

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00283	0.00648	0.12057
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01717	0.02164	0.11194
	B	A	0.00000	0.00000	0.00000
	B	A	0.00290	0.00644	0.11696
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01514	0.02006	0.12393

SKY130_OSU_SC_12T_MS_x

sky130_osu_sc_12T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__ant	4.39560
sky130_osu_sc_12T_ms__tiehi	4.39560
sky130_osu_sc_12T_ms__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ms__ant	0.55439
sky130_osu_sc_12T_ms__tiehi	0.00000
sky130_osu_sc_12T_ms__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__ant	0.00000	298950.00000	597899.00000
sky130_osu_sc_12T_ms__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_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_12T_ms__ant	0.00000	0.00000	0.00000
	-0.00176	0.07569	1.23970

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__ant	0.00000	0.00000	0.00000
	5.20405	4.98590	1.46743