sky130_osu_sc_12T_hs_tt_1P20_25C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_HS__ADDFx
SKY130_OSU_SC_12T_HS__ADDHx
SKY130_OSU_SC_12T_HS__AND2x
SKY130_OSU_SC_12T_HS__AOI21
SKY130_OSU_SC_12T_HS__AOI22
SKY130_OSU_SC_12T_HS__BUFx
SKY130_OSU_SC_12T_HS__DFFRx
SKY130_OSU_SC_12T_HS__DFFSRx
SKY130_OSU_SC_12T_HS__DFFSx
SKY130_OSU_SC_12T_HS__DFFx
SKY130_OSU_SC_12T_HS__INVx
SKY130_OSU_SC_12T_HS__MUX2
SKY130_OSU_SC_12T_HS__NAND2x
SKY130_OSU_SC_12T_HS__NOR2x
SKY130_OSU_SC_12T_HS__OAI21
SKY130_OSU_SC_12T_HS__OAI22
SKY130_OSU_SC_12T_HS__OR2x
SKY130_OSU_SC_12T_HS__TBUFIx
SKY130_OSU_SC_12T_HS__TNBUFIx
SKY130_OSU_SC_12T_HS__XNOR2
SKY130_OSU_SC_12T_HS__XOR2
SKY130_OSU_SC_12T_HS_x

SKY130_OSU_SC_12T_HS__ADDFx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addf_1	31.25760
sky130_osu_sc_12T_hs__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_hs__addf_1	0.01017	0.01017	0.00795	0.46623	0.19393	0.43207
sky130_osu_sc_12T_hs__addf_l	0.01017	0.01017	0.00795	0.34606	0.19456	0.43169

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.01543	0.01782
sky130_osu_sc_12T_hs__addf_l	0.00000	0.03521	0.05827

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (RR)	0.27045	2.12358	21.34080
	B->CO (RR)	0.25963	2.08088	21.12330
	CI->CO (RR)	0.25661	2.13389	21.74770
	CON->CO (FR)	0.06078	1.07995	12.72190
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.26070	1.96718	18.07950
	B->CO (RR)	0.25066	1.93674	18.06340
	CI->CO (RR)	0.24684	1.97759	18.50580
	CON->CO (FR)	0.06641	1.10022	11.98180

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (FF)	0.61964	3.75250	35.69540
	B->CO (FF)	0.56546	3.62040	34.81700
	CI->CO (FF)	0.55288	3.64772	35.35690
	CON->CO (RF)	0.02854	0.58962	7.38139
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.60272	3.38732	29.08290
	B->CO (FF)	0.54965	3.27114	28.41660
	CI->CO (FF)	0.53601	3.28319	28.76380
	CON->CO (RF)	0.03100	0.61205	7.29124

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (FR)	0.45911	1.75057	12.95710
	B->CON (FR)	0.41016	1.66515	12.70960
	CI->CON (FR)	0.39275	1.64644	12.68820
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.43941	1.73255	12.96050
	B->CON (FR)	0.39166	1.64782	12.71310
	CI->CON (FR)	0.37314	1.62843	12.69170

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (RF)	0.12867	0.66939	6.06595
	B->CON (RF)	0.12177	0.67499	6.34672
	CI->CON (RF)	0.11479	0.68115	6.49015
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.12480	0.66605	6.06833
	B->CON (RF)	0.11807	0.67186	6.35012
	CI->CON (RF)	0.11094	0.67783	6.49389

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-R)	0.84952	3.87598	31.17020
	B->S (-R)	0.82284	3.80869	30.80720
	CI->S (-R)	0.77812	3.75926	30.80130
	CON->S (RR)	0.16158	1.10421	8.90876
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.81830	3.85031	31.12780
	B->S (-R)	0.79234	3.78483	30.77850
	CI->S (-R)	0.74704	3.73323	30.75910
	CON->S (RR)	0.16166	1.10394	8.90222

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-F)	0.52833	1.90728	14.09240
	B->S (-F)	0.53036	1.84188	14.03200
	CI->S (-F)	0.51355	1.91278	14.50240
	CON->S (FF)	0.24664	0.91908	6.55182
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.51851	1.89900	14.07760
	B->S (-F)	0.52114	1.83426	14.01940
	CI->S (-F)	0.50363	1.90454	14.49040
	CON->S (FF)	0.24662	0.91892	6.54972

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00130	0.00124	0.00122
	B	0.00147	0.00147	0.00147
	CI	0.00148	0.00151	0.00152
sky130_osu_sc_12T_hs__addf_l	A	0.00119	0.00114	0.00110
	B	0.00136	0.00136	0.00134
	CI	0.00138	0.00140	0.00140

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00386	0.00384	0.00392
	B	0.00380	0.00380	0.00387
	CI	0.00333	0.00340	0.00347
sky130_osu_sc_12T_hs__addf_l	A	0.00377	0.00374	0.00379
	B	0.00371	0.00370	0.00373
	CI	0.00323	0.00331	0.00334

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00385	0.00383	0.00382
	B	0.00379	0.00378	0.00378
	CI	0.00333	0.00338	0.00339
sky130_osu_sc_12T_hs__addf_l	A	0.00377	0.00373	0.00373
	B	0.00370	0.00369	0.00368
	CI	0.00323	0.00329	0.00330

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00128	0.00123	0.00116
	B	0.00144	0.00145	0.00137
	CI	0.00148	0.00150	0.00148
sky130_osu_sc_12T_hs__addf_l	A	0.00117	0.00112	0.00105
	B	0.00134	0.00134	0.00126
	CI	0.00137	0.00139	0.00137

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00386	0.00384	0.00391
	B	0.00380	0.00380	0.00388
	CI	0.00333	0.00340	0.00348
sky130_osu_sc_12T_hs__addf_l	A	0.00377	0.00375	0.00381
	B	0.00371	0.00371	0.00379
	CI	0.00324	0.00331	0.00337

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00768	0.00771	0.00765
	B	0.00717	0.00700	0.00705
	CI	0.00635	0.00635	0.00629
sky130_osu_sc_12T_hs__addf_l	A	0.00768	0.00771	0.00765
	B	0.00716	0.00700	0.00705
	CI	0.00635	0.00635	0.00629

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	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_hs__addh_1	18.55920
sky130_osu_sc_12T_hs__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_hs__addh_1	0.00497	0.00527	0.45889	0.46658	0.47070
sky130_osu_sc_12T_hs__addh_l	0.00484	0.00524	0.34509	0.46890	0.35808

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.01275	0.01340
sky130_osu_sc_12T_hs__addh_l	0.00000	0.05532	0.05607

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CO (RR)	0.25937	1.24378	9.99407
	B->CO (RR)	0.26467	1.25162	10.23920
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.18751	1.13734	8.36678
	B->CO (RR)	0.19142	1.13318	8.51306

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CO (FF)	0.23092	0.99095	7.87808
	B->CO (FF)	0.23977	1.00408	7.97088
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.19442	0.86492	6.49552
	B->CO (FF)	0.20346	0.88123	6.60586

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CON (RR)	0.35626	1.31344	10.02870
	B->CON (RR)	0.36131	1.32000	10.26760
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.26617	1.16643	8.82693
	B->CON (RR)	0.26995	1.15851	8.97840

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CON (FF)	0.28754	1.03181	7.95002
	B->CON (FF)	0.28830	1.03741	8.03714
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.22611	0.85923	6.56557
	B->CON (FF)	0.22974	0.87063	6.66489

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->S (FR)	0.41675	2.15704	18.98790
	B->S (FR)	0.41781	2.16267	19.11190
	CON->S (FR)	0.06377	1.09074	12.88100
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.33347	1.81781	14.78520
	B->S (FR)	0.33742	1.82816	14.91350
	CON->S (FR)	0.06657	1.11495	12.22140

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->S (RF)	0.48559	2.39842	20.61270
	B->S (RF)	0.49053	2.40509	20.83260
	CON->S (RF)	0.03818	0.74133	9.17715
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.36243	1.86010	14.10220
	B->S (RF)	0.36609	1.85307	14.24570
	CON->S (RF)	0.03033	0.61763	7.41368

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00199	0.00192	0.00185
	B	0.00000	0.00000	0.00000
	B	0.00187	0.00182	0.00174
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00172	0.00163	0.00165
	B	0.00000	0.00000	0.00000
	B	0.00160	0.00152	0.00146

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00275	0.00268	0.00261
	B	0.00000	0.00000	0.00000
	B	0.00285	0.00286	0.00280
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00249	0.00241	0.00237
	B	0.00000	0.00000	0.00000
	B	0.00260	0.00258	0.00254

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00199	0.00192	0.00185
	B	0.00000	0.00000	0.00000
	B	0.00187	0.00180	0.00174
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00172	0.00163	0.00161
	B	0.00000	0.00000	0.00000
	B	0.00160	0.00152	0.00147

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00275	0.00268	0.00261
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00286	0.00280
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00249	0.00240	0.00230
	B	0.00000	0.00000	0.00000
	B	0.00260	0.00258	0.00250

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00275	0.00269	0.00264
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00286	0.00282
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00249	0.00241	0.00239
	B	0.00000	0.00000	0.00000
	B	0.00260	0.00259	0.00259

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00199	0.00192	0.00185
	B	0.00000	0.00000	0.00000
	B	0.00187	0.00181	0.00173
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00172	0.00163	0.00162
	B	0.00000	0.00000	0.00000
	B	0.00160	0.00152	0.00147

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.19487	0.18491	0.04472
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.19543	0.18546	0.04486

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.19479	0.18432	0.04161
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.19536	0.18487	0.04172

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__and2_1	8.30280
sky130_osu_sc_12T_hs__and2_2	10.25640
sky130_osu_sc_12T_hs__and2_4	14.16360
sky130_osu_sc_12T_hs__and2_6	18.07080
sky130_osu_sc_12T_hs__and2_8	21.97800
sky130_osu_sc_12T_hs__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__and2_1	0.00266	0.00277	0.46188
sky130_osu_sc_12T_hs__and2_2	0.00266	0.00277	0.92405
sky130_osu_sc_12T_hs__and2_4	0.00265	0.00277	1.81416
sky130_osu_sc_12T_hs__and2_6	0.00269	0.00276	2.69409
sky130_osu_sc_12T_hs__and2_8	0.00266	0.00277	3.50412
sky130_osu_sc_12T_hs__and2_l	0.00207	0.00215	0.35092

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.00674	0.01040
sky130_osu_sc_12T_hs__and2_2	0.00000	0.01043	0.01203
sky130_osu_sc_12T_hs__and2_4	0.00000	0.01782	0.01916
sky130_osu_sc_12T_hs__and2_6	0.00000	0.02521	0.02792
sky130_osu_sc_12T_hs__and2_8	0.00000	0.03259	0.03667
sky130_osu_sc_12T_hs__and2_l	0.00000	0.05662	0.09041

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.15032	1.04370	8.48165
	B->Y (RR)	0.15743	1.04696	8.66975
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.16477	0.93841	8.76695
	B->Y (RR)	0.17189	0.93496	8.92603
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.22343	0.92819	9.28929
	B->Y (RR)	0.23051	0.91716	9.37688
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.28335	0.96468	9.64809
	B->Y (RR)	0.29029	0.95069	9.70087
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.34037	1.01130	9.88932
	B->Y (RR)	0.34760	0.99690	9.88928
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.15130	1.08078	8.17461
	B->Y (RR)	0.15818	1.08510	8.35737

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	**A->Y (FF)**	0.15133	0.77298	6.02883
	B->Y (FF)	0.15998	0.78809	6.18344
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.18600	0.77710	6.46537
	B->Y (FF)	0.19299	0.78912	6.56849
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.27225	0.85337	7.08837
	B->Y (FF)	0.27547	0.85800	7.15315
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.36112	0.94419	7.53202
	B->Y (FF)	0.36031	0.94495	7.58097
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.44468	1.03375	7.83592
	B->Y (FF)	0.44053	1.02989	7.87011
sky130_osu_sc_12T_hs__and2_1	**A->Y (FF)**	0.14605	0.76112	5.41065
	B->Y (FF)	0.15946	0.78154	5.53638

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00139	0.00123	0.00131
	B	0.00000	0.00000	0.00000
	B	0.00142	0.00126	0.00124
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00249	0.00245	0.00251
	B	0.00000	0.00000	0.00000
	B	0.00253	0.00250	0.00249
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00504	0.00522	0.00541
	B	0.00000	0.00000	0.00000
	B	0.00507	0.00527	0.00539
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.00757	0.00797	0.00816
	B	0.00000	0.00000	0.00000
	B	0.00761	0.00788	0.00815
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01009	0.01045	0.01252
	B	0.00000	0.00000	0.00000
	B	0.01013	0.01055	0.01116
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00110	0.00099	0.00112
	B	0.00000	0.00000	0.00000
	B	0.00112	0.00101	0.00110

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00335	0.00326	0.00339
	B	0.00000	0.00000	0.00000
	B	0.00380	0.00368	0.00380
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00420	0.00427	0.00439
	B	0.00000	0.00000	0.00000
	B	0.00465	0.00470	0.00479
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00630	0.00673	0.00688
	B	0.00000	0.00000	0.00000
	B	0.00675	0.00715	0.00726
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.00848	0.00925	0.00947
	B	0.00000	0.00000	0.00000
	B	0.00892	0.00965	0.00982
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01052	0.01161	0.01194
	B	0.00000	0.00000	0.00000
	B	0.01098	0.01198	0.01226
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00260	0.00251	0.00281
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00284	0.00311

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00108	-0.00109	-0.00110
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00108	-0.00109	-0.00110
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00108	-0.00109	-0.00110
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00110	-0.00110	-0.00111
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00108	-0.00110	-0.00110
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00077	-0.00077	-0.00078

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00111	0.00113	0.00110
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00111	0.00113	0.00110
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00111	0.00111	0.00110
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00112	0.00112	0.00112
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00111	0.00111	0.00110
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00079	0.00080	0.00079

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00103	-0.00103	-0.00103
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00103	-0.00103	-0.00103
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00103	-0.00103	-0.00103
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00073	-0.00074	-0.00073

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00104	0.00104
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00105	0.00104
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00105	0.00104
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00105	0.00104
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00105	0.00104
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00075	0.00074	0.00074

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__aoi21_l	0.00240	0.00259	0.00260	0.19195

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.00303	0.00483

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (FR)	0.23296	1.54869	12.86610
	A1->Y (FR)	0.19460	1.44940	12.43910
	B0->Y (FR)	0.18332	1.45899	12.62620

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (RF)	0.06266	0.59605	5.92353
	A1->Y (RF)	0.05721	0.60942	6.23899
	B0->Y (RF)	0.03641	0.53880	5.79776

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00264	0.00259	0.00252
	A1	0.00000	0.00000	0.00000
	A1	0.00222	0.00217	0.00215
	B0	0.00223	0.00216	0.00215

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00058	0.00051	0.00046
	A1	0.00000	0.00000	0.00000
	A1	0.00059	0.00051	0.00046
	B0	-0.00016	-0.00016	-0.00020

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00082	-0.00087	-0.00086
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00088	-0.00089	-0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00089	-0.00088	-0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00086	0.00087	0.00086
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00088	0.00090	0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00091	0.00090	0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00082	-0.00087	-0.00087
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00089	-0.00089	-0.00089
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00098	-0.00099	-0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00086	0.00087	0.00087
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00089	0.00090	0.00089
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00100	0.00100	0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00049	-0.00050	-0.00049

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00057	0.00057	0.00051

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_12T_hs__aoi22_l	0.00240	0.00259	0.00272	0.00254	0.18996

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.00388	0.00876

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (FR)	0.29697	1.61841	12.89220
	A1->Y (FR)	0.26681	1.58023	12.82860
	B0->Y (FR)	0.19267	1.46262	12.55730
	B1->Y (FR)	0.22352	1.50078	12.62560

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (RF)	0.07851	0.61273	5.92314
	A1->Y (RF)	0.07298	0.62596	6.24002
	B0->Y (RF)	0.04941	0.59500	6.19013
	B1->Y (RF)	0.05510	0.58204	5.87691

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00327	0.00323	0.00315
	A1	0.00286	0.00280	0.00271
	B0	0.00237	0.00228	0.00226
	B1	0.00278	0.00272	0.00270

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00113	0.00107	0.00099
	A1	0.00114	0.00107	0.00099
	B0	-0.00006	-0.00007	-0.00011
	B1	-0.00006	-0.00006	-0.00010

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00083	-0.00087	-0.00086
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00088	-0.00089	-0.00089
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00088	-0.00088	-0.00088
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00088	-0.00088	-0.00088

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00086	0.00088	0.00086
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00088	0.00090	0.00089
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00091	0.00090	0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00091	0.00090	0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00083	-0.00087	-0.00086
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00089	-0.00089	-0.00089
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00097	-0.00098	-0.00099
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00097	-0.00098	-0.00099

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00086	0.00087	0.00086
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00089	0.00089	0.00089
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00099	0.00102	0.00100
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00099	0.00102	0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00049	-0.00050	-0.00049
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00049	-0.00049	-0.00049
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00103	-0.00103	-0.00105
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00103	-0.00103	-0.00105

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00060	0.00060	0.00052
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00049	0.00049	0.00049
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00105	0.00105	0.00105
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00105	0.00105	0.00105

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00050	-0.00051	-0.00050
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00050	-0.00050	-0.00050
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00094	-0.00095	-0.00094
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00094	-0.00095	-0.00094

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00061	0.00061	0.00053
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00050	0.00050	0.00050
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00096	0.00095	0.00094
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00096	0.00095	0.00094

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__buf_1	6.34920
sky130_osu_sc_12T_hs__buf_2	8.30280
sky130_osu_sc_12T_hs__buf_4	12.21000
sky130_osu_sc_12T_hs__buf_6	16.11720
sky130_osu_sc_12T_hs__buf_8	20.02440
sky130_osu_sc_12T_hs__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__buf_1	0.00277	0.43669
sky130_osu_sc_12T_hs__buf_2	0.00277	0.89803
sky130_osu_sc_12T_hs__buf_4	0.00277	1.79750
sky130_osu_sc_12T_hs__buf_6	0.00081	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00277	3.56477
sky130_osu_sc_12T_hs__buf_l	0.00212	0.35297

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.00602	0.00602
sky130_osu_sc_12T_hs__buf_2	0.00000	0.00902	0.01040
sky130_osu_sc_12T_hs__buf_4	0.00000	0.01504	0.01916
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.02707	0.03667
sky130_osu_sc_12T_hs__buf_l	0.00000	0.04559	0.04559

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__buf_1	**A->Y (RR)**	0.11182	1.00102	8.31778
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.11148	0.87166	8.59170
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.14564	0.83200	9.08132
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.21601	0.86259	9.70922
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.11218	1.03191	8.07691

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__buf_1	**A->Y (FF)**	0.14472	0.75570	5.84253
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.17894	0.76681	6.34566
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.26544	0.84171	7.02832
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.43751	1.02586	7.85509
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.14266	0.75593	5.37390

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00134	0.00113	0.00119
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00244	0.00234	0.00238
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00501	0.00512	0.00524
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01006	0.01054	0.01080
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00107	0.00092	0.00104

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00332	0.00318	0.00331
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00414	0.00414	0.00426
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00626	0.00660	0.00672
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01051	0.01145	0.01171
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00260	0.00249	0.00280

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00028	-0.00028	-0.00028

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
	0.00028	0.00028	0.00028

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffr_1	42.49080
sky130_osu_sc_12T_hs__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_hs__dffr_1	0.00252	0.00252	0.00818	0.46094	0.46181
sky130_osu_sc_12T_hs__dffr_l	0.00251	0.00252	0.00817	0.35437	0.35133

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.04397	0.08149
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.08354	0.12106

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RR)	0.75047	2.16564	14.19610
	QN->Q (FR)	0.06691	1.15136	13.45000
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.72403	2.19804	13.68460
	QN->Q (FR)	0.06959	1.15712	12.60630

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RF)	0.70404	2.31878	17.02770
	QN->Q (RF)	0.03075	0.62599	7.85752
	RN->Q (FF)	0.49471	2.24192	18.94080
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.70315	2.44668	16.90550
	QN->Q (RF)	0.03267	0.64587	7.75096
	RN->Q (FF)	0.49449	2.37327	18.79890

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->QN (RR)	0.62872	1.53410	9.24313
	RN->QN (FR)	0.41868	1.45858	11.16310
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.61902	1.56261	8.92125
	RN->QN (FR)	0.40960	1.48699	10.82850

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	**CK->QN (RF)**	0.63267	1.18327	4.59508
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.60733	1.17217	4.53814

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_hs__dffr_1	hold	CK (R)	-0.09631	-0.12420	-0.70201
	setup	CK (R)	0.56534	0.56043	1.79089
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.09687	-0.12300	-0.70112
	setup	CK (R)	0.56778	0.56390	1.80975

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.33320	-0.65868	-7.13271
	setup	CK (R)	0.38138	0.68585	7.20462
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.32971	-0.65872	-7.13339
	setup	CK (R)	0.38141	0.68594	7.20537

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.09631	-0.12420	-0.70201
	setup	CK (R)	0.56534	0.56043	1.79089
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.09687	-0.12300	-0.70112
	setup	CK (R)	0.56778	0.56390	1.80975

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.33320	-0.65868	-7.13271
	setup	CK (R)	0.38138	0.68585	7.20462
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.32971	-0.65872	-7.13339
	setup	CK (R)	0.38141	0.68594	7.20537

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.50827	0.50966	1.54683
	removal	CK (R)	-0.08170	-0.09772	-0.07120
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.51330	0.51323	1.55564
	removal	CK (R)	-0.08079	-0.09704	-0.07356

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.50827	0.50966	1.54683
	removal	CK (R)	-0.08170	-0.09772	-0.07120
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.51330	0.51323	1.55564
	removal	CK (R)	-0.08079	-0.09704	-0.07356

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	min_pulse_width	RN ()	0.31938	0.61699	13.33370
	min_pulse_width	RN ()	0.32173	0.61699	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.31017	0.61256	13.33370
	min_pulse_width	RN ()	0.31483	0.61256	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_hs__dffr_1	min_pulse_width	CK ()	0.31349	0.46875	13.33370
	min_pulse_width	CK ()	0.39818	0.46875	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.29232	0.46875	13.33370
	min_pulse_width	CK ()	0.38759	0.46875	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_hs__dffr_1	min_pulse_width	CK ()	0.75788	0.80727	13.33370
	min_pulse_width	CK ()	0.31037	0.58159	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.75892	0.81169	13.33370
	min_pulse_width	CK ()	0.31037	0.58159	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00345	0.00309	0.00115
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00314	0.00280	0.00165

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00379	0.00357	0.00253
	RN	-0.00046	-0.01571	-0.16594
	RN	0.00845	0.00829	0.00714
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00346	0.00327	0.00264
	RN	-0.00046	-0.01342	-0.12757
	RN	0.00813	0.00799	0.00725

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00379	0.00357	0.00254
	RN	-0.00046	-0.01573	-0.16625
	RN	0.00846	0.00830	0.00713
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00347	0.00327	0.00265
	RN	-0.00046	-0.01335	-0.12648
	RN	0.00813	0.00799	0.00726

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00343	0.00306	0.00106
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00312	0.00278	0.00159

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00078	-0.00088	-0.00088
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00407	0.00392	0.00382
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00164	0.00151	0.00145
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00078	-0.00088	-0.00088
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00407	0.00392	0.00382
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00164	0.00151	0.00145

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00087	0.00088	0.00088
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00595	0.00586	0.00574
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00290	0.00281	0.00277
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00087	0.00088	0.00088
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00595	0.00587	0.00575
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00290	0.00281	0.00277

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00136	0.00118	0.00120
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00394	0.00366	0.00363
sky130_osu_sc_12T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00136	0.00118	0.00121
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00395	0.00366	0.00363

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00333	0.00319	0.00328
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00645	0.00623	0.00618
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00333	0.00319	0.00328
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00645	0.00624	0.00618

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00012	-0.00037	-0.00043
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00204	0.00166	0.00147
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00016	-0.00043	-0.00047
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00012	-0.00037	-0.00043
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00204	0.00166	0.00147
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00016	-0.00043	-0.00047

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00527	0.00504	0.00508
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01023	0.00990	0.00970
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00763	0.00743	0.00737
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01011	0.00971	0.00982
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00544	0.00519	0.00528
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00527	0.00504	0.00508
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01023	0.00990	0.00970
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00763	0.00744	0.00737
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01011	0.00971	0.00982
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00544	0.00519	0.00528

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffsr_1	46.39800
sky130_osu_sc_12T_hs__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_hs__dffsr_1	0.00248	0.00253	0.00594	0.00832	0.46518	0.46929
sky130_osu_sc_12T_hs__dffsr_l	0.00248	0.00253	0.00593	0.00832	0.34685	0.35166

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.02357	0.02927
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.06314	0.06884

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RR)	0.80825	2.22777	14.37110
	QN->Q (FR)	0.06390	1.12086	13.15970
	RN->Q (RR)	0.65632	2.08376	14.40120
	SN->Q (FR)	0.65114	2.18415	17.02270
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.79225	2.26578	13.66180
	QN->Q (FR)	0.06946	1.14684	12.44580
	RN->Q (RR)	0.64037	2.12278	13.70510
	SN->Q (FR)	0.63098	2.21857	16.27990

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RF)	0.80949	2.41598	17.03560
	QN->Q (RF)	0.03054	0.62686	7.88167
	RN->Q (FF)	0.52704	2.26005	18.96570
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.80900	2.54238	16.71460
	QN->Q (RF)	0.03250	0.64084	7.68389
	RN->Q (FF)	0.52938	2.38750	18.63090

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RR)	0.73273	1.64003	9.31697
	RN->QN (FR)	0.45193	1.48221	11.25090
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.72258	1.67663	9.05451
	RN->QN (FR)	0.44465	1.52199	10.97120

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RF)	0.69654	1.26131	4.85657
	RN->QN (RF)	0.54421	1.12202	4.89394
	SN->QN (FF)	0.53907	1.22239	7.50281
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.67923	1.25794	4.77079
	RN->QN (RF)	0.52679	1.11856	4.81021
	SN->QN (FF)	0.51821	1.21392	7.37950

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_hs__dffsr_1	hold	CK (R)	-0.11943	-0.14631	-0.83097
	setup	CK (R)	0.60029	0.58703	1.75797
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.11874	-0.14587	-0.83102
	setup	CK (R)	0.59988	0.58902	1.76700

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.38246	-0.69940	-7.38880
	setup	CK (R)	0.44588	0.72445	7.44258
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.38465	-0.69970	-7.38678
	setup	CK (R)	0.44591	0.72446	7.44256

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.11943	-0.14631	-0.83097
	setup	CK (R)	0.60029	0.58703	1.75797
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.11874	-0.14587	-0.83102
	setup	CK (R)	0.59988	0.58902	1.76700

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.38246	-0.69940	-7.38880
	setup	CK (R)	0.44588	0.72445	7.44258
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.38465	-0.69970	-7.38678
	setup	CK (R)	0.44591	0.72446	7.44256

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.49663	0.49342	1.45926
	removal	CK (R)	-0.07003	-0.08507	-0.13850
	hold	SN (R)	-0.51838	-0.73435	-5.71575
	setup	SN (R)	0.54715	0.78574	7.68861
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.49906	0.49116	1.46363
	removal	CK (R)	-0.07003	-0.08507	-0.13949
	hold	SN (R)	-0.49489	-0.71090	-5.60846
	setup	SN (R)	0.54415	0.76369	7.54829

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.49663	0.49342	1.45926
	removal	CK (R)	-0.07003	-0.08507	-0.13850
	hold	SN (R)	-0.51838	-0.73435	-5.71575
	hold	SN (R)	-0.51948	-0.73954	-5.72036
	setup	SN (R)	0.54527	0.77734	7.64614
	setup	SN (R)	0.54715	0.78574	7.68861
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.49906	0.49116	1.46363
	removal	CK (R)	-0.07003	-0.08507	-0.13949
	hold	SN (R)	-0.49780	-0.71090	-5.60846
	hold	SN (R)	-0.49489	-0.71260	-5.62868
	setup	SN (R)	0.54415	0.76118	7.50556
	setup	SN (R)	0.51757	0.76369	7.54829

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	RN ()	0.35359	0.64133	13.33370
	min_pulse_width	RN ()	0.37310	0.64133	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.35121	0.63690	13.33370
	min_pulse_width	RN ()	0.36573	0.63690	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_hs__dffsr_1	recovery	CK (R)	0.06215	0.08424	1.27884
	removal	CK (R)	-0.01689	-0.04880	-0.60585
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.06210	0.08425	1.16316
	removal	CK (R)	-0.01563	-0.04880	-0.60585

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.06215	0.08424	1.27884
	removal	CK (R)	-0.01689	-0.04880	-0.60585
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.06210	0.08425	1.16316
	removal	CK (R)	-0.01563	-0.04880	-0.60585

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	SN ()	0.52781	0.80948	13.33370
	min_pulse_width	SN ()	0.54000	0.81390	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.52112	0.78514	13.33370
	min_pulse_width	SN ()	0.51338	0.79178	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_hs__dffsr_1	min_pulse_width	CK ()	0.36289	0.46875	13.33370
	min_pulse_width	CK ()	0.43699	0.46875	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.34878	0.46875	13.33370
	min_pulse_width	CK ()	0.42994	0.46875	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_hs__dffsr_1	min_pulse_width	CK ()	0.79444	0.83603	13.33370
	min_pulse_width	CK ()	0.38196	0.62363	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.79764	0.83603	13.33370
	min_pulse_width	CK ()	0.38196	0.62363	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00415	0.00382	0.00176
	RN	0.00757	0.00732	0.00512
	SN	-0.00046	-0.01580	-0.16747
	SN	0.00824	0.00803	0.00588
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00386	0.00356	0.00239
	RN	0.00727	0.00706	0.00579
	SN	-0.00046	-0.01325	-0.12487
	SN	0.00795	0.00777	0.00648

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00437	0.00421	0.00345
	RN	-0.00046	-0.01580	-0.16747
	RN	0.00890	0.00876	0.00791
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00406	0.00389	0.00328
	RN	-0.00046	-0.01325	-0.12487
	RN	0.00859	0.00844	0.00774

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00438	0.00421	0.00346
	RN	-0.00046	-0.01588	-0.16895
	RN	0.00891	0.00877	0.00790
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00407	0.00389	0.00329
	RN	-0.00046	-0.01336	-0.12660
	RN	0.00859	0.00844	0.00774

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00412	0.00379	0.00177
	RN	0.00754	0.00729	0.00517
	SN	-0.00046	-0.01588	-0.16894
	SN	0.00822	0.00800	0.00581
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00383	0.00353	0.00231
	RN	0.00724	0.00702	0.00570
	SN	-0.00046	-0.01336	-0.12659
	SN	0.00792	0.00774	0.00633

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00086	-0.00089	-0.00088
	(!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)	0.00501	0.00487	0.00480
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00177	0.00164	0.00157
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00175	0.00163	0.00156
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00177	0.00165	0.00158
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00086	-0.00089	-0.00088
	(!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)	0.00501	0.00487	0.00480
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00177	0.00164	0.00157
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00175	0.00163	0.00156
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00177	0.00165	0.00158

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00090	0.00089	0.00088
	(!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)	0.00685	0.00677	0.00660
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00318	0.00311	0.00309
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00320	0.00313	0.00310
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00317	0.00309	0.00307
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00090	0.00089	0.00088
	(!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)	0.00685	0.00677	0.00660
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00318	0.00311	0.00309
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00320	0.00313	0.00310
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00317	0.00309	0.00307

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00125	0.00107	0.00103
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00468	0.00439	0.00428
sky130_osu_sc_12T_hs__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00125	0.00107	0.00103
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00468	0.00439	0.00428

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00365	0.00352	0.00364
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00686	0.00663	0.00657
sky130_osu_sc_12T_hs__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00365	0.00352	0.00363
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00686	0.00663	0.00657

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00231	-0.00233	-0.00234
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00245	-0.00255	-0.00254
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00231	-0.00234	-0.00235
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00109	0.00093	0.00081
sky130_osu_sc_12T_hs__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00231	-0.00233	-0.00234
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00245	-0.00255	-0.00254
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00231	-0.00233	-0.00235
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00109	0.00093	0.00081

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00235	0.00235	0.00235
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00253	0.00255	0.00254
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00235	0.00237	0.00235
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00541	0.00528	0.00524
sky130_osu_sc_12T_hs__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00235	0.00235	0.00235
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00253	0.00255	0.00254
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00235	0.00237	0.00235
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00541	0.00528	0.00524

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00015	-0.00041	-0.00046
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00241	0.00206	0.00187
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00238	0.00204	0.00184
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00009	-0.00038	-0.00041
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00138	0.00093	0.00093
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00015	-0.00041	-0.00046
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00241	0.00207	0.00187
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00238	0.00204	0.00184
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00009	-0.00038	-0.00041
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00138	0.00093	0.00093

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01132	0.01100	0.01078
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00536	0.00513	0.00516
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00773	0.00754	0.00746
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00775	0.00756	0.00747
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01105	0.01063	0.01068
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00544	0.00519	0.00528
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00702	0.00663	0.00684
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01132	0.01100	0.01078
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00536	0.00513	0.00516
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00773	0.00754	0.00746
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00775	0.00756	0.00747
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01105	0.01063	0.01068
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00544	0.00519	0.00528
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00702	0.00663	0.00684

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffs_1	38.58360
sky130_osu_sc_12T_hs__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_hs__dffs_1	0.00250	0.00505	0.00816	0.45389	0.46164
sky130_osu_sc_12T_hs__dffs_l	0.00250	0.00505	0.00816	0.34833	0.35202

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.07565	0.19453
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.11522	0.23410

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RR)	0.48114	1.85034	13.74020
	QN->Q (FR)	0.06700	1.14202	13.30670
	SN->Q (FR)	0.39650	1.88072	15.58590
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.47225	1.90401	13.23750
	QN->Q (FR)	0.06959	1.14728	12.46420
	SN->Q (FR)	0.38510	1.93279	15.03500

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RF)	0.77604	2.38007	16.85090
	QN->Q (RF)	0.03062	0.62194	7.79696
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.76736	2.49523	16.70370
	QN->Q (RF)	0.03256	0.64081	7.68814

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RR)	0.69771	1.60785	9.30339
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.68058	1.62884	8.99276

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RF)	0.38138	0.89349	4.33431
	SN->QN (FF)	0.29452	0.92652	6.18135
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.37130	0.90140	4.30463
	SN->QN (FF)	0.28226	0.93240	6.09931

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_hs__dffs_1	hold	CK (R)	-0.07277	-0.09891	-0.62463
	setup	CK (R)	0.33426	0.33545	1.65407
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.07139	-0.09979	-0.62469
	setup	CK (R)	0.33524	0.33637	1.66010

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.34362	-0.66619	-7.21707
	setup	CK (R)	0.42158	0.70066	7.28478
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.34361	-0.66834	-7.21839
	setup	CK (R)	0.42201	0.70066	7.28491

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.07277	-0.09891	-0.62463
	setup	CK (R)	0.33426	0.33545	1.65407
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.07139	-0.09979	-0.62469
	setup	CK (R)	0.33524	0.33637	1.66010

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.34362	-0.66619	-7.21707
	setup	CK (R)	0.42158	0.70066	7.28478
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.34361	-0.66834	-7.21839
	setup	CK (R)	0.42201	0.70066	7.28491

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	recovery	CK (R)	0.07261	0.09968	0.98213
	removal	CK (R)	-0.02459	-0.05666	-0.61735
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.07368	0.09989	0.93094
	removal	CK (R)	-0.02459	-0.05666	-0.61735

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	recovery	CK (R)	0.07261	0.09968	0.98213
	removal	CK (R)	-0.02459	-0.05666	-0.61735
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.07368	0.09989	0.93094
	removal	CK (R)	-0.02459	-0.05666	-0.61735

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	min_pulse_width	SN ()	0.27740	0.64575	13.33370
	min_pulse_width	SN ()	0.28476	0.64575	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.27007	0.62805	13.33370
	min_pulse_width	SN ()	0.26859	0.63026	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_hs__dffs_1	min_pulse_width	CK ()	0.16882	0.46875	13.33370
	min_pulse_width	CK ()	0.41582	0.46875	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.16176	0.46875	13.33370
	min_pulse_width	CK ()	0.40876	0.46875	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_hs__dffs_1	min_pulse_width	CK ()	0.52650	0.61256	13.33370
	min_pulse_width	CK ()	0.36146	0.59708	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.52606	0.61478	13.33370
	min_pulse_width	CK ()	0.36146	0.59708	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00345	0.00309	0.00120
	SN	-0.00046	-0.01557	-0.16340
	SN	0.00718	0.00687	0.00507
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00314	0.00280	0.00170
	SN	-0.00046	-0.01328	-0.12540
	SN	0.00686	0.00659	0.00555

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00377	0.00357	0.00258
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00345	0.00327	0.00268

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00377	0.00358	0.00257
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00345	0.00328	0.00268

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00343	0.00306	0.00109
	SN	-0.00046	-0.01573	-0.16618
	SN	0.00716	0.00685	0.00491
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00311	0.00277	0.00158
	SN	-0.00046	-0.01336	-0.12672
	SN	0.00683	0.00656	0.00542

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00087	-0.00090	-0.00090
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00405	0.00389	0.00375
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00163	0.00150	0.00143
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00087	-0.00090	-0.00090
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00405	0.00389	0.00375
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00163	0.00150	0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00091	0.00090	0.00090
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00593	0.00583	0.00572
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00293	0.00285	0.00283
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00091	0.00090	0.00090
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00593	0.00583	0.00572
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00293	0.00285	0.00283

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00173	-0.00174	-0.00175
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00114	0.00098	0.00100
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00173	-0.00174	-0.00175
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00115	0.00098	0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00176	0.00177	0.00175
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00388	0.00369	0.00389
sky130_osu_sc_12T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00176	0.00176	0.00175
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00388	0.00369	0.00389

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00013	-0.00038	-0.00043
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00012	-0.00040	-0.00043
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00128	0.00083	0.00085
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00013	-0.00039	-0.00043
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00012	-0.00040	-0.00043
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00128	0.00083	0.00085

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01024	0.00991	0.00969
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00526	0.00504	0.00508
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01004	0.00958	0.00970
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00540	0.00516	0.00525
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00667	0.00628	0.00649
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01024	0.00991	0.00969
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00526	0.00504	0.00508
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01004	0.00958	0.00970
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00540	0.00516	0.00525
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00667	0.00628	0.00649

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
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_hs__dff_1	32.23440
sky130_osu_sc_12T_hs__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_hs__dff_1	0.00265	0.00793	0.43505
sky130_osu_sc_12T_hs__dff_l	0.00265	0.00791	0.33862

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.02099	0.02398
sky130_osu_sc_12T_hs__dff_l	0.00000	0.06056	0.06355

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	CK->Q (RR)	0.42298	1.32755	8.81386
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.41349	1.35664	8.55191

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	CK->Q (RF)	0.66287	1.15681	4.67611
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.65567	1.17478	4.70362

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_hs__dff_1	hold	CK (R)	-0.07831	-0.10524	-0.70449
	setup	CK (R)	0.27582	0.28083	1.62650
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.07900	-0.10524	-0.70433
	setup	CK (R)	0.27638	0.28247	1.64278

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	hold	CK (R)	-0.33047	-0.66780	-7.24991
	setup	CK (R)	0.38414	0.70291	7.34176
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.33010	-0.66748	-7.24778
	setup	CK (R)	0.38429	0.70291	7.34190

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	min_pulse_width	CK ()	0.15823	0.46875	13.33370
	min_pulse_width	CK ()	0.38406	0.46875	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.15471	0.46875	13.33370
	min_pulse_width	CK ()	0.37701	0.46875	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_hs__dff_1	min_pulse_width	CK ()	0.46622	0.59486	13.33370
	min_pulse_width	CK ()	0.30935	0.59708	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.46567	0.59708	13.33370
	min_pulse_width	CK ()	0.30935	0.59708	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00725	0.00670	0.00661
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00660	0.00601	0.00596

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00768	0.00736	0.00717
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00704	0.00671	0.00653

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00077	-0.00087	-0.00087
	!CK	0.00000	0.00000	0.00000
	!CK	0.00366	0.00350	0.00336
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00077	-0.00087	-0.00087
	!CK	0.00000	0.00000	0.00000
	!CK	0.00366	0.00350	0.00336

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00086	0.00087	0.00087
	!CK	0.00000	0.00000	0.00000
	!CK	0.00616	0.00603	0.00590
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00086	0.00087	0.00087
	!CK	0.00000	0.00000	0.00000
	!CK	0.00616	0.00603	0.00590

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00014	-0.00039	-0.00044
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00012	-0.00040	-0.00043
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00014	-0.00040	-0.00044
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00012	-0.00040	-0.00043

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00525	0.00502	0.00506
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.00983	0.00951	0.00930
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01017	0.00971	0.00982
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00537	0.00511	0.00521
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00525	0.00502	0.00507
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.00983	0.00951	0.00930
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01017	0.00971	0.00982
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00537	0.00511	0.00522

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__inv_1	4.39560
sky130_osu_sc_12T_hs__inv_10	21.97800
sky130_osu_sc_12T_hs__inv_2	6.34920
sky130_osu_sc_12T_hs__inv_3	8.30280
sky130_osu_sc_12T_hs__inv_4	10.25640
sky130_osu_sc_12T_hs__inv_6	14.16360
sky130_osu_sc_12T_hs__inv_8	18.07080
sky130_osu_sc_12T_hs__inv_l	4.38570

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__inv_1	0.00256	0.43889
sky130_osu_sc_12T_hs__inv_10	0.02265	4.35197
sky130_osu_sc_12T_hs__inv_2	0.00472	0.89659
sky130_osu_sc_12T_hs__inv_3	0.00698	1.32040
sky130_osu_sc_12T_hs__inv_4	0.00918	1.79273
sky130_osu_sc_12T_hs__inv_6	0.01374	2.66818
sky130_osu_sc_12T_hs__inv_8	0.01819	3.57190
sky130_osu_sc_12T_hs__inv_l	0.00208	0.33349

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.00301	0.00438
sky130_osu_sc_12T_hs__inv_10	0.00000	0.03008	0.04380
sky130_osu_sc_12T_hs__inv_2	0.00000	0.00602	0.00876
sky130_osu_sc_12T_hs__inv_3	0.00000	0.00902	0.01314
sky130_osu_sc_12T_hs__inv_4	0.00000	0.01203	0.01752
sky130_osu_sc_12T_hs__inv_6	0.00000	0.01805	0.02628
sky130_osu_sc_12T_hs__inv_8	0.00000	0.02406	0.03504
sky130_osu_sc_12T_hs__inv_l	0.00000	0.02279	0.04483

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__inv_1	**A->Y (FR)**	0.06587	1.10259	12.72700
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.05768	0.70249	12.66090
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.04561	0.92332	12.67270
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.04701	0.85606	12.66730
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.04394	0.80825	12.72180
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.04641	0.75400	12.69830
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.05132	0.72431	12.73400
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.07032	1.11223	11.97720

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__inv_1	**A->Y (RF)**	0.02839	0.58010	7.20082
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.03316	0.42578	7.32887
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.02230	0.52221	7.27087
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.02355	0.49777	7.32616
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.02282	0.47668	7.35569
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.02583	0.45272	7.36613
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02924	0.43860	7.39676
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.03118	0.60548	7.18057

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00165	0.00161	0.00081
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.01335	0.01336	0.01246
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00281	0.00278	0.00114
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00433	0.00426	0.00186
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.00549	0.00544	0.00352
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.00814	0.00813	0.00426
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01076	0.01076	0.00177
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00133	0.00129	0.00134

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00019	-0.00022	-0.00023
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00401	-0.00409	-0.00367
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00075	-0.00079	-0.00077
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00092	-0.00099	-0.00096
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00151	-0.00159	-0.00150
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00229	-0.00239	-0.00222
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00313	-0.00322	-0.00177
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00015	-0.00017	-0.00018

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_12T_hs__mux2_1	0.31625	0.31734	0.00530	0.40407

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.00606	0.00606

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__mux2_1	A0->Y (RR)	-	0.02637	0.61958	7.87428
	A1->Y (RR)	-	0.03480	0.62488	7.88337
	S0->Y (RR)	(!A0 * A1)	0.08044	0.75503	7.19098
	S0->Y (FR)	(A0 * !A1)	0.06725	0.87167	8.64305

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__mux2_1	A0->Y (FF)	-	0.02675	0.52092	6.38905
	A1->Y (FF)	-	0.02219	0.51534	6.37439
	S0->Y (FF)	(!A0 * A1)	0.14536	0.72321	5.70710
	S0->Y (RF)	(A0 * !A1)	0.03064	0.55863	6.33504

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00169	-0.00169	-0.00169
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00111	-0.00111	-0.00111
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00223	0.00206	0.00222
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00097	-0.00121	-0.00114

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00169	0.00169	0.00169
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00111	0.00111	0.00111
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00038	0.00015	0.00022
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00441	0.00423	0.00437

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00043	-0.00043	-0.00043

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00043	0.00043	0.00043

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00051	-0.00051	-0.00051

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00051	0.00051	0.00051

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00030	-0.00054	-0.00047
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00029	-0.00053	-0.00047

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00339	0.00322	0.00335
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00325	0.00309	0.00324

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nand2_1	6.34920
sky130_osu_sc_12T_hs__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nand2_1	0.00255	0.00255	0.43969
sky130_osu_sc_12T_hs__nand2_l	0.00203	0.00206	0.32978

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.00304	0.00876
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.02281	0.08965

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nand2_1	A->Y (FR)	0.06898	1.10910	12.75800
	B->Y (FR)	0.07862	1.08685	12.44820
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.07124	1.11029	11.92070
	B->Y (FR)	0.08415	1.12229	11.91960

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nand2_1	A->Y (RF)	0.04674	0.75156	8.89769
	B->Y (RF)	0.05273	0.74177	8.56927
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.05066	0.79281	8.80653
	B->Y (RF)	0.05647	0.78223	8.48130

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00173	0.00170	0.00074
	B	0.00000	0.00000	0.00000
	B	0.00216	0.00212	0.00145
sky130_osu_sc_12T_hs__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00133	0.00130	0.00134
	B	0.00000	0.00000	0.00000
	B	0.00166	0.00163	0.00167

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00010	-0.00013	-0.00014
	B	0.00000	0.00000	0.00000
	B	-0.00008	-0.00011	-0.00012
sky130_osu_sc_12T_hs__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00006	-0.00008	-0.00009
	B	0.00000	0.00000	0.00000
	B	-0.00006	-0.00008	-0.00009

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00104	-0.00104	-0.00106
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00074	-0.00075	-0.00076

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00105	0.00108	0.00106
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00075	0.00077	0.00076

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00096	-0.00096	-0.00096
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00069	-0.00070	-0.00070

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00098	0.00098	0.00096
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00071	0.00070	0.00070

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nor2_1	6.34920
sky130_osu_sc_12T_hs__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nor2_1	0.00251	0.00278	0.20445
sky130_osu_sc_12T_hs__nor2_l	0.00194	0.00216	0.15669

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00262	0.00438
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.01603	0.04483

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nor2_1	A->Y (FR)	0.17191	1.45655	12.82860
	B->Y (FR)	0.14564	1.39056	12.56100
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.17344	1.49581	12.35590
	B->Y (FR)	0.15409	1.41848	11.76420

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nor2_1	A->Y (RF)	0.03364	0.49770	5.36628
	B->Y (RF)	0.02983	0.48955	5.34961
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.03527	0.51601	5.36437
	B->Y (RF)	0.03215	0.50913	5.34997

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00215	0.00211	0.00190
	B	0.00000	0.00000	0.00000
	B	0.00180	0.00170	0.00173
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00160	0.00157	0.00156
	B	0.00000	0.00000	0.00000
	B	0.00139	0.00134	0.00137

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00026	0.00019	0.00016
	B	0.00000	0.00000	0.00000
	B	-0.00015	-0.00017	-0.00021
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00020	0.00015	0.00013
	B	0.00000	0.00000	0.00000
	B	-0.00010	-0.00011	-0.00014

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00078	-0.00088	-0.00088
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00051	-0.00060	-0.00061

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00087	0.00088	0.00088
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00060	0.00060	0.00061

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00049	-0.00050	-0.00050
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00035	-0.00035	-0.00035

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00053	0.00054	0.00051
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00037	0.00038	0.00036

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__oai21_l	0.00255	0.00264	0.00228	0.20745

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.01874	0.04921

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai21_l	A0->Y (FR)	0.20191	1.46201	12.74420
	A1->Y (FR)	0.23620	1.53488	12.98870
	B0->Y (FR)	0.08934	0.95314	9.51308

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai21_l	A0->Y (RF)	0.06281	0.61315	6.15404
	A1->Y (RF)	0.07063	0.61506	6.12187
	B0->Y (RF)	0.05062	0.62395	6.58262

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00244	0.00237	0.00236
	A1	0.00000	0.00000	0.00000
	A1	0.00284	0.00279	0.00223
	B0	0.00192	0.00186	0.00188

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00019	0.00018	0.00014
	A1	0.00000	0.00000	0.00000
	A1	0.00063	0.00056	0.00053
	B0	0.00080	0.00076	0.00073

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00050	-0.00050	-0.00050
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00088	-0.00090	-0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00092	-0.00092	-0.00092

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00054	0.00054	0.00051
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00089	0.00090	0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00092	0.00093	0.00092

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00075	-0.00085	-0.00085
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00086	-0.00089	-0.00089
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00090	-0.00091	-0.00091

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00084	0.00085	0.00085
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00088	0.00089	0.00089
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00091	0.00091	0.00091

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00078	-0.00078	-0.00081

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00081	0.00081	0.00081

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_hs__oai22_l	0.00238	0.00251	0.00269	0.00265	0.20946

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.00389	0.00876

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (FR)	0.25316	1.53573	12.92090
	A1->Y (FR)	0.22387	1.46779	12.66250
	B0->Y (FR)	0.15370	1.39179	12.58830
	B1->Y (FR)	0.18478	1.46199	12.86200

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (RF)	0.08875	0.64940	6.23232
	A1->Y (RF)	0.07590	0.63290	6.20082
	B0->Y (RF)	0.06359	0.64330	6.63097
	B1->Y (RF)	0.07746	0.66015	6.67933

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00353	0.00349	0.00329
	A1	0.00314	0.00307	0.00305
	B0	0.00228	0.00221	0.00220
	B1	0.00270	0.00265	0.00243

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00088	0.00082	0.00077
	A1	0.00047	0.00046	0.00040
	B0	0.00046	0.00045	0.00039
	B1	0.00089	0.00081	0.00076

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00076	-0.00085	-0.00086
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00076	-0.00085	-0.00086
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00084	-0.00086	-0.00086
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00087	-0.00088	-0.00087

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00086	0.00085	0.00086
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00086	0.00085	0.00086
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00086	0.00087	0.00086
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00087	0.00089	0.00088

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00049	-0.00049	-0.00048
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00049	-0.00049	-0.00048
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00083	-0.00085	-0.00085
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00087	-0.00087	-0.00087

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00052	0.00053	0.00050
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00052	0.00053	0.00050
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00085	0.00085	0.00085
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00087	0.00087	0.00087

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00049	-0.00050	-0.00049
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00049	-0.00050	-0.00049
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00100	-0.00102	-0.00102
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00099	-0.00101	-0.00104

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00053	0.00053	0.00050
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00053	0.00053	0.00050
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00102	0.00102	0.00102
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00104	0.00105	0.00105

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00075	-0.00085	-0.00085
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00075	-0.00085	-0.00085
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00102	-0.00105	-0.00105
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00101	-0.00103	-0.00106

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00085	0.00086	0.00085
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00085	0.00085	0.00085
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00105	0.00106	0.00105
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00107	0.00108	0.00107

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__or2_1	8.30280
sky130_osu_sc_12T_hs__or2_2	10.25640
sky130_osu_sc_12T_hs__or2_4	14.16360
sky130_osu_sc_12T_hs__or2_8	21.97800
sky130_osu_sc_12T_hs__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__or2_1	0.00286	0.00262	0.43888
sky130_osu_sc_12T_hs__or2_2	0.00286	0.00262	0.89805
sky130_osu_sc_12T_hs__or2_4	0.00285	0.00262	1.79481
sky130_osu_sc_12T_hs__or2_8	0.00285	0.00262	3.52928
sky130_osu_sc_12T_hs__or2_l	0.00220	0.00205	0.33544

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.00494	0.00765
sky130_osu_sc_12T_hs__or2_2	0.00000	0.00727	0.01203
sky130_osu_sc_12T_hs__or2_4	0.00000	0.01191	0.02079
sky130_osu_sc_12T_hs__or2_8	0.00000	0.02120	0.03831
sky130_osu_sc_12T_hs__or2_l	0.00000	0.02780	0.04635

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (RR)	0.12170	1.03212	8.56318
	B->Y (RR)	0.11356	1.00924	8.38891
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.12258	0.89699	8.77145
	B->Y (RR)	0.11372	0.87778	8.63685
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.15691	0.85275	9.22164
	B->Y (RR)	0.14774	0.83725	9.11847
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.22701	0.87676	9.75576
	B->Y (RR)	0.21757	0.86532	9.67871
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.12346	1.06648	8.21315
	B->Y (RR)	0.11603	1.04732	8.06043

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (FF)	0.31944	0.95588	6.64380
	B->Y (FF)	0.27514	0.87823	6.09380
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.40013	1.01992	7.13569
	B->Y (FF)	0.35609	0.94533	6.64789
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.58388	1.21384	7.83692
	B->Y (FF)	0.53936	1.13591	7.45504
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.94776	1.61951	8.75494
	B->Y (FF)	0.90281	1.53816	8.47732
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.31602	0.95973	6.16842
	B->Y (FF)	0.27803	0.87767	5.49333

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00182	0.00164	0.00162
	B	0.00000	0.00000	0.00000
	B	0.00139	0.00124	0.00128
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00294	0.00287	0.00290
	B	0.00000	0.00000	0.00000
	B	0.00250	0.00248	0.00252
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00551	0.00564	0.00576
	B	0.00000	0.00000	0.00000
	B	0.00506	0.00529	0.00541
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01058	0.01108	0.01128
	B	0.00000	0.00000	0.00000
	B	0.01012	0.01074	0.01107
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00143	0.00130	0.00131
	B	0.00000	0.00000	0.00000
	B	0.00111	0.00104	0.00111

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00383	0.00373	0.00370
	B	0.00000	0.00000	0.00000
	B	0.00330	0.00324	0.00338
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00465	0.00475	0.00471
	B	0.00000	0.00000	0.00000
	B	0.00412	0.00424	0.00437
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00674	0.00716	0.00719
	B	0.00000	0.00000	0.00000
	B	0.00620	0.00663	0.00680
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01095	0.01179	0.01221
	B	0.00000	0.00000	0.00000
	B	0.01046	0.01125	0.01175
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00292	0.00284	0.00284
	B	0.00000	0.00000	0.00000
	B	0.00255	0.00251	0.00280

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00079	-0.00089	-0.00089
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00079	-0.00089	-0.00089
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00079	-0.00089	-0.00089
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00079	-0.00089	-0.00089
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00051	-0.00060	-0.00061

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00088	0.00090	0.00089
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00088	0.00090	0.00089
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00088	0.00090	0.00089
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00088	0.00090	0.00089
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00061	0.00061	0.00061

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00050	-0.00050	-0.00050
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00050	-0.00050	-0.00050
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00050	-0.00050	-0.00050
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00050	-0.00050	-0.00050
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00034	-0.00034	-0.00034

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00054	0.00054	0.00051
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00054	0.00054	0.00051
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00055	0.00055	0.00051
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00055	0.00055	0.00051
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00037	0.00037	0.00035

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tbufi_1	8.30280
sky130_osu_sc_12T_hs__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tbufi_1	0.00276	0.00364	0.20902
sky130_osu_sc_12T_hs__tbufi_l	0.00217	0.00287	0.15518

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.00377	0.00876
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.02326	0.08965

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tbufi_1	A->Y (FR)	0.13487	1.37468	12.55510
	OE->Y (FR)	0.09271	0.45427	3.47354
	OE->Y (RR)	0.18265	1.30543	8.55149
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.14727	1.40690	11.69550
	OE->Y (FR)	0.08771	0.41149	3.47285
	OE->Y (RR)	0.18710	1.36493	8.21060

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tbufi_1	A->Y (RF)	0.04539	0.60533	6.43680
	OE->Y (FF)	0.09392	0.45715	3.47354
	OE->Y (RF)	0.04391	0.58489	6.10286
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.04974	0.62864	6.34954
	OE->Y (FF)	0.08853	0.41358	3.47285
	OE->Y (RF)	0.04782	0.60898	6.02402

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00167	0.00159	0.00159
	OE	0.00000	0.00000	0.00000
	OE	0.00156	0.00134	0.00144
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00130	0.00124	0.00126
	OE	0.00000	0.00000	0.00000
	OE	0.00117	0.00100	0.00116

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00016	-0.00017	-0.00021
	OE	0.00000	0.00000	0.00000
	OE	0.00109	0.00087	0.00096
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00010	-0.00011	-0.00013
	OE	0.00000	0.00000	0.00000
	OE	0.00077	0.00060	0.00076

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00082	-0.00082	-0.00082
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00076	-0.00076	-0.00077
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00059	-0.00060	-0.00059
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00056	-0.00056	-0.00055

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00082	0.00082	0.00082
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00080	0.00080	0.00078
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00059	0.00060	0.00059
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00058	0.00058	0.00056

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00061	0.00039	0.00049
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00055	0.00033	0.00042
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00044	0.00027	0.00044
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00038	0.00021	0.00037

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00201	0.00181	0.00194
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00206	0.00186	0.00198
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00158	0.00142	0.00171
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00159	0.00145	0.00175

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tnbufi_1	8.30280
sky130_osu_sc_12T_hs__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tnbufi_1	0.00275	0.00402	0.20901
sky130_osu_sc_12T_hs__tnbufi_l	0.00207	0.00311	0.15727

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.00469	0.00602
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.03795	0.04559

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tnbufi_1	A->Y (FR)	0.13612	1.37435	12.55430
	OE->Y (RR)	0.03331	0.24002	3.47305
	OE->Y (FR)	0.14951	1.42778	12.81150
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.14447	1.41416	11.78320
	OE->Y (RR)	0.03553	0.23958	3.47282
	OE->Y (FR)	0.15423	1.48082	12.37160

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tnbufi_1	A->Y (RF)	0.04410	0.60474	6.43645
	OE->Y (RF)	0.03274	0.23999	3.47308
	OE->Y (FF)	0.11748	0.72583	5.03158
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.04672	0.62945	6.38374
	OE->Y (RF)	0.03508	0.23954	3.47282
	OE->Y (FF)	0.12441	0.72580	4.45915

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00174	0.00166	0.00166
	OE	0.00000	0.00000	0.00000
	OE	0.00400	0.00388	0.00391
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00133	0.00128	0.00129
	OE	0.00000	0.00000	0.00000
	OE	0.00312	0.00303	0.00340

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00024	-0.00026	-0.00029
	OE	0.00000	0.00000	0.00000
	OE	0.00360	0.00348	0.00366
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00019	-0.00019	-0.00022
	OE	0.00000	0.00000	0.00000
	OE	0.00280	0.00270	0.00304

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00067	-0.00068	-0.00068
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00062	-0.00064	-0.00062
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00046	-0.00047	-0.00046
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00043	-0.00043	-0.00043

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00067	0.00068	0.00068
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00065	0.00065	0.00063
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00046	0.00047	0.00046
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00045	0.00045	0.00044

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00092	-0.00124	-0.00114
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00092	-0.00120	-0.00113
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00062	-0.00087	-0.00072
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00064	-0.00086	-0.00072

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00305	0.00293	0.00311
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00300	0.00288	0.00306
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00241	0.00230	0.00266
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00237	0.00227	0.00262

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xnor2_l	0.00553	0.00464	0.21289

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.01100	0.01478

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (RR)	B	0.23920	1.37858	8.84622
	A->Y (FR)	!B	0.17808	1.42592	12.67460
	B->Y (RR)	A	0.19973	1.33619	8.73569
	B->Y (FR)	!A	0.20363	1.48476	12.92430

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (FF)	B	0.18291	0.82069	5.56017
	A->Y (RF)	!B	0.06292	0.60376	6.16445
	B->Y (FF)	A	0.17098	0.80796	5.54327
	B->Y (RF)	!A	0.06978	0.61364	6.18049

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00164	0.00139	0.00143
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00421	0.00398	0.00412
	B	A	0.00000	0.00000	0.00000
	B	A	0.00093	0.00075	0.00081
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00430	0.00412	0.00410

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00501	0.00478	0.00486
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00123	0.00100	0.00104
	B	A	0.00000	0.00000	0.00000
	B	A	0.00448	0.00439	0.00453
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00164	0.00139	0.00142

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xor2_1	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xor2_1	0.00554	0.00468	0.20413

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.01100	0.01383

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (RR)	!B	0.25149	1.38540	8.74268
	A->Y (FR)	B	0.20702	1.48473	12.86140
	B->Y (RR)	!A	0.20844	1.35111	8.70467
	B->Y (FR)	A	0.22139	1.50573	12.88180

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (FF)	!B	0.18824	0.81669	5.50585
	A->Y (RF)	B	0.05873	0.62118	6.40507
	B->Y (FF)	!A	0.17747	0.80768	5.47844
	B->Y (RF)	A	0.06481	0.60620	6.07455

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00482	0.00460	0.00467
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00113	0.00077	0.00079
	B	A	0.00000	0.00000	0.00000
	B	A	0.00481	0.00465	0.00473
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00088	0.00068	0.00074

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00110	0.00078	0.00079
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00523	0.00506	0.00520
	B	A	0.00000	0.00000	0.00000
	B	A	0.00109	0.00082	0.00085
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00455	0.00445	0.00461

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__ant	4.39560
sky130_osu_sc_12T_hs__tiehi	4.39560
sky130_osu_sc_12T_hs__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_hs__ant	0.08682
sky130_osu_sc_12T_hs__tiehi	0.00000
sky130_osu_sc_12T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__ant	0.00000	27534.50000	55068.90000
sky130_osu_sc_12T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__ant	0.00000	0.00000	0.00000
	-0.00095	0.00369	0.06312

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__ant	0.00000	0.00000	0.00000
	0.47990	0.45424	0.08561