sky130_osu_sc_12T_hs_tt_1P44_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_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.01056	0.01059	0.00817	0.83850	0.36237	0.75918
sky130_osu_sc_12T_hs__addf_l	0.01056	0.01059	0.00818	0.59303	0.36307	0.75918

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.02878	0.03422
sky130_osu_sc_12T_hs__addf_l	0.00000	0.08352	0.14502

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)	0.17571	1.74654	22.08130
	B->CO (RR)	0.16897	1.71303	21.81560
	CI->CO (RR)	0.16595	1.77336	22.69130
	CON->CO (FR)	0.03546	0.85280	12.04520
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.17261	1.61600	18.17560
	B->CO (RR)	0.16629	1.59535	18.19640
	CI->CO (RR)	0.16289	1.64279	18.81320
	CON->CO (FR)	0.04081	0.89162	11.50090

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)	0.32539	2.64681	32.58350
	B->CO (FF)	0.29226	2.53698	31.50810
	CI->CO (FF)	0.28802	2.59688	32.55510
	CON->CO (RF)	0.02176	0.52646	7.56724
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.31783	2.35968	25.70820
	B->CO (FF)	0.28477	2.26576	24.93690
	CI->CO (FF)	0.28000	2.31000	25.69600
	CON->CO (RF)	0.02351	0.54392	7.26799

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)	0.25533	1.25545	11.84440
	B->CON (FR)	0.22368	1.18821	11.52640
	CI->CON (FR)	0.21750	1.20670	11.86490
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.24361	1.24488	11.84640
	B->CON (FR)	0.21264	1.17786	11.52840
	CI->CON (FR)	0.20565	1.19572	11.86700

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)	0.09463	0.55951	5.71013
	B->CON (RF)	0.09022	0.57584	6.11324
	CI->CON (RF)	0.08488	0.58785	6.34565
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.09188	0.55724	5.71292
	B->CON (RF)	0.08760	0.57331	6.11607
	CI->CON (RF)	0.08212	0.58537	6.34859

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)	0.46126	2.58319	26.67160
	B->S (-R)	0.45412	2.55175	26.15020
	CI->S (-R)	0.42057	2.52679	26.62530
	CON->S (RR)	0.10366	0.80503	7.56535
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.44488	2.57113	26.65760
	B->S (-R)	0.43788	2.53800	26.13950
	CI->S (-R)	0.40384	2.51410	26.61390
	CON->S (RR)	0.10372	0.80506	7.56498

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)	0.31566	1.49135	13.98220
	B->S (-F)	0.31300	1.44573	14.00770
	CI->S (-F)	0.30528	1.51503	14.59640
	CON->S (FF)	0.14258	0.71000	5.67847
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.30888	1.48754	13.97870
	B->S (-F)	0.30661	1.44214	14.00440
	CI->S (-F)	0.29853	1.50987	14.59280
	CON->S (FF)	0.14257	0.71000	5.67845

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	0.00186	0.00176	0.00223
	B	0.00218	0.00217	0.00267
	CI	0.00218	0.00226	0.00288
sky130_osu_sc_12T_hs__addf_l	A	0.00169	0.00159	0.00201
	B	0.00201	0.00200	0.00245
	CI	0.00202	0.00208	0.00257

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00539	0.00550	0.00731
	B	0.00565	0.00578	0.00730
	CI	0.00497	0.00516	0.00672
sky130_osu_sc_12T_hs__addf_l	A	0.00564	0.00563	0.00651
	B	0.00552	0.00562	0.00656
	CI	0.00484	0.00499	0.00601

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00576	0.00576	0.00621
	B	0.00565	0.00572	0.00618
	CI	0.00497	0.00511	0.00567
sky130_osu_sc_12T_hs__addf_l	A	0.00564	0.00563	0.00606
	B	0.00552	0.00559	0.00603
	CI	0.00484	0.00497	0.00552

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00183	0.00174	0.00188
	B	0.00215	0.00212	0.00227
	CI	0.00217	0.00223	0.00255
sky130_osu_sc_12T_hs__addf_l	A	0.00167	0.00157	0.00175
	B	0.00199	0.00196	0.00215
	CI	0.00201	0.00207	0.00241

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00539	0.00545	0.00713
	B	0.00565	0.00577	0.00710
	CI	0.00498	0.00514	0.00654
sky130_osu_sc_12T_hs__addf_l	A	0.00526	0.00533	0.00696
	B	0.00553	0.00563	0.00694
	CI	0.00484	0.00501	0.00637

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01164	0.01165	0.01219
	B	0.01075	0.01044	0.01221
	CI	0.00962	0.00954	0.01021
sky130_osu_sc_12T_hs__addf_l	A	0.01165	0.01166	0.01219
	B	0.01075	0.01045	0.01221
	CI	0.00962	0.00955	0.01022

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00528	0.00554	0.80947	0.83270	0.84236
sky130_osu_sc_12T_hs__addh_l	0.00516	0.00546	0.59537	0.83843	0.60313

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.02616	0.02761
sky130_osu_sc_12T_hs__addh_l	0.00000	0.14013	0.14172

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)	0.15270	0.89833	8.24723
	B->CO (RR)	0.15675	0.89802	8.40179
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.12120	0.85102	7.22213
	B->CO (RR)	0.12427	0.84525	7.29340

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)	0.13136	0.77259	6.76857
	B->CO (FF)	0.13740	0.78670	6.90246
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.11335	0.69207	5.64973
	B->CO (FF)	0.11918	0.70717	5.75354

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)	0.21168	0.93614	8.28801
	B->CON (RR)	0.21535	0.93467	8.43320
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.16572	0.82572	7.37438
	B->CON (RR)	0.16855	0.81773	7.44437

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)	0.17061	0.80334	6.89809
	B->CON (FF)	0.16970	0.81099	7.00963
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.13789	0.68754	5.88275
	B->CON (FF)	0.13828	0.69771	5.95914

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)	0.24278	1.68032	18.11550
	B->S (FR)	0.24183	1.68914	18.24350
	CON->S (FR)	0.03796	0.86371	12.20550
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.20255	1.44976	13.95440
	B->S (FR)	0.20306	1.45946	14.03640
	CON->S (FR)	0.04134	0.89521	11.64270

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)	0.27786	1.74256	18.56820
	B->S (RF)	0.28149	1.74076	18.71960
	CON->S (RF)	0.02651	0.63773	9.15942
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.21681	1.34343	12.19890
	B->S (RF)	0.21971	1.33484	12.27210
	CON->S (RF)	0.02295	0.54595	7.35773

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	0.00292	0.00279	0.00290
	B	0.00000	0.00000	0.00000
	B	0.00270	0.00259	0.00257
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00251	0.00235	0.00291
	B	0.00000	0.00000	0.00000
	B	0.00229	0.00214	0.00256

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	0.00405	0.00391	0.00411
	B	0.00000	0.00000	0.00000
	B	0.00423	0.00422	0.00440
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00366	0.00351	0.00417
	B	0.00000	0.00000	0.00000
	B	0.00383	0.00381	0.00449

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	0.00291	0.00279	0.00288
	B	0.00000	0.00000	0.00000
	B	0.00270	0.00259	0.00256
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00251	0.00235	0.00284
	B	0.00000	0.00000	0.00000
	B	0.00229	0.00214	0.00249

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	0.00405	0.00391	0.00405
	B	0.00000	0.00000	0.00000
	B	0.00423	0.00423	0.00442
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00365	0.00351	0.00409
	B	0.00000	0.00000	0.00000
	B	0.00383	0.00381	0.00439

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	0.00406	0.00391	0.00399
	B	0.00000	0.00000	0.00000
	B	0.00423	0.00423	0.00439
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00366	0.00352	0.00420
	B	0.00000	0.00000	0.00000
	B	0.00384	0.00382	0.00452

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	0.00292	0.00279	0.00289
	B	0.00000	0.00000	0.00000
	B	0.00270	0.00259	0.00264
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00250	0.00235	0.00292
	B	0.00000	0.00000	0.00000
	B	0.00229	0.00214	0.00253

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)	0.53707	0.51267	0.14143
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.53860	0.51411	0.14181

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)	0.53697	0.51205	0.14004
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.53852	0.51350	0.14034

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00277	0.00288	0.82214
sky130_osu_sc_12T_hs__and2_2	0.00277	0.00288	1.63886
sky130_osu_sc_12T_hs__and2_4	0.00277	0.00288	3.18260
sky130_osu_sc_12T_hs__and2_6	0.00280	0.00288	4.75441
sky130_osu_sc_12T_hs__and2_8	0.00277	0.00288	6.23708
sky130_osu_sc_12T_hs__and2_l	0.00215	0.00223	0.59315

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.01321	0.02060
sky130_osu_sc_12T_hs__and2_2	0.00000	0.02063	0.02306
sky130_osu_sc_12T_hs__and2_4	0.00000	0.03546	0.03875
sky130_osu_sc_12T_hs__and2_6	0.00000	0.05030	0.05690
sky130_osu_sc_12T_hs__and2_8	0.00000	0.06514	0.07504
sky130_osu_sc_12T_hs__and2_l	0.00000	0.15071	0.24088

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)	0.09473	0.74274	7.14990
	B->Y (RR)	0.09996	0.74424	7.21659
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.10486	0.66534	7.32927
	B->Y (RR)	0.11008	0.66053	7.38056
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.14227	0.66273	7.68264
	B->Y (RR)	0.14731	0.64938	7.71122
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.17968	0.69379	8.04608
	B->Y (RR)	0.18477	0.67685	8.04305
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.21564	0.73266	8.29387
	B->Y (RR)	0.22083	0.71181	8.27348
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.09705	0.79262	7.07830
	B->Y (RR)	0.10220	0.79612	7.09778

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)**	0.09018	0.61218	5.40430
	B->Y (FF)	0.09405	0.62620	5.49221
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.10716	0.60609	5.69537
	B->Y (FF)	0.11018	0.61510	5.77068
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.15348	0.64771	6.14202
	B->Y (FF)	0.15368	0.65148	6.21227
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.20183	0.70057	6.54696
	B->Y (FF)	0.19894	0.69918	6.58605
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.24711	0.74764	6.80749
	B->Y (FF)	0.24176	0.74343	6.83013
sky130_osu_sc_12T_hs__and2_l	**A->Y (FF)**	0.08951	0.59711	4.80408
	B->Y (FF)	0.09766	0.61699	4.87468

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	0.00197	0.00172	0.00384
	B	0.00000	0.00000	0.00000
	B	0.00201	0.00170	0.00294
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00361	0.00353	0.00549
	B	0.00000	0.00000	0.00000
	B	0.00366	0.00356	0.00467
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00741	0.00763	0.00968
	B	0.00000	0.00000	0.00000
	B	0.00744	0.00768	0.00904
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01123	0.01167	0.01363
	B	0.00000	0.00000	0.00000
	B	0.01129	0.01178	0.01308
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01504	0.01559	0.01747
	B	0.00000	0.00000	0.00000
	B	0.01508	0.01576	0.01697
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00155	0.00140	0.00473
	B	0.00000	0.00000	0.00000
	B	0.00158	0.00138	0.00354

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	0.00493	0.00488	0.00720
	B	0.00000	0.00000	0.00000
	B	0.00559	0.00547	0.00764
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00616	0.00638	0.00863
	B	0.00000	0.00000	0.00000
	B	0.00684	0.00696	0.00905
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00926	0.00998	0.01221
	B	0.00000	0.00000	0.00000
	B	0.00993	0.01053	0.01260
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01246	0.01366	0.01600
	B	0.00000	0.00000	0.00000
	B	0.01312	0.01421	0.01630
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01558	0.01714	0.01964
	B	0.00000	0.00000	0.00000
	B	0.01635	0.01764	0.01984
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00380	0.00383	0.00761
	B	0.00000	0.00000	0.00000
	B	0.00430	0.00432	0.00791

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)	-0.00166	-0.00167	-0.00168
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00165	-0.00166	-0.00168
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00165	-0.00166	-0.00168
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00167	-0.00169	-0.00169
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00165	-0.00167	-0.00168
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00117	-0.00118	-0.00119

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)	0.00167	0.00170	0.00168
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00167	0.00169	0.00168
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00167	0.00169	0.00168
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00169	0.00171	0.00170
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00167	0.00169	0.00168
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00118	0.00120	0.00119

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)	-0.00158	-0.00158	-0.00158
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00158	-0.00158	-0.00158
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00158	-0.00158	-0.00158
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00158	-0.00158	-0.00158
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00158	-0.00158	-0.00158
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00111	-0.00113	-0.00112

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)	0.00162	0.00159	0.00158
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00162	0.00160	0.00158
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00162	0.00161	0.00158
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00162	0.00160	0.00158
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00162	0.00160	0.00158
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00115	0.00113	0.00112

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00252	0.00271	0.00270	0.35149

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.00571	0.00930

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)	0.12983	1.14774	11.75400
	A1->Y (FR)	0.10586	1.06039	11.20760
	B0->Y (FR)	0.10044	1.10706	11.84920

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)	0.04705	0.50136	5.50502
	A1->Y (RF)	0.04301	0.52333	5.96106
	B0->Y (RF)	0.02795	0.47175	5.58701

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	0.00403	0.00397	0.00401
	A1	0.00000	0.00000	0.00000
	A1	0.00339	0.00331	0.00333
	B0	0.00332	0.00324	0.00349

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	0.00089	0.00075	0.00081
	A1	0.00000	0.00000	0.00000
	A1	0.00090	0.00076	0.00087
	B0	-0.00028	-0.00033	-0.00023

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)	-0.00121	-0.00134	-0.00134
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00137	-0.00137	-0.00137
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00136	-0.00137	-0.00137

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)	0.00133	0.00135	0.00134
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00137	0.00139	0.00137
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00141	0.00139	0.00137

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)	-0.00122	-0.00134	-0.00134
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00137	-0.00137	-0.00137
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00151	-0.00152	-0.00153

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)	0.00134	0.00134	0.00134
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00137	0.00138	0.00137
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00153	0.00156	0.00153

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)	-0.00069	-0.00070	-0.00070

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)	0.00078	0.00078	0.00072

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00252	0.00270	0.00283	0.00265	0.34703

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.00712	0.01815

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)	0.16565	1.18697	11.74630
	A1->Y (FR)	0.14822	1.16329	11.68860
	B0->Y (FR)	0.10540	1.10744	11.76450
	B1->Y (FR)	0.12320	1.13039	11.83160

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)	0.06046	0.51516	5.48871
	A1->Y (RF)	0.05635	0.53779	5.94331
	B0->Y (RF)	0.03503	0.50978	5.90812
	B1->Y (RF)	0.03946	0.48693	5.45619

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	0.00500	0.00493	0.00494
	A1	0.00436	0.00427	0.00426
	B0	0.00353	0.00342	0.00371
	B1	0.00417	0.00409	0.00440

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00174	0.00161	0.00165
	A1	0.00175	0.00162	0.00171
	B0	-0.00015	-0.00021	-0.00007
	B1	-0.00014	-0.00019	-0.00012

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)	-0.00124	-0.00134	-0.00134
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00137	-0.00137	-0.00137
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00136	-0.00137	-0.00136
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00136	-0.00137	-0.00136

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)	0.00133	0.00135	0.00134
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00137	0.00139	0.00137
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00141	0.00139	0.00137
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00141	0.00139	0.00137

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)	-0.00124	-0.00134	-0.00134
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00137	-0.00138	-0.00137
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00150	-0.00151	-0.00152
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00150	-0.00151	-0.00152

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)	0.00133	0.00135	0.00134
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00137	0.00138	0.00138
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00152	0.00155	0.00152
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00152	0.00155	0.00152

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)	-0.00069	-0.00070	-0.00069
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00069	-0.00070	-0.00069
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00158	-0.00159	-0.00160
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00158	-0.00159	-0.00160

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)	0.00082	0.00082	0.00072
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00069	0.00070	0.00069
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00159	0.00160	0.00160
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00159	0.00160	0.00160

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)	-0.00070	-0.00071	-0.00070
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00070	-0.00071	-0.00070
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00145	-0.00145	-0.00145
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00145	-0.00145	-0.00145

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)	0.00082	0.00083	0.00073
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00070	0.00071	0.00070
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00149	0.00145	0.00145
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00149	0.00146	0.00145

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00288	0.77035
sky130_osu_sc_12T_hs__buf_2	0.00288	1.59315
sky130_osu_sc_12T_hs__buf_4	0.00288	3.17100
sky130_osu_sc_12T_hs__buf_6	0.00082	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00288	6.25131
sky130_osu_sc_12T_hs__buf_l	0.00219	0.59117

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.01153	0.01153
sky130_osu_sc_12T_hs__buf_2	0.00000	0.01729	0.02060
sky130_osu_sc_12T_hs__buf_4	0.00000	0.02882	0.03875
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.05187	0.07504
sky130_osu_sc_12T_hs__buf_l	0.00000	0.12101	0.12101

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)**	0.07246	0.71701	7.03117
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.07479	0.61975	7.20955
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.09877	0.59755	7.58157
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.14675	0.63118	8.06291
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.07400	0.75355	6.91587

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)**	0.08536	0.59210	5.14081
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.10232	0.59455	5.55637
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.14864	0.64236	6.10536
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.24182	0.74226	6.79765
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.08679	0.59154	4.77183

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	0.00189	0.00157	0.00323
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00354	0.00337	0.00502
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00732	0.00761	0.00931
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01484	0.01555	0.01741
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00151	0.00130	0.00409

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	0.00482	0.00468	0.00689
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00603	0.00610	0.00821
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00916	0.00965	0.01171
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01550	0.01683	0.01893
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00377	0.00383	0.00757

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
	-0.00042	-0.00041	-0.00041

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
	0.00042	0.00041	0.00041

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00264	0.00263	0.00842	0.82201	0.81674
sky130_osu_sc_12T_hs__dffr_l	0.00264	0.00263	0.00842	0.59178	0.59472

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.09996	0.19846
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.20944	0.30794

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)	0.42187	1.56617	13.82150
	QN->Q (FR)	0.04020	0.92947	13.02230
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.41084	1.60500	12.88900
	QN->Q (FR)	0.04349	0.94075	12.10930

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)	0.40700	1.63385	15.36220
	QN->Q (RF)	0.02353	0.56867	8.15600
	RN->Q (FF)	0.29475	1.66988	17.14920
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.40960	1.74257	14.89090
	QN->Q (RF)	0.02481	0.57706	7.77048
	RN->Q (FF)	0.29782	1.77839	16.66410

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)	0.36540	1.02218	7.50053
	RN->QN (FR)	0.25292	1.05765	9.28318
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.36246	1.07222	7.34846
	RN->QN (FR)	0.25043	1.10722	9.11522

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)**	0.35576	0.78617	3.87589
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.34302	0.78407	3.67164

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)	-0.06558	-0.08616	-0.32576
	setup	CK (R)	0.31686	0.33586	1.51146
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.06489	-0.08755	-0.32461
	setup	CK (R)	0.32112	0.33737	1.52819

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)	-0.18099	-0.43986	-4.38640
	setup	CK (R)	0.20935	0.45567	4.45174
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.17984	-0.44175	-4.38738
	setup	CK (R)	0.20935	0.45567	4.45116

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)	-0.06558	-0.08616	-0.32576
	setup	CK (R)	0.31686	0.33586	1.51146
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.06489	-0.08755	-0.32461
	setup	CK (R)	0.32112	0.33737	1.52819

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)	-0.18099	-0.43986	-4.38640
	setup	CK (R)	0.20935	0.45567	4.45174
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.17984	-0.44175	-4.38738
	setup	CK (R)	0.20935	0.45567	4.45116

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)	0.28337	0.30301	1.48793
	removal	CK (R)	-0.05337	-0.06377	-0.08268
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.28222	0.30624	1.49184
	removal	CK (R)	-0.05337	-0.06377	-0.08268

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)	0.28337	0.30301	1.48793
	removal	CK (R)	-0.05337	-0.06377	-0.08268
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.28222	0.30624	1.49184
	removal	CK (R)	-0.05337	-0.06377	-0.08268

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 ()	0.18603	0.43029	13.33370
	min_pulse_width	RN ()	0.18603	0.43029	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.18187	0.42805	13.33370
	min_pulse_width	RN ()	0.18187	0.42805	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 ()	0.18326	0.42358	13.33370
	min_pulse_width	CK ()	0.21851	0.42358	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.17364	0.42358	13.33370
	min_pulse_width	CK ()	0.21210	0.42358	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 ()	0.42156	0.50626	13.33370
	min_pulse_width	CK ()	0.17044	0.42358	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.42156	0.50626	13.33370
	min_pulse_width	CK ()	0.17044	0.42358	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	0.00498	0.00412	-0.00107
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00452	0.00379	0.00160

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	0.00557	0.00498	0.00107
	RN	-0.00065	-0.03174	-0.42613
	RN	0.01258	0.01210	0.00824
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00509	0.00463	0.00301
	RN	-0.00065	-0.02606	-0.30678
	RN	0.01210	0.01174	0.01017

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	0.00557	0.00498	0.00109
	RN	-0.00065	-0.03162	-0.42340
	RN	0.01258	0.01210	0.00827
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00510	0.00463	0.00299
	RN	-0.00065	-0.02614	-0.30830
	RN	0.01210	0.01175	0.01012

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	0.00495	0.00410	-0.00109
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00449	0.00377	0.00144

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	-0.00115	-0.00135	-0.00136
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00609	0.00578	0.00661
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00246	0.00221	0.00311
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00115	-0.00135	-0.00136
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00610	0.00579	0.00661
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00246	0.00221	0.00311

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	0.00135	0.00136	0.00136
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00903	0.00886	0.00970
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00442	0.00427	0.00515
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00135	0.00136	0.00136
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00903	0.00886	0.00971
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00442	0.00427	0.00515

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)	0.00195	0.00164	0.00352
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00576	0.00529	0.00718
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)	0.00195	0.00164	0.00352
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00577	0.00530	0.00719

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)	0.00492	0.00476	0.00703
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00962	0.00935	0.01142
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)	0.00493	0.00476	0.00703
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00963	0.00935	0.01141

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)	-0.00027	-0.00073	0.00107
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00307	0.00233	0.00410
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00031	-0.00078	0.00105
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00027	-0.00073	0.00107
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00307	0.00233	0.00410
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00031	-0.00078	0.00105

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)	0.00761	0.00729	0.00960
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01518	0.01463	0.01661
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01134	0.01098	0.01305
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01491	0.01434	0.01884
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00803	0.00770	0.00996
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00761	0.00730	0.00960
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01519	0.01463	0.01661
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01135	0.01098	0.01305
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01491	0.01435	0.01885
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00801	0.00770	0.00997

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00260	0.00265	0.00618	0.00847	0.84044	0.84792
sky130_osu_sc_12T_hs__dffsr_l	0.00260	0.00265	0.00618	0.00847	0.59138	0.59592

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.04393	0.05540
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.15341	0.16488

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)	0.45288	1.60774	14.03900
	QN->Q (FR)	0.03803	0.89975	12.70340
	RN->Q (RR)	0.36501	1.52920	14.08690
	SN->Q (FR)	0.35113	1.64006	16.28860
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.44829	1.65584	13.01930
	QN->Q (FR)	0.04340	0.94056	12.09950
	RN->Q (RR)	0.36040	1.57875	13.06580
	SN->Q (FR)	0.34614	1.68937	15.24480

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)	0.46860	1.69539	15.46720
	QN->Q (RF)	0.02336	0.57181	8.23762
	RN->Q (FF)	0.31294	1.68472	17.27360
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.47229	1.81062	14.96060
	QN->Q (RF)	0.02467	0.57635	7.76245
	RN->Q (FF)	0.31788	1.80176	16.75370

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)	0.42622	1.08655	7.62129
	RN->QN (FR)	0.27141	1.07629	9.42444
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.42413	1.14168	7.44426
	RN->QN (FR)	0.27049	1.13254	9.23368

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)	0.39008	0.83793	4.13152
	RN->QN (RF)	0.30240	0.76139	4.18036
	SN->QN (FF)	0.28865	0.87221	6.38029
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.38214	0.83602	3.81367
	RN->QN (RF)	0.29444	0.76012	3.86197
	SN->QN (FF)	0.28048	0.87103	6.03814

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)	-0.08020	-0.10126	-0.42262
	setup	CK (R)	0.33698	0.34560	1.51722
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.08020	-0.10149	-0.42270
	setup	CK (R)	0.33742	0.34607	1.52315

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)	-0.20647	-0.46415	-4.55885
	setup	CK (R)	0.24590	0.47655	4.60521
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.20989	-0.46426	-4.55738
	setup	CK (R)	0.24591	0.47654	4.60516

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)	-0.08020	-0.10126	-0.42262
	setup	CK (R)	0.33698	0.34560	1.51722
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.08020	-0.10149	-0.42270
	setup	CK (R)	0.33742	0.34607	1.52315

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)	-0.20647	-0.46415	-4.55885
	setup	CK (R)	0.24590	0.47655	4.60521
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.20989	-0.46426	-4.55738
	setup	CK (R)	0.24591	0.47654	4.60516

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)	0.27304	0.28446	1.40887
	removal	CK (R)	-0.03880	-0.05085	-0.11275
	hold	SN (R)	-0.27738	-0.45049	-2.70598
	setup	SN (R)	0.30558	0.48847	5.70256
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.27263	0.28581	1.41165
	removal	CK (R)	-0.03880	-0.05085	-0.11174
	hold	SN (R)	-0.26600	-0.43779	-2.64046
	setup	SN (R)	0.30330	0.47619	5.59443

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)	0.27304	0.28446	1.40887
	removal	CK (R)	-0.03880	-0.05085	-0.11275
	hold	SN (R)	-0.27738	-0.45049	-2.70598
	hold	SN (R)	-0.27747	-0.45179	-2.71378
	setup	SN (R)	0.30401	0.48646	5.51539
	setup	SN (R)	0.30558	0.48847	5.70256
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.27263	0.28581	1.41165
	removal	CK (R)	-0.03880	-0.05085	-0.11174
	hold	SN (R)	-0.26684	-0.43779	-2.64046
	hold	SN (R)	-0.26600	-0.43922	-2.65754
	setup	SN (R)	0.30330	0.47333	5.38693
	setup	SN (R)	0.28723	0.47619	5.59443

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 ()	0.21143	0.45040	13.33370
	min_pulse_width	RN ()	0.21826	0.45040	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.20941	0.44593	13.33370
	min_pulse_width	RN ()	0.21721	0.44816	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)	0.04711	0.07318	3.58526
	removal	CK (R)	-0.01427	-0.05053	-0.41685
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04735	0.07310	3.44702
	removal	CK (R)	-0.01542	-0.04855	-0.41540

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)	0.04711	0.07318	3.58526
	removal	CK (R)	-0.01427	-0.05053	-0.41685
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04735	0.07310	3.44702
	removal	CK (R)	-0.01542	-0.04855	-0.41540

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 ()	0.27999	0.51520	13.33370
	min_pulse_width	SN ()	0.29175	0.51520	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.28050	0.50179	13.33370
	min_pulse_width	SN ()	0.27789	0.50403	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 ()	0.20248	0.42358	13.33370
	min_pulse_width	CK ()	0.24094	0.42358	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.19607	0.42358	13.33370
	min_pulse_width	CK ()	0.23773	0.42358	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 ()	0.44464	0.51520	13.33370
	min_pulse_width	CK ()	0.21210	0.42358	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.44464	0.51520	13.33370
	min_pulse_width	CK ()	0.21210	0.42358	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	0.00609	0.00527	-0.00025
	RN	0.01113	0.01045	0.00380
	SN	-0.00065	-0.03216	-0.43568
	SN	0.01228	0.01160	0.00455
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00566	0.00498	0.00275
	RN	0.01070	0.01016	0.00697
	SN	-0.00065	-0.02605	-0.30657
	SN	0.01185	0.01131	0.00771

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	0.00645	0.00601	0.00339
	RN	-0.00065	-0.03216	-0.43568
	RN	0.01322	0.01285	0.01027
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00599	0.00557	0.00397
	RN	-0.00065	-0.02605	-0.30657
	RN	0.01275	0.01240	0.01087

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	0.00645	0.00602	0.00339
	RN	-0.00065	-0.03234	-0.43956
	RN	0.01322	0.01285	0.01024
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00599	0.00557	0.00397
	RN	-0.00065	-0.02617	-0.30892
	RN	0.01276	0.01240	0.01084

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	0.00606	0.00524	-0.00044
	RN	0.01110	0.01042	0.00374
	SN	-0.00065	-0.03234	-0.43953
	SN	0.01225	0.01157	0.00443
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00563	0.00495	0.00254
	RN	0.01066	0.01013	0.00678
	SN	-0.00065	-0.02617	-0.30890
	SN	0.01181	0.01128	0.00762

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	-0.00134	-0.00137	-0.00136
	(!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)	0.00757	0.00729	0.00811
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00268	0.00242	0.00328
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00265	0.00240	0.00327
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00268	0.00243	0.00330
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00133	-0.00137	-0.00137
	(!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)	0.00757	0.00729	0.00811
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00268	0.00242	0.00328
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00265	0.00240	0.00327
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00268	0.00243	0.00330

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	0.00140	0.00137	0.00136
	(!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)	0.01041	0.01023	0.01094
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00481	0.00469	0.00558
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00484	0.00472	0.00559
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00479	0.00466	0.00555
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00140	0.00137	0.00137
	(!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)	0.01041	0.01023	0.01095
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00481	0.00469	0.00558
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00485	0.00472	0.00559
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00479	0.00466	0.00555

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)	0.00168	0.00136	0.00314
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00682	0.00633	0.00801
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)	0.00168	0.00136	0.00314
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00682	0.00633	0.00801

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)	0.00537	0.00524	0.00755
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01020	0.00990	0.01197
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)	0.00537	0.00524	0.00755
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01020	0.00989	0.01197

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)	-0.00352	-0.00354	-0.00355
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00358	-0.00384	-0.00384
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00344	-0.00357	-0.00356
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00172	0.00141	0.00246
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)	-0.00352	-0.00354	-0.00355
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00358	-0.00384	-0.00384
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00344	-0.00356	-0.00356
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00173	0.00141	0.00246

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)	0.00356	0.00363	0.00356
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00382	0.00387	0.00384
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00356	0.00359	0.00357
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00815	0.00792	0.00862
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)	0.00356	0.00363	0.00356
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00382	0.00387	0.00384
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00356	0.00359	0.00357
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00815	0.00793	0.00862

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)	-0.00032	-0.00078	0.00102
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00360	0.00290	0.00465
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00356	0.00284	0.00461
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00022	-0.00069	0.00113
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00193	0.00118	0.00491
sky130_osu_sc_12T_hs__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00032	-0.00077	0.00102
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00360	0.00290	0.00465
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00356	0.00285	0.00461
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00022	-0.00069	0.00113
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00193	0.00118	0.00491

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)	0.01687	0.01632	0.01827
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00775	0.00744	0.00973
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01151	0.01116	0.01321
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01153	0.01120	0.01323
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01635	0.01573	0.02007
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00803	0.00770	0.00996
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01024	0.00972	0.01433
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01687	0.01632	0.01827
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00775	0.00744	0.00973
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01151	0.01116	0.01321
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01153	0.01120	0.01323
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01635	0.01574	0.02007
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00804	0.00770	0.00996
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01024	0.00972	0.01433

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00262	0.00519	0.00840	0.81112	0.82135
sky130_osu_sc_12T_hs__dffs_l	0.00262	0.00519	0.00840	0.59485	0.59464

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.18926	0.50717
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.29874	0.61665

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)	0.29567	1.40974	13.49510
	QN->Q (FR)	0.04022	0.92210	12.88220
	SN->Q (FR)	0.23855	1.49923	15.14240
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.29292	1.47179	12.81660
	QN->Q (FR)	0.04346	0.94100	12.12110
	SN->Q (FR)	0.23468	1.55737	14.42360

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)	0.44845	1.66928	15.18520
	QN->Q (RF)	0.02343	0.56453	8.08585
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.44714	1.78451	14.98770
	QN->Q (RF)	0.02473	0.57649	7.77404

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)	0.40528	1.06852	7.56669
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.39863	1.11181	7.37645

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)	0.23783	0.64450	3.75653
	SN->QN (FF)	0.17975	0.73459	5.40637
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.23251	0.65123	3.54295
	SN->QN (FF)	0.17349	0.73739	5.15488

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)	-0.04862	-0.07055	-0.28057
	setup	CK (R)	0.20666	0.23283	1.50329
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.04861	-0.07056	-0.28060
	setup	CK (R)	0.20721	0.23335	1.51281

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)	-0.18461	-0.44442	-4.40822
	setup	CK (R)	0.23256	0.46248	4.49458
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.18711	-0.44523	-4.40594
	setup	CK (R)	0.23256	0.46248	4.49458

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)	-0.04862	-0.07055	-0.28057
	setup	CK (R)	0.20666	0.23283	1.50329
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.04861	-0.07056	-0.28060
	setup	CK (R)	0.20721	0.23335	1.51281

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)	-0.18461	-0.44442	-4.40822
	setup	CK (R)	0.23256	0.46248	4.49458
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.18711	-0.44523	-4.40594
	setup	CK (R)	0.23256	0.46248	4.49458

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)	0.04882	0.07769	2.71878
	removal	CK (R)	-0.01897	-0.05168	-0.47576
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.05277	0.07769	2.56005
	removal	CK (R)	-0.01897	-0.05168	-0.47576

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)	0.04882	0.07769	2.71878
	removal	CK (R)	-0.01897	-0.05168	-0.47576
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.05277	0.07769	2.56005
	removal	CK (R)	-0.01897	-0.05168	-0.47576

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 ()	0.16671	0.45934	13.33370
	min_pulse_width	SN ()	0.17019	0.45934	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.16210	0.44593	13.33370
	min_pulse_width	SN ()	0.16210	0.44593	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 ()	0.11597	0.42358	13.33370
	min_pulse_width	CK ()	0.22812	0.42358	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.10956	0.42358	13.33370
	min_pulse_width	CK ()	0.22171	0.42358	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 ()	0.31144	0.42805	13.33370
	min_pulse_width	CK ()	0.19928	0.42358	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.31305	0.43029	13.33370
	min_pulse_width	CK ()	0.19928	0.42358	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	0.00499	0.00412	-0.00091
	SN	-0.00065	-0.03149	-0.42048
	SN	0.01059	0.00986	0.00631
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00452	0.00379	0.00160
	SN	-0.00065	-0.02614	-0.30837
	SN	0.01012	0.00952	0.00853

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	0.00553	0.00499	0.00128
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00507	0.00463	0.00307

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	0.00554	0.00499	0.00123
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00507	0.00464	0.00307

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	0.00496	0.00409	-0.00116
	SN	-0.00065	-0.03172	-0.42575
	SN	0.01056	0.00982	0.00604
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00449	0.00376	0.00152
	SN	-0.00065	-0.02614	-0.30824
	SN	0.01008	0.00949	0.00869

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	-0.00135	-0.00138	-0.00139
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00601	0.00568	0.00660
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00245	0.00218	0.00307
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00135	-0.00138	-0.00139
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00601	0.00568	0.00660
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00245	0.00219	0.00307

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	0.00143	0.00140	0.00139
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00895	0.00876	0.00957
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00444	0.00431	0.00522
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00143	0.00140	0.00139
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00895	0.00876	0.00957
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00445	0.00431	0.00523

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)	-0.00261	-0.00264	-0.00263
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00173	0.00143	0.00380
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)	-0.00260	-0.00263	-0.00263
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00174	0.00144	0.00381

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)	0.00266	0.00267	0.00264
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00578	0.00553	0.00901
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)	0.00266	0.00266	0.00264
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00577	0.00553	0.00901

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)	-0.00028	-0.00073	0.00107
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00026	-0.00073	0.00110
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00176	0.00100	0.00481
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00027	-0.00073	0.00107
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00026	-0.00073	0.00110
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00176	0.00100	0.00481

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)	0.01516	0.01461	0.01663
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00761	0.00730	0.00960
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01475	0.01407	0.01857
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00798	0.00765	0.00992
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00972	0.00921	0.01389
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01516	0.01461	0.01663
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00761	0.00731	0.00960
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01475	0.01407	0.01857
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00798	0.00765	0.00992
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00972	0.00921	0.01389

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00277	0.00834	0.75224
sky130_osu_sc_12T_hs__dff_l	0.00277	0.00834	0.56140

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.03934	0.04586
sky130_osu_sc_12T_hs__dff_l	0.00000	0.14882	0.15534

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)	0.25392	0.91333	7.22205
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.25080	0.96138	7.08955

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)	0.38282	0.77311	3.73488
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.38146	0.79176	3.63773

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)	-0.05129	-0.07177	-0.32845
	setup	CK (R)	0.16929	0.19569	1.50006
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.05206	-0.07347	-0.33074
	setup	CK (R)	0.17002	0.19619	1.51054

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)	-0.17270	-0.44443	-4.42970
	setup	CK (R)	0.20665	0.46046	4.52213
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.17357	-0.44473	-4.43062
	setup	CK (R)	0.20665	0.46046	4.52214

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 ()	0.10315	0.42358	13.33370
	min_pulse_width	CK ()	0.20889	0.42358	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.09995	0.42358	13.33370
	min_pulse_width	CK ()	0.20569	0.42358	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 ()	0.26977	0.42358	13.33370
	min_pulse_width	CK ()	0.16403	0.42358	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.26977	0.42358	13.33370
	min_pulse_width	CK ()	0.16403	0.42358	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	0.01047	0.00949	0.01276
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00951	0.00853	0.01184

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	0.01127	0.01067	0.01229
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01032	0.00972	0.01135

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	-0.00115	-0.00134	-0.00135
	!CK	0.00000	0.00000	0.00000
	!CK	0.00540	0.00508	0.00591
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00115	-0.00134	-0.00135
	!CK	0.00000	0.00000	0.00000
	!CK	0.00540	0.00509	0.00591

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	0.00134	0.00135	0.00135
	!CK	0.00000	0.00000	0.00000
	!CK	0.00926	0.00901	0.00987
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00134	0.00135	0.00135
	!CK	0.00000	0.00000	0.00000
	!CK	0.00926	0.00901	0.00987

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)	-0.00030	-0.00075	0.00106
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00026	-0.00069	0.00111
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00030	-0.00075	0.00106
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00026	-0.00069	0.00111

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)	0.00758	0.00730	0.00958
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01454	0.01399	0.01606
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01493	0.01426	0.01878
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00793	0.00762	0.00987
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00759	0.00730	0.00959
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01454	0.01399	0.01607
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01493	0.01426	0.01878
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00790	0.00762	0.00987

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00267	0.75836
sky130_osu_sc_12T_hs__inv_10	0.02376	7.54786
sky130_osu_sc_12T_hs__inv_2	0.00495	1.56809
sky130_osu_sc_12T_hs__inv_3	0.00731	2.30379
sky130_osu_sc_12T_hs__inv_4	0.00963	3.11199
sky130_osu_sc_12T_hs__inv_6	0.01441	4.64128
sky130_osu_sc_12T_hs__inv_8	0.01908	6.18932
sky130_osu_sc_12T_hs__inv_l	0.00215	0.54298

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.00576	0.00907
sky130_osu_sc_12T_hs__inv_10	0.00000	0.05764	0.09073
sky130_osu_sc_12T_hs__inv_2	0.00000	0.01153	0.01815
sky130_osu_sc_12T_hs__inv_3	0.00000	0.01729	0.02722
sky130_osu_sc_12T_hs__inv_4	0.00000	0.02306	0.03629
sky130_osu_sc_12T_hs__inv_6	0.00000	0.03458	0.05444
sky130_osu_sc_12T_hs__inv_8	0.00000	0.04611	0.07259
sky130_osu_sc_12T_hs__inv_l	0.00000	0.06051	0.11987

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)**	0.03915	0.86786	11.95340
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.04034	0.56139	11.88730
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.02790	0.73084	11.93120
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.02950	0.67566	11.94580
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.02841	0.63810	11.93470
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.03100	0.59931	11.93770
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.03524	0.57577	11.97440
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.04374	0.88312	11.23380

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)**	0.02168	0.51214	7.18695
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.02693	0.34481	7.38027
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01711	0.45122	7.32404
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01829	0.42262	7.39721
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01787	0.40068	7.41314
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.02077	0.37338	7.43722
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02375	0.35703	7.46213
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.02358	0.52680	6.94659

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	0.00242	0.00240	0.00268
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.01953	0.02011	0.02335
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00414	0.00417	0.00478
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00637	0.00581	0.00734
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.00808	0.00759	0.00945
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01194	0.01230	0.01414
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01576	0.01570	0.01876
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00194	0.00170	0.00244

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	-0.00035	-0.00038	-0.00028
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00678	-0.00666	-0.00464
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00124	-0.00125	-0.00100
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00159	-0.00164	-0.00119
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00254	-0.00255	-0.00191
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00388	-0.00379	-0.00282
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00530	-0.00523	-0.00375
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00025	-0.00027	-0.00019

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.10852	0.10842	0.00553	0.10513

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.01162	0.01162

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)	-	0.01520	0.28236	2.62846
	A1->Y (RR)	-	0.01910	0.28743	2.62637
	S0->Y (RR)	(!A0 * A1)	0.05224	0.30770	0.96760
	S0->Y (FR)	(A0 * !A1)	0.04120	0.44866	3.40207

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)	-	0.01768	0.24902	2.29003
	A1->Y (FF)	-	0.01530	0.24562	2.28075
	S0->Y (FF)	(!A0 * A1)	0.08448	0.41771	2.43704
	S0->Y (RF)	(A0 * !A1)	0.02369	0.28123	1.90518

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	-	-0.00246	-0.00245	-0.00246
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00159	-0.00159	-0.00160
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00322	0.00306	0.00565
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00148	-0.00184	0.00032

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	-	0.00246	0.00246	0.00246
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00159	0.00159	0.00160
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00049	0.00015	0.00238
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00653	0.00634	0.00880

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)	-0.00060	-0.00060	-0.00060

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)	0.00060	0.00060	0.00060

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)	-0.00072	-0.00072	-0.00072

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)	0.00072	0.00072	0.00072

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)	-0.00050	-0.00085	0.00137
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00049	-0.00084	0.00136

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)	0.00502	0.00481	0.00733
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00473	0.00454	0.00715

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00266	0.00267	0.75458
sky130_osu_sc_12T_hs__nand2_l	0.00210	0.00214	0.54127

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.00579	0.01815
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.06052	0.23973

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)	0.04093	0.87064	11.95460
	B->Y (FR)	0.04654	0.84322	11.53110
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.04426	0.88786	11.23280
	B->Y (FR)	0.05293	0.89585	11.22220

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)	0.03304	0.65088	8.94160
	B->Y (RF)	0.03753	0.63117	8.47282
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.03552	0.67505	8.60930
	B->Y (RF)	0.03985	0.65778	8.14546

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	0.00255	0.00253	0.00278
	B	0.00000	0.00000	0.00000
	B	0.00323	0.00316	0.00342
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00196	0.00185	0.00240
	B	0.00000	0.00000	0.00000
	B	0.00247	0.00238	0.00291

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	-0.00020	-0.00025	-0.00016
	B	0.00000	0.00000	0.00000
	B	-0.00018	-0.00024	-0.00018
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00012	-0.00016	-0.00007
	B	0.00000	0.00000	0.00000
	B	-0.00012	-0.00016	-0.00011

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)	-0.00159	-0.00161	-0.00161
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00114	-0.00114	-0.00115

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)	0.00160	0.00163	0.00161
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00114	0.00116	0.00115

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)	-0.00147	-0.00148	-0.00147
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00106	-0.00107	-0.00106

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)	0.00152	0.00150	0.00148
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00109	0.00108	0.00106

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00262	0.00289	0.38505
sky130_osu_sc_12T_hs__nor2_l	0.00202	0.00223	0.28571

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00482	0.00907
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.04123	0.11986

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)	0.09344	1.08286	11.80860
	B->Y (FR)	0.07628	1.05246	11.76500
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.09743	1.13550	11.41160
	B->Y (FR)	0.08421	1.09095	11.12320

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)	0.02706	0.43094	5.09857
	B->Y (RF)	0.02285	0.42132	5.08274
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.02779	0.44679	5.01645
	B->Y (RF)	0.02447	0.44066	5.00343

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	0.00327	0.00322	0.00328
	B	0.00000	0.00000	0.00000
	B	0.00264	0.00257	0.00291
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00243	0.00237	0.00251
	B	0.00000	0.00000	0.00000
	B	0.00203	0.00200	0.00275

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	0.00039	0.00027	0.00041
	B	0.00000	0.00000	0.00000
	B	-0.00027	-0.00029	-0.00016
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00029	0.00022	0.00036
	B	0.00000	0.00000	0.00000
	B	-0.00017	-0.00018	-0.00006

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)	-0.00115	-0.00136	-0.00136
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00075	-0.00092	-0.00093

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)	0.00136	0.00136	0.00136
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00093	0.00094	0.00094

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)	-0.00070	-0.00070	-0.00070
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00049	-0.00049	-0.00049

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)	0.00074	0.00075	0.00071
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00052	0.00052	0.00050

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00267	0.00276	0.00236	0.38248

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.04827	0.12894

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)	0.10766	1.08304	11.77350
	A1->Y (FR)	0.12927	1.11965	11.81590
	B0->Y (FR)	0.05458	0.78893	9.32512

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)	0.04517	0.51777	5.82420
	A1->Y (RF)	0.05215	0.51759	5.76899
	B0->Y (RF)	0.03567	0.54360	6.46210

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	0.00366	0.00358	0.00387
	A1	0.00000	0.00000	0.00000
	A1	0.00434	0.00426	0.00430
	B0	0.00292	0.00290	0.00364

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	0.00022	0.00018	0.00024
	A1	0.00000	0.00000	0.00000
	A1	0.00091	0.00079	0.00085
	B0	0.00116	0.00112	0.00123

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)	-0.00070	-0.00071	-0.00070
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00136	-0.00138	-0.00138
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00141	-0.00142	-0.00141

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)	0.00075	0.00075	0.00072
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00137	0.00138	0.00138
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00143	0.00143	0.00142

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)	-0.00110	-0.00132	-0.00131
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00134	-0.00138	-0.00137
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00139	-0.00140	-0.00140

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)	0.00131	0.00133	0.00131
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00137	0.00138	0.00137
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00141	0.00142	0.00140

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)	-0.00118	-0.00119	-0.00122

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)	0.00122	0.00125	0.00123

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00250	0.00263	0.00280	0.00276	0.40402

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.00714	0.01815

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)	0.13713	1.12624	11.95930
	A1->Y (FR)	0.11957	1.09294	11.92860
	B0->Y (FR)	0.08068	1.05463	11.89390
	B1->Y (FR)	0.10015	1.08739	11.92550

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)	0.06832	0.55774	6.05192
	A1->Y (RF)	0.05683	0.54275	6.02196
	B0->Y (RF)	0.04775	0.56764	6.66928
	B1->Y (RF)	0.06000	0.58071	6.72449

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	0.00546	0.00539	0.00544
	A1	0.00478	0.00470	0.00497
	B0	0.00346	0.00341	0.00367
	B1	0.00418	0.00411	0.00415

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00134	0.00122	0.00127
	A1	0.00070	0.00067	0.00070
	B0	0.00069	0.00065	0.00074
	B1	0.00135	0.00122	0.00131

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)	-0.00113	-0.00132	-0.00133
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00113	-0.00132	-0.00133
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00130	-0.00133	-0.00133
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00135	-0.00135	-0.00135

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)	0.00133	0.00134	0.00133
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00133	0.00134	0.00133
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00132	0.00133	0.00133
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00135	0.00137	0.00135

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)	-0.00068	-0.00069	-0.00068
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00068	-0.00069	-0.00068
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00130	-0.00132	-0.00132
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00134	-0.00135	-0.00135

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)	0.00072	0.00073	0.00070
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00072	0.00073	0.00070
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00131	0.00132	0.00132
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00135	0.00136	0.00135

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)	-0.00069	-0.00070	-0.00069
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00068	-0.00070	-0.00069
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00154	-0.00157	-0.00156
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00154	-0.00155	-0.00159

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)	0.00073	0.00074	0.00070
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00073	0.00074	0.00070
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00156	0.00157	0.00156
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00159	0.00163	0.00160

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)	-0.00112	-0.00131	-0.00132
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00112	-0.00131	-0.00132
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00157	-0.00161	-0.00160
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00156	-0.00157	-0.00162

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)	0.00132	0.00133	0.00132
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00132	0.00133	0.00132
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00160	0.00162	0.00160
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00162	0.00164	0.00163

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00298	0.00274	0.76630
sky130_osu_sc_12T_hs__or2_2	0.00298	0.00274	1.58185
sky130_osu_sc_12T_hs__or2_4	0.00298	0.00274	3.16069
sky130_osu_sc_12T_hs__or2_8	0.00296	0.00274	6.13198
sky130_osu_sc_12T_hs__or2_l	0.00227	0.00213	0.56274

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.00893	0.01398
sky130_osu_sc_12T_hs__or2_2	0.00000	0.01304	0.02306
sky130_osu_sc_12T_hs__or2_4	0.00000	0.02126	0.04120
sky130_osu_sc_12T_hs__or2_8	0.00000	0.03769	0.07750
sky130_osu_sc_12T_hs__or2_l	0.00000	0.07206	0.12215

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)	0.08123	0.74591	7.12574
	B->Y (RR)	0.07378	0.72064	7.01210
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.08430	0.64462	7.27392
	B->Y (RR)	0.07632	0.62367	7.17048
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.10858	0.61839	7.67379
	B->Y (RR)	0.10033	0.60143	7.58795
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.15650	0.64533	8.06757
	B->Y (RR)	0.14805	0.63269	7.99948
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.08345	0.79663	6.98136
	B->Y (RR)	0.07695	0.77350	6.92143

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)	0.17102	0.70846	5.61986
	B->Y (FF)	0.14439	0.66649	5.33273
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.20927	0.72591	6.04209
	B->Y (FF)	0.18295	0.69337	5.78624
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.30101	0.81694	6.67180
	B->Y (FF)	0.27449	0.78282	6.42347
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.48424	1.01780	7.36343
	B->Y (FF)	0.45764	0.97997	7.18590
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.17595	0.71391	5.16085
	B->Y (FF)	0.15219	0.66510	4.84773

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	0.00266	0.00231	0.00354
	B	0.00000	0.00000	0.00000
	B	0.00199	0.00177	0.00338
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00433	0.00415	0.00543
	B	0.00000	0.00000	0.00000
	B	0.00363	0.00362	0.00530
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00813	0.00829	0.00980
	B	0.00000	0.00000	0.00000
	B	0.00741	0.00781	0.00967
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01569	0.01641	0.01807
	B	0.00000	0.00000	0.00000
	B	0.01497	0.01597	0.01811
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00206	0.00185	0.00317
	B	0.00000	0.00000	0.00000
	B	0.00160	0.00145	0.00374

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	0.00569	0.00549	0.00631
	B	0.00000	0.00000	0.00000
	B	0.00481	0.00480	0.00697
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00693	0.00699	0.00773
	B	0.00000	0.00000	0.00000
	B	0.00605	0.00629	0.00829
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01004	0.01055	0.01131
	B	0.00000	0.00000	0.00000
	B	0.00915	0.00975	0.01176
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01697	0.01745	0.01861
	B	0.00000	0.00000	0.00000
	B	0.01583	0.01663	0.01887
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00431	0.00416	0.00545
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00382	0.00722

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)	-0.00117	-0.00137	-0.00138
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00117	-0.00137	-0.00138
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00117	-0.00137	-0.00138
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00117	-0.00137	-0.00138
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00075	-0.00092	-0.00094

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)	0.00137	0.00138	0.00138
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00137	0.00138	0.00138
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00137	0.00139	0.00138
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00137	0.00139	0.00138
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00094	0.00094	0.00094

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)	-0.00070	-0.00070	-0.00070
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00070	-0.00070	-0.00070
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00070	-0.00070	-0.00070
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00070	-0.00070	-0.00070
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00048	-0.00048	-0.00048

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)	0.00075	0.00075	0.00072
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00075	0.00076	0.00072
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00075	0.00076	0.00072
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00075	0.00076	0.00072
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00051	0.00051	0.00049

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00287	0.00378	0.39933
sky130_osu_sc_12T_hs__tbufi_l	0.00224	0.00296	0.28155

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.00687	0.01815
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.06117	0.23973

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)	0.07059	1.04120	11.80210
	OE->Y (FR)	0.05892	0.30918	4.28306
	OE->Y (RR)	0.10649	0.90613	7.18051
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.08089	1.08189	11.02350
	OE->Y (FR)	0.05852	0.27590	4.28303
	OE->Y (RR)	0.11191	0.97397	7.00119

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)	0.03225	0.52705	6.36079
	OE->Y (FF)	0.05981	0.31172	4.28305
	OE->Y (RF)	0.03080	0.50037	5.87904
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.03503	0.54412	6.07842
	OE->Y (FF)	0.05921	0.27741	4.28301
	OE->Y (RF)	0.03341	0.51601	5.62098

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	0.00247	0.00241	0.00270
	OE	0.00000	0.00000	0.00000
	OE	0.00236	0.00204	0.00421
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00191	0.00187	0.00256
	OE	0.00000	0.00000	0.00000
	OE	0.00176	0.00153	0.00496

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	-0.00027	-0.00029	-0.00018
	OE	0.00000	0.00000	0.00000
	OE	0.00156	0.00123	0.00359
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00017	-0.00017	-0.00007
	OE	0.00000	0.00000	0.00000
	OE	0.00110	0.00088	0.00458

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)	-0.00118	-0.00119	-0.00119
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00108	-0.00111	-0.00109
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00086	-0.00086	-0.00086
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00079	-0.00079	-0.00079

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)	0.00118	0.00119	0.00119
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00112	0.00113	0.00110
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00086	0.00086	0.00086
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00081	0.00081	0.00079

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)	0.00091	0.00058	0.00296
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00080	0.00048	0.00285
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00065	0.00043	0.00417
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00056	0.00034	0.00407

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)	0.00298	0.00273	0.00530
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00303	0.00279	0.00535
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00232	0.00226	0.00634
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00233	0.00231	0.00639

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00286	0.00422	0.39929
sky130_osu_sc_12T_hs__tnbufi_l	0.00214	0.00324	0.28170

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.00908	0.01153
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.10075	0.12101

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)	0.07130	1.04103	11.80110
	OE->Y (RR)	0.02680	0.27147	4.28325
	OE->Y (FR)	0.08248	1.06553	11.82820
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.07942	1.07990	11.02380
	OE->Y (RR)	0.02872	0.27124	4.28302
	OE->Y (FR)	0.08807	1.12082	11.30750

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)	0.03147	0.52674	6.36014
	OE->Y (RF)	0.02650	0.27148	4.28325
	OE->Y (FF)	0.07034	0.55492	4.35710
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.03314	0.54289	6.07880
	OE->Y (RF)	0.02818	0.27124	4.28300
	OE->Y (FF)	0.07620	0.54894	3.83505

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	0.00257	0.00250	0.00279
	OE	0.00000	0.00000	0.00000
	OE	0.00601	0.00595	0.00874
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00196	0.00192	0.00261
	OE	0.00000	0.00000	0.00000
	OE	0.00465	0.00468	0.00899

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	-0.00040	-0.00041	-0.00030
	OE	0.00000	0.00000	0.00000
	OE	0.00531	0.00524	0.00784
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00030	-0.00030	-0.00019
	OE	0.00000	0.00000	0.00000
	OE	0.00410	0.00419	0.00826

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)	-0.00097	-0.00098	-0.00098
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00088	-0.00089	-0.00089
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00067	-0.00068	-0.00067
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00061	-0.00061	-0.00060

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)	0.00097	0.00098	0.00098
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00091	0.00092	0.00089
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00067	0.00068	0.00067
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00063	0.00063	0.00062

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)	-0.00145	-0.00194	0.00051
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00145	-0.00191	0.00052
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00096	-0.00132	0.00247
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00100	-0.00133	0.00247

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)	0.00455	0.00447	0.00725
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00448	0.00445	0.00717
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00356	0.00366	0.00787
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00351	0.00362	0.00782

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00576	0.00487	0.41185

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.02077	0.02968

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	0.13762	0.95614	7.44337
	A->Y (FR)	!B	0.09349	1.06932	11.94730
	B->Y (RR)	A	0.11276	0.93069	7.40035
	B->Y (FR)	!A	0.11166	1.09720	11.97080

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	0.11374	0.64226	4.74892
	A->Y (RF)	!B	0.04425	0.51687	5.99205
	B->Y (FF)	A	0.10323	0.63110	4.74262
	B->Y (RF)	!A	0.05128	0.52674	6.00406

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	0.00250	0.00209	0.00413
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00620	0.00593	0.00881
	B	A	0.00000	0.00000	0.00000
	B	A	0.00122	0.00098	0.00321
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00645	0.00627	0.00895

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	0.00741	0.00707	0.00950
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00178	0.00140	0.00370
	B	A	0.00000	0.00000	0.00000
	B	A	0.00666	0.00660	0.00916
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00234	0.00194	0.00424

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00577	0.00491	0.38391

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.02077	0.02789

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	0.14387	0.95510	7.26926
	A->Y (FR)	B	0.11579	1.09995	11.81160
	B->Y (RR)	!A	0.11899	0.94034	7.25790
	B->Y (FR)	A	0.12448	1.11078	11.81720

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	0.11340	0.63123	4.56895
	A->Y (RF)	B	0.04338	0.54006	6.25096
	B->Y (FF)	!A	0.10729	0.62640	4.57317
	B->Y (RF)	A	0.04899	0.51597	5.77759

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	0.00719	0.00696	0.00959
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00160	0.00094	0.00307
	B	A	0.00000	0.00000	0.00000
	B	A	0.00722	0.00706	0.00969
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00116	0.00088	0.00311

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	0.00153	0.00103	0.00334
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00775	0.00758	0.00998
	B	A	0.00000	0.00000	0.00000
	B	A	0.00154	0.00110	0.00337
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00674	0.00671	0.00925

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.19295
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	70352.50000	140705.00000
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
	-0.00123	0.01245	0.20388

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
	1.22525	1.16629	0.25900