sky130_osu_sc_12T_hs_ss_1P60_-40C.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_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.01059	0.01061	0.00827	0.57842	0.25037	0.53044
sky130_osu_sc_12T_hs__addf_l	0.01059	0.01061	0.00828	0.42461	0.25140	0.53005

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.00082	0.00094
sky130_osu_sc_12T_hs__addf_l	0.00000	0.00076	0.00094

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)	0.20829	1.81677	19.97300
	B->CO (RR)	0.19926	1.78457	19.89920
	CI->CO (RR)	0.19877	1.84538	20.63070
	CON->CO (FR)	0.05065	1.00484	12.84930
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.20300	1.71052	17.07450
	B->CO (RR)	0.19486	1.69116	17.22710
	CI->CO (RR)	0.19359	1.73927	17.74830
	CON->CO (FR)	0.05651	1.04665	12.32530

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)	0.46951	3.14618	33.18140
	B->CO (FF)	0.42607	3.01826	32.21470
	CI->CO (FF)	0.42263	3.07944	33.04680
	CON->CO (RF)	0.02284	0.50876	6.78181
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.44999	2.79796	26.63620
	B->CO (FF)	0.40775	2.68774	25.91890
	CI->CO (FF)	0.40312	2.73183	26.51400
	CON->CO (RF)	0.02378	0.51467	6.46293

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)	0.36876	1.55958	12.98540
	B->CON (FR)	0.32887	1.48111	12.67860
	CI->CON (FR)	0.32138	1.49197	12.87100
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.35125	1.54379	12.98920
	B->CON (FR)	0.31233	1.46699	12.69350
	CI->CON (FR)	0.30452	1.47628	12.88360

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)	0.09742	0.54463	5.21725
	B->CON (RF)	0.09242	0.56417	5.62185
	CI->CON (RF)	0.08794	0.57487	5.81672
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.09407	0.54181	5.22289
	B->CON (RF)	0.08923	0.56159	5.62804
	CI->CON (RF)	0.08456	0.57236	5.82309

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)	0.64824	3.24618	29.24990
	B->S (-R)	0.62503	3.19341	28.80920
	CI->S (-R)	0.59835	3.17317	29.09640
	CON->S (RR)	0.12832	0.96518	8.32950
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.62274	3.22467	29.21980
	B->S (-R)	0.60097	3.17305	28.78160
	CI->S (-R)	0.57305	3.15188	29.05860
	CON->S (RR)	0.12839	0.96498	8.32409

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)	0.39884	1.54751	12.60810
	B->S (-F)	0.40240	1.51150	12.78910
	CI->S (-F)	0.38880	1.56968	13.26260
	CON->S (FF)	0.19494	0.79050	6.34007
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.39043	1.54060	12.59760
	B->S (-F)	0.39463	1.50503	12.77870
	CI->S (-F)	0.38044	1.56244	13.25270
	CON->S (FF)	0.19496	0.79039	6.31720

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	0.00208	0.00201	0.00196
	B	0.00243	0.00246	0.00241
	CI	0.00256	0.00262	0.00259
sky130_osu_sc_12T_hs__addf_l	A	0.00187	0.00180	0.00172
	B	0.00221	0.00222	0.00214
	CI	0.00234	0.00239	0.00234

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00702	0.00700	0.00697
	B	0.00688	0.00693	0.00691
	CI	0.00604	0.00617	0.00615
sky130_osu_sc_12T_hs__addf_l	A	0.00685	0.00683	0.00676
	B	0.00671	0.00675	0.00672
	CI	0.00586	0.00599	0.00595

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00701	0.00698	0.00692
	B	0.00688	0.00690	0.00679
	CI	0.00604	0.00614	0.00609
sky130_osu_sc_12T_hs__addf_l	A	0.00685	0.00681	0.00675
	B	0.00672	0.00673	0.00663
	CI	0.00587	0.00597	0.00592

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00207	0.00200	0.00188
	B	0.00241	0.00241	0.00223
	CI	0.00256	0.00261	0.00254
sky130_osu_sc_12T_hs__addf_l	A	0.00185	0.00178	0.00166
	B	0.00219	0.00219	0.00202
	CI	0.00234	0.00239	0.00231

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00702	0.00700	0.00697
	B	0.00691	0.00690	0.00688
	CI	0.00605	0.00617	0.00615
sky130_osu_sc_12T_hs__addf_l	A	0.00686	0.00683	0.00679
	B	0.00672	0.00676	0.00675
	CI	0.00587	0.00600	0.00598

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01421	0.01426	0.01420
	B	0.01317	0.01282	0.01275
	CI	0.01159	0.01152	0.01149
sky130_osu_sc_12T_hs__addf_l	A	0.01422	0.01426	0.01420
	B	0.01318	0.01282	0.01276
	CI	0.01159	0.01152	0.01149

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00517	0.00556	0.56746	0.57537	0.57408
sky130_osu_sc_12T_hs__addh_l	0.00509	0.00546	0.42505	0.57414	0.42849

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.00080	0.00092
sky130_osu_sc_12T_hs__addh_l	0.00000	0.00069	0.00080

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)	0.18617	1.06902	9.24859
	B->CO (RR)	0.18960	1.05987	9.38214
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.14777	1.00643	7.90804
	B->CO (RR)	0.15031	0.99748	7.99958

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)	0.18148	0.83248	7.25897
	B->CO (FF)	0.18987	0.84461	7.34402
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.15326	0.75544	6.29671
	B->CO (FF)	0.16103	0.76699	6.38596

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)	0.26885	1.12589	9.23192
	B->CON (RR)	0.27212	1.11514	9.35946
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.21177	0.99830	8.06305
	B->CON (RR)	0.21438	0.98663	8.15949

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)	0.22390	0.86062	7.30628
	B->CON (FF)	0.22590	0.86712	7.38166
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.18193	0.76076	6.46277
	B->CON (FF)	0.18470	0.76784	6.54719

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)	0.32196	1.82525	17.65020
	B->S (FR)	0.32430	1.83100	17.75200
	CON->S (FR)	0.05399	1.01148	12.89840
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.26922	1.63801	14.63140
	B->S (FR)	0.27240	1.64499	14.71730
	CON->S (FR)	0.05694	1.04849	12.40280

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)	0.35615	1.95267	18.03710
	B->S (RF)	0.35944	1.94266	18.16670
	CON->S (RF)	0.02732	0.60196	8.13822
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.27651	1.51863	12.15350
	B->S (RF)	0.27903	1.50718	12.25680
	CON->S (RF)	0.02321	0.51597	6.51878

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	0.00360	0.00346	0.00333
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00325	0.00312
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00303	0.00284	0.00279
	B	0.00000	0.00000	0.00000
	B	0.00281	0.00263	0.00255

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	0.00502	0.00487	0.00465
	B	0.00000	0.00000	0.00000
	B	0.00526	0.00526	0.00507
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00449	0.00431	0.00411
	B	0.00000	0.00000	0.00000
	B	0.00471	0.00467	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	0.00360	0.00346	0.00333
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00325	0.00312
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00303	0.00284	0.00274
	B	0.00000	0.00000	0.00000
	B	0.00281	0.00263	0.00250

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	0.00503	0.00487	0.00462
	B	0.00000	0.00000	0.00000
	B	0.00526	0.00526	0.00507
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00449	0.00430	0.00408
	B	0.00000	0.00000	0.00000
	B	0.00471	0.00467	0.00447

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	0.00503	0.00488	0.00458
	B	0.00000	0.00000	0.00000
	B	0.00526	0.00527	0.00503
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00450	0.00432	0.00418
	B	0.00000	0.00000	0.00000
	B	0.00471	0.00468	0.00457

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	0.00361	0.00346	0.00331
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00325	0.00311
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00303	0.00284	0.00274
	B	0.00000	0.00000	0.00000
	B	0.00281	0.00263	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)	0.44195	0.42092	0.09773
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.44277	0.42130	0.09794

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)	0.44182	0.41983	0.09483
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.44265	0.42059	0.09500

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00287	0.56552
sky130_osu_sc_12T_hs__and2_2	0.00277	0.00287	1.13645
sky130_osu_sc_12T_hs__and2_4	0.00277	0.00287	2.20554
sky130_osu_sc_12T_hs__and2_6	0.00281	0.00287	3.27323
sky130_osu_sc_12T_hs__and2_8	0.00277	0.00287	4.31629
sky130_osu_sc_12T_hs__and2_l	0.00212	0.00219	0.42847

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.00036	0.00053
sky130_osu_sc_12T_hs__and2_2	0.00000	0.00055	0.00058
sky130_osu_sc_12T_hs__and2_4	0.00000	0.00093	0.00104
sky130_osu_sc_12T_hs__and2_6	0.00000	0.00131	0.00151
sky130_osu_sc_12T_hs__and2_8	0.00000	0.00169	0.00198
sky130_osu_sc_12T_hs__and2_l	0.00000	0.00021	0.00029

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)	0.11722	0.89647	7.80590
	B->Y (RR)	0.12203	0.89396	7.93153
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.12765	0.79655	8.05567
	B->Y (RR)	0.13246	0.78826	8.15682
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.17297	0.77975	8.43471
	B->Y (RR)	0.17785	0.76264	8.46785
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.21908	0.80765	8.74030
	B->Y (RR)	0.22379	0.78647	8.74706
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.26347	0.84712	9.04373
	B->Y (RR)	0.26832	0.82285	8.99988
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.11281	0.93469	7.51266
	B->Y (RR)	0.11743	0.93617	7.64310

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)**	0.12238	0.68466	6.01037
	B->Y (FF)	0.12885	0.69841	6.12233
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.15028	0.68903	6.34982
	B->Y (FF)	0.15564	0.69987	6.44793
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.22009	0.75022	6.87172
	B->Y (FF)	0.22184	0.75428	6.91784
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.29256	0.82736	7.24006
	B->Y (FF)	0.29009	0.82534	7.29123
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.36109	0.90080	7.54828
	B->Y (FF)	0.35573	0.89489	7.56227
sky130_osu_sc_12T_hs__and2_1	**A->Y (FF)**	0.11580	0.66031	5.31886
	B->Y (FF)	0.12721	0.68153	5.42516

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	0.00245	0.00213	0.00211
	B	0.00000	0.00000	0.00000
	B	0.00249	0.00217	0.00210
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00454	0.00440	0.00439
	B	0.00000	0.00000	0.00000
	B	0.00459	0.00449	0.00439
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00930	0.00957	0.00956
	B	0.00000	0.00000	0.00000
	B	0.00936	0.00964	0.00966
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01407	0.01461	0.01481
	B	0.00000	0.00000	0.00000
	B	0.01413	0.01478	0.01489
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01877	0.01959	0.02037
	B	0.00000	0.00000	0.00000
	B	0.01881	0.01982	0.02048
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00191	0.00169	0.00167
	B	0.00000	0.00000	0.00000
	B	0.00194	0.00171	0.00170

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	0.00611	0.00593	0.00595
	B	0.00000	0.00000	0.00000
	B	0.00685	0.00666	0.00665
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00760	0.00775	0.00780
	B	0.00000	0.00000	0.00000
	B	0.00837	0.00847	0.00846
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01135	0.01214	0.01231
	B	0.00000	0.00000	0.00000
	B	0.01212	0.01282	0.01291
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01524	0.01668	0.01699
	B	0.00000	0.00000	0.00000
	B	0.01596	0.01730	0.01751
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01886	0.02087	0.02147
	B	0.00000	0.00000	0.00000
	B	0.01965	0.02146	0.02191
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00465	0.00448	0.00469
	B	0.00000	0.00000	0.00000
	B	0.00521	0.00502	0.00522

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)	-0.00208	-0.00209	-0.00210
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00208	-0.00209	-0.00210
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00207	-0.00209	-0.00210
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00209	-0.00213	-0.00212
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00207	-0.00210	-0.00210
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00144	-0.00147	-0.00146

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)	0.00209	0.00214	0.00210
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00209	0.00212	0.00210
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00209	0.00212	0.00210
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00212	0.00213	0.00212
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00210	0.00211	0.00210
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00146	0.00149	0.00146

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)	-0.00198	-0.00200	-0.00199
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00198	-0.00199	-0.00199
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00198	-0.00198	-0.00199
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00198	-0.00200	-0.00199
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00198	-0.00200	-0.00199
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00138	-0.00139	-0.00139

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)	0.00198	0.00200	0.00199
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00198	0.00200	0.00199
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00198	0.00202	0.00199
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00198	0.00200	0.00199
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00198	0.00200	0.00199
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00138	0.00140	0.00139

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00249	0.00268	0.00270	0.24783

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.00017	0.00024

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)	0.18180	1.40195	12.95720
	A1->Y (FR)	0.14821	1.29973	12.43970
	B0->Y (FR)	0.14754	1.34414	12.89770

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)	0.04671	0.48690	5.09784
	A1->Y (RF)	0.04303	0.51258	5.52984
	B0->Y (RF)	0.02795	0.45050	5.03269

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	0.00476	0.00469	0.00440
	A1	0.00000	0.00000	0.00000
	A1	0.00405	0.00395	0.00390
	B0	0.00404	0.00390	0.00334

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	0.00075	0.00062	0.00052
	A1	0.00000	0.00000	0.00000
	A1	0.00077	0.00061	0.00051
	B0	-0.00039	-0.00039	-0.00049

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)	-0.00163	-0.00168	-0.00168
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00172	-0.00173	-0.00172
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00172	-0.00174	-0.00172

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)	0.00168	0.00168	0.00168
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00172	0.00173	0.00173
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00172	0.00174	0.00173

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)	-0.00163	-0.00169	-0.00169
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00172	-0.00172	-0.00173
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00189	-0.00191	-0.00191

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)	0.00168	0.00170	0.00169
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00172	0.00174	0.00173
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00190	0.00196	0.00192

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)	-0.00097	-0.00098	-0.00097

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)	0.00105	0.00106	0.00099

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00249	0.00268	0.00284	0.00264	0.24584

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.00024	0.00047

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)	0.23152	1.45689	12.99290
	A1->Y (FR)	0.20603	1.42364	12.92260
	B0->Y (FR)	0.15577	1.34716	12.83660
	B1->Y (FR)	0.18157	1.38017	12.91280

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)	0.05923	0.50063	5.09940
	A1->Y (RF)	0.05550	0.52634	5.53146
	B0->Y (RF)	0.03687	0.50116	5.49188
	B1->Y (RF)	0.04081	0.47557	5.06440

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	0.00584	0.00576	0.00564
	A1	0.00515	0.00503	0.00472
	B0	0.00431	0.00413	0.00344
	B1	0.00501	0.00488	0.00429

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00164	0.00151	0.00139
	A1	0.00165	0.00151	0.00138
	B0	-0.00024	-0.00024	-0.00034
	B1	-0.00024	-0.00023	-0.00033

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)	-0.00163	-0.00170	-0.00168
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00172	-0.00174	-0.00172
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00172	-0.00173	-0.00172
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00172	-0.00173	-0.00172

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)	0.00168	0.00171	0.00168
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00172	0.00174	0.00173
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00172	0.00173	0.00173
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00172	0.00173	0.00173

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)	-0.00163	-0.00170	-0.00168
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00172	-0.00174	-0.00173
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00188	-0.00190	-0.00191
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00188	-0.00190	-0.00191

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)	0.00168	0.00170	0.00168
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00172	0.00174	0.00173
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00190	0.00195	0.00191
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00190	0.00195	0.00191

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)	-0.00097	-0.00098	-0.00097
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00096	-0.00097	-0.00097
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00198	-0.00200	-0.00200
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00197	-0.00200	-0.00200

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)	0.00108	0.00109	0.00100
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00096	0.00097	0.00097
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00199	0.00200	0.00200
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00199	0.00200	0.00200

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)	-0.00098	-0.00099	-0.00098
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00097	-0.00098	-0.00098
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00182	-0.00183	-0.00182
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00182	-0.00182	-0.00182

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)	0.00109	0.00110	0.00101
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00098	0.00098	0.00098
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00182	0.00183	0.00183
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00182	0.00183	0.00183

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.53426
sky130_osu_sc_12T_hs__buf_2	0.00289	1.10015
sky130_osu_sc_12T_hs__buf_4	0.00288	2.18220
sky130_osu_sc_12T_hs__buf_6	0.00084	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00288	4.38835
sky130_osu_sc_12T_hs__buf_l	0.00216	0.42837

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.00029	0.00029
sky130_osu_sc_12T_hs__buf_2	0.00000	0.00043	0.00053
sky130_osu_sc_12T_hs__buf_4	0.00000	0.00072	0.00100
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.00130	0.00195
sky130_osu_sc_12T_hs__buf_l	0.00000	0.00017	0.00017

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)**	0.09109	0.86751	7.69991
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.09073	0.74415	7.89029
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.11874	0.70417	8.25868
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.17614	0.73546	8.90286
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.08944	0.89746	7.43104

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)**	0.11650	0.66891	5.81543
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.14407	0.68016	6.23635
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.21395	0.74259	6.81453
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.35444	0.89487	7.56566
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.11281	0.65712	5.28070

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	0.00236	0.00196	0.00192
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00444	0.00422	0.00420
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00925	0.00937	0.00935
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01870	0.01952	0.02010
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00185	0.00157	0.00153

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	0.00601	0.00573	0.00576
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00747	0.00747	0.00750
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01125	0.01180	0.01192
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01878	0.02051	0.02092
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00463	0.00443	0.00464

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
	-0.00051	-0.00050	-0.00050

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
	0.00051	0.00050	0.00050

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00262	0.00264	0.00846	0.56400	0.56099
sky130_osu_sc_12T_hs__dffr_l	0.00262	0.00264	0.00845	0.42310	0.42400

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.00121	0.00159
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.00110	0.00147

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)	0.57703	1.80411	13.02970
	QN->Q (FR)	0.05629	1.06575	13.60670
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.54935	1.81338	12.22710
	QN->Q (FR)	0.05962	1.09308	12.80830

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)	0.53598	1.90264	15.25850
	QN->Q (RF)	0.02484	0.54840	7.35222
	RN->Q (FF)	0.38476	1.92983	17.97720
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.53503	1.99638	14.80840
	QN->Q (RF)	0.02522	0.54723	6.96444
	RN->Q (FF)	0.38411	2.02404	17.50660

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)	0.48243	1.26814	8.33480
	RN->QN (FR)	0.33072	1.29240	11.04990
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.47713	1.31660	8.18437
	RN->QN (FR)	0.32596	1.34099	10.88390

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)**	0.48431	0.92546	3.60398
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.45710	0.90117	3.43260

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)	-0.07053	-0.09084	-0.45042
	setup	CK (R)	0.42605	0.43086	1.51379
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.07044	-0.09109	-0.45058
	setup	CK (R)	0.42771	0.43473	1.55187

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)	-0.25548	-0.55382	-7.30288
	setup	CK (R)	0.28786	0.57383	7.35740
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.25363	-0.55670	-7.30351
	setup	CK (R)	0.28787	0.57410	7.35763

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)	-0.07053	-0.09084	-0.45042
	setup	CK (R)	0.42605	0.43086	1.51379
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.07044	-0.09109	-0.45058
	setup	CK (R)	0.42771	0.43473	1.55187

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)	-0.25548	-0.55382	-7.30288
	setup	CK (R)	0.28786	0.57383	7.35740
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.25363	-0.55670	-7.30351
	setup	CK (R)	0.28787	0.57410	7.35763

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)	0.38813	0.39870	1.28746
	removal	CK (R)	-0.06935	-0.08395	-0.05880
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.39037	0.40306	1.31128
	removal	CK (R)	-0.06629	-0.08395	-0.05880

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)	0.38813	0.39870	1.28746
	removal	CK (R)	-0.06935	-0.08395	-0.05880
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.39037	0.40306	1.31128
	removal	CK (R)	-0.06629	-0.08395	-0.05880

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 ()	0.24460	0.53561	13.33370
	min_pulse_width	RN ()	0.24460	0.53561	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.23860	0.53115	13.33370
	min_pulse_width	RN ()	0.23860	0.53115	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 ()	0.23772	0.42847	13.33370
	min_pulse_width	CK ()	0.27652	0.42847	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.21832	0.42847	13.33370
	min_pulse_width	CK ()	0.27005	0.42847	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 ()	0.57900	0.65392	13.33370
	min_pulse_width	CK ()	0.23420	0.49097	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.58295	0.65838	13.33370
	min_pulse_width	CK ()	0.23420	0.49097	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	0.00595	0.00508	-0.00094
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00534	0.00455	0.00068

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	0.00672	0.00622	0.00329
	RN	-0.00081	-0.03148	-0.36096
	RN	0.01520	0.01484	0.01167
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00609	0.00566	0.00395
	RN	-0.00081	-0.02649	-0.27078
	RN	0.01457	0.01427	0.01228

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	0.00672	0.00623	0.00330
	RN	-0.00081	-0.03138	-0.35904
	RN	0.01521	0.01484	0.01166
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00609	0.00566	0.00393
	RN	-0.00081	-0.02653	-0.27136
	RN	0.01458	0.01428	0.01229

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	0.00593	0.00506	-0.00107
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00532	0.00453	0.00054

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	-0.00162	-0.00171	-0.00170
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00708	0.00676	0.00653
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00278	0.00252	0.00236
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00162	-0.00171	-0.00170
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00708	0.00677	0.00654
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00279	0.00252	0.00236

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	0.00169	0.00172	0.00170
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01091	0.01073	0.01053
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00523	0.00507	0.00502
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00169	0.00172	0.00170
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01091	0.01074	0.01053
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00523	0.00507	0.00502

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)	0.00239	0.00203	0.00190
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00697	0.00640	0.00615
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)	0.00240	0.00203	0.00190
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00697	0.00641	0.00615

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)	0.00597	0.00570	0.00569
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01180	0.01142	0.01114
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)	0.00597	0.00570	0.00569
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01180	0.01142	0.01115

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)	-0.00041	-0.00090	-0.00111
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00351	0.00270	0.00222
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00044	-0.00097	-0.00115
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00041	-0.00090	-0.00111
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00351	0.00270	0.00222
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00044	-0.00097	-0.00115

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)	0.00961	0.00920	0.00909
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01849	0.01783	0.01726
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01401	0.01355	0.01315
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01840	0.01769	0.01743
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01000	0.00958	0.00953
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00960	0.00919	0.00909
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01850	0.01783	0.01727
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01401	0.01356	0.01315
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01841	0.01771	0.01743
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01000	0.00958	0.00953

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00258	0.00265	0.00611	0.00855	0.57524	0.58221
sky130_osu_sc_12T_hs__dffsr_l	0.00258	0.00265	0.00610	0.00855	0.42177	0.42851

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.00134	0.00166
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.00122	0.00154

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)	0.61504	1.84927	13.23860
	QN->Q (FR)	0.05365	1.04615	13.33740
	RN->Q (RR)	0.50262	1.74624	13.26670
	SN->Q (FR)	0.49186	1.88284	16.61810
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.59676	1.87016	12.36020
	QN->Q (FR)	0.05951	1.09149	12.77810
	RN->Q (RR)	0.48523	1.77021	12.38580
	SN->Q (FR)	0.47609	1.90711	15.69660

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)	0.61555	1.98357	15.36080
	QN->Q (RF)	0.02467	0.55066	7.41015
	RN->Q (FF)	0.41075	1.94813	18.10420
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.61541	2.08076	14.86000
	QN->Q (RF)	0.02508	0.54627	6.95109
	RN->Q (FF)	0.41312	2.05088	17.58350

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)	0.56129	1.35208	8.50262
	RN->QN (FR)	0.35713	1.31799	11.24710
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.55636	1.40683	8.35408
	RN->QN (FR)	0.35485	1.37541	11.08210

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)	0.52702	0.98229	3.84885
	RN->QN (RF)	0.41570	0.88428	3.88353
	SN->QN (FF)	0.40760	1.02259	7.22547
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.50705	0.96340	3.62038
	RN->QN (RF)	0.39578	0.86631	3.65579
	SN->QN (FF)	0.38678	1.00269	6.96645

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)	-0.08479	-0.10648	-0.54429
	setup	CK (R)	0.44992	0.44662	1.48535
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.08586	-0.10533	-0.54658
	setup	CK (R)	0.45134	0.44888	1.49113

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)	-0.29402	-0.58503	-7.52646
	setup	CK (R)	0.33903	0.60293	7.56200
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.29365	-0.58496	-7.52674
	setup	CK (R)	0.33603	0.60293	7.56201

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)	-0.08479	-0.10648	-0.54429
	setup	CK (R)	0.44992	0.44662	1.48535
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.08586	-0.10533	-0.54658
	setup	CK (R)	0.45134	0.44888	1.49113

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)	-0.29402	-0.58503	-7.52646
	setup	CK (R)	0.33903	0.60293	7.56200
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.29365	-0.58496	-7.52674
	setup	CK (R)	0.33603	0.60293	7.56201

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)	0.38278	0.38487	1.26793
	removal	CK (R)	-0.05337	-0.06746	-0.09357
	hold	SN (R)	-0.39905	-0.58779	-4.94631
	setup	SN (R)	0.41853	0.62308	6.87913
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.38606	0.38752	1.28386
	removal	CK (R)	-0.05337	-0.06746	-0.09357
	hold	SN (R)	-0.37580	-0.56345	-4.80577
	setup	SN (R)	0.42007	0.60416	6.80532

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)	0.38278	0.38487	1.26793
	removal	CK (R)	-0.05337	-0.06746	-0.09357
	hold	SN (R)	-0.39905	-0.58779	-4.94631
	hold	SN (R)	-0.39963	-0.58966	-4.94973
	setup	SN (R)	0.41793	0.62112	6.85869
	setup	SN (R)	0.41853	0.62308	6.87913
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.38606	0.38752	1.28386
	removal	CK (R)	-0.05337	-0.06746	-0.09357
	hold	SN (R)	-0.38029	-0.56345	-4.80577
	hold	SN (R)	-0.37580	-0.56633	-4.81846
	setup	SN (R)	0.42007	0.60416	6.77531
	setup	SN (R)	0.39675	0.60188	6.80532

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 ()	0.27461	0.55570	13.33370
	min_pulse_width	RN ()	0.28518	0.55570	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.27246	0.55124	13.33370
	min_pulse_width	RN ()	0.28085	0.55124	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)	0.04912	0.06923	2.00982
	removal	CK (R)	-0.01458	-0.04332	-0.45879
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04916	0.06923	1.84028
	removal	CK (R)	-0.01458	-0.04332	-0.45879

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)	0.04912	0.06923	2.00982
	removal	CK (R)	-0.01458	-0.04332	-0.45879
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04916	0.06923	1.84028
	removal	CK (R)	-0.01458	-0.04332	-0.45879

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 ()	0.40205	0.66285	13.33370
	min_pulse_width	SN ()	0.40846	0.66508	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.39604	0.64053	13.33370
	min_pulse_width	SN ()	0.38759	0.64276	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 ()	0.26682	0.42847	13.33370
	min_pulse_width	CK ()	0.30561	0.42847	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.25389	0.42847	13.33370
	min_pulse_width	CK ()	0.30238	0.42847	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 ()	0.60559	0.66954	13.33370
	min_pulse_width	CK ()	0.28548	0.52445	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.61017	0.67178	13.33370
	min_pulse_width	CK ()	0.28548	0.52445	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	0.00721	0.00637	0.00021
	RN	0.01352	0.01287	0.00667
	SN	-0.00081	-0.03186	-0.36816
	SN	0.01481	0.01421	0.00784
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00664	0.00589	0.00203
	RN	0.01294	0.01239	0.00848
	SN	-0.00081	-0.02644	-0.26993
	SN	0.01424	0.01373	0.00944

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	0.00765	0.00728	0.00510
	RN	-0.00081	-0.03186	-0.36816
	RN	0.01608	0.01577	0.01340
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00704	0.00666	0.00495
	RN	-0.00081	-0.02644	-0.26993
	RN	0.01547	0.01515	0.01321

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	0.00766	0.00728	0.00508
	RN	-0.00081	-0.03209	-0.37261
	RN	0.01609	0.01577	0.01334
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00705	0.00667	0.00502
	RN	-0.00081	-0.02670	-0.27425
	RN	0.01547	0.01515	0.01321

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	0.00718	0.00634	0.00002
	RN	0.01350	0.01285	0.00647
	SN	-0.00081	-0.03209	-0.37259
	SN	0.01480	0.01419	0.00779
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00661	0.00586	0.00181
	RN	0.01292	0.01236	0.00825
	SN	-0.00081	-0.02670	-0.27424
	SN	0.01422	0.01371	0.00955

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	-0.00166	-0.00173	-0.00172
	(!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)	0.00883	0.00854	0.00832
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00307	0.00282	0.00266
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00305	0.00280	0.00264
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00309	0.00284	0.00268
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00166	-0.00173	-0.00172
	(!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)	0.00883	0.00854	0.00832
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00307	0.00282	0.00266
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00305	0.00280	0.00264
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00309	0.00284	0.00268

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	0.00171	0.00173	0.00172
	(!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)	0.01243	0.01228	0.01202
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00580	0.00565	0.00561
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00583	0.00568	0.00563
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00578	0.00563	0.00559
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00171	0.00173	0.00172
	(!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)	0.01243	0.01228	0.01202
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00580	0.00565	0.00561
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00583	0.00568	0.00563
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00578	0.00563	0.00559

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)	0.00218	0.00181	0.00164
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00831	0.00774	0.00737
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)	0.00218	0.00181	0.00164
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00831	0.00774	0.00737

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)	0.00662	0.00635	0.00633
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01261	0.01219	0.01186
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)	0.00662	0.00635	0.00633
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01261	0.01219	0.01186

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)	-0.00441	-0.00444	-0.00444
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00473	-0.00481	-0.00480
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00442	-0.00450	-0.00447
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00178	0.00148	0.00120
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)	-0.00441	-0.00444	-0.00444
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00473	-0.00481	-0.00480
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00442	-0.00450	-0.00447
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00178	0.00148	0.00120

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)	0.00442	0.00454	0.00445
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00479	0.00481	0.00480
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00444	0.00450	0.00447
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00989	0.00966	0.00960
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)	0.00443	0.00455	0.00445
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00479	0.00481	0.00480
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00444	0.00450	0.00447
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00989	0.00966	0.00960

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)	-0.00047	-0.00095	-0.00117
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00423	0.00347	0.00298
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00418	0.00342	0.00294
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00086	-0.00104
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00237	0.00150	0.00120
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00047	-0.00095	-0.00117
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00423	0.00346	0.00298
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00418	0.00343	0.00294
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00086	-0.00104
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00237	0.00150	0.00120

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)	0.02046	0.01981	0.01922
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00978	0.00935	0.00925
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01422	0.01375	0.01342
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01427	0.01384	0.01342
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02000	0.01923	0.01892
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01001	0.00958	0.00953
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01279	0.01207	0.01201
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02046	0.01981	0.01922
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00978	0.00936	0.00925
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01422	0.01375	0.01342
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01427	0.01384	0.01342
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02000	0.01923	0.01892
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01001	0.00958	0.00953
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01279	0.01208	0.01200

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00260	0.00514	0.00847	0.57182	0.56523
sky130_osu_sc_12T_hs__dffs_l	0.00260	0.00514	0.00847	0.42829	0.42716

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.00115	0.00128
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.00103	0.00116

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)	0.38344	1.58778	12.97860
	QN->Q (FR)	0.05632	1.06878	13.67920
	SN->Q (FR)	0.32253	1.69138	15.60090
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.37149	1.61566	12.17290
	QN->Q (FR)	0.05959	1.09640	12.87550
	SN->Q (FR)	0.30945	1.71903	14.73720

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)	0.57951	1.95890	15.46880
	QN->Q (RF)	0.02473	0.54863	7.37603
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.57391	2.04605	14.99740
	QN->Q (RF)	0.02513	0.54763	6.98713

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)	0.52476	1.31490	8.41838
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.51497	1.35849	8.26491

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)	0.30343	0.71220	3.42178
	SN->QN (FF)	0.24095	0.81742	6.04018
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.29039	0.70500	3.26717
	SN->QN (FF)	0.22705	0.80992	5.83797

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)	-0.05215	-0.07332	-0.41234
	setup	CK (R)	0.26321	0.27767	1.43548
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.05222	-0.07327	-0.41213
	setup	CK (R)	0.26650	0.27846	1.44780

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)	-0.25903	-0.55938	-7.35302
	setup	CK (R)	0.30853	0.58157	7.42023
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.25991	-0.55940	-7.35483
	setup	CK (R)	0.30867	0.58158	7.42040

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)	-0.05215	-0.07332	-0.41234
	setup	CK (R)	0.26321	0.27767	1.43548
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.05222	-0.07327	-0.41213
	setup	CK (R)	0.26650	0.27846	1.44780

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)	-0.25903	-0.55938	-7.35302
	setup	CK (R)	0.30853	0.58157	7.42023
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.25991	-0.55940	-7.35483
	setup	CK (R)	0.30867	0.58158	7.42040

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)	0.04958	0.07151	1.21247
	removal	CK (R)	-0.01906	-0.04182	-0.30259
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.04972	0.07159	1.06238
	removal	CK (R)	-0.01906	-0.04182	-0.30259

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)	0.04958	0.07151	1.21247
	removal	CK (R)	-0.01906	-0.04182	-0.30259
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.04972	0.07159	1.06238
	removal	CK (R)	-0.01906	-0.04182	-0.30259

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 ()	0.22734	0.56463	13.33370
	min_pulse_width	SN ()	0.23289	0.56240	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.22129	0.54900	13.33370
	min_pulse_width	SN ()	0.21921	0.54900	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 ()	0.13427	0.42847	13.33370
	min_pulse_width	CK ()	0.28622	0.42847	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.12780	0.42847	13.33370
	min_pulse_width	CK ()	0.27975	0.42847	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 ()	0.41788	0.53338	13.33370
	min_pulse_width	CK ()	0.25727	0.49990	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.41816	0.53115	13.33370
	min_pulse_width	CK ()	0.25727	0.49990	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	0.00597	0.00504	-0.00091
	SN	-0.00081	-0.03174	-0.36597
	SN	0.01281	0.01202	0.00614
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00535	0.00451	0.00072
	SN	-0.00081	-0.02669	-0.27411
	SN	0.01219	0.01151	0.00771

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	0.00668	0.00621	0.00332
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00606	0.00565	0.00396

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	0.00668	0.00622	0.00335
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00606	0.00566	0.00396

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	0.00594	0.00502	-0.00099
	SN	-0.00081	-0.03152	-0.36173
	SN	0.01279	0.01201	0.00606
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00532	0.00449	0.00058
	SN	-0.00081	-0.02665	-0.27337
	SN	0.01216	0.01149	0.00762

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	-0.00168	-0.00175	-0.00175
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00702	0.00669	0.00640
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00277	0.00251	0.00235
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00168	-0.00175	-0.00175
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00702	0.00669	0.00640
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00277	0.00251	0.00235

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	0.00173	0.00176	0.00175
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01092	0.01074	0.01054
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00534	0.00518	0.00513
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00173	0.00176	0.00175
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01092	0.01074	0.01054
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00534	0.00518	0.00513

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)	-0.00323	-0.00326	-0.00326
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00216	0.00185	0.00172
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)	-0.00323	-0.00326	-0.00325
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00217	0.00186	0.00172

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)	0.00325	0.00327	0.00326
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00701	0.00664	0.00674
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)	0.00325	0.00327	0.00326
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00700	0.00663	0.00673

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)	-0.00042	-0.00091	-0.00111
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00038	-0.00091	-0.00109
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00213	0.00125	0.00096
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00042	-0.00091	-0.00111
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00038	-0.00091	-0.00109
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00213	0.00125	0.00096

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)	0.01849	0.01783	0.01720
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00960	0.00919	0.00906
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01833	0.01749	0.01727
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00994	0.00953	0.00947
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01213	0.01138	0.01137
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01849	0.01783	0.01720
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00960	0.00919	0.00906
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01833	0.01751	0.01727
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00994	0.00952	0.00947
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01213	0.01138	0.01137

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00275	0.00839	0.52807
sky130_osu_sc_12T_hs__dff_l	0.00275	0.00840	0.40996

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.00116	0.00127
sky130_osu_sc_12T_hs__dff_l	0.00000	0.00104	0.00115

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)	0.33240	1.12304	8.04052
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.32131	1.16710	7.95181

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)	0.51384	0.90698	3.63271
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.50731	0.91339	3.55902

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)	-0.05720	-0.07852	-0.46516
	setup	CK (R)	0.21385	0.22589	1.42485
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.05724	-0.07843	-0.46490
	setup	CK (R)	0.21282	0.22766	1.43427

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)	-0.25678	-0.56745	-7.44398
	setup	CK (R)	0.29481	0.59148	7.51793
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.25553	-0.56551	-7.44283
	setup	CK (R)	0.29513	0.59148	7.52097

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 ()	0.12134	0.42847	13.33370
	min_pulse_width	CK ()	0.27329	0.42847	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.11810	0.42847	13.33370
	min_pulse_width	CK ()	0.26682	0.42847	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 ()	0.36839	0.51775	13.33370
	min_pulse_width	CK ()	0.23756	0.50659	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.36683	0.51552	13.33370
	min_pulse_width	CK ()	0.23756	0.50659	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	0.01258	0.01145	0.01097
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01130	0.01016	0.00967

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	0.01365	0.01299	0.01249
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01239	0.01172	0.01126

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	-0.00161	-0.00170	-0.00169
	!CK	0.00000	0.00000	0.00000
	!CK	0.00637	0.00607	0.00579
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00161	-0.00170	-0.00169
	!CK	0.00000	0.00000	0.00000
	!CK	0.00637	0.00607	0.00579

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	0.00168	0.00171	0.00169
	!CK	0.00000	0.00000	0.00000
	!CK	0.01136	0.01110	0.01089
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00168	0.00171	0.00169
	!CK	0.00000	0.00000	0.00000
	!CK	0.01136	0.01110	0.01089

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)	-0.00045	-0.00093	-0.00114
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00038	-0.00091	-0.00109
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00045	-0.00093	-0.00114
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00038	-0.00091	-0.00109

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)	0.00957	0.00913	0.00906
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01782	0.01718	0.01662
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01861	0.01773	0.01748
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00988	0.00946	0.00942
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00957	0.00914	0.00906
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01782	0.01717	0.01662
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01861	0.01773	0.01749
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00988	0.00945	0.00942

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00268	0.53761
sky130_osu_sc_12T_hs__inv_10	0.02380	5.43227
sky130_osu_sc_12T_hs__inv_2	0.00495	1.10954
sky130_osu_sc_12T_hs__inv_3	0.00733	1.63931
sky130_osu_sc_12T_hs__inv_4	0.00964	2.20846
sky130_osu_sc_12T_hs__inv_6	0.01443	3.26178
sky130_osu_sc_12T_hs__inv_8	0.01912	4.36799
sky130_osu_sc_12T_hs__inv_l	0.00212	0.39911

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.00014	0.00024
sky130_osu_sc_12T_hs__inv_10	0.00000	0.00145	0.00237
sky130_osu_sc_12T_hs__inv_2	0.00000	0.00029	0.00047
sky130_osu_sc_12T_hs__inv_3	0.00000	0.00043	0.00071
sky130_osu_sc_12T_hs__inv_4	0.00000	0.00058	0.00095
sky130_osu_sc_12T_hs__inv_6	0.00000	0.00087	0.00142
sky130_osu_sc_12T_hs__inv_8	0.00000	0.00116	0.00190
sky130_osu_sc_12T_hs__inv_l	0.00000	0.00009	0.00012

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)**	0.05539	1.02710	12.86820
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.05255	0.65671	12.89880
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.03857	0.86007	12.85300
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.04028	0.79915	12.89060
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.03825	0.75207	12.86980
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.04095	0.70044	12.78060
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.04612	0.67152	12.86080
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.06021	1.05115	12.18530

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)**	0.02278	0.49909	6.55230
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.02855	0.35079	6.76430
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01804	0.44320	6.65769
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01928	0.42015	6.74236
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01884	0.39780	6.74443
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.02192	0.37572	6.73622
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02511	0.36120	6.77116
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.02385	0.50569	6.27438

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	0.00305	0.00298	0.00293
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02471	0.02486	0.02527
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00522	0.00514	0.00514
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00804	0.00791	0.00794
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01021	0.01012	0.01017
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01510	0.01512	0.00961
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01995	0.01989	0.02026
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00240	0.00234	0.00236

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	-0.00047	-0.00053	-0.00056
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00863	-0.00877	-0.00799
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00160	-0.00166	-0.00168
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00205	-0.00217	-0.00214
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00325	-0.00341	-0.00326
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00493	-0.00512	-0.00484
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00673	-0.00686	-0.00642
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00033	-0.00038	-0.00041

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.43278	0.43432	0.00554	0.52900

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.00046	0.00071

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)	-	0.01990	0.53674	7.40391
	A1->Y (RR)	-	0.02603	0.53929	7.41239
	S0->Y (RR)	(!A0 * A1)	0.06243	0.65237	6.94496
	S0->Y (FR)	(A0 * !A1)	0.05733	0.77530	8.46938

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)	-	0.02064	0.45770	6.02284
	A1->Y (FF)	-	0.01780	0.45313	6.00671
	S0->Y (FF)	(!A0 * A1)	0.11846	0.65303	5.86105
	S0->Y (RF)	(A0 * !A1)	0.02487	0.48358	5.83653

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	-	-0.00299	-0.00299	-0.00300
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00195	-0.00196	-0.00196
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00418	0.00385	0.00388
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00185	-0.00228	-0.00238

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	-	0.00299	0.00300	0.00300
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00195	0.00196	0.00196
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00054	0.00009	0.00002
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00810	0.00778	0.00778

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)	-0.00075	-0.00075	-0.00075

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)	0.00075	0.00075	0.00075

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)	-0.00091	-0.00090	-0.00091

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)	0.00091	0.00090	0.00091

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)	-0.00066	-0.00112	-0.00120
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00065	-0.00110	-0.00119

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)	0.00628	0.00596	0.00595
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00599	0.00568	0.00571

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00266	0.53369
sky130_osu_sc_12T_hs__nand2_l	0.00207	0.00210	0.39596

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.00016	0.00047
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.00010	0.00024

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)	0.05802	1.02965	12.84850
	B->Y (FR)	0.06662	1.00312	12.44130
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.06101	1.05065	12.15120
	B->Y (FR)	0.07285	1.06127	12.14450

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)	0.03516	0.62573	8.00121
	B->Y (RF)	0.03921	0.60061	7.47429
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.03509	0.62026	7.51403
	B->Y (RF)	0.03885	0.60003	7.03476

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	0.00321	0.00314	0.00308
	B	0.00000	0.00000	0.00000
	B	0.00395	0.00387	0.00262
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00242	0.00236	0.00238
	B	0.00000	0.00000	0.00000
	B	0.00298	0.00292	0.00289

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	-0.00030	-0.00037	-0.00040
	B	0.00000	0.00000	0.00000
	B	-0.00028	-0.00034	-0.00038
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00019	-0.00024	-0.00026
	B	0.00000	0.00000	0.00000
	B	-0.00018	-0.00022	-0.00025

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)	-0.00200	-0.00200	-0.00202
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00140	-0.00142	-0.00141

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)	0.00201	0.00204	0.00202
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00141	0.00143	0.00142

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)	-0.00185	-0.00186	-0.00186
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00131	-0.00132	-0.00132

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)	0.00186	0.00189	0.00186
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00131	0.00134	0.00132

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00260	0.00290	0.26724
sky130_osu_sc_12T_hs__nor2_l	0.00198	0.00220	0.20125

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00016	0.00024
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.00010	0.00012

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)	0.13317	1.31993	12.95140
	B->Y (FR)	0.11375	1.27649	12.79240
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.13674	1.36783	12.48590
	B->Y (FR)	0.12174	1.31557	12.11820

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)	0.02711	0.42364	4.76487
	B->Y (RF)	0.02384	0.41628	4.74977
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.02700	0.42856	4.56036
	B->Y (RF)	0.02458	0.42164	4.54776

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	0.00394	0.00387	0.00351
	B	0.00000	0.00000	0.00000
	B	0.00331	0.00313	0.00245
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00289	0.00283	0.00281
	B	0.00000	0.00000	0.00000
	B	0.00249	0.00239	0.00239

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	0.00028	0.00014	0.00005
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00041	-0.00051
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00023	0.00013	0.00008
	B	0.00000	0.00000	0.00000
	B	-0.00024	-0.00026	-0.00033

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)	-0.00162	-0.00172	-0.00171
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00107	-0.00116	-0.00115

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)	0.00170	0.00172	0.00171
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00115	0.00116	0.00115

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)	-0.00097	-0.00098	-0.00098
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00066	-0.00067	-0.00067

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)	0.00101	0.00102	0.00099
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00069	0.00070	0.00068

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00265	0.00273	0.00234	0.26870

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.00015	0.00036

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)	0.16082	1.33069	12.92030
	A1->Y (FR)	0.18680	1.37981	13.07610
	B0->Y (FR)	0.07653	0.92082	9.99540

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)	0.04671	0.50176	5.33261
	A1->Y (RF)	0.05250	0.50238	5.30425
	B0->Y (RF)	0.03804	0.53101	5.93924

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	0.00442	0.00428	0.00402
	A1	0.00000	0.00000	0.00000
	A1	0.00512	0.00503	0.00496
	B0	0.00349	0.00336	0.00336

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	0.00020	0.00019	0.00010
	A1	0.00000	0.00000	0.00000
	A1	0.00091	0.00078	0.00071
	B0	0.00126	0.00119	0.00112

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)	-0.00098	-0.00099	-0.00098
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00168	-0.00174	-0.00174
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00178	-0.00179	-0.00178

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)	0.00102	0.00102	0.00099
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00173	0.00174	0.00174
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00178	0.00181	0.00179

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)	-0.00156	-0.00165	-0.00165
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00166	-0.00172	-0.00172
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00175	-0.00176	-0.00176

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)	0.00164	0.00165	0.00165
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00172	0.00172	0.00172
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00175	0.00176	0.00176

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)	-0.00147	-0.00148	-0.00151

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)	0.00150	0.00151	0.00151

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00247	0.00261	0.00280	0.00274	0.27754

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.00026	0.00047

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)	0.20033	1.38574	13.05620
	A1->Y (FR)	0.16374	1.32872	12.94820
	B0->Y (FR)	0.11938	1.27683	12.88850
	B1->Y (FR)	0.14323	1.32538	12.99810

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)	0.06722	0.53472	5.46049
	A1->Y (RF)	0.05671	0.52088	5.43406
	B0->Y (RF)	0.04869	0.54917	6.05053
	B1->Y (RF)	0.05997	0.56293	6.10081

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	0.00633	0.00625	0.00498
	A1	0.00562	0.00549	0.00523
	B0	0.00419	0.00406	0.00348
	B1	0.00495	0.00485	0.00377

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00128	0.00116	0.00107
	A1	0.00063	0.00062	0.00051
	B0	0.00062	0.00059	0.00048
	B1	0.00129	0.00113	0.00105

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)	-0.00159	-0.00168	-0.00167
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00159	-0.00168	-0.00167
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00161	-0.00168	-0.00167
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00170	-0.00171	-0.00170

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)	0.00166	0.00168	0.00167
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00166	0.00168	0.00167
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00166	0.00168	0.00167
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00171	0.00173	0.00171

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)	-0.00095	-0.00096	-0.00096
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00095	-0.00096	-0.00096
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00160	-0.00166	-0.00166
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00169	-0.00171	-0.00170

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)	0.00099	0.00100	0.00097
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00099	0.00100	0.00097
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00165	0.00166	0.00166
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00170	0.00172	0.00170

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)	-0.00096	-0.00097	-0.00096
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00096	-0.00098	-0.00096
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00189	-0.00195	-0.00195
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00194	-0.00196	-0.00199

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)	0.00100	0.00101	0.00098
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00100	0.00101	0.00098
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00195	0.00195	0.00195
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00199	0.00200	0.00200

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)	-0.00157	-0.00166	-0.00166
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00157	-0.00166	-0.00166
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00194	-0.00200	-0.00200
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00198	-0.00199	-0.00203

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)	0.00165	0.00167	0.00166
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00165	0.00166	0.00166
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00199	0.00201	0.00200
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00203	0.00205	0.00204

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00295	0.00274	0.54084
sky130_osu_sc_12T_hs__or2_2	0.00295	0.00274	1.11128
sky130_osu_sc_12T_hs__or2_4	0.00294	0.00274	2.18280
sky130_osu_sc_12T_hs__or2_8	0.00294	0.00274	4.28764
sky130_osu_sc_12T_hs__or2_l	0.00223	0.00210	0.41043

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.00026	0.00034
sky130_osu_sc_12T_hs__or2_2	0.00000	0.00036	0.00058
sky130_osu_sc_12T_hs__or2_4	0.00000	0.00055	0.00105
sky130_osu_sc_12T_hs__or2_8	0.00000	0.00095	0.00200
sky130_osu_sc_12T_hs__or2_l	0.00000	0.00017	0.00022

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)	0.09906	0.89756	7.93798
	B->Y (RR)	0.09257	0.87661	7.80944
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.09970	0.77011	8.09922
	B->Y (RR)	0.09241	0.75261	7.99699
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.12795	0.72366	8.37559
	B->Y (RR)	0.12037	0.70983	8.29391
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.18524	0.74594	8.84515
	B->Y (RR)	0.17748	0.73628	8.79208
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.09843	0.93591	7.59030
	B->Y (RR)	0.09316	0.91747	7.46408

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)	0.24179	0.81715	6.51884
	B->Y (FF)	0.20844	0.76824	6.05690
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.30380	0.86492	6.94369
	B->Y (FF)	0.27056	0.81577	6.54438
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.44599	1.01242	7.50589
	B->Y (FF)	0.41300	0.96012	7.19915
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.73222	1.32665	8.27781
	B->Y (FF)	0.69920	1.27262	8.07790
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.23813	0.81036	5.99177
	B->Y (FF)	0.20830	0.75540	5.39601

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	0.00312	0.00274	0.00261
	B	0.00000	0.00000	0.00000
	B	0.00246	0.00218	0.00213
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00524	0.00503	0.00492
	B	0.00000	0.00000	0.00000
	B	0.00454	0.00451	0.00449
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01006	0.01021	0.01061
	B	0.00000	0.00000	0.00000
	B	0.00933	0.00974	0.00974
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01955	0.02034	0.02092
	B	0.00000	0.00000	0.00000
	B	0.01882	0.01993	0.02067
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00241	0.00215	0.00211
	B	0.00000	0.00000	0.00000
	B	0.00195	0.00176	0.00173

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	0.00691	0.00670	0.00668
	B	0.00000	0.00000	0.00000
	B	0.00597	0.00585	0.00589
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00840	0.00853	0.00850
	B	0.00000	0.00000	0.00000
	B	0.00745	0.00765	0.00767
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01209	0.01283	0.01294
	B	0.00000	0.00000	0.00000
	B	0.01116	0.01190	0.01206
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01953	0.02111	0.02191
	B	0.00000	0.00000	0.00000
	B	0.01871	0.02013	0.02097
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00519	0.00504	0.00501
	B	0.00000	0.00000	0.00000
	B	0.00453	0.00446	0.00464

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)	-0.00164	-0.00173	-0.00173
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00164	-0.00173	-0.00173
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00164	-0.00173	-0.00173
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00164	-0.00173	-0.00173
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00109	-0.00116	-0.00116

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)	0.00172	0.00173	0.00173
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00172	0.00173	0.00173
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00172	0.00173	0.00173
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00172	0.00173	0.00173
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00115	0.00116	0.00116

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)	-0.00097	-0.00098	-0.00098
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00097	-0.00098	-0.00098
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00097	-0.00099	-0.00098
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00097	-0.00099	-0.00098
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00065	-0.00066	-0.00065

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)	0.00102	0.00103	0.00099
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00103	0.00103	0.00099
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00103	0.00103	0.00099
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00103	0.00103	0.00099
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00068	0.00069	0.00066

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00374	0.27585
sky130_osu_sc_12T_hs__tbufi_l	0.00222	0.00289	0.20117

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.00018	0.00047
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.00012	0.00024

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)	0.10587	1.26378	12.82730
	OE->Y (FR)	0.08626	0.42341	4.68804
	OE->Y (RR)	0.14256	1.12449	8.03181
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.11736	1.31197	12.11600
	OE->Y (FR)	0.08331	0.39187	4.68813
	OE->Y (RR)	0.14674	1.18346	7.56178

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)	0.03414	0.51390	5.80203
	OE->Y (FF)	0.08737	0.42510	4.68819
	OE->Y (RF)	0.03238	0.48262	5.34225
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.03446	0.50821	5.38337
	OE->Y (FF)	0.08353	0.39367	4.68812
	OE->Y (RF)	0.03289	0.47965	5.00476

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	0.00310	0.00293	0.00227
	OE	0.00000	0.00000	0.00000
	OE	0.00281	0.00239	0.00234
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00235	0.00224	0.00222
	OE	0.00000	0.00000	0.00000
	OE	0.00209	0.00178	0.00179

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	-0.00040	-0.00042	-0.00051
	OE	0.00000	0.00000	0.00000
	OE	0.00195	0.00153	0.00145
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00026	-0.00033
	OE	0.00000	0.00000	0.00000
	OE	0.00136	0.00105	0.00105

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)	-0.00154	-0.00157	-0.00154
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00145	-0.00145	-0.00145
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00109	-0.00110	-0.00110
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00102	-0.00103	-0.00103

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)	0.00154	0.00157	0.00154
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00147	0.00148	0.00146
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00109	0.00110	0.00110
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00105	0.00105	0.00103

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)	0.00111	0.00069	0.00062
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00099	0.00057	0.00050
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00078	0.00047	0.00047
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00067	0.00037	0.00036

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)	0.00365	0.00330	0.00330
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00377	0.00343	0.00339
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00276	0.00250	0.00272
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00286	0.00260	0.00279

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00287	0.00423	0.27382
sky130_osu_sc_12T_hs__tnbufi_l	0.00211	0.00321	0.20289

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.00024	0.00029
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.00015	0.00017

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)	0.10677	1.25982	12.79920
	OE->Y (RR)	0.02861	0.30032	4.68834
	OE->Y (FR)	0.11716	1.29474	12.91990
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.11498	1.31364	12.17320
	OE->Y (RR)	0.02890	0.30004	4.68808
	OE->Y (FR)	0.12363	1.36171	12.54080

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)	0.03335	0.51250	5.78087
	OE->Y (RF)	0.02820	0.30032	4.68838
	OE->Y (FF)	0.08944	0.62708	5.08623
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.03258	0.50809	5.40459
	OE->Y (RF)	0.02866	0.30004	4.68809
	OE->Y (FF)	0.09254	0.60465	4.37685

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	0.00322	0.00306	0.00302
	OE	0.00000	0.00000	0.00000
	OE	0.00737	0.00715	0.00708
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00241	0.00231	0.00229
	OE	0.00000	0.00000	0.00000
	OE	0.00565	0.00547	0.00576

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	-0.00055	-0.00057	-0.00065
	OE	0.00000	0.00000	0.00000
	OE	0.00662	0.00638	0.00646
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00041	-0.00048
	OE	0.00000	0.00000	0.00000
	OE	0.00503	0.00485	0.00512

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)	-0.00129	-0.00130	-0.00129
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00120	-0.00120	-0.00120
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00086	-0.00087	-0.00086
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00080	-0.00082	-0.00080

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)	0.00129	0.00130	0.00129
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00122	0.00122	0.00120
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00086	0.00087	0.00086
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00082	0.00082	0.00081

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)	-0.00199	-0.00251	-0.00257
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00188	-0.00245	-0.00255
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00132	-0.00173	-0.00173
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00127	-0.00169	-0.00172

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)	0.00569	0.00547	0.00553
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00559	0.00537	0.00543
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00436	0.00419	0.00444
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00430	0.00413	0.00439

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00575	0.00484	0.27566

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.00051	0.00076

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	0.18545	1.17153	8.11414
	A->Y (FR)	!B	0.14167	1.29419	12.80620
	B->Y (RR)	A	0.15649	1.14233	8.06089
	B->Y (FR)	!A	0.16192	1.33233	12.90010

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	0.14509	0.71255	5.51180
	A->Y (RF)	!B	0.04629	0.49485	5.35130
	B->Y (FF)	A	0.13553	0.70338	5.50220
	B->Y (RF)	!A	0.05167	0.50263	5.36274

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	0.00285	0.00237	0.00225
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00768	0.00725	0.00721
	B	A	0.00000	0.00000	0.00000
	B	A	0.00155	0.00118	0.00109
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00786	0.00753	0.00719

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	0.00895	0.00849	0.00840
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00206	0.00163	0.00146
	B	A	0.00000	0.00000	0.00000
	B	A	0.00826	0.00810	0.00811
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00253	0.00204	0.00189

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.00575	0.00488	0.26845

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.00051	0.00062

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	0.20140	1.19530	8.20554
	A->Y (FR)	B	0.16319	1.34766	12.97730
	B->Y (RR)	!A	0.16442	1.17024	8.18028
	B->Y (FR)	A	0.17777	1.36633	13.00940

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	0.14686	0.71067	5.47281
	A->Y (RF)	B	0.04418	0.52646	5.74961
	B->Y (FF)	!A	0.14116	0.70521	5.46889
	B->Y (RF)	A	0.04921	0.49918	5.29637

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	0.00881	0.00841	0.00746
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00184	0.00108	0.00092
	B	A	0.00000	0.00000	0.00000
	B	A	0.00877	0.00845	0.00793
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00144	0.00105	0.00095

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	0.00160	0.00102	0.00082
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00952	0.00927	0.00924
	B	A	0.00000	0.00000	0.00000
	B	A	0.00160	0.00109	0.00093
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00837	0.00823	0.00824

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

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	0.10524
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	58335.40000	116671.00000
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
	-0.00175	0.00776	0.13671

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
	1.01660	0.96641	0.18380