sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_LS__ADDFx
SKY130_OSU_SC_12T_LS__ADDHx
SKY130_OSU_SC_12T_LS__AND2x
SKY130_OSU_SC_12T_LS__AOI21
SKY130_OSU_SC_12T_LS__AOI22
SKY130_OSU_SC_12T_LS__BUFx
SKY130_OSU_SC_12T_LS__DFFRx
SKY130_OSU_SC_12T_LS__DFFSRx
SKY130_OSU_SC_12T_LS__DFFSx
SKY130_OSU_SC_12T_LS__DFFx
SKY130_OSU_SC_12T_LS__INVx
SKY130_OSU_SC_12T_LS__MUX2
SKY130_OSU_SC_12T_LS__NAND2x
SKY130_OSU_SC_12T_LS__NOR2x
SKY130_OSU_SC_12T_LS__OAI21
SKY130_OSU_SC_12T_LS__OAI22
SKY130_OSU_SC_12T_LS__OR2x
SKY130_OSU_SC_12T_LS__TBUFIx
SKY130_OSU_SC_12T_LS__TNBUFIx
SKY130_OSU_SC_12T_LS__XNOR2
SKY130_OSU_SC_12T_LS__XOR2
SKY130_OSU_SC_12T_LS_x

SKY130_OSU_SC_12T_LS__ADDFx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__addf_1	31.25760
sky130_osu_sc_12T_ls__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_ls__addf_1	0.01109	0.01109	0.00861	1.52075	0.69936	1.32829
sky130_osu_sc_12T_ls__addf_l	0.01110	0.01109	0.00861	0.98453	0.70121	1.34076

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.05042	0.06445
sky130_osu_sc_12T_ls__addf_l	0.00000	0.04106	0.06442

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.09438	1.22951	19.94680
	B->CO (RR)	0.08925	1.17769	19.16370
	CI->CO (RR)	0.08864	1.25030	20.43090
	CON->CO (FR)	0.02052	0.67426	11.50940
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.09784	1.16160	16.08430
	B->CO (RR)	0.09259	1.12557	15.75810
	CI->CO (RR)	0.09207	1.18544	16.65500
	CON->CO (FR)	0.02544	0.74592	11.42950

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.15524	1.71451	27.40460
	B->CO (FF)	0.13631	1.62800	26.17330
	CI->CO (FF)	0.13516	1.71286	27.80350
	CON->CO (RF)	0.01395	0.39728	6.76848
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.15161	1.48907	20.41090
	B->CO (FF)	0.13314	1.41880	19.62780
	CI->CO (FF)	0.13145	1.48831	20.83650
	CON->CO (RF)	0.01523	0.40113	6.03885

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.14073	0.89677	10.91830
	B->CON (FR)	0.11850	0.82541	10.49630
	CI->CON (FR)	0.12058	0.89716	11.37100
sky130_osu_sc_12T_ls__addf_l	A->CON (FR)	0.13342	0.89082	10.93290
	B->CON (FR)	0.11217	0.82025	10.50660
	CI->CON (FR)	0.11326	0.89124	11.38260

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.05465	0.38544	4.59174
	B->CON (RF)	0.05129	0.38459	4.59389
	CI->CON (RF)	0.04893	0.40994	5.03549
sky130_osu_sc_12T_ls__addf_l	A->CON (RF)	0.05299	0.38399	4.59888
	B->CON (RF)	0.04974	0.38331	4.60092
	CI->CON (RF)	0.04726	0.40850	5.04331

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.22796	1.61702	22.34760
	B->S (-R)	0.22364	1.58364	21.55600
	CI->S (-R)	0.20671	1.61385	22.75630
	CON->S (RR)	0.05814	0.51849	6.24574
sky130_osu_sc_12T_ls__addf_l	A->S (-R)	0.21993	1.61743	22.51600
	B->S (-R)	0.21585	1.58417	21.71390
	CI->S (-R)	0.19860	1.61428	22.91970
	CON->S (RR)	0.05816	0.52090	6.31224

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-F)	0.15962	1.00475	12.85910
	B->S (-F)	0.16700	0.97996	12.50420
	CI->S (-F)	0.15369	1.02365	13.37120
	CON->S (FF)	0.07247	0.52346	6.07683
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.15589	1.00586	12.95500
	B->S (-F)	0.16364	0.98103	12.59440
	CI->S (-F)	0.14998	1.02474	13.46100
	CON->S (FF)	0.07250	0.52467	6.11091

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00284	0.00326	0.01457
	B	0.00404	0.00428	0.01394
	CI	0.00414	0.00468	0.01623
sky130_osu_sc_12T_ls__addf_l	A	0.00300	0.00305	0.00985
	B	0.00373	0.00387	0.01164
	CI	0.00383	0.00425	0.01303

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01043	0.01186	0.04391
	B	0.01073	0.01188	0.04004
	CI	0.00887	0.01043	0.04300
sky130_osu_sc_12T_ls__addf_l	A	0.01013	0.01107	0.03073
	B	0.01045	0.01122	0.02818
	CI	0.00858	0.00964	0.02998

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01040	0.01113	0.02638
	B	0.01072	0.01135	0.02460
	CI	0.00886	0.00976	0.02562
sky130_osu_sc_12T_ls__addf_l	A	0.01012	0.01080	0.02517
	B	0.01044	0.01102	0.02354
	CI	0.00857	0.00940	0.02448

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00328	0.00326	0.00955
	B	0.00401	0.00409	0.01144
	CI	0.00412	0.00451	0.01224
sky130_osu_sc_12T_ls__addf_l	A	0.00297	0.00293	0.00902
	B	0.00371	0.00379	0.01084
	CI	0.00381	0.00418	0.01189

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01043	0.01175	0.03966
	B	0.01073	0.01178	0.03621
	CI	0.00886	0.01031	0.03884
sky130_osu_sc_12T_ls__addf_l	A	0.01013	0.01136	0.03800
	B	0.01045	0.01141	0.03464
	CI	0.00858	0.00993	0.03718

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.02266	0.02261	0.04394
	B	0.02046	0.02033	0.04652
	CI	0.01853	0.01825	0.03976
sky130_osu_sc_12T_ls__addf_l	A	0.02267	0.02262	0.04407
	B	0.02046	0.02035	0.04652
	CI	0.01853	0.01823	0.03974

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__addh_1	18.55920
sky130_osu_sc_12T_ls__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ls__addh_1	0.00540	0.00574	1.46010	1.50663	1.52713
sky130_osu_sc_12T_ls__addh_l	0.00540	0.00574	0.97410	1.49922	0.99929

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.05588	0.06259
sky130_osu_sc_12T_ls__addh_l	0.00000	0.03717	0.04387

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CO (RR)	0.06459	0.49736	6.00902
	B->CO (RR)	0.06695	0.49993	6.09315
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.06702	0.55949	5.95673
	B->CO (RR)	0.06941	0.56198	6.01704

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CO (FF)	0.06267	0.51045	6.37592
	B->CO (FF)	0.06690	0.52221	6.41058
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.06182	0.51248	5.86401
	B->CO (FF)	0.06595	0.52421	5.90424

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CON (RR)	0.09671	0.51436	5.98573
	B->CON (RR)	0.09907	0.51555	6.07263
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.08968	0.50172	5.93919
	B->CON (RR)	0.09205	0.50302	6.00507

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CON (FF)	0.08434	0.52672	6.47059
	B->CON (FF)	0.08371	0.53380	6.49116
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.07865	0.51136	6.35040
	B->CON (FF)	0.07805	0.51864	6.37255

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->S (FR)	0.11894	1.13948	16.74120
	B->S (FR)	0.11863	1.14808	16.80530
	CON->S (FR)	0.02220	0.68644	11.72610
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.11677	1.09835	13.97850
	B->S (FR)	0.11647	1.10627	14.01760
	CON->S (FR)	0.02635	0.75261	11.58450

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->S (RF)	0.11550	0.93649	13.11240
	B->S (RF)	0.11787	0.93729	13.19600
	CON->S (RF)	0.01355	0.39929	6.82624
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.11061	0.81656	9.29139
	B->S (RF)	0.11301	0.81779	9.35385
	CON->S (RF)	0.01481	0.40622	6.14658

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00530	0.00552	0.01720
	B	0.00000	0.00000	0.00000
	B	0.00484	0.00484	0.01873
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00471	0.00486	0.01748
	B	0.00000	0.00000	0.00000
	B	0.00425	0.00422	0.01807

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00735	0.00744	0.02072
	B	0.00000	0.00000	0.00000
	B	0.00779	0.00822	0.02105
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00675	0.00688	0.02040
	B	0.00000	0.00000	0.00000
	B	0.00720	0.00759	0.02117

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00530	0.00553	0.01721
	B	0.00000	0.00000	0.00000
	B	0.00484	0.00485	0.01880
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00471	0.00486	0.01725
	B	0.00000	0.00000	0.00000
	B	0.00425	0.00421	0.01797

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00735	0.00744	0.02071
	B	0.00000	0.00000	0.00000
	B	0.00779	0.00822	0.02178
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00676	0.00685	0.02016
	B	0.00000	0.00000	0.00000
	B	0.00720	0.00758	0.02100

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00736	0.00744	0.02070
	B	0.00000	0.00000	0.00000
	B	0.00779	0.00822	0.02215
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00676	0.00688	0.02032
	B	0.00000	0.00000	0.00000
	B	0.00720	0.00759	0.02111

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00530	0.00552	0.01729
	B	0.00000	0.00000	0.00000
	B	0.00484	0.00487	0.01853
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00471	0.00485	0.01712
	B	0.00000	0.00000	0.00000
	B	0.00426	0.00421	0.01768

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	2.01623	1.93439	0.57523
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	2.01631	1.93445	0.57531

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	2.01609	1.93483	0.60672
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	2.01617	1.93491	0.60680

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__and2_1	8.30280
sky130_osu_sc_12T_ls__and2_2	10.25640
sky130_osu_sc_12T_ls__and2_4	14.16360
sky130_osu_sc_12T_ls__and2_6	18.07080
sky130_osu_sc_12T_ls__and2_8	21.97800
sky130_osu_sc_12T_ls__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__and2_1	0.00291	0.00302	1.47768
sky130_osu_sc_12T_ls__and2_2	0.00291	0.00302	2.89677
sky130_osu_sc_12T_ls__and2_4	0.00291	0.00302	5.60259
sky130_osu_sc_12T_ls__and2_6	0.00295	0.00302	8.34184
sky130_osu_sc_12T_ls__and2_8	0.00292	0.00303	10.80577
sky130_osu_sc_12T_ls__and2_l	0.00225	0.00232	0.98184

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.02603	0.04157
sky130_osu_sc_12T_ls__and2_2	0.00000	0.04160	0.04173
sky130_osu_sc_12T_ls__and2_4	0.00000	0.07274	0.08302
sky130_osu_sc_12T_ls__and2_6	0.00000	0.10388	0.12444
sky130_osu_sc_12T_ls__and2_8	0.00000	0.13502	0.16585
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00266	0.00419

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (RR)	0.04957	0.45190	5.95423
	B->Y (RR)	0.05299	0.45736	5.84108
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.05497	0.38294	5.88203
	B->Y (RR)	0.05840	0.38588	5.77805
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.07473	0.37286	6.04299
	B->Y (RR)	0.07812	0.37258	5.95394
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.09455	0.39059	6.23805
	B->Y (RR)	0.09784	0.38801	6.15545
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.11406	0.41396	6.30639
	B->Y (RR)	0.11743	0.40895	6.22725
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.05510	0.51567	5.80004
	B->Y (RR)	0.05844	0.51836	5.66579

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (FF)	0.04997	0.45931	5.89938
	B->Y (FF)	0.05197	0.46700	5.92809
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.05797	0.44003	5.96516
	B->Y (FF)	0.05930	0.44420	5.99117
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.08119	0.46349	6.15618
	B->Y (FF)	0.08040	0.46272	6.17239
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.10636	0.49738	6.34897
	B->Y (FF)	0.10341	0.49340	6.36333
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.13008	0.52654	6.41100
	B->Y (FF)	0.12532	0.52020	6.40845
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.05183	0.47321	5.53812
	B->Y (FF)	0.05686	0.48703	5.59786

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00345	0.00435	0.04665
	B	0.00000	0.00000	0.00000
	B	0.00349	0.00367	0.03044
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00663	0.00764	0.04888
	B	0.00000	0.00000	0.00000
	B	0.00669	0.00710	0.03390
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01390	0.01494	0.05676
	B	0.00000	0.00000	0.00000
	B	0.01395	0.01460	0.04290
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02163	0.02287	0.06355
	B	0.00000	0.00000	0.00000
	B	0.02164	0.02218	0.05092
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02966	0.03005	0.07081
	B	0.00000	0.00000	0.00000
	B	0.02971	0.02994	0.05909
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00268	0.00350	0.04050
	B	0.00000	0.00000	0.00000
	B	0.00274	0.00307	0.03005

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00915	0.01055	0.04245
	B	0.00000	0.00000	0.00000
	B	0.01041	0.01187	0.04153
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01187	0.01345	0.04538
	B	0.00000	0.00000	0.00000
	B	0.01314	0.01467	0.04460
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01897	0.02046	0.05222
	B	0.00000	0.00000	0.00000
	B	0.02017	0.02142	0.05126
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02704	0.02795	0.05962
	B	0.00000	0.00000	0.00000
	B	0.02789	0.02868	0.05853
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03609	0.03505	0.06696
	B	0.00000	0.00000	0.00000
	B	0.03680	0.03567	0.06528
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00704	0.00834	0.03859
	B	0.00000	0.00000	0.00000
	B	0.00799	0.00938	0.03775

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00318	-0.00321	-0.00321
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00318	-0.00321	-0.00321
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00318	-0.00320	-0.00321
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00321	-0.00324	-0.00324
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00318	-0.00320	-0.00321
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00226	-0.00228	-0.00228

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00320	0.00325	0.00322
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00320	0.00325	0.00322
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00320	0.00325	0.00322
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00324	0.00328	0.00325
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00320	0.00324	0.00322
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00228	0.00231	0.00229

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00301	-0.00302	-0.00301
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00301	-0.00302	-0.00301
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00301	-0.00301	-0.00301
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00300	-0.00303	-0.00301
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00301	-0.00303	-0.00301
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00214	-0.00215	-0.00215

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00306	0.00304	0.00302
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00306	0.00304	0.00302
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00306	0.00304	0.00302
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00306	0.00304	0.00302
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00306	0.00306	0.00302
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00218	0.00217	0.00215

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__aoi21_l	0.00266	0.00284	0.00281	0.64685

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.01064	0.02071

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi21_l	A0->Y (FR)	0.07024	0.83383	10.67600
	A1->Y (FR)	0.05430	0.75191	9.93514
	B0->Y (FR)	0.05388	0.84112	11.25570

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi21_l	A0->Y (RF)	0.02743	0.34229	4.22466
	A1->Y (RF)	0.02455	0.34528	4.30276
	B0->Y (RF)	0.01777	0.34136	4.41075

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00782	0.00772	0.01271
	A1	0.00000	0.00000	0.00000
	A1	0.00649	0.00636	0.01129
	B0	0.00474	0.00498	0.01327

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00132	0.00121	0.00659
	A1	0.00000	0.00000	0.00000
	A1	0.00139	0.00139	0.00845
	B0	-0.00068	-0.00038	0.00697

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00242	-0.00259	-0.00259
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00262	-0.00264	-0.00262
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00262	-0.00263	-0.00263

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00257	0.00261	0.00259
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00262	0.00264	0.00263
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00267	0.00264	0.00263

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00241	-0.00259	-0.00259
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00263	-0.00264	-0.00263
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00291	-0.00293	-0.00293

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00257	0.00262	0.00259
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00263	0.00265	0.00264
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00293	0.00299	0.00294

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00115	-0.00115	-0.00115

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00124	0.00125	0.00117

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__aoi22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__aoi22_1	0.00266	0.00284	0.00297	0.00279	0.63962

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_1	0.00000	0.01345	0.04142

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi22_l	A0->Y (FR)	0.09053	0.85728	10.67700
	A1->Y (FR)	0.07999	0.84097	10.61180
	B0->Y (FR)	0.05714	0.83867	11.19990
	B1->Y (FR)	0.06811	0.85784	11.27280

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi22_l	A0->Y (RF)	0.03542	0.35167	4.20257
	A1->Y (RF)	0.03253	0.35426	4.27901
	B0->Y (RF)	0.01893	0.33374	4.25695
	B1->Y (RF)	0.02288	0.33379	4.18205

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00951	0.00938	0.01434
	A1	0.00817	0.00800	0.01297
	B0	0.00514	0.00541	0.01402
	B1	0.00652	0.00685	0.01487

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00283	0.00271	0.00836
	A1	0.00289	0.00288	0.01006
	B0	-0.00041	-0.00016	0.00693
	B1	-0.00034	-0.00026	0.00526

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00246	-0.00259	-0.00258
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00262	-0.00264	-0.00262
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00262	-0.00262	-0.00262
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00262	-0.00262	-0.00262

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00256	0.00259	0.00258
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00262	0.00265	0.00263
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00267	0.00264	0.00263
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00267	0.00264	0.00263

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00246	-0.00260	-0.00259
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00263	-0.00264	-0.00263
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00290	-0.00292	-0.00292
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00291	-0.00291	-0.00292

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00257	0.00260	0.00259
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00263	0.00265	0.00264
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00292	0.00296	0.00293
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00292	0.00296	0.00293

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00114	-0.00115	-0.00114
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00113	-0.00114	-0.00114
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00304	-0.00306	-0.00306
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00304	-0.00306	-0.00306

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00128	0.00128	0.00117
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00113	0.00114	0.00114
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00305	0.00308	0.00307
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00305	0.00307	0.00307

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00116	-0.00117	-0.00116
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00115	-0.00116	-0.00116
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00276	-0.00279	-0.00277
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00276	-0.00278	-0.00277

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00129	0.00130	0.00119
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00115	0.00116	0.00116
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00282	0.00279	0.00278
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00282	0.00280	0.00278

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__buf_1	6.34920
sky130_osu_sc_12T_ls__buf_2	8.30280
sky130_osu_sc_12T_ls__buf_4	12.21000
sky130_osu_sc_12T_ls__buf_6	16.11720
sky130_osu_sc_12T_ls__buf_8	20.02440
sky130_osu_sc_12T_ls__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__buf_1	0.00303	1.35679
sky130_osu_sc_12T_ls__buf_2	0.00303	2.80126
sky130_osu_sc_12T_ls__buf_4	0.00303	5.57979
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00304	10.82597
sky130_osu_sc_12T_ls__buf_l	0.00229	0.98308

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.02086	0.02086
sky130_osu_sc_12T_ls__buf_2	0.00000	0.03130	0.04157
sky130_osu_sc_12T_ls__buf_4	0.00000	0.05216	0.08299
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.09389	0.16582
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00216	0.00216

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (RR)**	0.04220	0.44463	5.67438
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.04439	0.36253	5.65035
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.05936	0.34306	5.87601
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.08929	0.36920	6.07304
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.04541	0.49301	5.58151

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (FF)**	0.04651	0.43976	5.57443
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.05463	0.42950	5.85967
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.07751	0.45678	6.16485
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.12549	0.52102	6.42992
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.04983	0.46894	5.57333

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00324	0.00401	0.03071
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00639	0.00728	0.03493
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01354	0.01498	0.04243
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02849	0.03047	0.06247
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00255	0.00333	0.03471

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00877	0.01018	0.03923
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01142	0.01292	0.04214
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01844	0.01969	0.04869
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03544	0.03371	0.06211
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00688	0.00842	0.03859

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00076	-0.00076	-0.00074

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
	0.00076	0.00076	0.00074

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__dffr_1	42.49080
sky130_osu_sc_12T_ls__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ls__dffr_1	0.00278	0.00278	0.00869	1.45345	1.45138
sky130_osu_sc_12T_ls__dffr_l	0.00278	0.00278	0.00868	0.98512	0.97970

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.06394	0.10591
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.04523	0.08721

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RR)	0.21705	1.00027	12.11990
	QN->Q (FR)	0.02412	0.75262	12.73820
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.21524	1.07856	11.50230
	QN->Q (FR)	0.02773	0.80287	12.29270

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RF)	0.21117	0.99623	12.36110
	QN->Q (RF)	0.01540	0.44907	7.57613
	RN->Q (FF)	0.16093	1.13726	15.54070
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.21687	1.09539	11.86800
	QN->Q (RF)	0.01625	0.44656	6.81025
	RN->Q (FF)	0.16683	1.23671	15.05370

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->QN (RR)	0.19311	0.60174	5.83116
	RN->QN (FR)	0.14279	0.74309	9.01018
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.19643	0.66753	5.78816
	RN->QN (FR)	0.14630	0.80850	8.96189

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	**CK->QN (RF)**	0.18116	0.43400	2.78077
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.17480	0.43356	2.36193

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_ls__dffr_1	hold	CK (R)	-0.04168	-0.05351	-0.07645
	setup	CK (R)	0.16969	0.20166	0.34064
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.04176	-0.05388	-0.07295
	setup	CK (R)	0.16987	0.20181	0.34312

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.09109	-0.28559	-4.81224
	setup	CK (R)	0.11165	0.29484	4.83790
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.09071	-0.28590	-4.81272
	setup	CK (R)	0.10895	0.29484	4.83780

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.04168	-0.05351	-0.07645
	setup	CK (R)	0.16969	0.20166	0.34064
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.04176	-0.05388	-0.07295
	setup	CK (R)	0.16987	0.20181	0.34312

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.09109	-0.28559	-4.81224
	setup	CK (R)	0.11165	0.29484	4.83790
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.09071	-0.28590	-4.81272
	setup	CK (R)	0.10895	0.29484	4.83780

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.15270	0.18303	0.61086
	removal	CK (R)	-0.03448	-0.04662	-0.08659
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.15449	0.18338	0.61203
	removal	CK (R)	-0.03448	-0.04662	-0.08659

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.15270	0.18303	0.61086
	removal	CK (R)	-0.03448	-0.04662	-0.08659
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.15449	0.18338	0.61203
	removal	CK (R)	-0.03448	-0.04662	-0.08659

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	min_pulse_width	RN ()	0.10057	0.38086	13.33370
	min_pulse_width	RN ()	0.10057	0.38086	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.10057	0.38086	13.33370
	min_pulse_width	RN ()	0.09768	0.38086	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_ls__dffr_1	min_pulse_width	CK ()	0.10057	0.38086	13.33370
	min_pulse_width	CK ()	0.10634	0.38086	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.09479	0.38086	13.33370
	min_pulse_width	CK ()	0.10346	0.38086	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_ls__dffr_1	min_pulse_width	CK ()	0.22482	0.38086	13.33370
	min_pulse_width	CK ()	0.08901	0.38086	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.22482	0.38086	13.33370
	min_pulse_width	CK ()	0.08901	0.38086	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00900	0.00695	-0.00023
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00810	0.00701	0.02104

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01035	0.00874	0.00261
	RN	-0.00114	-0.08072	-1.38168
	RN	0.02357	0.02233	0.01584
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00947	0.00871	0.02009
	RN	-0.00114	-0.06392	-0.93648
	RN	0.02267	0.02228	0.03277

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01035	0.00874	0.00261
	RN	-0.00114	-0.08065	-1.37971
	RN	0.02356	0.02232	0.01612
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00947	0.00870	0.01953
	RN	-0.00114	-0.06371	-0.93132
	RN	0.02267	0.02229	0.03302

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00898	0.00701	-0.00100
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00807	0.00689	0.01991

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00231	-0.00262	-0.00261
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01146	0.01147	0.04182
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00449	0.00464	0.03493
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00231	-0.00262	-0.00261
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01145	0.01147	0.04182
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00449	0.00464	0.03493

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00260	0.00262	0.00261
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01715	0.01718	0.04758
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00844	0.00853	0.03786
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00260	0.00262	0.00261
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01715	0.01718	0.04758
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00844	0.00853	0.03786

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00346	0.00452	0.04976
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01067	0.01148	0.05776
sky130_osu_sc_12T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00346	0.00452	0.04976
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01067	0.01148	0.05776

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00910	0.01093	0.05447
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01797	0.01869	0.06424
sky130_osu_sc_12T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00910	0.01093	0.05447
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01797	0.01869	0.06424

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00074	-0.00013	0.04611
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00592	0.00557	0.05330
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00080	-0.00020	0.04606
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00075	-0.00013	0.04611
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00592	0.00557	0.05330
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00080	-0.00020	0.04606

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01370	0.01472	0.06010
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02841	0.02873	0.08631
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02120	0.02181	0.06819
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02738	0.02921	0.10229
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01488	0.01575	0.06035
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01370	0.01471	0.06010
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02841	0.02873	0.08631
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02120	0.02181	0.06819
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02738	0.02920	0.10228
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01488	0.01575	0.06035

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__dffsr_1	46.39800
sky130_osu_sc_12T_ls__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_ls__dffsr_1	0.00274	0.00279	0.00647	0.00880	1.53035	1.51965
sky130_osu_sc_12T_ls__dffsr_l	0.00274	0.00279	0.00647	0.00879	0.97522	0.98082

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.07979	0.10603
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.06108	0.08733

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RR)	0.22436	1.02143	12.54430
	QN->Q (FR)	0.02258	0.72848	12.45790
	RN->Q (RR)	0.18147	0.99044	12.64510
	SN->Q (FR)	0.17276	1.16179	15.92430
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.22640	1.09071	11.38830
	QN->Q (FR)	0.02765	0.79967	12.20960
	RN->Q (RR)	0.18405	1.06222	11.50370
	SN->Q (FR)	0.17443	1.22888	14.76690

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RF)	0.23798	1.03314	12.79680
	QN->Q (RF)	0.01527	0.45691	7.81191
	RN->Q (FF)	0.17028	1.15990	15.98000
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.24568	1.12181	11.78020
	QN->Q (RF)	0.01615	0.44416	6.75594
	RN->Q (FF)	0.17769	1.24804	14.95990

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RR)	0.21988	0.62686	5.90935
	RN->QN (FR)	0.15220	0.75374	9.09308
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.22534	0.69953	5.83369
	RN->QN (FR)	0.15732	0.82591	9.01285

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RF)	0.19046	0.45434	2.97782
	RN->QN (RF)	0.14879	0.42504	3.08787
	SN->QN (FF)	0.13934	0.59367	6.36358
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.18715	0.45143	2.38474
	RN->QN (RF)	0.14561	0.42284	2.49232
	SN->QN (FF)	0.13610	0.58936	5.76395

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_ls__dffsr_1	hold	CK (R)	-0.04283	-0.06011	-0.10234
	setup	CK (R)	0.17337	0.20407	0.38904
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.04283	-0.06011	-0.10234
	setup	CK (R)	0.17302	0.20303	0.39518

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.10351	-0.30047	-4.86260
	setup	CK (R)	0.12544	0.31106	4.88913
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.10431	-0.29829	-4.86144
	setup	CK (R)	0.12546	0.31094	4.88876

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.04283	-0.06011	-0.10234
	setup	CK (R)	0.17337	0.20407	0.38904
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.04283	-0.06011	-0.10234
	setup	CK (R)	0.17302	0.20303	0.39518

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.10351	-0.30047	-4.86260
	setup	CK (R)	0.12544	0.31106	4.88913
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.10431	-0.29829	-4.86144
	setup	CK (R)	0.12546	0.31094	4.88876

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.14157	0.16825	0.59735
	removal	CK (R)	-0.02352	-0.02651	-0.05262
	hold	SN (R)	-0.13444	-0.23895	-1.02491
	setup	SN (R)	0.15639	0.27069	1.82997
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.14147	0.16752	0.59904
	removal	CK (R)	-0.02352	-0.02651	-0.05262
	hold	SN (R)	-0.12964	-0.23288	-0.99512
	setup	SN (R)	0.15530	0.26452	1.77175

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.14157	0.16825	0.59735
	removal	CK (R)	-0.02352	-0.02651	-0.05262
	hold	SN (R)	-0.13505	-0.23989	-1.02491
	hold	SN (R)	-0.13444	-0.23895	-1.03484
	setup	SN (R)	0.15278	0.27031	1.70941
	setup	SN (R)	0.15639	0.27069	1.82997
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.14147	0.16752	0.59904
	removal	CK (R)	-0.02352	-0.02651	-0.05262
	hold	SN (R)	-0.13206	-0.23288	-0.99512
	hold	SN (R)	-0.12964	-0.23543	-1.00080
	setup	SN (R)	0.15530	0.26444	1.64675
	setup	SN (R)	0.14944	0.26452	1.77175

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	RN ()	0.11790	0.38086	13.33370
	min_pulse_width	RN ()	0.12079	0.38086	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.11790	0.38086	13.33370
	min_pulse_width	RN ()	0.11790	0.38086	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_ls__dffsr_1	recovery	CK (R)	0.02688	0.05361	1.64505
	removal	CK (R)	-0.01187	-0.04021	-0.22589
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.02288	0.05361	1.58921
	removal	CK (R)	-0.01187	-0.04021	-0.22589

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.02688	0.05361	1.64505
	removal	CK (R)	-0.01187	-0.04021	-0.22589
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.02288	0.05361	1.58921
	removal	CK (R)	-0.01187	-0.04021	-0.22589

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	SN ()	0.14102	0.38086	13.33370
	min_pulse_width	SN ()	0.14391	0.38086	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.14102	0.38086	13.33370
	min_pulse_width	SN ()	0.13813	0.38086	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_ls__dffsr_1	min_pulse_width	CK ()	0.09768	0.38086	13.33370
	min_pulse_width	CK ()	0.12368	0.38086	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.09479	0.38086	13.33370
	min_pulse_width	CK ()	0.12079	0.38086	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_ls__dffsr_1	min_pulse_width	CK ()	0.22771	0.38086	13.33370
	min_pulse_width	CK ()	0.10634	0.38086	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.22482	0.38086	13.33370
	min_pulse_width	CK ()	0.10346	0.38086	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01124	0.00909	-0.00090
	RN	0.02052	0.01825	-0.00255
	SN	-0.00114	-0.08326	-1.45479
	SN	0.02009	0.01726	-0.00340
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01041	0.00929	0.02300
	RN	0.01968	0.01842	0.02110
	SN	-0.00114	-0.06353	-0.92707
	SN	0.01926	0.01743	0.02033

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01187	0.01080	0.01199
	RN	-0.00114	-0.08326	-1.45479
	RN	0.02465	0.02393	0.02561
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01098	0.01031	0.02176
	RN	-0.00114	-0.06353	-0.92707
	RN	0.02377	0.02346	0.03503

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01187	0.01080	0.01215
	RN	-0.00114	-0.08291	-1.44462
	RN	0.02489	0.02417	0.02556
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01099	0.01031	0.02142
	RN	-0.00114	-0.06375	-0.93240
	RN	0.02377	0.02346	0.03494

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01121	0.00913	-0.00120
	RN	0.02049	0.01824	-0.00234
	SN	-0.00114	-0.08291	-1.44457
	SN	0.02007	0.01725	-0.00292
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01037	0.00931	0.02177
	RN	0.01964	0.01840	0.02086
	SN	-0.00114	-0.06375	-0.93237
	SN	0.01924	0.01742	0.02011

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00256	-0.00264	-0.00263
	(!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)	0.01447	0.01449	0.04463
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00490	0.00504	0.03517
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00486	0.00501	0.03512
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00492	0.00507	0.03520
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00256	-0.00264	-0.00263
	(!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)	0.01447	0.01449	0.04463
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00490	0.00504	0.03517
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00486	0.00501	0.03512
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00492	0.00507	0.03520

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00267	0.00265	0.00263
	(!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)	0.01965	0.01958	0.04897
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00932	0.00940	0.03835
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00936	0.00945	0.03835
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00929	0.00937	0.03832
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00267	0.00265	0.00263
	(!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)	0.01965	0.01958	0.04897
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00932	0.00940	0.03835
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00936	0.00945	0.03835
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00929	0.00937	0.03832

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__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)	0.00256	0.00336	0.04872
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01251	0.01298	0.05927
sky130_osu_sc_12T_ls__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)	0.00256	0.00336	0.04872
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01251	0.01298	0.05927

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__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)	0.01004	0.01193	0.05564
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01917	0.01985	0.06568
sky130_osu_sc_12T_ls__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)	0.01004	0.01193	0.05564
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01917	0.01985	0.06568

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__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)	-0.00676	-0.00677	-0.00679
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00697	-0.00725	-0.00728
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00662	-0.00678	-0.00677
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00294	0.00314	0.03517
sky130_osu_sc_12T_ls__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)	-0.00676	-0.00678	-0.00679
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00697	-0.00725	-0.00728
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00662	-0.00678	-0.00677
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00294	0.00315	0.03517

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__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)	0.00678	0.00692	0.00681
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00727	0.00725	0.00728
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00674	0.00679	0.00677
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01563	0.01538	0.04400
sky130_osu_sc_12T_ls__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)	0.00678	0.00692	0.00681
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00727	0.00725	0.00728
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00674	0.00679	0.00677
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01563	0.01538	0.04400

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00082	-0.00024	0.04600
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00704	0.00674	0.05431
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00698	0.00664	0.05424
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00061	-0.00005	0.04620
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00312	0.00430	0.08878
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00082	-0.00024	0.04600
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00704	0.00671	0.05430
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00698	0.00664	0.05426
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00061	-0.00005	0.04620
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00312	0.00430	0.08878

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03175	0.03205	0.08934
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01397	0.01499	0.06033
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02150	0.02216	0.06824
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02159	0.02231	0.06819
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02998	0.03160	0.10471
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01489	0.01574	0.06031
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01876	0.02061	0.10300
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03175	0.03205	0.08934
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01396	0.01498	0.06033
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02150	0.02216	0.06824
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02159	0.02231	0.06819
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02998	0.03158	0.10472
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01489	0.01574	0.06031
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01876	0.02060	0.10300

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__dffs_1	38.58360
sky130_osu_sc_12T_ls__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ls__dffs_1	0.00276	0.00538	0.00866	1.46953	1.45572
sky130_osu_sc_12T_ls__dffs_l	0.00276	0.00538	0.00866	0.98354	0.98022

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.06131	0.08499
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.04261	0.06629

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RR)	0.16328	0.93925	12.16060
	QN->Q (FR)	0.02410	0.75472	12.77000
	SN->Q (FR)	0.13582	1.13629	15.59480
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.16517	1.01740	11.38950
	QN->Q (FR)	0.02769	0.80021	12.24350
	SN->Q (FR)	0.13792	1.21100	14.80950

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RF)	0.22617	1.01755	12.49600
	QN->Q (RF)	0.01533	0.44882	7.59691
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.23139	1.11032	11.85390
	QN->Q (RF)	0.01620	0.44478	6.78019

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RR)	0.20808	0.61905	5.84933
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.21099	0.68334	5.79369

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RF)	0.13181	0.37164	2.70833
	SN->QN (FF)	0.10385	0.56769	6.14901
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.12901	0.37587	2.28605
	SN->QN (FF)	0.10094	0.56821	5.71015

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_ls__dffs_1	hold	CK (R)	-0.02810	-0.04356	-0.06728
	setup	CK (R)	0.12227	0.16149	0.31148
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.02760	-0.04356	-0.06776
	setup	CK (R)	0.12381	0.16109	0.31481

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.09208	-0.28774	-4.83016
	setup	CK (R)	0.11982	0.29797	4.85820
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.09180	-0.28774	-4.83165
	setup	CK (R)	0.11963	0.29797	4.85820

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.02810	-0.04356	-0.06728
	setup	CK (R)	0.12227	0.16149	0.31148
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.02760	-0.04356	-0.06776
	setup	CK (R)	0.12381	0.16109	0.31481

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.09208	-0.28774	-4.83016
	setup	CK (R)	0.11982	0.29797	4.85820
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.09180	-0.28774	-4.83165
	setup	CK (R)	0.11963	0.29797	4.85820

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	recovery	CK (R)	0.02622	0.05361	1.25345
	removal	CK (R)	-0.01396	-0.04021	-0.19028
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.02887	0.05026	1.19607
	removal	CK (R)	-0.01396	-0.04021	-0.19028

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	recovery	CK (R)	0.02622	0.05361	1.25345
	removal	CK (R)	-0.01396	-0.04021	-0.19028
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.02887	0.05026	1.19607
	removal	CK (R)	-0.01396	-0.04021	-0.19028

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	min_pulse_width	SN ()	0.09768	0.38086	13.33370
	min_pulse_width	SN ()	0.10346	0.38086	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.09768	0.38086	13.33370
	min_pulse_width	SN ()	0.09768	0.38086	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_ls__dffs_1	min_pulse_width	CK ()	0.06878	0.38086	13.33370
	min_pulse_width	CK ()	0.11212	0.38086	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.06300	0.38086	13.33370
	min_pulse_width	CK ()	0.10923	0.38086	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_ls__dffs_1	min_pulse_width	CK ()	0.17569	0.38086	13.33370
	min_pulse_width	CK ()	0.09768	0.38086	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.17569	0.38086	13.33370
	min_pulse_width	CK ()	0.09768	0.38086	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00894	0.00701	0.00010
	SN	-0.00114	-0.08125	-1.39697
	SN	0.01658	0.01464	0.00375
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00806	0.00711	0.02144
	SN	-0.00114	-0.06386	-0.93498
	SN	0.01568	0.01473	0.02518

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01028	0.00875	0.00330
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00941	0.00870	0.02037

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01028	0.00877	0.00357
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00941	0.00872	0.02001

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00891	0.00703	-0.00025
	SN	-0.00114	-0.08080	-1.38380
	SN	0.01655	0.01466	0.00351
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00803	0.00710	0.02039
	SN	-0.00114	-0.06373	-0.93179
	SN	0.01566	0.01471	0.02461

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00260	-0.00268	-0.00267
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01119	0.01121	0.04214
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00448	0.00463	0.03496
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00260	-0.00268	-0.00267
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01119	0.01121	0.04214
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00448	0.00463	0.03496

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00271	0.00268	0.00267
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01708	0.01701	0.04694
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00859	0.00870	0.03802
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00271	0.00268	0.00267
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01709	0.01701	0.04694
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00859	0.00870	0.03802

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00500	-0.00502	-0.00502
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00324	0.00368	0.03854
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00500	-0.00502	-0.00502
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00324	0.00366	0.03854

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00506	0.00505	0.00504
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01086	0.01124	0.04588
sky130_osu_sc_12T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00506	0.00505	0.00504
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01086	0.01124	0.04588

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00074	-0.00013	0.04615
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00070	-0.00011	0.04620
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00278	0.00407	0.08898
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00074	-0.00013	0.04615
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00070	-0.00011	0.04620
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00278	0.00407	0.08898

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02826	0.02892	0.08717
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01371	0.01476	0.06015
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02716	0.02881	0.10197
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01479	0.01567	0.06030
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01774	0.01979	0.10271
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02825	0.02892	0.08717
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01371	0.01476	0.06015
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02715	0.02881	0.10197
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01479	0.01567	0.06030
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01773	0.01979	0.10271

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__dff_1	32.23440
sky130_osu_sc_12T_ls__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ls__dff_1	0.00291	0.00845	1.30310
sky130_osu_sc_12T_ls__dff_l	0.00291	0.00843	0.91514

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.07399	0.08500
sky130_osu_sc_12T_ls__dff_l	0.00000	0.05529	0.06630

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	CK->Q (RR)	0.13289	0.54378	5.56674
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.13452	0.60821	5.59001

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	CK->Q (RF)	0.19753	0.42207	2.48062
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.20104	0.44097	2.24578

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_ls__dff_1	hold	CK (R)	-0.02619	-0.04021	-0.06258
	setup	CK (R)	0.08835	0.13894	0.28164
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.02476	-0.04021	-0.06699
	setup	CK (R)	0.08830	0.13864	0.28346

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	hold	CK (R)	-0.08237	-0.28403	-4.84549
	setup	CK (R)	0.10322	0.29797	4.86745
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.08304	-0.28432	-4.84555
	setup	CK (R)	0.10322	0.29797	4.86701

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	min_pulse_width	CK ()	0.05433	0.38086	13.33370
	min_pulse_width	CK ()	0.10057	0.38086	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.05144	0.38086	13.33370
	min_pulse_width	CK ()	0.10057	0.38086	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_ls__dff_1	**min_pulse_width**	**CK ()**	0.14102	0.38086	13.33370
	min_pulse_width	**CK ()**	0.08034	0.38086	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.14102	0.38086	13.33370
	min_pulse_width	**CK ()**	0.08034	0.38086	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01873	0.01937	0.08953
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01693	0.01777	0.08819

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.02089	0.02078	0.06857
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01916	0.01916	0.06697

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00230	-0.00261	-0.00259
	!CK	0.00000	0.00000	0.00000
	!CK	0.00981	0.01000	0.04059
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00230	-0.00261	-0.00259
	!CK	0.00000	0.00000	0.00000
	!CK	0.00981	0.00999	0.04059

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00258	0.00261	0.00259
	!CK	0.00000	0.00000	0.00000
	!CK	0.01754	0.01754	0.04815
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00258	0.00261	0.00259
	!CK	0.00000	0.00000	0.00000
	!CK	0.01754	0.01754	0.04815

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00079	-0.00015	0.04613
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00070	-0.00009	0.04623
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00079	-0.00015	0.04613
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00070	-0.00009	0.04623

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01367	0.01483	0.06015
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02689	0.02731	0.08665
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02749	0.02931	0.10373
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01471	0.01560	0.06024
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01367	0.01483	0.06015
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02688	0.02731	0.08665
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02749	0.02932	0.10372
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01471	0.01560	0.06024

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__inv_1	4.39560
sky130_osu_sc_12T_ls__inv_10	21.97800
sky130_osu_sc_12T_ls__inv_2	6.34920
sky130_osu_sc_12T_ls__inv_3	8.30280
sky130_osu_sc_12T_ls__inv_4	10.25640
sky130_osu_sc_12T_ls__inv_6	14.16360
sky130_osu_sc_12T_ls__inv_8	18.07080
sky130_osu_sc_12T_ls__inv_l	4.38570

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__inv_1	0.00282	1.33876
sky130_osu_sc_12T_ls__inv_10	0.02518	13.33364
sky130_osu_sc_12T_ls__inv_2	0.00523	2.73928
sky130_osu_sc_12T_ls__inv_3	0.00774	4.00529
sky130_osu_sc_12T_ls__inv_4	0.01020	5.41845
sky130_osu_sc_12T_ls__inv_6	0.01526	8.06269
sky130_osu_sc_12T_ls__inv_8	0.02022	10.63620
sky130_osu_sc_12T_ls__inv_l	0.00225	0.89343

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.01043	0.02071
sky130_osu_sc_12T_ls__inv_10	0.00000	0.10432	0.20708
sky130_osu_sc_12T_ls__inv_2	0.00000	0.02086	0.04142
sky130_osu_sc_12T_ls__inv_3	0.00000	0.03130	0.06212
sky130_osu_sc_12T_ls__inv_4	0.00000	0.04173	0.08283
sky130_osu_sc_12T_ls__inv_6	0.00000	0.06259	0.12425
sky130_osu_sc_12T_ls__inv_8	0.00000	0.08345	0.16566
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00108	0.00203

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (FR)**	0.02317	0.69094	11.43610
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.02858	0.45048	11.36790
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.01735	0.57925	11.26350
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.01879	0.53929	11.29760
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.01875	0.50971	11.26470
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.02111	0.47832	11.26650
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.02452	0.45950	11.24190
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.02773	0.74888	11.19310

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (RF)**	0.01385	0.37643	6.17306
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.01934	0.21223	6.48734
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.01123	0.31442	6.31223
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.01229	0.28773	6.42039
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.01224	0.26470	6.43965
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.01472	0.23834	6.47113
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.01701	0.22184	6.45963
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.01519	0.38535	5.61480

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00439	0.00497	0.01093
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03617	0.04427	0.10161
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00756	0.00867	0.02048
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01164	0.01268	0.03093
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01483	0.01766	0.04052
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02194	0.02757	0.06071
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02898	0.03498	0.08131
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00350	0.00396	0.00826

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00081	-0.00051	0.00500
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01276	-0.00753	0.04486
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00257	-0.00182	0.00881
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00339	-0.00173	0.01389
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00522	-0.00334	0.01748
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00800	-0.00461	0.02617
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01062	-0.00500	0.03599
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00060	-0.00040	0.00429

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ls__mux2_1	0.35164	0.35171	0.00581	0.35362

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.03129	0.06212

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__mux2_1	A0->Y (RR)	-	0.00807	0.14395	1.36560
	A1->Y (RR)	-	0.00938	0.14548	1.36350
	S0->Y (RR)	(!A0 * A1)	0.02968	0.17311	0.39432
	S0->Y (FR)	(A0 * !A1)	0.02580	0.33020	3.62266

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__mux2_1	A0->Y (FF)	-	0.00981	0.17667	1.82274
	A1->Y (FF)	-	0.00906	0.17465	1.81506
	S0->Y (FF)	(!A0 * A1)	0.04684	0.31801	3.03696
	S0->Y (RF)	(A0 * !A1)	0.01573	0.17481	1.17001

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00443	-0.00443	-0.00444
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00275	-0.00276	-0.00276
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00584	0.00736	0.05339
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00280	-0.00180	0.04451

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00443	0.00443	0.00444
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00275	0.00276	0.00276
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00065	0.00178	0.04856
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01208	0.01339	0.05850

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00102	-0.00102	-0.00102

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00102	0.00102	0.00102

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00124	-0.00124	-0.00124

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00124	0.00124	0.00124

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00110	-0.00002	0.04650
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00106	-0.00004	0.04651

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00932	0.01050	0.05599
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00858	0.00996	0.05590

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__nand2_1	6.34920
sky130_osu_sc_12T_ls__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nand2_1	0.00280	0.00280	1.32852
sky130_osu_sc_12T_ls__nand2_l	0.00221	0.00224	0.88961

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.01046	0.04142
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00111	0.00406

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (FR)	0.02430	0.69253	11.42750
	B->Y (FR)	0.02806	0.66205	10.85650
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.02818	0.74944	11.20520
	B->Y (FR)	0.03437	0.75368	11.17460

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (RF)	0.01834	0.44947	7.33392
	B->Y (RF)	0.02139	0.44614	7.20727
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.02024	0.46853	6.83100
	B->Y (RF)	0.02309	0.45864	6.57826

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00468	0.00517	0.01060
	B	0.00000	0.00000	0.00000
	B	0.00609	0.00652	0.01235
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00358	0.00401	0.00991
	B	0.00000	0.00000	0.00000
	B	0.00461	0.00497	0.00984

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00050	-0.00032	0.00455
	B	0.00000	0.00000	0.00000
	B	-0.00049	-0.00045	0.00349
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00034	-0.00022	0.00383
	B	0.00000	0.00000	0.00000
	B	-0.00033	-0.00029	0.00305

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00306	-0.00308	-0.00309
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00220	-0.00221	-0.00221

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00308	0.00311	0.00310
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00221	0.00223	0.00222

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00281	-0.00283	-0.00282
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00204	-0.00205	-0.00205

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00287	0.00286	0.00283
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00208	0.00208	0.00205

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__nor2_1	6.34920
sky130_osu_sc_12T_ls__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nor2_1	0.00276	0.00304	0.76478
sky130_osu_sc_12T_ls__nor2_l	0.00212	0.00234	0.51665

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.01064	0.02071
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00114	0.00203

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nor2_1	A->Y (FR)	0.04843	0.79551	11.01110
	B->Y (FR)	0.03762	0.79484	11.26930
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.05480	0.87721	10.88910
	B->Y (FR)	0.04576	0.87284	11.14900

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nor2_1	A->Y (RF)	0.01836	0.30546	4.05009
	B->Y (RF)	0.01476	0.29797	4.03539
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.01876	0.31253	3.64568
	B->Y (RF)	0.01600	0.30620	3.63252

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00630	0.00625	0.01128
	B	0.00000	0.00000	0.00000
	B	0.00484	0.00498	0.01134
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00463	0.00459	0.00956
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00378	0.01198

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00053	0.00064	0.00776
	B	0.00000	0.00000	0.00000
	B	-0.00064	-0.00025	0.00656
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00036	0.00046	0.00653
	B	0.00000	0.00000	0.00000
	B	-0.00041	-0.00015	0.00559

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00231	-0.00262	-0.00262
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00158	-0.00180	-0.00181

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00261	0.00263	0.00262
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00180	0.00182	0.00181

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00115	-0.00116	-0.00115
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00083	-0.00083	-0.00083

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00120	0.00121	0.00117
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00086	0.00087	0.00084

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__oai21_l	0.00280	0.00290	0.00249	0.75865

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00615	0.02274

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai21_l	A0->Y (FR)	0.05464	0.81278	11.27640
	A1->Y (FR)	0.06790	0.81534	11.00580
	B0->Y (FR)	0.03441	0.70803	10.18700

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai21_l	A0->Y (RF)	0.02594	0.36535	4.85233
	A1->Y (RF)	0.03010	0.36628	4.78667
	B0->Y (RF)	0.01984	0.38701	5.30537

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00688	0.00713	0.01363
	A1	0.00000	0.00000	0.00000
	A1	0.00838	0.00825	0.01295
	B0	0.00555	0.00599	0.01377

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00022	0.00028	0.00509
	A1	0.00000	0.00000	0.00000
	A1	0.00141	0.00127	0.00627
	B0	0.00059	0.00080	0.00606

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00116	-0.00116	-0.00116
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00261	-0.00266	-0.00267
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00270	-0.00273	-0.00271

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00121	0.00121	0.00118
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00265	0.00266	0.00267
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00271	0.00274	0.00272

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00222	-0.00254	-0.00253
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00257	-0.00266	-0.00265
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00267	-0.00268	-0.00268

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00252	0.00254	0.00253
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00263	0.00266	0.00265
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00268	0.00270	0.00268

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00232	-0.00233	-0.00236

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00235	0.00239	0.00236

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__oai22_1	0.00263	0.00276	0.00294	0.00290	0.80662

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.01599	0.04142

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai22_l	A0->Y (FR)	0.07129	0.80870	11.02530
	A1->Y (FR)	0.06131	0.80922	11.31540
	B0->Y (FR)	0.03892	0.78784	11.30200
	B1->Y (FR)	0.05025	0.78716	11.01720

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai22_l	A0->Y (RF)	0.04123	0.39609	5.12197
	A1->Y (RF)	0.03379	0.38578	5.09293
	B0->Y (RF)	0.02818	0.40821	5.56555
	B1->Y (RF)	0.03605	0.42213	5.64498

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.01072	0.01063	0.01504
	A1	0.00924	0.00948	0.01447
	B0	0.00510	0.00546	0.01090
	B1	0.00672	0.00660	0.01117

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00091	0.00081	0.00587
	A1	-0.00016	-0.00010	0.00483
	B0	-0.00022	0.00007	0.00633
	B1	0.00091	0.00092	0.00724

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00227	-0.00256	-0.00256
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00227	-0.00256	-0.00256
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00250	-0.00256	-0.00256
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00258	-0.00260	-0.00259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00254	0.00258	0.00256
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00254	0.00258	0.00256
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00254	0.00258	0.00256
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00259	0.00262	0.00260

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00112	-0.00113	-0.00112
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00112	-0.00113	-0.00112
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00248	-0.00255	-0.00254
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00258	-0.00260	-0.00259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00117	0.00118	0.00114
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00117	0.00118	0.00114
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00254	0.00256	0.00254
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00259	0.00262	0.00259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00114	-0.00114	-0.00114
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00114	-0.00114	-0.00114
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00296	-0.00304	-0.00303
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00301	-0.00300	-0.00306

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00118	0.00119	0.00115
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00119	0.00119	0.00115
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00305	0.00307	0.00303
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00305	0.00312	0.00307

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00225	-0.00254	-0.00254
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00225	-0.00254	-0.00254
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00301	-0.00309	-0.00310
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00305	-0.00308	-0.00311

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00252	0.00255	0.00254
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00253	0.00255	0.00254
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00312	0.00315	0.00310
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00311	0.00315	0.00313

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__or2_1	8.30280
sky130_osu_sc_12T_ls__or2_2	10.25640
sky130_osu_sc_12T_ls__or2_4	14.16360
sky130_osu_sc_12T_ls__or2_8	21.97800
sky130_osu_sc_12T_ls__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__or2_1	0.00311	0.00288	1.34774
sky130_osu_sc_12T_ls__or2_2	0.00311	0.00288	2.81750
sky130_osu_sc_12T_ls__or2_4	0.00312	0.00289	5.50652
sky130_osu_sc_12T_ls__or2_8	0.00312	0.00289	10.70387
sky130_osu_sc_12T_ls__or2_l	0.00237	0.00223	0.90910

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.01594	0.02102
sky130_osu_sc_12T_ls__or2_2	0.00000	0.02123	0.04173
sky130_osu_sc_12T_ls__or2_4	0.00000	0.03182	0.08314
sky130_osu_sc_12T_ls__or2_8	0.00000	0.05299	0.16598
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00174	0.00229

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (RR)	0.04866	0.46399	5.58603
	B->Y (RR)	0.04325	0.44703	5.53227
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.05147	0.38377	5.67054
	B->Y (RR)	0.04572	0.36830	5.60550
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.06665	0.35946	5.79291
	B->Y (RR)	0.06082	0.34648	5.72796
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.09651	0.38343	6.05177
	B->Y (RR)	0.09075	0.37247	5.99316
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.05263	0.52209	5.35807
	B->Y (RR)	0.04803	0.50611	5.32565

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (FF)	0.08298	0.48952	5.76269
	B->Y (FF)	0.06756	0.48408	5.92171
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.09870	0.48733	6.09488
	B->Y (FF)	0.08365	0.48730	6.23144
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.13960	0.52753	6.35628
	B->Y (FF)	0.12462	0.53237	6.47711
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.22468	0.62251	6.67594
	B->Y (FF)	0.20966	0.62710	6.77487
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.09212	0.51431	5.55367
	B->Y (FF)	0.07742	0.51217	5.71195

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00457	0.00478	0.02693
	B	0.00000	0.00000	0.00000
	B	0.00351	0.00446	0.02948
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00777	0.00832	0.03130
	B	0.00000	0.00000	0.00000
	B	0.00663	0.00792	0.03353
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01497	0.01578	0.03962
	B	0.00000	0.00000	0.00000
	B	0.01377	0.01561	0.04193
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02998	0.03111	0.05998
	B	0.00000	0.00000	0.00000
	B	0.02885	0.03143	0.06234
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00352	0.00384	0.02376
	B	0.00000	0.00000	0.00000
	B	0.00280	0.00364	0.02719

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.01074	0.01048	0.03080
	B	0.00000	0.00000	0.00000
	B	0.00893	0.01016	0.04430
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01359	0.01348	0.03364
	B	0.00000	0.00000	0.00000
	B	0.01176	0.01298	0.04578
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02165	0.02036	0.04012
	B	0.00000	0.00000	0.00000
	B	0.01990	0.01984	0.04979
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04390	0.03532	0.05346
	B	0.00000	0.00000	0.00000
	B	0.04177	0.03434	0.06094
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00813	0.00813	0.02714
	B	0.00000	0.00000	0.00000
	B	0.00686	0.00806	0.03773

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00234	-0.00266	-0.00265
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00234	-0.00266	-0.00265
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00235	-0.00267	-0.00265
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00234	-0.00266	-0.00264
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00158	-0.00182	-0.00182

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00263	0.00266	0.00265
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00263	0.00266	0.00265
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00263	0.00267	0.00265
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00263	0.00266	0.00264
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00181	0.00183	0.00182

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00081	-0.00081	-0.00081

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00121	0.00122	0.00117
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00121	0.00122	0.00117
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00121	0.00122	0.00117
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00121	0.00122	0.00117
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00085	0.00085	0.00082

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__tbufi_1	8.30280
sky130_osu_sc_12T_ls__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tbufi_1	0.00301	0.00399	0.80109
sky130_osu_sc_12T_ls__tbufi_l	0.00235	0.00311	0.51632

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.01052	0.04142
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00116	0.00406

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (FR)	0.03456	0.78147	11.25710
	OE->Y (FR)	0.03846	0.31109	5.34252
	OE->Y (RR)	0.05654	0.54507	5.76675
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.04407	0.87268	11.14170
	OE->Y (FR)	0.04096	0.31107	5.34252
	OE->Y (RR)	0.06430	0.63611	5.63265

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (RF)	0.01783	0.36467	5.07719
	OE->Y (FF)	0.03880	0.31108	5.34254
	OE->Y (RF)	0.01757	0.35903	4.96522
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.01993	0.37458	4.53117
	OE->Y (FF)	0.04160	0.31106	5.34250
	OE->Y (RF)	0.01930	0.36082	4.32680

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00449	0.00457	0.01095
	OE	0.00000	0.00000	0.00000
	OE	0.00446	0.00566	0.04548
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00345	0.00359	0.01088
	OE	0.00000	0.00000	0.00000
	OE	0.00330	0.00435	0.04071

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00064	-0.00034	0.00574
	OE	0.00000	0.00000	0.00000
	OE	0.00269	0.00393	0.05130
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00019	0.00489
	OE	0.00000	0.00000	0.00000
	OE	0.00191	0.00300	0.04337

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00210	-0.00213	-0.00211
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00187	-0.00188	-0.00187
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00153	-0.00156	-0.00154
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00138	-0.00138	-0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00210	0.00213	0.00211
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00190	0.00191	0.00188
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00153	0.00156	0.00154
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00140	0.00141	0.00139

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00158	0.00289	0.05115
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00139	0.00299	0.05097
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00113	0.00226	0.04316
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00097	0.00210	0.04302

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00533	0.00676	0.05417
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00550	0.00696	0.05426
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00407	0.00533	0.04576
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00422	0.00604	0.04586

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__tnbufi_1	8.30280
sky130_osu_sc_12T_ls__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tnbufi_1	0.00301	0.00441	0.80109
sky130_osu_sc_12T_ls__tnbufi_l	0.00225	0.00339	0.51668

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.01737	0.02086
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00179	0.00216

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (FR)	0.03474	0.78376	11.25690
	OE->Y (RR)	0.01884	0.31124	5.34279
	OE->Y (FR)	0.04373	0.78058	10.95230
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.04323	0.87160	11.14360
	OE->Y (RR)	0.02030	0.31100	5.34244
	OE->Y (FR)	0.05087	0.87362	10.85080

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (RF)	0.01744	0.36460	5.07712
	OE->Y (RF)	0.01864	0.31122	5.34278
	OE->Y (FF)	0.03880	0.40325	4.79128
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.01895	0.37396	4.53330
	OE->Y (RF)	0.02009	0.31101	5.34247
	OE->Y (FF)	0.04356	0.42463	4.57040

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00466	0.00500	0.01112
	OE	0.00000	0.00000	0.00000
	OE	0.01138	0.01308	0.06028
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00355	0.00367	0.01100
	OE	0.00000	0.00000	0.00000
	OE	0.00874	0.01017	0.05056

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00087	-0.00055	0.00553
	OE	0.00000	0.00000	0.00000
	OE	0.00982	0.01185	0.04845
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00064	-0.00042	0.00468
	OE	0.00000	0.00000	0.00000
	OE	0.00755	0.00940	0.04328

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00170	-0.00173	-0.00171
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00149	-0.00150	-0.00149
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00119	-0.00120	-0.00119
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00105	-0.00105	-0.00105

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00170	0.00173	0.00171
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00152	0.00153	0.00150
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00119	0.00120	0.00119
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00107	0.00107	0.00106

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00302	-0.00179	0.04662
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00289	-0.00182	0.04666
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00209	-0.00107	0.03988
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00204	-0.00106	0.03987

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00850	0.01039	0.05856
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00838	0.01073	0.05848
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00661	0.00825	0.04901
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00654	0.00877	0.04894

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xnor2_l	0.00602	0.00514	0.84041

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.03182	0.06228

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xnor2_l	A->Y (RR)	B	0.07215	0.57632	6.01325
	A->Y (FR)	!B	0.04688	0.79850	11.44000
	B->Y (RR)	A	0.05854	0.56455	6.07202
	B->Y (FR)	!A	0.05939	0.79739	11.14860

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xnor2_l	A->Y (FF)	B	0.06246	0.45205	5.11176
	A->Y (RF)	!B	0.02473	0.37360	5.17703
	B->Y (FF)	A	0.05592	0.44756	5.11659
	B->Y (RF)	!A	0.02946	0.38073	5.17610

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00479	0.00575	0.04801
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01143	0.01298	0.06681
	B	A	0.00000	0.00000	0.00000
	B	A	0.00198	0.00345	0.05230
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01219	0.01347	0.06390

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01350	0.01442	0.06061
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00309	0.00430	0.05641
	B	A	0.00000	0.00000	0.00000
	B	A	0.01247	0.01399	0.06153
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00378	0.00492	0.05643

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
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_ls__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xor2_l	0.00604	0.00518	0.77725

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.03182	0.04313

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xor2_l	A->Y (RR)	!B	0.07755	0.58516	5.99970
	A->Y (FR)	B	0.06152	0.81457	11.17790
	B->Y (RR)	!A	0.06290	0.58154	6.01999
	B->Y (FR)	A	0.06774	0.82008	11.16530

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xor2_l	A->Y (FF)	!B	0.06246	0.45119	4.83574
	A->Y (RF)	B	0.02451	0.37240	4.96007
	B->Y (FF)	!A	0.05773	0.44456	4.92930
	B->Y (RF)	A	0.02946	0.37024	4.87575

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01343	0.01461	0.06321
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00291	0.00293	0.04811
	B	A	0.00000	0.00000	0.00000
	B	A	0.01369	0.01490	0.06262
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00191	0.00312	0.05029

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00228	0.00322	0.05419
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01442	0.01586	0.05150
	B	A	0.00000	0.00000	0.00000
	B	A	0.00234	0.00321	0.05198
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01264	0.01424	0.05997

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__ant	4.39560
sky130_osu_sc_12T_ls__tiehi	4.39560
sky130_osu_sc_12T_ls__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ls__ant	0.41202
sky130_osu_sc_12T_ls__tiehi	0.00000
sky130_osu_sc_12T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__ant	0.00000	225889.00000	451777.00000
sky130_osu_sc_12T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__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_ls__ant	0.00000	0.00000	0.00000
	-0.00177	0.04688	0.79859

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__ant	0.00000	0.00000	0.00000
	3.93254	3.76685	0.97115