sky130_osu_sc_12T_ls_ss_1P60_-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_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.01088	0.01090	0.00853	0.46583	0.19569	0.42266
sky130_osu_sc_12T_ls__addf_l	0.01089	0.01090	0.00853	0.29926	0.19669	0.42708

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.00218	0.00266
sky130_osu_sc_12T_ls__addf_l	0.00000	0.00183	0.00266

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)	0.29647	2.26799	22.16120
	B->CO (RR)	0.28551	2.21877	21.91120
	CI->CO (RR)	0.28372	2.28131	22.60510
	CON->CO (FR)	0.06966	1.18001	13.52580
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.30546	2.15482	18.32170
	B->CO (RR)	0.29498	2.12137	18.35340
	CI->CO (RR)	0.29275	2.16846	18.80290
	CON->CO (FR)	0.08799	1.30639	13.35840

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)	0.66964	3.96521	36.72030
	B->CO (FF)	0.61305	3.81677	35.71470
	CI->CO (FF)	0.61054	3.89053	36.74890
	CON->CO (RF)	0.03033	0.61566	7.56048
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.65612	3.43141	27.30010
	B->CO (FF)	0.60130	3.30945	26.62410
	CI->CO (FF)	0.59658	3.35656	27.33530
	CON->CO (RF)	0.03656	0.65782	7.49833

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)	0.49533	1.86366	13.48980
	B->CON (FR)	0.44592	1.77363	13.19410
	CI->CON (FR)	0.43620	1.78890	13.54300
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.47045	1.84108	13.49830
	B->CON (FR)	0.42199	1.75193	13.19860
	CI->CON (FR)	0.41132	1.76572	13.55560

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)	0.13737	0.70349	6.26798
	B->CON (RF)	0.13204	0.70929	6.57338
	CI->CON (RF)	0.12468	0.71862	6.72933
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.13202	0.69897	6.27412
	B->CON (RF)	0.12693	0.70712	6.57965
	CI->CON (RF)	0.11931	0.71413	6.73594

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)	0.91515	4.11703	32.42820
	B->S (-R)	0.89021	4.04677	31.95810
	CI->S (-R)	0.85242	4.03680	32.44060
	CON->S (RR)	0.17830	1.19546	9.52999
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.87501	4.10412	32.66440
	B->S (-R)	0.85144	4.03386	32.19230
	CI->S (-R)	0.81180	4.02283	32.67630
	CON->S (RR)	0.17843	1.20026	9.60992

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)	0.57796	2.01859	14.62730
	B->S (-F)	0.58266	1.95469	14.58690
	CI->S (-F)	0.56442	2.02597	15.07320
	CON->S (FF)	0.26971	0.97735	7.31364
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.56470	2.01421	14.71790
	B->S (-F)	0.57037	1.95118	14.67800
	CI->S (-F)	0.55115	2.02207	15.15480
	CON->S (FF)	0.26970	0.97897	7.33979

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	0.00215	0.00210	0.00203
	B	0.00252	0.00256	0.00252
	CI	0.00269	0.00276	0.00272
sky130_osu_sc_12T_ls__addf_l	A	0.00191	0.00185	0.00177
	B	0.00228	0.00231	0.00222
	CI	0.00245	0.00251	0.00245

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00730	0.00729	0.00724
	B	0.00716	0.00721	0.00716
	CI	0.00628	0.00642	0.00636
sky130_osu_sc_12T_ls__addf_l	A	0.00711	0.00708	0.00703
	B	0.00696	0.00700	0.00694
	CI	0.00608	0.00621	0.00614

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00729	0.00728	0.00720
	B	0.00715	0.00719	0.00712
	CI	0.00628	0.00639	0.00632
sky130_osu_sc_12T_ls__addf_l	A	0.00711	0.00708	0.00700
	B	0.00696	0.00699	0.00692
	CI	0.00608	0.00619	0.00612

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00214	0.00208	0.00199
	B	0.00250	0.00253	0.00239
	CI	0.00269	0.00275	0.00268
sky130_osu_sc_12T_ls__addf_l	A	0.00190	0.00184	0.00172
	B	0.00226	0.00229	0.00213
	CI	0.00245	0.00250	0.00242

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00730	0.00729	0.00725
	B	0.00716	0.00721	0.00716
	CI	0.00628	0.00642	0.00637
sky130_osu_sc_12T_ls__addf_l	A	0.00711	0.00710	0.00705
	B	0.00697	0.00701	0.00696
	CI	0.00609	0.00622	0.00617

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01479	0.01485	0.01477
	B	0.01370	0.01349	0.01327
	CI	0.01208	0.01203	0.01196
sky130_osu_sc_12T_ls__addf_l	A	0.01479	0.01485	0.01476
	B	0.01370	0.01349	0.01326
	CI	0.01208	0.01203	0.01196

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00523	0.00560	0.44860	0.45947	0.45898
sky130_osu_sc_12T_ls__addh_l	0.00521	0.00560	0.29862	0.46097	0.30264

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.00235	0.00265
sky130_osu_sc_12T_ls__addh_l	0.00000	0.00165	0.00196

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)	0.21642	1.21262	9.44919
	B->CO (RR)	0.21964	1.20111	9.58636
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.22406	1.32453	9.36047
	B->CO (RR)	0.22742	1.31481	9.51056

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)	0.22763	0.91451	7.51041
	B->CO (FF)	0.23713	0.93227	7.59381
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.22392	0.94920	7.46199
	B->CO (FF)	0.23345	0.96701	7.54948

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)	0.32066	1.29277	9.53312
	B->CON (RR)	0.32387	1.27921	9.66499
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.29535	1.26491	9.45861
	B->CON (RR)	0.29858	1.25289	9.60570

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)	0.27270	0.94407	7.57709
	B->CON (FF)	0.27620	0.95699	7.65437
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.25013	0.91582	7.42874
	B->CON (FF)	0.25363	0.92853	7.51255

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)	0.39530	2.02093	17.82580
	B->S (FR)	0.39907	2.03411	17.91730
	CON->S (FR)	0.07170	1.17779	13.50650
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.38550	2.00690	15.83630
	B->S (FR)	0.38931	2.01965	15.91670
	CON->S (FR)	0.08807	1.31109	13.45700

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)	0.42279	2.14357	17.54580
	B->S (RF)	0.42603	2.13290	17.67520
	CON->S (RF)	0.02977	0.61405	7.54152
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.40389	1.91823	13.38800
	B->S (RF)	0.40717	1.90611	13.50920
	CON->S (RF)	0.03580	0.66086	7.55412

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	0.00361	0.00348	0.00335
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00325	0.00312
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00316	0.00300	0.00291
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00276	0.00267

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	0.00510	0.00497	0.00473
	B	0.00000	0.00000	0.00000
	B	0.00533	0.00536	0.00514
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00465	0.00449	0.00430
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00487	0.00469

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	0.00362	0.00348	0.00335
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00325	0.00311
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00317	0.00300	0.00288
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00276	0.00264

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	0.00510	0.00497	0.00472
	B	0.00000	0.00000	0.00000
	B	0.00533	0.00536	0.00514
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00465	0.00447	0.00421
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00486	0.00463

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	0.00511	0.00497	0.00486
	B	0.00000	0.00000	0.00000
	B	0.00534	0.00537	0.00528
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00465	0.00450	0.00423
	B	0.00000	0.00000	0.00000
	B	0.00489	0.00488	0.00480

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	0.00361	0.00348	0.00336
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00325	0.00312
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00316	0.00299	0.00287
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00277	0.00267

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)	0.33303	0.31478	0.06568
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.33306	0.31481	0.06571

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)	0.33298	0.31443	0.06724
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.33302	0.31444	0.06727

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00285	0.00294	0.45290
sky130_osu_sc_12T_ls__and2_2	0.00285	0.00294	0.91633
sky130_osu_sc_12T_ls__and2_4	0.00285	0.00294	1.77275
sky130_osu_sc_12T_ls__and2_6	0.00288	0.00294	2.64298
sky130_osu_sc_12T_ls__and2_8	0.00285	0.00294	3.49441
sky130_osu_sc_12T_ls__and2_l	0.00213	0.00219	0.29993

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00108	0.00168
sky130_osu_sc_12T_ls__and2_2	0.00000	0.00170	0.00174
sky130_osu_sc_12T_ls__and2_4	0.00000	0.00295	0.00334
sky130_osu_sc_12T_ls__and2_6	0.00000	0.00420	0.00498
sky130_osu_sc_12T_ls__and2_8	0.00000	0.00545	0.00661
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00021	0.00029

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (RR)	0.16665	1.13127	9.12600
	B->Y (RR)	0.17319	1.13077	9.30487
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.18347	1.01918	9.46332
	B->Y (RR)	0.18980	1.01075	9.61367
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.24999	1.00224	9.87148
	B->Y (RR)	0.25638	0.98734	9.95477
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.31816	1.04118	10.27390
	B->Y (RR)	0.32423	1.02396	10.30030
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.38362	1.09432	10.60090
	B->Y (RR)	0.39009	1.07801	10.60150
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.18509	1.26703	9.17873
	B->Y (RR)	0.19166	1.26762	9.35445

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)	0.17217	0.83122	6.98608
	B->Y (FF)	0.18044	0.84384	7.09373
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.21342	0.84080	7.36340
	B->Y (FF)	0.22020	0.85164	7.44492
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.31390	0.93226	7.88287
	B->Y (FF)	0.31611	0.93504	7.93092
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.41736	1.04086	8.29728
	B->Y (FF)	0.41478	1.03859	8.32679
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.51566	1.14363	8.61042
	B->Y (FF)	0.50914	1.13822	8.62286
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.18566	0.88239	6.94967
	B->Y (FF)	0.20154	0.90229	7.06560

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	0.00265	0.00235	0.00221
	B	0.00000	0.00000	0.00000
	B	0.00270	0.00239	0.00229
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00487	0.00475	0.00467
	B	0.00000	0.00000	0.00000
	B	0.00492	0.00482	0.00472
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00993	0.01020	0.01011
	B	0.00000	0.00000	0.00000
	B	0.00998	0.01020	0.01131
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01500	0.01548	0.01564
	B	0.00000	0.00000	0.00000
	B	0.01504	0.01551	0.01584
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01998	0.02074	0.02120
	B	0.00000	0.00000	0.00000
	B	0.02002	0.02086	0.02131
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00201	0.00181	0.00173
	B	0.00000	0.00000	0.00000
	B	0.00204	0.00184	0.00176

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	0.00637	0.00620	0.00614
	B	0.00000	0.00000	0.00000
	B	0.00713	0.00694	0.00687
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00796	0.00817	0.00810
	B	0.00000	0.00000	0.00000
	B	0.00873	0.00889	0.00881
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01191	0.01279	0.01283
	B	0.00000	0.00000	0.00000
	B	0.01267	0.01347	0.01348
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01599	0.01747	0.01773
	B	0.00000	0.00000	0.00000
	B	0.01675	0.01811	0.01831
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01979	0.02180	0.02243
	B	0.00000	0.00000	0.00000
	B	0.02061	0.02243	0.02294
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00473	0.00460	0.00454
	B	0.00000	0.00000	0.00000
	B	0.00525	0.00511	0.00504

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)	-0.00215	-0.00216	-0.00217
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00214	-0.00217	-0.00217
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00215	-0.00216	-0.00217
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00217	-0.00218	-0.00219
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00215	-0.00215	-0.00217
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00148	-0.00149	-0.00150

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)	0.00217	0.00216	0.00218
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00217	0.00222	0.00218
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00217	0.00222	0.00218
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00219	0.00222	0.00220
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00217	0.00219	0.00218
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00149	0.00154	0.00150

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)	-0.00206	-0.00207	-0.00206
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00206	-0.00207	-0.00206
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00206	-0.00207	-0.00206
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00206	-0.00207	-0.00206
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00206	-0.00207	-0.00206
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00143	-0.00144	-0.00143

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)	0.00206	0.00209	0.00207
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00206	0.00209	0.00207
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00206	0.00208	0.00207
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00206	0.00207	0.00207
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00206	0.00207	0.00207
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00143	0.00145	0.00144

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00255	0.00275	0.00274	0.19573

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00046	0.00082

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)	0.24425	1.65003	13.46940
	A1->Y (FR)	0.20070	1.53244	12.94920
	B0->Y (FR)	0.20180	1.58563	13.56400

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)	0.06743	0.62634	6.14595
	A1->Y (RF)	0.06254	0.64192	6.48830
	B0->Y (RF)	0.04332	0.60199	6.40965

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	0.00496	0.00489	0.00486
	A1	0.00000	0.00000	0.00000
	A1	0.00425	0.00415	0.00410
	B0	0.00420	0.00409	0.00404

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	0.00068	0.00054	0.00046
	A1	0.00000	0.00000	0.00000
	A1	0.00069	0.00054	0.00044
	B0	-0.00040	-0.00040	-0.00049

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)	-0.00170	-0.00176	-0.00175
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00179	-0.00181	-0.00180
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00180	-0.00181	-0.00180

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)	0.00175	0.00177	0.00175
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00179	0.00181	0.00181
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00180	0.00181	0.00181

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)	-0.00170	-0.00177	-0.00175
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00180	-0.00180	-0.00180
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00196	-0.00199	-0.00198

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)	0.00175	0.00177	0.00175
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00180	0.00180	0.00181
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00198	0.00199	0.00199

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)	-0.00098	-0.00100	-0.00098

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)	0.00107	0.00108	0.00101

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__aoi22_l	0.00255	0.00274	0.00291	0.00271	0.19431

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00059	0.00163

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)	0.31118	1.72369	13.52260
	A1->Y (FR)	0.27747	1.68044	13.44600
	B0->Y (FR)	0.21569	1.59180	13.51450
	B1->Y (FR)	0.24956	1.63254	13.59330

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)	0.08570	0.64537	6.15612
	A1->Y (RF)	0.08066	0.66106	6.49820
	B0->Y (RF)	0.05306	0.62772	6.44854
	B1->Y (RF)	0.05825	0.61210	6.11046

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	0.00609	0.00602	0.00597
	A1	0.00539	0.00528	0.00522
	B0	0.00451	0.00436	0.00428
	B1	0.00522	0.00511	0.00504

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00156	0.00144	0.00132
	A1	0.00157	0.00144	0.00130
	B0	-0.00020	-0.00021	-0.00030
	B1	-0.00020	-0.00020	-0.00029

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)	-0.00170	-0.00176	-0.00175
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00180	-0.00181	-0.00180
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00180	-0.00181	-0.00180
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00179	-0.00180	-0.00180

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)	0.00174	0.00176	0.00175
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00180	0.00181	0.00181
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00180	0.00183	0.00181
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00179	0.00183	0.00181

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)	-0.00170	-0.00176	-0.00175
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00180	-0.00182	-0.00180
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00195	-0.00198	-0.00198
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00196	-0.00198	-0.00198

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)	0.00175	0.00178	0.00175
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00180	0.00184	0.00181
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00197	0.00203	0.00198
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00197	0.00203	0.00198

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)	-0.00098	-0.00100	-0.00098
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00097	-0.00098	-0.00098
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00205	-0.00205	-0.00207
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00205	-0.00206	-0.00207

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)	0.00109	0.00109	0.00101
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00097	0.00098	0.00098
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00206	0.00208	0.00207
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00206	0.00208	0.00207

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)	-0.00099	-0.00101	-0.00099
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00099	-0.00099	-0.00099
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00190	-0.00190	-0.00190
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00190	-0.00190	-0.00190

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)	0.00110	0.00111	0.00102
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00099	0.00099	0.00099
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00190	0.00192	0.00190
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00190	0.00192	0.00190

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00296	0.43142
sky130_osu_sc_12T_ls__buf_2	0.00296	0.88415
sky130_osu_sc_12T_ls__buf_4	0.00296	1.76610
sky130_osu_sc_12T_ls__buf_6	0.00085	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00296	3.52694
sky130_osu_sc_12T_ls__buf_l	0.00217	0.29986

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00087	0.00087
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00130	0.00168
sky130_osu_sc_12T_ls__buf_4	0.00000	0.00217	0.00332
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.00390	0.00658
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00017	0.00017

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (RR)**	0.12397	1.09037	9.01476
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.12330	0.94563	9.23416
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.16106	0.90203	9.70210
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.23938	0.93290	10.35860
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.14113	1.21099	9.05269

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)**	0.16332	0.81225	6.81284
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.20419	0.82456	7.23267
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.30505	0.92028	7.83606
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.50700	1.13768	8.61637
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.18048	0.87688	6.90090

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	0.00252	0.00214	0.00200
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00475	0.00451	0.00443
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00984	0.00998	0.00990
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01991	0.02055	0.02098
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00194	0.00167	0.00157

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	0.00627	0.00604	0.00597
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00783	0.00788	0.00781
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01181	0.01249	0.01249
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01975	0.02149	0.02195
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00473	0.00457	0.00450

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
	-0.00051	-0.00051	-0.00051

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
	0.00051	0.00051	0.00051

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00268	0.00272	0.00872	0.45178	0.45132
sky130_osu_sc_12T_ls__dffr_l	0.00268	0.00272	0.00871	0.29960	0.30265

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.00289	0.00447
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.00219	0.00378

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)	0.89848	2.39827	14.89720
	QN->Q (FR)	0.07669	1.24122	14.13440
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.88417	2.53545	14.60500
	QN->Q (FR)	0.09166	1.35279	13.80130

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)	0.77702	2.49244	17.74510
	QN->Q (RF)	0.03320	0.65365	8.01055
	RN->Q (FF)	0.55437	2.41009	20.24240
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.80853	2.76010	17.72100
	QN->Q (RF)	0.03845	0.68790	7.85751
	RN->Q (FF)	0.58609	2.67838	20.21330

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)	0.69516	1.67287	9.89521
	RN->QN (FR)	0.47213	1.59041	12.40260
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.70647	1.79918	9.91971
	RN->QN (FR)	0.48379	1.71672	12.41990

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)**	0.76593	1.34685	4.98310
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.73640	1.34389	4.98341

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)	-0.11637	-0.13853	-0.71561
	setup	CK (R)	0.67074	0.66411	1.62193
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.11680	-0.13853	-0.71630
	setup	CK (R)	0.67126	0.66212	1.61734

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)	-0.36224	-0.71273	-8.95972
	setup	CK (R)	0.41338	0.74046	9.01876
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.36290	-0.71137	-8.95841
	setup	CK (R)	0.41281	0.74046	9.01840

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)	-0.11637	-0.13853	-0.71561
	setup	CK (R)	0.67074	0.66411	1.62193
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.11680	-0.13853	-0.71630
	setup	CK (R)	0.67126	0.66212	1.61734

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)	-0.36224	-0.71273	-8.95972
	setup	CK (R)	0.41338	0.74046	9.01876
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.36290	-0.71137	-8.95841
	setup	CK (R)	0.41281	0.74046	9.01840

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)	0.62028	0.61697	1.40475
	removal	CK (R)	-0.12575	-0.14712	-0.12468
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.62104	0.61806	1.40244
	removal	CK (R)	-0.12575	-0.14712	-0.12468

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)	0.62028	0.61697	1.40475
	removal	CK (R)	-0.12575	-0.14712	-0.12468
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.62104	0.61806	1.40244
	removal	CK (R)	-0.12575	-0.14712	-0.12468

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 ()	0.35757	0.66644	13.33370
	min_pulse_width	RN ()	0.35389	0.66424	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.35526	0.66203	13.33370
	min_pulse_width	RN ()	0.35274	0.66203	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 ()	0.39256	0.48340	13.33370
	min_pulse_width	CK ()	0.41800	0.48340	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.35986	0.48340	13.33370
	min_pulse_width	CK ()	0.40346	0.48340	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 ()	0.88743	0.93771	13.33370
	min_pulse_width	CK ()	0.34227	0.64660	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.88743	0.93771	13.33370
	min_pulse_width	CK ()	0.33982	0.64660	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	0.00609	0.00544	0.00153
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00541	0.00483	0.00288

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	0.00702	0.00660	0.00468
	RN	-0.00087	-0.02829	-0.28914
	RN	0.01573	0.01547	0.01334
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00631	0.00594	0.00499
	RN	-0.00087	-0.02211	-0.19174
	RN	0.01502	0.01481	0.01364

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	0.00702	0.00661	0.00469
	RN	-0.00087	-0.02828	-0.28884
	RN	0.01573	0.01547	0.01334
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00631	0.00595	0.00498
	RN	-0.00087	-0.02225	-0.19370
	RN	0.01502	0.01481	0.01361

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	0.00607	0.00542	0.00135
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00539	0.00480	0.00271

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	-0.00171	-0.00178	-0.00177
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00718	0.00688	0.00666
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00281	0.00256	0.00237
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00171	-0.00178	-0.00177
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00718	0.00688	0.00666
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00281	0.00256	0.00237

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	0.00176	0.00179	0.00177
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01130	0.01115	0.01093
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00547	0.00532	0.00525
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00176	0.00179	0.00177
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01130	0.01115	0.01093
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00547	0.00532	0.00525

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)	0.00243	0.00209	0.00193
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00714	0.00661	0.00633
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)	0.00243	0.00209	0.00193
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00714	0.00661	0.00633

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)	0.00606	0.00579	0.00574
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01209	0.01175	0.01142
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)	0.00606	0.00579	0.00574
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01209	0.01175	0.01142

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)	-0.00043	-0.00090	-0.00113
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00363	0.00296	0.00245
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00044	-0.00092	-0.00115
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00043	-0.00090	-0.00113
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00363	0.00296	0.00245
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00044	-0.00092	-0.00114

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)	0.00981	0.00939	0.00923
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01907	0.01852	0.01788
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01450	0.01410	0.01365
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01896	0.01831	0.01786
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01039	0.00995	0.00989
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00981	0.00939	0.00923
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01907	0.01852	0.01788
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01450	0.01410	0.01365
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01896	0.01831	0.01786
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01039	0.00995	0.00989

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00264	0.00273	0.00625	0.00882	0.46013	0.46328
sky130_osu_sc_12T_ls__dffsr_l	0.00264	0.00273	0.00625	0.00882	0.30326	0.30337

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.00349	0.00453
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.00279	0.00383

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)	0.86276	2.36259	15.02300
	QN->Q (FR)	0.07343	1.21927	13.90130
	RN->Q (RR)	0.71161	2.22411	15.04080
	SN->Q (FR)	0.69003	2.31164	18.00840
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.86631	2.53466	14.83510
	QN->Q (FR)	0.09150	1.35792	13.88290
	RN->Q (RR)	0.71657	2.39760	14.86710
	SN->Q (FR)	0.69853	2.48870	17.81010

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)	0.87425	2.59008	17.86990
	QN->Q (RF)	0.03297	0.65590	8.06093
	RN->Q (FF)	0.59391	2.44217	20.38660
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.91004	2.88435	18.02160
	QN->Q (RF)	0.03826	0.68951	7.88933
	RN->Q (FF)	0.63096	2.73676	20.53540

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)	0.79113	1.77388	10.02790
	RN->QN (FR)	0.51242	1.62673	12.55580
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.80617	1.90986	10.05510
	RN->QN (FR)	0.52811	1.76407	12.57730

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)	0.74059	1.32592	5.12723
	RN->QN (RF)	0.58919	1.19182	5.15095
	SN->QN (FF)	0.57389	1.28503	8.09769
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.72564	1.33806	5.08893
	RN->QN (RF)	0.57417	1.20423	5.11425
	SN->QN (FF)	0.55754	1.29493	8.02739

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)	-0.12766	-0.14685	-0.81060
	setup	CK (R)	0.63365	0.61500	1.57340
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.12835	-0.14753	-0.81171
	setup	CK (R)	0.63378	0.61500	1.57408

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)	-0.41291	-0.75609	-9.16934
	setup	CK (R)	0.47531	0.77808	9.20673
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.41285	-0.75551	-9.17025
	setup	CK (R)	0.47306	0.77793	9.20684

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)	-0.12766	-0.14685	-0.81060
	setup	CK (R)	0.63365	0.61500	1.57340
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.12835	-0.14753	-0.81171
	setup	CK (R)	0.63378	0.61500	1.57408

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)	-0.41291	-0.75609	-9.16934
	setup	CK (R)	0.47531	0.77808	9.20673
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.41285	-0.75551	-9.17025
	setup	CK (R)	0.47306	0.77793	9.20684

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)	0.53925	0.52952	1.33873
	removal	CK (R)	-0.07300	-0.08587	-0.08790
	hold	SN (R)	-0.56834	-0.80433	-6.84072
	setup	SN (R)	0.58903	0.84845	8.15182
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.53781	0.52893	1.33863
	removal	CK (R)	-0.07300	-0.08587	-0.08790
	hold	SN (R)	-0.53862	-0.78016	-6.76192
	setup	SN (R)	0.58823	0.82881	8.05764

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)	0.53925	0.52952	1.33873
	removal	CK (R)	-0.07300	-0.08587	-0.08790
	hold	SN (R)	-0.57009	-0.80433	-6.84072
	hold	SN (R)	-0.56834	-0.80712	-6.84887
	setup	SN (R)	0.58892	0.84325	8.13286
	setup	SN (R)	0.58903	0.84845	8.15182
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.53781	0.52893	1.33863
	removal	CK (R)	-0.07300	-0.08587	-0.08790
	hold	SN (R)	-0.55842	-0.78372	-6.76192
	hold	SN (R)	-0.53862	-0.78016	-6.77441
	setup	SN (R)	0.58823	0.82312	8.03883
	setup	SN (R)	0.55766	0.82881	8.05764

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 ()	0.40430	0.69511	13.33370
	min_pulse_width	RN ()	0.41487	0.69511	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.40966	0.69070	13.33370
	min_pulse_width	RN ()	0.40966	0.69070	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)	0.06805	0.08381	1.01642
	removal	CK (R)	-0.01650	-0.05000	-0.55590
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.06625	0.08381	0.91866
	removal	CK (R)	-0.01650	-0.05000	-0.55590

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)	0.06805	0.08381	1.01642
	removal	CK (R)	-0.01650	-0.05000	-0.55590
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.06625	0.08381	0.91866
	removal	CK (R)	-0.01650	-0.05000	-0.55590

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 ()	0.56209	0.86713	13.33370
	min_pulse_width	SN ()	0.57015	0.86934	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.55765	0.84508	13.33370
	min_pulse_width	SN ()	0.54104	0.84949	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 ()	0.37076	0.48340	13.33370
	min_pulse_width	CK ()	0.43980	0.48340	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.35259	0.48340	13.33370
	min_pulse_width	CK ()	0.43253	0.48340	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 ()	0.85047	0.89139	13.33370
	min_pulse_width	CK ()	0.40710	0.68629	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.85047	0.89139	13.33370
	min_pulse_width	CK ()	0.40710	0.68629	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	0.00741	0.00681	0.00285
	RN	0.01401	0.01353	0.00951
	SN	-0.00087	-0.02861	-0.29449
	SN	0.01530	0.01490	0.01104
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00678	0.00624	0.00419
	RN	0.01336	0.01295	0.01094
	SN	-0.00087	-0.02228	-0.19409
	SN	0.01465	0.01434	0.01237

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	0.00793	0.00764	0.00618
	RN	-0.00087	-0.02861	-0.29449
	RN	0.01667	0.01646	0.01478
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00724	0.00695	0.00597
	RN	-0.00087	-0.02228	-0.19409
	RN	0.01598	0.01576	0.01458

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	0.00794	0.00765	0.00618
	RN	-0.00087	-0.02872	-0.29650
	RN	0.01668	0.01646	0.01479
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00725	0.00696	0.00598
	RN	-0.00087	-0.02228	-0.19415
	RN	0.01598	0.01576	0.01457

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	0.00739	0.00678	0.00261
	RN	0.01399	0.01350	0.00934
	SN	-0.00087	-0.02872	-0.29648
	SN	0.01528	0.01488	0.01084
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00675	0.00621	0.00409
	RN	0.01334	0.01293	0.01080
	SN	-0.00087	-0.02228	-0.19414
	SN	0.01464	0.01431	0.01220

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	-0.00172	-0.00180	-0.00179
	(!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)	0.00903	0.00877	0.00854
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00313	0.00288	0.00271
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00310	0.00287	0.00269
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00315	0.00290	0.00273
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00172	-0.00180	-0.00179
	(!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)	0.00903	0.00877	0.00854
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00313	0.00288	0.00271
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00310	0.00287	0.00269
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00315	0.00290	0.00273

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	0.00178	0.00180	0.00179
	(!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)	0.01284	0.01271	0.01243
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00608	0.00595	0.00589
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00611	0.00599	0.00592
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00607	0.00593	0.00588
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00178	0.00180	0.00179
	(!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)	0.01284	0.01271	0.01243
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00609	0.00595	0.00589
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00611	0.00599	0.00592
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00606	0.00593	0.00586

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)	0.00220	0.00186	0.00164
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00854	0.00801	0.00766
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)	0.00220	0.00186	0.00164
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00854	0.00802	0.00766

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)	0.00674	0.00646	0.00641
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01294	0.01257	0.01218
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)	0.00674	0.00646	0.00641
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01294	0.01257	0.01218

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)	-0.00454	-0.00460	-0.00459
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00488	-0.00495	-0.00495
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00458	-0.00463	-0.00462
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00178	0.00148	0.00118
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)	-0.00454	-0.00460	-0.00459
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00488	-0.00495	-0.00495
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00458	-0.00463	-0.00462
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00178	0.00148	0.00117

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)	0.00458	0.00462	0.00461
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00494	0.00495	0.00495
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00460	0.00466	0.00462
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01019	0.00995	0.00993
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)	0.00458	0.00462	0.00461
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00494	0.00495	0.00495
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00460	0.00466	0.00462
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01019	0.00996	0.00993

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)	-0.00049	-0.00095	-0.00118
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00439	0.00377	0.00327
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00434	0.00372	0.00323
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00079	-0.00102
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00248	0.00169	0.00128
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00049	-0.00095	-0.00118
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00439	0.00377	0.00327
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00434	0.00372	0.00323
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00079	-0.00103
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00248	0.00169	0.00128

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)	0.02114	0.02061	0.01998
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00998	0.00958	0.00941
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01477	0.01438	0.01399
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01479	0.01446	0.01403
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02057	0.01988	0.01939
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01039	0.00994	0.00987
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01320	0.01252	0.01232
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02114	0.02061	0.01997
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00998	0.00958	0.00941
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01477	0.01438	0.01399
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01479	0.01446	0.01403
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02057	0.01988	0.01939
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01039	0.00994	0.00987
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01320	0.01252	0.01232

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00266	0.00516	0.00864	0.45287	0.45414
sky130_osu_sc_12T_ls__dffs_l	0.00266	0.00516	0.00864	0.29946	0.30298

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.00273	0.00358
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.00204	0.00288

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)	0.57825	2.03969	14.57030
	QN->Q (FR)	0.07681	1.24477	14.12330
	SN->Q (FR)	0.48423	2.08939	17.64680
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.58508	2.20533	14.29190
	QN->Q (FR)	0.09170	1.34994	13.77730
	SN->Q (FR)	0.48993	2.25674	17.31560

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)	0.85473	2.57366	17.83950
	QN->Q (RF)	0.03304	0.65216	8.00262
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.88018	2.83322	17.77260
	QN->Q (RF)	0.03833	0.68649	7.84505

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)	0.77017	1.75525	10.00970
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.77619	1.87277	9.99503

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)	0.46624	1.00489	4.67280
	SN->QN (FF)	0.36950	1.05725	7.74029
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.45578	1.02667	4.69359
	SN->QN (FF)	0.35820	1.07881	7.70962

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)	-0.09390	-0.11700	-0.69843
	setup	CK (R)	0.40776	0.39741	1.43216
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.09470	-0.11507	-0.69331
	setup	CK (R)	0.40688	0.39583	1.42714

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)	-0.37083	-0.72133	-9.01237
	setup	CK (R)	0.45399	0.75550	9.07818
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.37128	-0.71967	-9.01249
	setup	CK (R)	0.45563	0.75517	9.07786

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)	-0.09390	-0.11700	-0.69843
	setup	CK (R)	0.40776	0.39741	1.43216
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.09470	-0.11507	-0.69331
	setup	CK (R)	0.40688	0.39583	1.42714

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)	-0.37083	-0.72133	-9.01237
	setup	CK (R)	0.45399	0.75550	9.07818
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.37128	-0.71967	-9.01249
	setup	CK (R)	0.45563	0.75517	9.07786

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)	0.08936	0.11706	0.97736
	removal	CK (R)	-0.03234	-0.07131	-0.71132
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.08808	0.11639	0.94284
	removal	CK (R)	-0.03234	-0.07131	-0.71132

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)	0.08936	0.11706	0.97736
	removal	CK (R)	-0.03234	-0.07131	-0.71132
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.08808	0.11639	0.94284
	removal	CK (R)	-0.03234	-0.07131	-0.71132

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 ()	0.35014	0.76348	13.33370
	min_pulse_width	SN ()	0.35497	0.76128	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.34131	0.74363	13.33370
	min_pulse_width	SN ()	0.33660	0.74584	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 ()	0.20725	0.48340	13.33370
	min_pulse_width	CK ()	0.43616	0.48340	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.19999	0.48340	13.33370
	min_pulse_width	CK ()	0.42526	0.48340	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 ()	0.62305	0.68850	13.33370
	min_pulse_width	CK ()	0.39046	0.66203	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.62043	0.68850	13.33370
	min_pulse_width	CK ()	0.39169	0.65983	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	0.00609	0.00542	0.00166
	SN	-0.00087	-0.02834	-0.28984
	SN	0.01311	0.01264	0.00877
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00540	0.00482	0.00274
	SN	-0.00087	-0.02211	-0.19165
	SN	0.01241	0.01203	0.00999

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	0.00699	0.00661	0.00474
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00629	0.00596	0.00502

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	0.00700	0.00662	0.00473
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00630	0.00596	0.00501

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	0.00607	0.00540	0.00146
	SN	-0.00087	-0.02838	-0.29063
	SN	0.01309	0.01262	0.00862
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00538	0.00480	0.00271
	SN	-0.00087	-0.02226	-0.19390
	SN	0.01239	0.01201	0.00987

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	-0.00175	-0.00182	-0.00181
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00705	0.00675	0.00645
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00280	0.00254	0.00237
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00175	-0.00182	-0.00181
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00705	0.00675	0.00645
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00280	0.00254	0.00237

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	0.00180	0.00183	0.00181
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01138	0.01122	0.01103
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00558	0.00543	0.00538
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00180	0.00183	0.00181
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01138	0.01122	0.01103
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00558	0.00543	0.00538

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)	-0.00331	-0.00334	-0.00333
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00232	0.00203	0.00185
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)	-0.00331	-0.00334	-0.00333
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00232	0.00204	0.00185

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)	0.00333	0.00335	0.00334
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00713	0.00679	0.00669
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)	0.00333	0.00335	0.00334
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00713	0.00679	0.00669

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)	-0.00043	-0.00090	-0.00113
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00038	-0.00086	-0.00108
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00222	0.00141	0.00101
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00043	-0.00090	-0.00113
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00038	-0.00086	-0.00108
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00222	0.00141	0.00101

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)	0.01901	0.01844	0.01780
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00982	0.00942	0.00924
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01896	0.01820	0.01781
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01033	0.00994	0.00983
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01251	0.01182	0.01164
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01901	0.01844	0.01780
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00982	0.00942	0.00924
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01896	0.01821	0.01780
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01033	0.00994	0.00983
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01251	0.01182	0.01164

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00281	0.00844	0.42981
sky130_osu_sc_12T_ls__dff_l	0.00281	0.00842	0.28945

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.00318	0.00357
sky130_osu_sc_12T_ls__dff_l	0.00000	0.00248	0.00288

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)	0.46725	1.44658	9.51103
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.47407	1.55883	9.43699

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)	0.72411	1.24454	4.99026
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.74221	1.30408	5.06280

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)	-0.09112	-0.11445	-0.73888
	setup	CK (R)	0.30144	0.29754	1.40797
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.09262	-0.11459	-0.73699
	setup	CK (R)	0.30027	0.29599	1.40793

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)	-0.35680	-0.72336	-9.07823
	setup	CK (R)	0.41400	0.76026	9.16472
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.35751	-0.72230	-9.07819
	setup	CK (R)	0.41657	0.76191	9.16778

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 ()	0.17455	0.48340	13.33370
	min_pulse_width	CK ()	0.39256	0.48340	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.17092	0.48340	13.33370
	min_pulse_width	CK ()	0.38529	0.48340	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 ()**	0.51581	0.64880	13.33370
	min_pulse_width	**CK ()**	0.33875	0.66424	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.51581	0.64880	13.33370
	min_pulse_width	**CK ()**	0.33875	0.66424	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	0.01298	0.01197	0.01128
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01157	0.01054	0.00990

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	0.01432	0.01376	0.01328
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01293	0.01233	0.01180

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	-0.00170	-0.00177	-0.00176
	!CK	0.00000	0.00000	0.00000
	!CK	0.00656	0.00627	0.00599
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00170	-0.00177	-0.00176
	!CK	0.00000	0.00000	0.00000
	!CK	0.00656	0.00627	0.00599

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	0.00175	0.00178	0.00176
	!CK	0.00000	0.00000	0.00000
	!CK	0.01188	0.01166	0.01143
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00175	0.00178	0.00176
	!CK	0.00000	0.00000	0.00000
	!CK	0.01188	0.01166	0.01143

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)	-0.00046	-0.00088	-0.00115
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00037	-0.00084	-0.00107
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00046	-0.00088	-0.00115
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00037	-0.00084	-0.00107

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)	0.00979	0.00938	0.00921
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01847	0.01795	0.01733
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01930	0.01855	0.01810
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01027	0.00989	0.00977
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00979	0.00938	0.00921
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01848	0.01795	0.01733
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01930	0.01855	0.01810
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01027	0.00989	0.00977

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00276	0.43052
sky130_osu_sc_12T_ls__inv_10	0.02458	4.34458
sky130_osu_sc_12T_ls__inv_2	0.00511	0.88858
sky130_osu_sc_12T_ls__inv_3	0.00756	1.30444
sky130_osu_sc_12T_ls__inv_4	0.00996	1.76578
sky130_osu_sc_12T_ls__inv_6	0.01490	2.62874
sky130_osu_sc_12T_ls__inv_8	0.01974	3.50309
sky130_osu_sc_12T_ls__inv_l	0.00213	0.28876

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00043	0.00082
sky130_osu_sc_12T_ls__inv_10	0.00000	0.00434	0.00816
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00087	0.00163
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00130	0.00245
sky130_osu_sc_12T_ls__inv_4	0.00000	0.00174	0.00327
sky130_osu_sc_12T_ls__inv_6	0.00000	0.00260	0.00490
sky130_osu_sc_12T_ls__inv_8	0.00000	0.00347	0.00653
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00009	0.00012

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (FR)**	0.07547	1.19623	13.45250
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.06730	0.76859	13.46800
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.05291	1.00660	13.44650
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.05459	0.93275	13.42910
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.05142	0.87948	13.44490
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.05406	0.82124	13.42740
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.05979	0.78862	13.45750
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.09284	1.31805	13.34000

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)**	0.03026	0.60340	7.33350
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.03647	0.45344	7.52246
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.02389	0.54733	7.42963
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.02536	0.52361	7.48632
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.02465	0.50255	7.50297
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.02811	0.47862	7.51765
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.03206	0.46401	7.53576
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.03677	0.64878	7.39375

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	0.00320	0.00306	0.00311
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02639	0.02627	0.02679
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00552	0.00545	0.00552
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00850	0.00835	0.00843
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01082	0.01067	0.01091
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01607	0.01597	0.01612
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02126	0.02109	0.02149
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00248	0.00241	0.00240

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	-0.00048	-0.00053	-0.00057
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00862	-0.00875	-0.00802
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00160	-0.00166	-0.00168
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00205	-0.00218	-0.00215
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00324	-0.00341	-0.00327
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00493	-0.00511	-0.00485
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00672	-0.00685	-0.00644
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00033	-0.00037	-0.00041

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.29774	0.29906	0.00568	0.41017

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00133	0.00245

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)	-	0.03291	0.68773	8.49367
	A1->Y (RR)	-	0.04138	0.69383	8.50285
	S0->Y (RR)	(!A0 * A1)	0.08958	0.82792	7.95124
	S0->Y (FR)	(A0 * !A1)	0.07788	0.97180	9.55405

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)	-	0.02892	0.56389	6.89211
	A1->Y (FF)	-	0.02448	0.55869	6.87656
	S0->Y (FF)	(!A0 * A1)	0.16690	0.78790	6.75493
	S0->Y (RF)	(A0 * !A1)	0.03285	0.59332	6.72684

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	-	-0.00307	-0.00308	-0.00308
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00206	-0.00206	-0.00206
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00434	0.00403	0.00396
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00191	-0.00234	-0.00250

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	-	0.00307	0.00308	0.00308
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00206	0.00206	0.00207
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00061	0.00020	0.00004
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00842	0.00812	0.00802

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)	-0.00080	-0.00080	-0.00080

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)	0.00080	0.00080	0.00080

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)	-0.00096	-0.00096	-0.00096

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)	0.00096	0.00096	0.00096

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)	-0.00066	-0.00109	-0.00123
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00065	-0.00108	-0.00121

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)	0.00656	0.00624	0.00619
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00619	0.00589	0.00582

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00274	0.00272	0.42864
sky130_osu_sc_12T_ls__nand2_l	0.00209	0.00211	0.28821

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00045	0.00163
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00010	0.00024

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (FR)	0.07977	1.20372	13.45190
	B->Y (FR)	0.09072	1.17802	13.09380
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.09436	1.32119	13.34810
	B->Y (FR)	0.11010	1.33642	13.34940

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)	0.05068	0.78161	8.98180
	B->Y (RF)	0.05607	0.76594	8.62881
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.05821	0.83860	8.85402
	B->Y (RF)	0.06359	0.82915	8.54798

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	0.00338	0.00331	0.00327
	B	0.00000	0.00000	0.00000
	B	0.00413	0.00402	0.00404
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00249	0.00243	0.00241
	B	0.00000	0.00000	0.00000
	B	0.00300	0.00293	0.00291

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	-0.00027	-0.00033	-0.00037
	B	0.00000	0.00000	0.00000
	B	-0.00025	-0.00032	-0.00034
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00016	-0.00022	-0.00024
	B	0.00000	0.00000	0.00000
	B	-0.00016	-0.00021	-0.00023

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)	-0.00207	-0.00208	-0.00209
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00144	-0.00144	-0.00145

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)	0.00209	0.00214	0.00209
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00144	0.00149	0.00145

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)	-0.00193	-0.00194	-0.00194
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00136	-0.00136	-0.00136

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)	0.00193	0.00195	0.00194
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00136	0.00138	0.00137

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00267	0.00298	0.20888
sky130_osu_sc_12T_ls__nor2_l	0.00198	0.00222	0.14186

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00045	0.00082
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00010	0.00012

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nor2_1	A->Y (FR)	0.18314	1.54824	13.40110
	B->Y (FR)	0.15919	1.50600	13.44060
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.21081	1.71137	13.32660
	B->Y (FR)	0.19152	1.66508	13.30840

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)	0.03624	0.52642	5.62555
	B->Y (RF)	0.03169	0.51842	5.60838
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.04214	0.56258	5.69995
	B->Y (RF)	0.03784	0.55619	5.68363

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	0.00417	0.00409	0.00406
	B	0.00000	0.00000	0.00000
	B	0.00349	0.00337	0.00331
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00298	0.00291	0.00289
	B	0.00000	0.00000	0.00000
	B	0.00258	0.00248	0.00244

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	0.00023	0.00010	0.00002
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00042	-0.00051
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00019	0.00009	0.00004
	B	0.00000	0.00000	0.00000
	B	-0.00025	-0.00026	-0.00034

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)	-0.00172	-0.00179	-0.00178
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00115	-0.00119	-0.00119

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)	0.00177	0.00179	0.00178
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00118	0.00119	0.00119

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)	-0.00099	-0.00101	-0.00099
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00068	-0.00069	-0.00068

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)	0.00101	0.00103	0.00099
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00070	0.00071	0.00069

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00272	0.00279	0.00239	0.20820

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00030	0.00094

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)	0.21982	1.56924	13.49320
	A1->Y (FR)	0.25215	1.61779	13.45920
	B0->Y (FR)	0.11886	1.18984	11.35480

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)	0.06587	0.64170	6.33884
	A1->Y (RF)	0.07493	0.64267	6.30489
	B0->Y (RF)	0.05418	0.65546	6.80195

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	0.00459	0.00446	0.00439
	A1	0.00000	0.00000	0.00000
	A1	0.00533	0.00518	0.00518
	B0	0.00366	0.00352	0.00348

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	0.00021	0.00012
	A1	0.00000	0.00000	0.00000
	A1	0.00090	0.00077	0.00070
	B0	0.00126	0.00121	0.00113

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)	-0.00100	-0.00100	-0.00099
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00175	-0.00181	-0.00180
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00185	-0.00186	-0.00186

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)	0.00102	0.00103	0.00100
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00180	0.00181	0.00180
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00186	0.00186	0.00186

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)	-0.00165	-0.00170	-0.00171
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00173	-0.00180	-0.00179
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00183	-0.00184	-0.00184

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)	0.00171	0.00170	0.00171
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00179	0.00180	0.00179
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00183	0.00184	0.00184

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)	-0.00151	-0.00152	-0.00155

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)	0.00154	0.00156	0.00155

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00252	0.00268	0.00288	0.00281	0.21743

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00069	0.00163

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)	0.27273	1.64263	13.61190
	A1->Y (FR)	0.24580	1.59796	13.65730
	B0->Y (FR)	0.16757	1.51484	13.57040
	B1->Y (FR)	0.19823	1.56251	13.53100

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)	0.09577	0.68711	6.50786
	A1->Y (RF)	0.08081	0.66880	6.47537
	B0->Y (RF)	0.07007	0.68349	6.94695
	B1->Y (RF)	0.08596	0.70207	6.99624

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	0.00663	0.00654	0.00651
	A1	0.00588	0.00576	0.00570
	B0	0.00443	0.00432	0.00424
	B1	0.00524	0.00513	0.00507

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00125	0.00112	0.00104
	A1	0.00063	0.00062	0.00051
	B0	0.00062	0.00060	0.00048
	B1	0.00126	0.00112	0.00102

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)	-0.00168	-0.00175	-0.00174
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00168	-0.00175	-0.00174
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00168	-0.00175	-0.00174
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00178	-0.00178	-0.00178

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)	0.00173	0.00175	0.00174
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00173	0.00175	0.00174
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00173	0.00175	0.00174
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00178	0.00179	0.00178

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)	-0.00096	-0.00098	-0.00097
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00096	-0.00098	-0.00097
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00166	-0.00173	-0.00172
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00177	-0.00178	-0.00178

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)	0.00100	0.00100	0.00097
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00100	0.00100	0.00097
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00171	0.00173	0.00172
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00177	0.00178	0.00178

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)	-0.00097	-0.00100	-0.00098
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00097	-0.00100	-0.00098
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00196	-0.00204	-0.00202
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00201	-0.00201	-0.00206

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)	0.00100	0.00101	0.00098
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00100	0.00101	0.00098
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00202	0.00204	0.00202
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00206	0.00208	0.00207

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)	-0.00166	-0.00173	-0.00172
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00166	-0.00174	-0.00172
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00201	-0.00208	-0.00207
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00205	-0.00206	-0.00210

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)	0.00172	0.00173	0.00172
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00172	0.00174	0.00172
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00207	0.00209	0.00207
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00211	0.00215	0.00211

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00302	0.00282	0.43199
sky130_osu_sc_12T_ls__or2_2	0.00301	0.00282	0.88644
sky130_osu_sc_12T_ls__or2_4	0.00301	0.00282	1.75740
sky130_osu_sc_12T_ls__or2_8	0.00301	0.00282	3.45623
sky130_osu_sc_12T_ls__or2_l	0.00224	0.00211	0.28902

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00069	0.00092
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00093	0.00174
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00142	0.00337
sky130_osu_sc_12T_ls__or2_8	0.00000	0.00239	0.00663
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00017	0.00022

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (RR)	0.13434	1.12018	9.20167
	B->Y (RR)	0.12596	1.09736	9.04846
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.13514	0.97219	9.39626
	B->Y (RR)	0.12579	0.95396	9.28662
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.17320	0.92056	9.78495
	B->Y (RR)	0.16360	0.90654	9.69971
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.25126	0.94458	10.32320
	B->Y (RR)	0.24141	0.93394	10.26540
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.15471	1.25286	9.20857
	B->Y (RR)	0.14599	1.23179	9.07188

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)	0.34428	1.00876	7.36756
	B->Y (FF)	0.30195	0.95498	7.09155
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.43696	1.08631	7.78716
	B->Y (FF)	0.39414	1.03158	7.59346
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.64447	1.30489	8.40753
	B->Y (FF)	0.60174	1.24847	8.32162
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	1.05974	1.75990	9.25093
	B->Y (FF)	1.01731	1.69924	9.27847
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.38121	1.08543	7.41148
	B->Y (FF)	0.33860	1.02771	7.10212

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	0.00325	0.00291	0.00273
	B	0.00000	0.00000	0.00000
	B	0.00262	0.00234	0.00218
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00551	0.00532	0.00518
	B	0.00000	0.00000	0.00000
	B	0.00484	0.00479	0.00468
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01061	0.01078	0.01064
	B	0.00000	0.00000	0.00000
	B	0.00995	0.01026	0.01023
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02073	0.02146	0.02170
	B	0.00000	0.00000	0.00000
	B	0.02006	0.02074	0.02144
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00246	0.00224	0.00211
	B	0.00000	0.00000	0.00000
	B	0.00202	0.00183	0.00171

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	0.00725	0.00708	0.00704
	B	0.00000	0.00000	0.00000
	B	0.00625	0.00618	0.00612
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00883	0.00900	0.00896
	B	0.00000	0.00000	0.00000
	B	0.00783	0.00808	0.00803
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01272	0.01347	0.01363
	B	0.00000	0.00000	0.00000
	B	0.01174	0.01251	0.01265
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02053	0.02203	0.02303
	B	0.00000	0.00000	0.00000
	B	0.01956	0.02104	0.02198
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00531	0.00521	0.00515
	B	0.00000	0.00000	0.00000
	B	0.00464	0.00459	0.00453

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)	-0.00173	-0.00181	-0.00179
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00173	-0.00181	-0.00179
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00173	-0.00181	-0.00179
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00173	-0.00181	-0.00179
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00117	-0.00120	-0.00120

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)	0.00179	0.00181	0.00179
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00179	0.00181	0.00179
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00179	0.00181	0.00179
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00179	0.00181	0.00179
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00119	0.00120	0.00120

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)	-0.00100	-0.00100	-0.00099
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00100	-0.00100	-0.00099
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00100	-0.00100	-0.00099
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00099	-0.00100	-0.00099
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00067	-0.00067	-0.00067

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)	0.00102	0.00104	0.00100
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00102	0.00104	0.00100
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00102	0.00104	0.00100
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00103	0.00104	0.00100
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00069	0.00070	0.00067

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00295	0.00382	0.21465
sky130_osu_sc_12T_ls__tbufi_l	0.00223	0.00286	0.14228

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00047	0.00163
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00012	0.00024

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (FR)	0.14771	1.48895	13.45710
	OE->Y (FR)	0.11532	0.52422	4.68833
	OE->Y (RR)	0.19528	1.39467	9.22605
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.18401	1.66023	13.32780
	OE->Y (FR)	0.12455	0.53307	4.68821
	OE->Y (RR)	0.22833	1.58404	9.27956

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)	0.04885	0.63923	6.70766
	OE->Y (FF)	0.11678	0.52542	4.68846
	OE->Y (RF)	0.04606	0.61545	6.34491
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.05692	0.67586	6.60998
	OE->Y (FF)	0.12585	0.53385	4.68826
	OE->Y (RF)	0.05294	0.65349	6.30701

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	0.00325	0.00313	0.00305
	OE	0.00000	0.00000	0.00000
	OE	0.00300	0.00259	0.00248
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00241	0.00232	0.00225
	OE	0.00000	0.00000	0.00000
	OE	0.00218	0.00189	0.00180

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	-0.00041	-0.00042	-0.00051
	OE	0.00000	0.00000	0.00000
	OE	0.00206	0.00166	0.00153
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00024	-0.00026	-0.00033
	OE	0.00000	0.00000	0.00000
	OE	0.00143	0.00114	0.00105

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)	-0.00156	-0.00157	-0.00156
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00146	-0.00147	-0.00146
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00111	-0.00112	-0.00111
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00103	-0.00103	-0.00104

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)	0.00156	0.00157	0.00156
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00148	0.00149	0.00147
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00111	0.00112	0.00111
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00106	0.00107	0.00105

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)	0.00117	0.00076	0.00064
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00102	0.00062	0.00050
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00082	0.00053	0.00043
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00069	0.00040	0.00030

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)	0.00381	0.00344	0.00339
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00396	0.00363	0.00349
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00283	0.00256	0.00253
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00295	0.00270	0.00261

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00294	0.00436	0.21433
sky130_osu_sc_12T_ls__tnbufi_l	0.00213	0.00325	0.14236

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00073	0.00087
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00015	0.00017

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (FR)	0.14888	1.48766	13.44520
	OE->Y (RR)	0.03711	0.33073	4.68842
	OE->Y (FR)	0.16044	1.51961	13.39180
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.18018	1.65905	13.32710
	OE->Y (RR)	0.04280	0.33048	4.68812
	OE->Y (FR)	0.18961	1.69633	13.34170

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)	0.04766	0.63849	6.70314
	OE->Y (RF)	0.03664	0.33073	4.68843
	OE->Y (FF)	0.12698	0.79175	6.18826
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.05383	0.67416	6.60930
	OE->Y (RF)	0.04257	0.33047	4.68809
	OE->Y (FF)	0.14893	0.84323	6.06560

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	0.00337	0.00325	0.00317
	OE	0.00000	0.00000	0.00000
	OE	0.00774	0.00752	0.00747
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00247	0.00239	0.00232
	OE	0.00000	0.00000	0.00000
	OE	0.00579	0.00560	0.00558

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	-0.00056	-0.00057	-0.00066
	OE	0.00000	0.00000	0.00000
	OE	0.00689	0.00667	0.00662
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00041	-0.00049
	OE	0.00000	0.00000	0.00000
	OE	0.00515	0.00496	0.00492

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)	-0.00130	-0.00133	-0.00130
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00121	-0.00121	-0.00121
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00088	-0.00088	-0.00088
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00081	-0.00081	-0.00081

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)	0.00130	0.00133	0.00130
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00122	0.00123	0.00121
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00088	0.00088	0.00088
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00083	0.00084	0.00082

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)	-0.00208	-0.00256	-0.00270
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00194	-0.00248	-0.00265
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00138	-0.00174	-0.00185
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00130	-0.00170	-0.00183

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)	0.00592	0.00568	0.00564
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00580	0.00555	0.00553
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00447	0.00427	0.00424
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00440	0.00418	0.00417

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00589	0.00497	0.21578

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00138	0.00250

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	0.25541	1.46292	9.39900
	A->Y (FR)	!B	0.19920	1.53900	13.48610
	B->Y (RR)	A	0.21841	1.42539	9.30804
	B->Y (FR)	!A	0.22305	1.57638	13.42080

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	0.20492	0.89091	6.63560
	A->Y (RF)	!B	0.06665	0.63413	6.37412
	B->Y (FF)	A	0.19098	0.87720	6.61421
	B->Y (RF)	!A	0.07452	0.64376	6.38927

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	0.00308	0.00265	0.00244
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00815	0.00773	0.00759
	B	A	0.00000	0.00000	0.00000
	B	A	0.00169	0.00131	0.00114
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00835	0.00805	0.00796

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	0.00922	0.00882	0.00864
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00214	0.00173	0.00150
	B	A	0.00000	0.00000	0.00000
	B	A	0.00861	0.00845	0.00840
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00247	0.00199	0.00177

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00589	0.00502	0.20852

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00138	0.00177

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	0.27670	1.48882	9.40682
	A->Y (FR)	B	0.22260	1.58078	13.41880
	B->Y (RR)	!A	0.22881	1.44945	9.35763
	B->Y (FR)	A	0.24285	1.60773	13.44630

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	0.20777	0.88592	6.58805
	A->Y (RF)	B	0.06406	0.65510	6.66002
	B->Y (FF)	!A	0.19853	0.87976	6.56193
	B->Y (RF)	A	0.07041	0.63780	6.30289

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	0.00922	0.00880	0.00870
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00200	0.00132	0.00108
	B	A	0.00000	0.00000	0.00000
	B	A	0.00923	0.00892	0.00883
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00156	0.00117	0.00100

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	0.00158	0.00103	0.00077
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00987	0.00960	0.00955
	B	A	0.00000	0.00000	0.00000
	B	A	0.00158	0.00109	0.00086
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00875	0.00863	0.00857

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.06968
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	43902.30000	87804.60000
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
	-0.00185	0.00498	0.08942

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
	0.76543	0.72272	0.12594