sky130_osu_sc_12T_ls_tt_1P20_25C.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_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.01018	0.01024	0.00801	0.27171	0.10798	0.25688
sky130_osu_sc_12T_ls__addf_l	0.01018	0.01024	0.00803	0.19768	0.10851	0.25689

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.00055	0.00058
sky130_osu_sc_12T_ls__addf_l	0.00000	0.00051	0.00058

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)	0.41480	2.57859	20.63560
	B->CO (RR)	0.39869	2.51771	20.31860
	CI->CO (RR)	0.39605	2.56580	20.77540
	CON->CO (FR)	0.10966	1.41238	13.68510
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.41682	2.49978	18.25830
	B->CO (RR)	0.40139	2.44974	18.11540
	CI->CO (RR)	0.39803	2.48708	18.43630
	CON->CO (FR)	0.12846	1.52692	13.57360

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)	1.13847	5.22890	38.14380
	B->CO (FF)	1.05299	5.06248	37.39230
	CI->CO (FF)	1.03111	5.07553	37.85430
	CON->CO (RF)	0.03897	0.66532	7.24160
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	1.10164	4.66006	30.52780
	B->CO (FF)	1.01734	4.51061	29.96000
	CI->CO (FF)	0.99414	4.50662	30.23940
	CON->CO (RF)	0.04307	0.68615	7.11494

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)	0.83091	2.45888	13.98960
	B->CON (FR)	0.75416	2.34602	13.73080
	CI->CON (FR)	0.72347	2.30482	13.72340
sky130_osu_sc_12T_ls__addf_l	A->CON (FR)	0.79480	2.42549	13.98800
	B->CON (FR)	0.71931	2.31346	13.72910
	CI->CON (FR)	0.68730	2.27155	13.72010

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)	0.17708	0.78976	6.23871
	B->CON (RF)	0.16743	0.77470	6.25981
	CI->CON (RF)	0.15836	0.77820	6.34886
sky130_osu_sc_12T_ls__addf_l	A->CON (RF)	0.17102	0.78442	6.24129
	B->CON (RF)	0.16159	0.76955	6.26229
	CI->CON (RF)	0.15228	0.77291	6.35098

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)	1.52170	5.62518	35.45840
	B->S (-R)	1.46278	5.51812	35.09060
	CI->S (-R)	1.40725	5.45795	35.12410
	CON->S (RR)	0.25541	1.48586	10.13080
sky130_osu_sc_12T_ls__addf_l	A->S (-R)	1.46267	5.57747	35.41940
	B->S (-R)	1.40588	5.47168	35.05140
	CI->S (-R)	1.34803	5.41137	35.08450
	CON->S (RR)	0.25557	1.48607	10.13140

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)	0.88018	2.44437	14.29000
	B->S (-F)	0.96589	2.44249	14.07880
	CI->S (-F)	0.86051	2.42403	14.42460
	CON->S (FF)	0.44351	1.21485	7.85433
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.86529	2.43255	14.28170
	B->S (-F)	0.95190	2.42996	14.06870
	CI->S (-F)	0.84549	2.41099	14.41350
	CON->S (FF)	0.44311	1.21482	7.85427

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	0.00128	0.00125	0.00121
	B	0.00144	0.00146	0.00145
	CI	0.00150	0.00153	0.00150
sky130_osu_sc_12T_ls__addf_l	A	0.00116	0.00113	0.00109
	B	0.00132	0.00134	0.00130
	CI	0.00139	0.00141	0.00138

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00389	0.00387	0.00386
	B	0.00384	0.00383	0.00380
	CI	0.00336	0.00342	0.00339
sky130_osu_sc_12T_ls__addf_l	A	0.00379	0.00377	0.00374
	B	0.00374	0.00372	0.00368
	CI	0.00326	0.00331	0.00327

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00389	0.00386	0.00384
	B	0.00383	0.00381	0.00377
	CI	0.00336	0.00340	0.00337
sky130_osu_sc_12T_ls__addf_l	A	0.00379	0.00376	0.00373
	B	0.00374	0.00371	0.00367
	CI	0.00326	0.00330	0.00327

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00126	0.00124	0.00117
	B	0.00142	0.00144	0.00134
	CI	0.00150	0.00152	0.00147
sky130_osu_sc_12T_ls__addf_l	A	0.00114	0.00112	0.00104
	B	0.00131	0.00133	0.00123
	CI	0.00138	0.00141	0.00135

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00389	0.00387	0.00386
	B	0.00384	0.00383	0.00381
	CI	0.00336	0.00342	0.00339
sky130_osu_sc_12T_ls__addf_l	A	0.00380	0.00377	0.00376
	B	0.00374	0.00373	0.00370
	CI	0.00326	0.00331	0.00329

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00777	0.00778	0.00772
	B	0.00725	0.00712	0.00701
	CI	0.00641	0.00641	0.00635
sky130_osu_sc_12T_ls__addf_l	A	0.00777	0.00779	0.00772
	B	0.00725	0.00712	0.00701
	CI	0.00641	0.00641	0.00635

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00499	0.00526	0.26331	0.26955	0.27137
sky130_osu_sc_12T_ls__addh_l	0.00498	0.00526	0.19449	0.27011	0.19697

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.00043	0.00047
sky130_osu_sc_12T_ls__addh_l	0.00000	0.00036	0.00040

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)	0.30725	1.49732	9.93512
	B->CO (RR)	0.31240	1.50106	10.15100
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.30900	1.59310	9.85433
	B->CO (RR)	0.31420	1.59748	10.08280

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)	0.35499	1.09909	7.86030
	B->CO (FF)	0.37065	1.12295	7.96146
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.33970	1.10281	7.73830
	B->CO (FF)	0.35587	1.12642	7.84484

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)	0.46621	1.63134	10.10350
	B->CON (RR)	0.47133	1.63295	10.31450
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.43432	1.59941	10.01610
	B->CON (RR)	0.43943	1.60124	10.23660

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)	0.41707	1.13727	7.93271
	B->CON (FF)	0.42637	1.15595	8.02132
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.38656	1.10391	7.80883
	B->CON (FF)	0.39583	1.12243	7.90291

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)	0.60702	2.42162	17.65850
	B->S (FR)	0.61667	2.43920	17.77010
	CON->S (FR)	0.11128	1.41582	13.73800
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.58517	2.39883	16.23310
	B->S (FR)	0.59463	2.41568	16.33530
	CON->S (FR)	0.12759	1.52155	13.55430

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)	0.63590	2.69100	17.95850
	B->S (RF)	0.64111	2.69206	18.16830
	CON->S (RF)	0.03837	0.66510	7.25439
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.60351	2.42722	14.40560
	B->S (RF)	0.60865	2.42707	14.62770
	CON->S (RF)	0.04213	0.68507	7.12326

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	0.00198	0.00192	0.00184
	B	0.00000	0.00000	0.00000
	B	0.00187	0.00181	0.00174
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00176	0.00168	0.00161
	B	0.00000	0.00000	0.00000
	B	0.00164	0.00157	0.00150

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	0.00275	0.00270	0.00256
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00288	0.00275
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00252	0.00246	0.00233
	B	0.00000	0.00000	0.00000
	B	0.00263	0.00263	0.00253

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	0.00198	0.00192	0.00185
	B	0.00000	0.00000	0.00000
	B	0.00187	0.00181	0.00174
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00176	0.00168	0.00161
	B	0.00000	0.00000	0.00000
	B	0.00164	0.00157	0.00150

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	0.00275	0.00270	0.00256
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00287	0.00274
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00252	0.00245	0.00231
	B	0.00000	0.00000	0.00000
	B	0.00263	0.00263	0.00250

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	0.00276	0.00270	0.00265
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00288	0.00284
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00252	0.00246	0.00238
	B	0.00000	0.00000	0.00000
	B	0.00263	0.00264	0.00257

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	0.00198	0.00192	0.00185
	B	0.00000	0.00000	0.00000
	B	0.00187	0.00181	0.00174
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00175	0.00168	0.00161
	B	0.00000	0.00000	0.00000
	B	0.00164	0.00157	0.00150

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)	0.10608	0.09978	0.02033
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.10609	0.09979	0.02034

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)	0.10604	0.09941	0.01937
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.10605	0.09942	0.01938

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00268	0.00277	0.26908
sky130_osu_sc_12T_ls__and2_2	0.00268	0.00277	0.53706
sky130_osu_sc_12T_ls__and2_4	0.00268	0.00277	1.06185
sky130_osu_sc_12T_ls__and2_6	0.00271	0.00277	1.57596
sky130_osu_sc_12T_ls__and2_8	0.00268	0.00277	2.08149
sky130_osu_sc_12T_ls__and2_l	0.00206	0.00213	0.19672

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00017	0.00023
sky130_osu_sc_12T_ls__and2_2	0.00000	0.00024	0.00037
sky130_osu_sc_12T_ls__and2_4	0.00000	0.00037	0.00065
sky130_osu_sc_12T_ls__and2_6	0.00000	0.00051	0.00093
sky130_osu_sc_12T_ls__and2_8	0.00000	0.00064	0.00121
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00012	0.00016

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)	0.23880	1.40987	9.60994
	B->Y (RR)	0.24847	1.42411	9.90400
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.25688	1.26065	9.95510
	B->Y (RR)	0.26635	1.26767	10.17600
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.34684	1.23911	10.53730
	B->Y (RR)	0.35658	1.24258	10.71400
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.44051	1.28550	10.96450
	B->Y (RR)	0.44980	1.29126	11.08010
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.53005	1.35455	11.30010
	B->Y (RR)	0.53946	1.36198	11.39860
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.25221	1.51526	9.49537
	B->Y (RR)	0.26111	1.52543	9.78537

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)**	0.26465	0.98342	7.32744
	B->Y (FF)	0.28174	1.00241	7.47207
sky130_osu_sc_12T_ls__and2_2	**A->Y (FF)**	0.33115	1.02465	7.74895
	B->Y (FF)	0.34607	1.04226	7.85051
sky130_osu_sc_12T_ls__and2_4	**A->Y (FF)**	0.48800	1.18315	8.39265
	B->Y (FF)	0.49792	1.19435	8.45496
sky130_osu_sc_12T_ls__and2_6	**A->Y (FF)**	0.64729	1.35897	8.85399
	B->Y (FF)	0.65152	1.36305	8.89108
sky130_osu_sc_12T_ls__and2_8	**A->Y (FF)**	0.79776	1.52739	9.19894
	B->Y (FF)	0.79799	1.52493	9.22554
sky130_osu_sc_12T_ls__and2_l	**A->Y (FF)**	0.26553	0.99655	7.02946
	B->Y (FF)	0.28988	1.02421	7.16987

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	0.00145	0.00133	0.00126
	B	0.00000	0.00000	0.00000
	B	0.00149	0.00137	0.00128
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00260	0.00258	0.00276
	B	0.00000	0.00000	0.00000
	B	0.00263	0.00262	0.00253
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00523	0.00533	0.00537
	B	0.00000	0.00000	0.00000
	B	0.00527	0.00541	0.00538
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.00785	0.00814	0.00826
	B	0.00000	0.00000	0.00000
	B	0.00789	0.00822	0.00831
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01045	0.01091	0.01104
	B	0.00000	0.00000	0.00000
	B	0.01047	0.01100	0.01109
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00113	0.00104	0.00099
	B	0.00000	0.00000	0.00000
	B	0.00115	0.00106	0.00099

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	0.00342	0.00333	0.00328
	B	0.00000	0.00000	0.00000
	B	0.00386	0.00376	0.00369
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00431	0.00439	0.00433
	B	0.00000	0.00000	0.00000
	B	0.00475	0.00481	0.00474
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00651	0.00690	0.00687
	B	0.00000	0.00000	0.00000
	B	0.00695	0.00732	0.00727
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.00879	0.00946	0.00952
	B	0.00000	0.00000	0.00000
	B	0.00920	0.00985	0.00989
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01091	0.01183	0.01204
	B	0.00000	0.00000	0.00000
	B	0.01134	0.01223	0.01240
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00260	0.00252	0.00248
	B	0.00000	0.00000	0.00000
	B	0.00291	0.00284	0.00279

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)	-0.00110	-0.00111	-0.00111
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00110	-0.00111	-0.00111
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00110	-0.00110	-0.00111
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00111	-0.00111	-0.00112
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00110	-0.00110	-0.00111
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00078	-0.00079	-0.00079

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)	0.00111	0.00112	0.00112
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00111	0.00112	0.00112
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00111	0.00114	0.00112
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00113	0.00115	0.00113
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00111	0.00113	0.00112
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00079	0.00080	0.00079

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00104	-0.00105	-0.00104
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00104	-0.00105	-0.00104
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00104	-0.00105	-0.00104
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00104	-0.00104	-0.00104
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00104	-0.00104	-0.00104
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00075	-0.00075	-0.00075

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)	0.00105	0.00106	0.00105
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00106	0.00105
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00106	0.00105
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00106	0.00105
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00105	0.00106	0.00105
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00075	0.00076	0.00075

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00239	0.00259	0.00259	0.11247

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00009	0.00021

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)	0.41600	2.10944	14.02940
	A1->Y (FR)	0.35044	1.97813	13.62930
	B0->Y (FR)	0.33898	1.97940	13.80770

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)	0.08574	0.69995	6.18950
	A1->Y (RF)	0.07851	0.69374	6.22625
	B0->Y (RF)	0.05028	0.61939	5.89424

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	0.00263	0.00259	0.00257
	A1	0.00000	0.00000	0.00000
	A1	0.00223	0.00218	0.00215
	B0	0.00224	0.00218	0.00214

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	0.00049	0.00043	0.00036
	A1	0.00000	0.00000	0.00000
	A1	0.00049	0.00042	0.00036
	B0	-0.00015	-0.00016	-0.00021

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)	-0.00085	-0.00087	-0.00087
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00089	-0.00090	-0.00090
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00090	-0.00090	-0.00090

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)	0.00086	0.00088	0.00087
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00089	0.00091	0.00090
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00090	0.00091	0.00090

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)	-0.00085	-0.00087	-0.00087
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00090	-0.00090	-0.00090
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00099	-0.00099	-0.00101

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)	0.00087	0.00087	0.00087
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00090	0.00090	0.00090
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00101	0.00101	0.00101

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)	-0.00050	-0.00051	-0.00051

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)	0.00058	0.00058	0.00053

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00239	0.00259	0.00274	0.00254	0.10977

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00016	0.00028

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)	0.53122	2.21689	14.00250
	A1->Y (FR)	0.47661	2.15095	13.91220
	B0->Y (FR)	0.36188	1.97520	13.64050
	B1->Y (FR)	0.41724	2.03532	13.72870

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)	0.10608	0.71940	6.17486
	A1->Y (RF)	0.09870	0.71341	6.20952
	B0->Y (RF)	0.07005	0.67656	6.14224
	B1->Y (RF)	0.07755	0.68248	6.11280

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	0.00326	0.00321	0.00319
	A1	0.00286	0.00280	0.00277
	B0	0.00241	0.00230	0.00227
	B1	0.00280	0.00272	0.00269

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00098	0.00094	0.00085
	A1	0.00099	0.00094	0.00085
	B0	-0.00003	-0.00004	-0.00009
	B1	-0.00004	-0.00004	-0.00008

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)	-0.00085	-0.00088	-0.00087
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00090	-0.00090	-0.00090
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00090	-0.00090	-0.00090
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00090	-0.00090	-0.00090

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)	0.00086	0.00088	0.00087
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00090	0.00091	0.00090
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00090	0.00091	0.00090
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00090	0.00091	0.00090

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)	-0.00085	-0.00087	-0.00087
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00090	-0.00090	-0.00090
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00099	-0.00100	-0.00100
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00099	-0.00100	-0.00100

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)	0.00086	0.00087	0.00087
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00090	0.00092	0.00090
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00100	0.00101	0.00101
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00100	0.00101	0.00101

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)	-0.00051	-0.00051	-0.00051
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00050	-0.00051	-0.00050
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00104	-0.00105	-0.00105
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00104	-0.00105	-0.00105

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)	0.00061	0.00061	0.00053
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00050	0.00051	0.00050
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00105	0.00106	0.00106
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00105	0.00106	0.00106

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)	-0.00052	-0.00051	-0.00051
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00051	-0.00051	-0.00051
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00095	-0.00096	-0.00095
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00095	-0.00095	-0.00095

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)	0.00062	0.00062	0.00054
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00051	0.00051	0.00051
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00096	0.00096	0.00095
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00096	0.00096	0.00095

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00279	0.25999
sky130_osu_sc_12T_ls__buf_2	0.00279	0.52993
sky130_osu_sc_12T_ls__buf_4	0.00278	1.06310
sky130_osu_sc_12T_ls__buf_6	0.00082	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00279	2.09999
sky130_osu_sc_12T_ls__buf_l	0.00210	0.19793

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00019	0.00019
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00028	0.00032
sky130_osu_sc_12T_ls__buf_4	0.00000	0.00046	0.00060
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.00083	0.00116
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00011	0.00011

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)**	0.18012	1.36106	9.51987
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.17291	1.18012	9.80670
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.22232	1.11770	10.37610
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.32843	1.14248	11.03270
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.19212	1.45248	9.43421

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)**	0.25189	0.96426	7.19475
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.31819	1.00777	7.67802
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.47613	1.16791	8.36235
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.78752	1.51405	9.19239
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.25864	0.98816	6.98476

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	0.00139	0.00122	0.00113
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00253	0.00245	0.00235
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00517	0.00527	0.00522
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01041	0.01074	0.01095
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00108	0.00096	0.00090

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	0.00339	0.00327	0.00322
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00426	0.00428	0.00422
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00647	0.00680	0.00676
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01089	0.01173	0.01190
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00262	0.00252	0.00247

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
	-0.00028	-0.00028	-0.00028

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
	0.00028	0.00028	0.00028

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00251	0.00254	0.00834	0.26791	0.26716
sky130_osu_sc_12T_ls__dffr_l	0.00251	0.00254	0.00834	0.19515	0.19489

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.00080	0.00091
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.00073	0.00084

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)	1.38657	3.11487	14.93140
	QN->Q (FR)	0.11807	1.47002	14.19230
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	1.33568	3.17212	14.55100
	QN->Q (FR)	0.13229	1.56073	13.81310

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)	1.22517	3.27869	18.41110
	QN->Q (RF)	0.04207	0.69666	7.61011
	RN->Q (FF)	0.83927	3.02869	21.00710
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	1.24627	3.47856	18.17000
	QN->Q (RF)	0.04507	0.71126	7.38988
	RN->Q (FF)	0.86133	3.22941	20.75300

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)	1.09300	2.27556	10.75260
	RN->QN (FR)	0.70597	2.02603	13.34400
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	1.09737	2.37220	10.66780
	RN->QN (FR)	0.71120	2.12297	13.24830

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)**	1.17123	1.84197	5.45837
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	1.11271	1.78932	5.33245

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)	-0.15119	-0.18570	-1.08609
	setup	CK (R)	1.03875	1.04069	2.17471
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.15359	-0.18585	-1.08493
	setup	CK (R)	1.04313	1.04610	2.16891

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)	-0.60040	-0.99490	-10.41670
	setup	CK (R)	0.68113	1.05688	10.53100
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.60154	-0.99409	-10.42010
	setup	CK (R)	0.68117	1.05673	10.53090

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)	-0.15119	-0.18570	-1.08609
	setup	CK (R)	1.03875	1.04069	2.17471
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.15359	-0.18585	-1.08493
	setup	CK (R)	1.04313	1.04610	2.16891

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)	-0.60040	-0.99490	-10.41670
	setup	CK (R)	0.68113	1.05688	10.53100
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.60154	-0.99409	-10.42010
	setup	CK (R)	0.68117	1.05673	10.53090

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)	0.96586	0.96630	1.84374
	removal	CK (R)	-0.15864	-0.19269	-0.15288
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.96896	0.97385	1.87931
	removal	CK (R)	-0.15864	-0.19269	-0.15288

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)	0.96586	0.96630	1.84374
	removal	CK (R)	-0.15864	-0.19269	-0.15288
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.96896	0.97385	1.87931
	removal	CK (R)	-0.15864	-0.19269	-0.15288

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 ()	0.54570	0.88141	13.33370
	min_pulse_width	RN ()	0.54234	0.88141	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.53838	0.87488	13.33370
	min_pulse_width	RN ()	0.53505	0.87488	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 ()	0.58716	0.69183	13.33370
	min_pulse_width	CK ()	0.68406	0.61120	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.53995	0.65043	13.33370
	min_pulse_width	CK ()	0.67119	0.60248	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 ()	1.38878	1.44145	13.33370
	min_pulse_width	CK ()	0.56389	0.89449	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	1.39576	1.44581	13.33370
	min_pulse_width	CK ()	0.56389	0.89449	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	0.00344	0.00322	0.00217
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00310	0.00288	0.00223

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	0.00383	0.00369	0.00325
	RN	-0.00048	-0.01160	-0.09645
	RN	0.00848	0.00841	0.00787
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00348	0.00334	0.00304
	RN	-0.00048	-0.00959	-0.07026
	RN	0.00812	0.00806	0.00765

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	0.00383	0.00369	0.00326
	RN	-0.00048	-0.01158	-0.09618
	RN	0.00848	0.00842	0.00785
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00348	0.00334	0.00305
	RN	-0.00048	-0.00959	-0.07016
	RN	0.00812	0.00806	0.00765

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	0.00342	0.00321	0.00205
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00308	0.00286	0.00212

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	-0.00085	-0.00088	-0.00088
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00401	0.00389	0.00376
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00159	0.00150	0.00138
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00085	-0.00088	-0.00088
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00401	0.00389	0.00376
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00159	0.00150	0.00138

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	0.00087	0.00088	0.00088
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00595	0.00588	0.00576
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00290	0.00281	0.00279
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00087	0.00088	0.00088
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00596	0.00588	0.00576
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00290	0.00281	0.00279

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)	0.00137	0.00124	0.00113
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00396	0.00375	0.00356
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)	0.00137	0.00124	0.00113
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00396	0.00375	0.00356

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)	0.00329	0.00316	0.00313
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00645	0.00629	0.00610
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)	0.00329	0.00316	0.00313
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00645	0.00629	0.00610

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)	-0.00013	-0.00032	-0.00050
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00205	0.00176	0.00143
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00015	-0.00036	-0.00051
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00013	-0.00032	-0.00050
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00205	0.00176	0.00143
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00015	-0.00036	-0.00051

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)	0.00529	0.00510	0.00497
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01030	0.01008	0.00973
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00772	0.00760	0.00738
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01019	0.00985	0.00958
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00554	0.00530	0.00524
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00530	0.00510	0.00497
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01030	0.01008	0.00973
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00772	0.00760	0.00738
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01019	0.00985	0.00958
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00554	0.00530	0.00524

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00247	0.00256	0.00595	0.00844	0.27239	0.27215
sky130_osu_sc_12T_ls__dffsr_l	0.00247	0.00256	0.00595	0.00844	0.19519	0.19547

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.00085	0.00104
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.00077	0.00097

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)	1.40922	3.14260	15.17650
	QN->Q (FR)	0.11368	1.45071	14.04070
	RN->Q (RR)	1.16415	2.91472	15.13960
	SN->Q (FR)	1.17125	3.02904	18.31500
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	1.38335	3.22880	14.76390
	QN->Q (FR)	0.13206	1.55970	13.80830
	RN->Q (RR)	1.13737	3.00231	14.72190
	SN->Q (FR)	1.14547	3.11656	17.87100

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)	1.39720	3.45869	18.65990
	QN->Q (RF)	0.04178	0.69819	7.64815
	RN->Q (FF)	0.89631	3.08008	21.19830
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	1.42142	3.66428	18.36940
	QN->Q (RF)	0.04485	0.71075	7.38722
	RN->Q (FF)	0.92454	3.29488	20.91100

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)	1.26366	2.45466	10.95660
	RN->QN (FR)	0.76498	2.07834	13.49750
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	1.27013	2.56048	10.88910
	RN->QN (FR)	0.77484	2.18806	13.42850

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)	1.20834	1.88657	5.68669
	RN->QN (RF)	0.96164	1.66642	5.63774
	SN->QN (FF)	0.96862	1.78060	8.81638
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	1.16913	1.85329	5.54847
	RN->QN (RF)	0.92182	1.63374	5.50389
	SN->QN (FF)	0.92928	1.74810	8.64987

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)	-0.17978	-0.20817	-1.22189
	setup	CK (R)	1.04888	1.03419	2.12282
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.17974	-0.20815	-1.22242
	setup	CK (R)	1.05070	1.03585	2.12856

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)	-0.70175	-1.08011	-10.71480
	setup	CK (R)	0.79607	1.13766	10.79700
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.70083	-1.08007	-10.71450
	setup	CK (R)	0.79505	1.13366	10.79690

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)	-0.17978	-0.20817	-1.22189
	setup	CK (R)	1.04888	1.03419	2.12282
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.17974	-0.20815	-1.22242
	setup	CK (R)	1.05070	1.03585	2.12856

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)	-0.70175	-1.08011	-10.71480
	setup	CK (R)	0.79607	1.13766	10.79700
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.70083	-1.08007	-10.71450
	setup	CK (R)	0.79505	1.13366	10.79690

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)	0.90018	0.89294	1.70604
	removal	CK (R)	-0.11773	-0.14105	-0.15115
	hold	SN (R)	-0.94146	-1.19134	-8.38330
	setup	SN (R)	0.97492	1.24912	9.76737
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.90084	0.89204	1.71357
	removal	CK (R)	-0.11490	-0.14110	-0.14987
	hold	SN (R)	-0.89359	-1.14693	-8.26976
	setup	SN (R)	0.97042	1.22046	9.68878

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)	0.90018	0.89294	1.70604
	removal	CK (R)	-0.11773	-0.14105	-0.15115
	hold	SN (R)	-0.94380	-1.19134	-8.38330
	hold	SN (R)	-0.94146	-1.19459	-8.39590
	setup	SN (R)	0.97492	1.24109	9.73942
	setup	SN (R)	0.97208	1.24912	9.76737
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.90084	0.89204	1.71357
	removal	CK (R)	-0.11490	-0.14110	-0.14987
	hold	SN (R)	-0.91126	-1.14693	-8.26976
	hold	SN (R)	-0.89359	-1.14729	-8.28308
	setup	SN (R)	0.97042	1.22046	9.64639
	setup	SN (R)	0.92097	1.20268	9.68878

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 ()	0.61106	0.92500	13.33370
	min_pulse_width	RN ()	0.63222	0.92500	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.61379	0.91846	13.33370
	min_pulse_width	RN ()	0.62080	0.91846	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)	0.07975	0.10168	0.86181
	removal	CK (R)	-0.01905	-0.05201	-0.64633
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.07992	0.09777	0.85317
	removal	CK (R)	-0.01905	-0.05201	-0.64633

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)	0.07975	0.10168	0.86181
	removal	CK (R)	-0.01905	-0.05201	-0.64633
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.07992	0.09777	0.85317
	removal	CK (R)	-0.01905	-0.05201	-0.64633

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 ()	0.95658	1.28456	13.33370
	min_pulse_width	SN ()	0.97877	1.29109	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.94337	1.24097	13.33370
	min_pulse_width	SN ()	0.92754	1.24533	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 ()	0.62051	0.68529	13.33370
	min_pulse_width	CK ()	0.76114	0.68529	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.58945	0.65914	13.33370
	min_pulse_width	CK ()	0.75046	0.67658	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 ()	1.40329	1.43928	13.33370
	min_pulse_width	CK ()	0.68843	0.97512	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	1.40688	1.44581	13.33370
	min_pulse_width	CK ()	0.68471	0.97512	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	0.00413	0.00394	0.00284
	RN	0.00762	0.00747	0.00644
	SN	-0.00048	-0.01172	-0.09806
	SN	0.00826	0.00814	0.00715
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00381	0.00362	0.00298
	RN	0.00729	0.00715	0.00652
	SN	-0.00048	-0.00960	-0.07027
	SN	0.00793	0.00782	0.00722

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	0.00437	0.00426	0.00391
	RN	-0.00048	-0.01172	-0.09806
	RN	0.00898	0.00892	0.00846
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00403	0.00391	0.00361
	RN	-0.00048	-0.00960	-0.07027
	RN	0.00863	0.00857	0.00817

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	0.00438	0.00427	0.00393
	RN	-0.00048	-0.01171	-0.09797
	RN	0.00898	0.00893	0.00847
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00403	0.00391	0.00363
	RN	-0.00048	-0.00960	-0.07037
	RN	0.00863	0.00857	0.00817

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	0.00411	0.00392	0.00273
	RN	0.00760	0.00745	0.00631
	SN	-0.00048	-0.01171	-0.09797
	SN	0.00824	0.00812	0.00700
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00379	0.00360	0.00284
	RN	0.00727	0.00713	0.00639
	SN	-0.00048	-0.00960	-0.07037
	SN	0.00791	0.00780	0.00709

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	-0.00086	-0.00089	-0.00089
	(!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)	0.00494	0.00484	0.00472
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00172	0.00163	0.00152
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00170	0.00162	0.00150
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00173	0.00164	0.00153
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00086	-0.00089	-0.00089
	(!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)	0.00494	0.00484	0.00472
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00172	0.00163	0.00152
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00170	0.00162	0.00150
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00173	0.00164	0.00153

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	0.00089	0.00089	0.00089
	(!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)	0.00680	0.00673	0.00655
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00322	0.00315	0.00312
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00324	0.00317	0.00313
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00321	0.00314	0.00311
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00089	0.00089	0.00089
	(!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)	0.00680	0.00673	0.00655
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00322	0.00315	0.00312
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00324	0.00317	0.00313
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00321	0.00314	0.00311

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)	0.00127	0.00114	0.00098
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00471	0.00449	0.00425
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)	0.00127	0.00114	0.00098
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00471	0.00449	0.00425

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)	0.00366	0.00353	0.00349
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00690	0.00674	0.00652
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)	0.00366	0.00353	0.00349
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00690	0.00674	0.00652

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)	-0.00233	-0.00236	-0.00237
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00252	-0.00255	-0.00255
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00235	-0.00238	-0.00237
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00099	0.00087	0.00067
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)	-0.00233	-0.00236	-0.00237
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00252	-0.00255	-0.00255
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00235	-0.00238	-0.00237
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00099	0.00087	0.00067

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)	0.00237	0.00238	0.00237
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00254	0.00258	0.00255
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00237	0.00239	0.00237
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00543	0.00530	0.00529
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)	0.00237	0.00238	0.00237
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00254	0.00258	0.00255
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00237	0.00239	0.00237
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00543	0.00530	0.00529

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)	-0.00017	-0.00035	-0.00053
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00245	0.00219	0.00186
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00243	0.00217	0.00184
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00009	-0.00030	-0.00045
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00142	0.00109	0.00082
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00017	-0.00035	-0.00053
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00245	0.00219	0.00187
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00243	0.00217	0.00184
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00009	-0.00030	-0.00045
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00142	0.00109	0.00082

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)	0.01139	0.01116	0.01078
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00540	0.00520	0.00507
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00782	0.00770	0.00751
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00786	0.00772	0.00752
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01109	0.01074	0.01039
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00554	0.00530	0.00524
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00714	0.00678	0.00664
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01138	0.01116	0.01078
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00540	0.00520	0.00507
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00782	0.00770	0.00751
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00786	0.00772	0.00752
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01109	0.01074	0.01039
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00554	0.00530	0.00524
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00714	0.00678	0.00664

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00249	0.00501	0.00825	0.26764	0.26552
sky130_osu_sc_12T_ls__dffs_l	0.00249	0.00501	0.00824	0.19342	0.19648

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.00067	0.00085
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.00060	0.00078

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)	0.84108	2.51421	14.35520
	QN->Q (FR)	0.11823	1.46653	14.16280
	SN->Q (FR)	0.71631	2.51749	17.49460
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.82990	2.61226	13.93840
	QN->Q (FR)	0.13240	1.55320	13.73490
	SN->Q (FR)	0.70013	2.61338	17.01940

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)	1.32969	3.38192	18.48810
	QN->Q (RF)	0.04189	0.69502	7.59519
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	1.34160	3.56104	18.12860
	QN->Q (RF)	0.04493	0.70852	7.35790

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)	1.19432	2.37652	10.80740
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	1.19030	2.47152	10.81750

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)	0.66576	1.27619	4.90051
	SN->QN (FF)	0.53614	1.28548	8.04283
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.64123	1.26600	4.84997
	SN->QN (FF)	0.50833	1.27128	7.92732

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)	-0.12105	-0.15548	-1.03039
	setup	CK (R)	0.59131	0.58176	1.83540
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.11962	-0.15373	-1.02931
	setup	CK (R)	0.59164	0.58221	1.82947

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)	-0.62805	-1.01696	-10.51000
	setup	CK (R)	0.75304	1.08991	10.62750
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.62645	-1.01587	-10.51070
	setup	CK (R)	0.75223	1.08991	10.62750

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)	-0.12105	-0.15548	-1.03039
	setup	CK (R)	0.59131	0.58176	1.83540
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.11962	-0.15373	-1.02931
	setup	CK (R)	0.59164	0.58221	1.82947

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)	-0.62805	-1.01696	-10.51000
	setup	CK (R)	0.75304	1.08991	10.62750
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.62645	-1.01587	-10.51070
	setup	CK (R)	0.75223	1.08991	10.62750

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)	0.10223	0.12677	0.91193
	removal	CK (R)	-0.03369	-0.06654	-0.64163
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.10164	0.12652	0.90431
	removal	CK (R)	-0.03369	-0.06654	-0.64163

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)	0.10223	0.12677	0.91193
	removal	CK (R)	-0.03369	-0.06654	-0.64163
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.10164	0.12652	0.90431
	removal	CK (R)	-0.03369	-0.06654	-0.64163

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 ()	0.51641	0.98819	13.33370
	min_pulse_width	SN ()	0.52920	0.98383	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.50108	0.95115	13.33370
	min_pulse_width	SN ()	0.49856	0.95333	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 ()	0.27157	0.54147	13.33370
	min_pulse_width	CK ()	0.71191	0.63735	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.25840	0.53929	13.33370
	min_pulse_width	CK ()	0.69478	0.62428	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 ()	0.93913	0.98819	13.33370
	min_pulse_width	CK ()	0.64430	0.92718	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.93913	0.98819	13.33370
	min_pulse_width	CK ()	0.64430	0.92718	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	0.00344	0.00320	0.00215
	SN	-0.00048	-0.01160	-0.09635
	SN	0.00719	0.00704	0.00600
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00309	0.00286	0.00222
	SN	-0.00048	-0.00954	-0.06963
	SN	0.00684	0.00670	0.00604

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	0.00383	0.00370	0.00327
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00348	0.00335	0.00306

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	0.00383	0.00370	0.00329
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00348	0.00335	0.00307

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	0.00342	0.00319	0.00205
	SN	-0.00048	-0.01154	-0.09558
	SN	0.00717	0.00702	0.00586
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00307	0.00284	0.00209
	SN	-0.00048	-0.00963	-0.07073
	SN	0.00682	0.00668	0.00590

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	-0.00088	-0.00091	-0.00090
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00396	0.00384	0.00366
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00159	0.00149	0.00138
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00088	-0.00091	-0.00090
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00396	0.00384	0.00366
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00159	0.00149	0.00138

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	0.00090	0.00091	0.00090
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00599	0.00591	0.00581
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00295	0.00287	0.00285
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00090	0.00091	0.00090
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00599	0.00591	0.00581
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00295	0.00287	0.00285

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)	-0.00175	-0.00176	-0.00176
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00117	0.00105	0.00094
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)	-0.00175	-0.00176	-0.00176
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00117	0.00105	0.00094

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)	0.00176	0.00178	0.00177
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00387	0.00370	0.00364
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)	0.00176	0.00178	0.00177
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00387	0.00370	0.00364

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)	-0.00013	-0.00032	-0.00050
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00012	-0.00033	-0.00048
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00132	0.00100	0.00073
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00013	-0.00032	-0.00050
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00012	-0.00033	-0.00048
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00132	0.00100	0.00073

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)	0.01029	0.01007	0.00969
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00532	0.00511	0.00498
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01018	0.00980	0.00954
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00550	0.00526	0.00521
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00677	0.00641	0.00627
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01029	0.01007	0.00969
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00532	0.00511	0.00498
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01018	0.00981	0.00954
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00550	0.00526	0.00521
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00677	0.00641	0.00627

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00266	0.00818	0.25401
sky130_osu_sc_12T_ls__dff_l	0.00266	0.00817	0.18774

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.00075	0.00087
sky130_osu_sc_12T_ls__dff_l	0.00000	0.00067	0.00080

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)**	0.70906	1.88454	10.08390
sky130_osu_sc_12T_ls__dff_l	**CK->Q (RR)**	0.69977	1.96507	9.99174

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)**	1.16086	1.74545	5.53099
sky130_osu_sc_12T_ls__dff_l	**CK->Q (RF)**	1.16488	1.77164	5.51537

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)	-0.12580	-0.15921	-1.09241
	setup	CK (R)	0.45604	0.44903	1.77823
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.12581	-0.15921	-1.09263
	setup	CK (R)	0.45698	0.45015	1.78117

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)	-0.60479	-1.01188	-10.54910
	setup	CK (R)	0.71066	1.09852	10.70720
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.60528	-1.01376	-10.54880
	setup	CK (R)	0.71128	1.09849	10.71100

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 ()	0.24205	0.54365	13.33370
	min_pulse_width	CK ()	0.67763	0.61120	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.23505	0.54147	13.33370
	min_pulse_width	CK ()	0.66690	0.60248	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 ()**	0.80479	0.88577	13.33370
	min_pulse_width	**CK ()**	0.58200	0.92936	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.80338	0.88795	13.33370
	min_pulse_width	**CK ()**	0.58200	0.92936	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	0.00723	0.00683	0.00642
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00652	0.00611	0.00571

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	0.00782	0.00755	0.00725
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00711	0.00684	0.00657

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	-0.00084	-0.00088	-0.00087
	!CK	0.00000	0.00000	0.00000
	!CK	0.00364	0.00352	0.00334
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00084	-0.00088	-0.00087
	!CK	0.00000	0.00000	0.00000
	!CK	0.00364	0.00352	0.00334

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	0.00087	0.00088	0.00087
	!CK	0.00000	0.00000	0.00000
	!CK	0.00625	0.00613	0.00601
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00087	0.00088	0.00087
	!CK	0.00000	0.00000	0.00000
	!CK	0.00625	0.00613	0.00601

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)	-0.00015	-0.00034	-0.00051
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00012	-0.00033	-0.00048
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00015	-0.00034	-0.00051
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00012	-0.00033	-0.00048

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)	0.00530	0.00509	0.00496
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.00993	0.00972	0.00937
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01035	0.00997	0.00969
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00547	0.00523	0.00517
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00530	0.00509	0.00496
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.00993	0.00972	0.00937
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01035	0.00997	0.00969
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00547	0.00523	0.00517

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00258	0.26079
sky130_osu_sc_12T_ls__inv_10	0.02284	2.61079
sky130_osu_sc_12T_ls__inv_2	0.00476	0.53256
sky130_osu_sc_12T_ls__inv_3	0.00704	0.78818
sky130_osu_sc_12T_ls__inv_4	0.00926	1.06017
sky130_osu_sc_12T_ls__inv_6	0.01386	1.57829
sky130_osu_sc_12T_ls__inv_8	0.01835	2.09117
sky130_osu_sc_12T_ls__inv_l	0.00207	0.19023

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00009	0.00014
sky130_osu_sc_12T_ls__inv_10	0.00000	0.00092	0.00140
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00018	0.00028
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00028	0.00042
sky130_osu_sc_12T_ls__inv_4	0.00000	0.00037	0.00056
sky130_osu_sc_12T_ls__inv_6	0.00000	0.00055	0.00084
sky130_osu_sc_12T_ls__inv_8	0.00000	0.00074	0.00112
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00006	0.00007

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)**	0.11655	1.43421	13.76310
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.08962	0.90729	13.72820
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.08025	1.19776	13.72960
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.08108	1.10970	13.73900
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.07467	1.04681	13.73150
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.07641	0.97423	13.70420
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.08174	0.93201	13.67970
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.13460	1.53208	13.48830

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)**	0.03888	0.65888	7.13741
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.04203	0.50707	7.25423
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.03035	0.60112	7.19204
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.03168	0.57760	7.24115
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.03048	0.55557	7.24441
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.03358	0.53232	7.25093
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.03742	0.51739	7.24996
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.04329	0.67823	7.01896

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	0.00168	0.00164	0.00163
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.01382	0.01364	0.01393
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00289	0.00271	0.00286
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00445	0.00420	0.00440
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.00565	0.00555	0.00564
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.00840	0.00829	0.00843
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.01112	0.01098	0.01118
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00134	0.00130	0.00128

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	-0.00019	-0.00021	-0.00023
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00373	-0.00387	-0.00362
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00071	-0.00075	-0.00077
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00087	-0.00095	-0.00095
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00143	-0.00152	-0.00148
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00215	-0.00227	-0.00220
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00292	-0.00306	-0.00291
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00014	-0.00016	-0.00018

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.18652	0.18739	0.00534	0.24585

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00024	0.00024

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)	-	0.05075	0.82484	8.85801
	A1->Y (RR)	-	0.06438	0.83335	8.86407
	S0->Y (RR)	(!A0 * A1)	0.12662	1.00201	8.38431
	S0->Y (FR)	(A0 * !A1)	0.11885	1.20805	10.09700

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)	-	0.04047	0.63128	6.93538
	A1->Y (FF)	-	0.03294	0.62357	6.92036
	S0->Y (FF)	(!A0 * A1)	0.25782	0.93798	7.13902
	S0->Y (RF)	(A0 * !A1)	0.04172	0.65276	6.69993

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	-	-0.00170	-0.00170	-0.00171
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00115	-0.00115	-0.00115
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00229	0.00213	0.00209
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00098	-0.00116	-0.00126

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	-	0.00170	0.00170	0.00171
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00115	0.00115	0.00115
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00041	0.00023	0.00013
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00448	0.00431	0.00427

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)	-0.00045	-0.00045	-0.00045

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)	0.00045	0.00045	0.00045

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)	-0.00054	-0.00054	-0.00054

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)	0.00054	0.00054	0.00054

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)	-0.00028	-0.00048	-0.00057
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00028	-0.00047	-0.00056

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)	0.00347	0.00331	0.00326
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00331	0.00314	0.00310

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00257	0.00256	0.26048
sky130_osu_sc_12T_ls__nand2_l	0.00202	0.00204	0.18982

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00010	0.00014
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00007	0.00009

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)	0.12380	1.44775	13.77880
	B->Y (FR)	0.14140	1.42681	13.51570
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.13732	1.53598	13.48330
	B->Y (FR)	0.15960	1.55780	13.49320

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)	0.06647	0.84212	8.51624
	B->Y (RF)	0.07451	0.85138	8.42677
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.07241	0.88096	8.34375
	B->Y (RF)	0.07978	0.88715	8.23961

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	0.00177	0.00173	0.00169
	B	0.00000	0.00000	0.00000
	B	0.00219	0.00214	0.00211
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00134	0.00131	0.00128
	B	0.00000	0.00000	0.00000
	B	0.00164	0.00160	0.00159

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	-0.00007	-0.00009	-0.00011
	B	0.00000	0.00000	0.00000
	B	-0.00006	-0.00008	-0.00010
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00005	-0.00007	-0.00008
	B	0.00000	0.00000	0.00000
	B	-0.00004	-0.00006	-0.00008

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)	-0.00105	-0.00106	-0.00106
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00075	-0.00076	-0.00076

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)	0.00107	0.00107	0.00107
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00077	0.00077	0.00077

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)	-0.00097	-0.00098	-0.00097
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00071	-0.00071	-0.00071

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)	0.00098	0.00099	0.00098
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00071	0.00072	0.00071

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00251	0.00280	0.11745
sky130_osu_sc_12T_ls__nor2_l	0.00192	0.00215	0.08788

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00010	0.00028
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00007	0.00013

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)	0.31557	1.97041	13.90190
	B->Y (FR)	0.27572	1.87938	13.69190
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.33676	2.09716	13.70260
	B->Y (FR)	0.30579	2.01313	13.46620

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)	0.04515	0.57546	5.50627
	B->Y (RF)	0.04083	0.56782	5.48663
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.04823	0.59146	5.44024
	B->Y (RF)	0.04454	0.58478	5.42105

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	0.00218	0.00213	0.00212
	B	0.00000	0.00000	0.00000
	B	0.00186	0.00177	0.00176
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00161	0.00157	0.00156
	B	0.00000	0.00000	0.00000
	B	0.00141	0.00134	0.00132

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	0.00021	0.00015	0.00010
	B	0.00000	0.00000	0.00000
	B	-0.00015	-0.00016	-0.00021
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00015	0.00011	0.00008
	B	0.00000	0.00000	0.00000
	B	-0.00010	-0.00011	-0.00015

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)	-0.00085	-0.00089	-0.00088
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00058	-0.00061	-0.00061

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)	0.00089	0.00089	0.00088
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00060	0.00062	0.00061

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)	-0.00051	-0.00052	-0.00051
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00036	-0.00036	-0.00036

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)	0.00054	0.00054	0.00052
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00038	0.00038	0.00037

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00256	0.00263	0.00230	0.11616

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_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__oai21_l	A0->Y (FR)	0.37680	1.97415	13.73340
	A1->Y (FR)	0.43117	2.08619	13.95230
	B0->Y (FR)	0.17164	1.31408	10.75460

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)	0.08762	0.71040	6.27044
	A1->Y (RF)	0.09723	0.71533	6.26797
	B0->Y (RF)	0.07166	0.69872	6.38201

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	0.00245	0.00234	0.00235
	A1	0.00000	0.00000	0.00000
	A1	0.00282	0.00276	0.00274
	B0	0.00193	0.00186	0.00184

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	0.00020	0.00020	0.00015
	A1	0.00000	0.00000	0.00000
	A1	0.00059	0.00053	0.00049
	B0	0.00076	0.00073	0.00068

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)	-0.00052	-0.00052	-0.00051
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00087	-0.00090	-0.00090
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00093	-0.00093	-0.00093

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)	0.00054	0.00054	0.00052
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00090	0.00090	0.00090
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00093	0.00094	0.00093

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)	-0.00081	-0.00086	-0.00085
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00086	-0.00090	-0.00089
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00091	-0.00092	-0.00092

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)	0.00084	0.00086	0.00085
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00089	0.00090	0.00089
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00092	0.00092	0.00092

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)	-0.00078	-0.00079	-0.00082

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)	0.00082	0.00083	0.00082

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00237	0.00252	0.00271	0.00266	0.11768

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00016	0.00028

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)	0.46811	2.11517	13.95980
	A1->Y (FR)	0.42125	2.01683	13.74560
	B0->Y (FR)	0.29053	1.88000	13.59980
	B1->Y (FR)	0.34550	1.97998	13.82010

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)	0.11984	0.75440	6.36469
	A1->Y (RF)	0.10424	0.73543	6.33190
	B0->Y (RF)	0.08780	0.72220	6.44512
	B1->Y (RF)	0.10470	0.74178	6.49284

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	0.00351	0.00346	0.00344
	A1	0.00313	0.00306	0.00303
	B0	0.00231	0.00224	0.00220
	B1	0.00272	0.00266	0.00262

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00080	0.00074	0.00068
	A1	0.00043	0.00043	0.00037
	B0	0.00043	0.00042	0.00035
	B1	0.00080	0.00074	0.00067

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)	-0.00083	-0.00087	-0.00086
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00083	-0.00087	-0.00086
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00083	-0.00087	-0.00086
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00089	-0.00089	-0.00089

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)	0.00086	0.00087	0.00086
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00086	0.00087	0.00086
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00086	0.00087	0.00086
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00089	0.00089	0.00089

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)	-0.00050	-0.00051	-0.00050
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00050	-0.00051	-0.00050
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00083	-0.00086	-0.00085
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00088	-0.00089	-0.00088

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)	0.00053	0.00053	0.00051
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00053	0.00053	0.00051
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00085	0.00086	0.00085
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00088	0.00089	0.00089

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)	-0.00050	-0.00051	-0.00050
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00050	-0.00051	-0.00050
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00100	-0.00103	-0.00102
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00101	-0.00101	-0.00105

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)	0.00053	0.00054	0.00051
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00053	0.00054	0.00051
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00102	0.00103	0.00102
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00105	0.00106	0.00106

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)	-0.00082	-0.00086	-0.00085
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00082	-0.00086	-0.00085
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00102	-0.00106	-0.00105
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00103	-0.00103	-0.00107

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)	0.00086	0.00086	0.00085
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00086	0.00086	0.00085
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00106	0.00106	0.00105
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00108	0.00110	0.00108

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00285	0.00265	0.25581
sky130_osu_sc_12T_ls__or2_2	0.00285	0.00264	0.52809
sky130_osu_sc_12T_ls__or2_4	0.00286	0.00264	1.04165
sky130_osu_sc_12T_ls__or2_8	0.00284	0.00264	2.07567
sky130_osu_sc_12T_ls__or2_l	0.00217	0.00204	0.19082

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00022	0.00032
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00033	0.00037
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00057	0.00061
sky130_osu_sc_12T_ls__or2_8	0.00000	0.00103	0.00117
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00013	0.00018

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)	0.19281	1.38313	9.60762
	B->Y (RR)	0.18286	1.36081	9.45185
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.18750	1.20491	9.95885
	B->Y (RR)	0.17646	1.18696	9.83933
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.23703	1.13269	10.36300
	B->Y (RR)	0.22558	1.11842	10.26150
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.34288	1.15688	11.05800
	B->Y (RR)	0.33100	1.14497	10.99850
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.20744	1.48784	9.57035
	B->Y (RR)	0.19823	1.46843	9.42001

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)	0.58396	1.32931	7.94176
	B->Y (FF)	0.51133	1.21395	7.51291
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.73961	1.49036	8.43979
	B->Y (FF)	0.66713	1.37357	8.10967
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	1.08278	1.86876	9.16346
	B->Y (FF)	1.01000	1.74986	8.94706
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	1.76087	2.63685	10.27710
	B->Y (FF)	1.68694	2.51309	10.13010
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.59310	1.34963	7.70426
	B->Y (FF)	0.52502	1.23966	7.25596

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	0.00181	0.00169	0.00156
	B	0.00000	0.00000	0.00000
	B	0.00142	0.00131	0.00121
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00297	0.00293	0.00305
	B	0.00000	0.00000	0.00000
	B	0.00257	0.00257	0.00246
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00562	0.00574	0.00568
	B	0.00000	0.00000	0.00000
	B	0.00522	0.00541	0.00534
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01088	0.01124	0.01141
	B	0.00000	0.00000	0.00000
	B	0.01047	0.01091	0.01116
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00139	0.00130	0.00121
	B	0.00000	0.00000	0.00000
	B	0.00112	0.00104	0.00097

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	0.00390	0.00382	0.00378
	B	0.00000	0.00000	0.00000
	B	0.00339	0.00334	0.00330
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00477	0.00487	0.00483
	B	0.00000	0.00000	0.00000
	B	0.00426	0.00437	0.00434
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00694	0.00730	0.00737
	B	0.00000	0.00000	0.00000
	B	0.00642	0.00680	0.00686
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01127	0.01196	0.01248
	B	0.00000	0.00000	0.00000
	B	0.01075	0.01146	0.01194
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00293	0.00287	0.00284
	B	0.00000	0.00000	0.00000
	B	0.00257	0.00254	0.00250

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)	-0.00087	-0.00090	-0.00089
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00087	-0.00090	-0.00089
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00087	-0.00090	-0.00089
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00086	-0.00090	-0.00089
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00059	-0.00062	-0.00061

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)	0.00090	0.00090	0.00089
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00090	0.00090	0.00089
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00090	0.00090	0.00089
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00090	0.00090	0.00089
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00061	0.00062	0.00061

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)	-0.00052	-0.00052	-0.00051
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00052	-0.00052	-0.00051
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00052	-0.00052	-0.00051
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00052	-0.00052	-0.00051
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00035	-0.00036	-0.00035

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)	0.00055	0.00055	0.00052
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00055	0.00055	0.00052
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00055	0.00055	0.00052
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00055	0.00055	0.00052
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00037	0.00038	0.00036

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00278	0.00365	0.11947
sky130_osu_sc_12T_ls__tbufi_l	0.00216	0.00282	0.08761

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00016	0.00019
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00009	0.00011

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)	0.25568	1.85552	13.67820
	OE->Y (FR)	0.16288	0.63851	4.88344
	OE->Y (RR)	0.31812	1.81211	9.78589
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.29239	2.00030	13.43220
	OE->Y (FR)	0.16449	0.62907	4.58677
	OE->Y (RR)	0.34353	1.95390	9.64716

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)	0.06397	0.68321	6.32580
	OE->Y (FF)	0.16490	0.63713	4.89008
	OE->Y (RF)	0.06204	0.67899	6.26989
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.07064	0.70697	6.21710
	OE->Y (FF)	0.16595	0.63091	4.59302
	OE->Y (RF)	0.06726	0.69995	6.14240

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	0.00170	0.00163	0.00159
	OE	0.00000	0.00000	0.00000
	OE	0.00160	0.00141	0.00134
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00130	0.00124	0.00121
	OE	0.00000	0.00000	0.00000
	OE	0.00118	0.00104	0.00099

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	-0.00015	-0.00017	-0.00021
	OE	0.00000	0.00000	0.00000
	OE	0.00113	0.00095	0.00087
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00010	-0.00010	-0.00015
	OE	0.00000	0.00000	0.00000
	OE	0.00080	0.00066	0.00060

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)	-0.00083	-0.00083	-0.00083
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00077	-0.00078	-0.00078
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00060	-0.00060	-0.00060
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00056	-0.00056	-0.00056

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)	0.00083	0.00083	0.00083
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00080	0.00080	0.00079
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00060	0.00060	0.00060
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00058	0.00058	0.00057

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)	0.00062	0.00044	0.00036
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00055	0.00036	0.00029
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00044	0.00030	0.00025
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00038	0.00024	0.00019

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)	0.00202	0.00184	0.00180
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00210	0.00191	0.00185
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00154	0.00141	0.00138
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00160	0.00147	0.00142

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00277	0.00403	0.11982
sky130_osu_sc_12T_ls__tnbufi_l	0.00206	0.00311	0.08808

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00012	0.00028
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00009	0.00014

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)	0.25732	1.85556	13.70070
	OE->Y (RR)	0.04480	0.32287	3.47306
	OE->Y (FR)	0.27230	1.92791	13.89030
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.28598	1.99642	13.46550
	OE->Y (RR)	0.04821	0.32778	3.47283
	OE->Y (FR)	0.29779	2.06632	13.68420

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)	0.06204	0.68294	6.33193
	OE->Y (RF)	0.04423	0.32328	3.47313
	OE->Y (FF)	0.19906	0.92765	6.44733
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.06633	0.70414	6.22644
	OE->Y (RF)	0.04760	0.32696	3.47280
	OE->Y (FF)	0.21678	0.95572	6.18581

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	0.00177	0.00169	0.00166
	OE	0.00000	0.00000	0.00000
	OE	0.00406	0.00394	0.00391
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00134	0.00128	0.00125
	OE	0.00000	0.00000	0.00000
	OE	0.00314	0.00302	0.00301

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	-0.00024	-0.00025	-0.00029
	OE	0.00000	0.00000	0.00000
	OE	0.00366	0.00352	0.00351
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00019	-0.00019	-0.00023
	OE	0.00000	0.00000	0.00000
	OE	0.00281	0.00269	0.00268

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)	-0.00069	-0.00069	-0.00069
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00063	-0.00063	-0.00063
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00047	-0.00047	-0.00047
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00043	-0.00044	-0.00043

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)	0.00069	0.00069	0.00069
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00065	0.00066	0.00065
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00047	0.00047	0.00047
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00046	0.00046	0.00045

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)	-0.00096	-0.00120	-0.00127
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00092	-0.00115	-0.00126
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00067	-0.00085	-0.00091
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00065	-0.00083	-0.00090

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)	0.00309	0.00296	0.00294
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00303	0.00289	0.00288
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00241	0.00229	0.00227
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00237	0.00225	0.00224

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00555	0.00464	0.12013

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00037	0.00055

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	0.42086	1.92376	10.06070
	A->Y (FR)	!B	0.34471	1.95108	13.78130
	B->Y (RR)	A	0.35976	1.85911	9.93191
	B->Y (FR)	!A	0.37913	2.03097	13.96520

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	0.30448	1.03916	6.96934
	A->Y (RF)	!B	0.08889	0.70315	6.30488
	B->Y (FF)	A	0.28809	1.02202	6.94059
	B->Y (RF)	!A	0.09629	0.71263	6.32644

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	0.00168	0.00147	0.00134
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00434	0.00411	0.00405
	B	A	0.00000	0.00000	0.00000
	B	A	0.00102	0.00083	0.00073
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00440	0.00423	0.00420

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	0.00501	0.00484	0.00473
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00124	0.00107	0.00094
	B	A	0.00000	0.00000	0.00000
	B	A	0.00457	0.00448	0.00442
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00155	0.00134	0.00121

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00556	0.00469	0.11709

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00037	0.00046

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	0.45437	1.95566	10.03070
	A->Y (FR)	B	0.37251	2.01714	13.91690
	B->Y (RR)	!A	0.37252	1.88265	9.94509
	B->Y (FR)	A	0.40368	2.06311	13.96830

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	0.31891	1.04348	6.97414
	A->Y (RF)	B	0.08163	0.70390	6.32420
	B->Y (FF)	!A	0.29812	1.02699	6.91569
	B->Y (RF)	A	0.08871	0.70654	6.27170

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	0.00489	0.00465	0.00460
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00120	0.00091	0.00078
	B	A	0.00000	0.00000	0.00000
	B	A	0.00489	0.00472	0.00469
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00093	0.00076	0.00065

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	0.00104	0.00080	0.00064
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00529	0.00514	0.00508
	B	A	0.00000	0.00000	0.00000
	B	A	0.00104	0.00083	0.00069
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00465	0.00456	0.00451

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P20_25C.ccs
Cell Library: Process , Voltage 1.20,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.03696
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	15066.70000	30133.50000
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
	-0.00102	0.00111	0.02574

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
	0.26300	0.24665	0.03905