sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_15T_LS__ADDFx
SKY130_OSU_SC_15T_LS__ADDHx
SKY130_OSU_SC_15T_LS__AND2x
SKY130_OSU_SC_15T_LS__AOI21
SKY130_OSU_SC_15T_LS__AOI22
SKY130_OSU_SC_15T_LS__BUFx
SKY130_OSU_SC_15T_LS__DFFRx
SKY130_OSU_SC_15T_LS__DFFSRx
SKY130_OSU_SC_15T_LS__DFFSx
SKY130_OSU_SC_15T_LS__DFFx
SKY130_OSU_SC_15T_LS__INVx
SKY130_OSU_SC_15T_LS__MUX2
SKY130_OSU_SC_15T_LS__NAND2x
SKY130_OSU_SC_15T_LS__NOR2x
SKY130_OSU_SC_15T_LS__OAI21
SKY130_OSU_SC_15T_LS__OAI22
SKY130_OSU_SC_15T_LS__OR2x
SKY130_OSU_SC_15T_LS__TBUFIx
SKY130_OSU_SC_15T_LS__TNBUFIx
SKY130_OSU_SC_15T_LS__XNOR2
SKY130_OSU_SC_15T_LS__XOR2
SKY130_OSU_SC_15T_LS_x

SKY130_OSU_SC_15T_LS__ADDFx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__addf_1	39.07200
sky130_osu_sc_15T_ls__addf_l	39.07200

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_15T_ls__addf_1	0.01482	0.01482	0.01170	0.46755	0.19368	0.44852
sky130_osu_sc_15T_ls__addf_l	0.01483	0.01482	0.01170	0.27344	0.19435	0.27660

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00034	0.00036
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00048	0.00063

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.35203	2.41031	20.56940
	B->CO (RR)	0.33371	2.33471	20.16210
	CI->CO (RR)	0.33842	2.41419	20.85360
	CON->CO (FR)	0.09668	1.37234	13.78850
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.38203	2.37588	17.25960
	B->CO (RR)	0.36384	2.32145	17.17810
	CI->CO (RR)	0.36846	2.37968	17.58270
	CON->CO (FR)	0.13691	1.60122	13.99270

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.93248	4.77413	37.86320
	B->CO (FF)	0.86181	4.61291	37.01850
	CI->CO (FF)	0.85262	4.65106	37.58610
	CON->CO (RF)	0.03802	0.68034	7.43954
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.92384	4.02908	26.65320
	B->CO (FF)	0.85273	3.89645	26.12530
	CI->CO (FF)	0.84376	3.90517	26.37900
	CON->CO (RF)	0.04527	0.72110	7.36414

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.66983	2.25291	14.16840
	B->CON (FR)	0.60898	2.15300	13.89750
	CI->CON (FR)	0.59006	2.12856	13.89610
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.63322	2.21793	14.15040
	B->CON (FR)	0.57376	2.11891	13.88590
	CI->CON (FR)	0.55331	2.09353	13.88420

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.15055	0.76422	6.29323
	B->CON (RF)	0.14100	0.75786	6.40320
	CI->CON (RF)	0.13676	0.77068	6.55409
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.14385	0.75806	6.29193
	B->CON (RF)	0.13475	0.75225	6.40185
	CI->CON (RF)	0.13006	0.76461	6.55268

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	1.24338	5.11535	35.58100
	B->S (-R)	1.19086	5.01393	35.11070
	CI->S (-R)	1.15852	4.98273	35.26660
	CON->S (RR)	0.21802	1.38082	10.10100
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	1.19681	4.58402	27.94960
	B->S (-R)	1.14691	4.50208	27.65720
	CI->S (-R)	1.11126	4.45172	27.64590
	CON->S (RR)	0.24493	1.58415	10.25090

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-F)	0.73467	2.23964	14.37590
	B->S (-F)	0.81379	2.24019	14.16150
	CI->S (-F)	0.72034	2.23642	14.65470
	CON->S (FF)	0.36900	1.14306	8.07778
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.68920	2.00694	11.66440
	B->S (-F)	0.70664	1.93674	11.61920
	CI->S (-F)	0.67520	2.00226	11.96930
	CON->S (FF)	0.35034	1.16043	7.89868

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00232	0.00227	0.00219
	B	0.00275	0.00282	0.00276
	CI	0.00295	0.00301	0.00297
sky130_osu_sc_15T_ls__addf_l	A	0.00177	0.00167	0.00157
	B	0.00221	0.00220	0.00208
	CI	0.00240	0.00242	0.00234

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00829	0.00828	0.00823
	B	0.00812	0.00816	0.00811
	CI	0.00714	0.00729	0.00723
sky130_osu_sc_15T_ls__addf_l	A	0.00776	0.00773	0.00767
	B	0.00758	0.00761	0.00754
	CI	0.00660	0.00672	0.00666

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00829	0.00827	0.00823
	B	0.00811	0.00815	0.00809
	CI	0.00713	0.00726	0.00722
sky130_osu_sc_15T_ls__addf_l	A	0.00777	0.00773	0.00768
	B	0.00759	0.00760	0.00754
	CI	0.00660	0.00671	0.00667

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00230	0.00226	0.00214
	B	0.00273	0.00277	0.00260
	CI	0.00294	0.00300	0.00291
sky130_osu_sc_15T_ls__addf_l	A	0.00174	0.00167	0.00147
	B	0.00219	0.00218	0.00196
	CI	0.00239	0.00241	0.00227

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00830	0.00829	0.00825
	B	0.00812	0.00817	0.00809
	CI	0.00714	0.00729	0.00725
sky130_osu_sc_15T_ls__addf_l	A	0.00777	0.00774	0.00770
	B	0.00759	0.00762	0.00756
	CI	0.00661	0.00673	0.00668

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01705	0.01715	0.01706
	B	0.01558	0.01544	0.01517
	CI	0.01375	0.01378	0.01372
sky130_osu_sc_15T_ls__addf_l	A	0.01626	0.01626	0.01615
	B	0.01482	0.01458	0.01431
	CI	0.01300	0.01294	0.01284

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__addh_1	23.19900
sky130_osu_sc_15T_ls__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_ls__addh_1	0.00734	0.00801	0.46199	0.20415	0.46661
sky130_osu_sc_15T_ls__addh_l	0.00734	0.00801	0.27905	0.20621	0.28059

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00028	0.00033
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00045	0.00052

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CO (RR)	0.26361	1.41832	10.15060
	B->CO (RR)	0.26818	1.41243	10.30240
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.29302	1.61508	10.21290
	B->CO (RR)	0.29784	1.61185	10.37580

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CO (FF)	0.31098	1.06595	8.11593
	B->CO (FF)	0.32761	1.08703	8.18122
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.29991	1.03553	7.58763
	B->CO (FF)	0.31639	1.05169	7.65458

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CON (RR)	B	0.39054	1.21509	6.22453
	A->CON (FR)	!B	0.41109	1.91046	13.81760
	B->CON (RR)	A	0.39556	1.20797	6.36646
	B->CON (FR)	!A	0.47359	2.04327	14.08230
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.35822	1.18159	6.15269
	A->CON (FR)	!B	0.37481	1.88002	13.85610
	B->CON (RR)	A	0.36308	1.17670	6.30462
	B->CON (FR)	!A	0.43727	2.01264	14.12540

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CON (FF)	B	0.39562	1.13759	7.70513
	A->CON (RF)	!B	0.09520	0.72652	6.55596
	B->CON (FF)	A	0.40760	1.16602	7.84888
	B->CON (RF)	!A	0.10816	0.73260	6.46867
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.36336	1.10569	7.60977
	A->CON (RF)	!B	0.08873	0.72186	6.56957
	B->CON (FF)	A	0.37505	1.12943	7.75947
	B->CON (RF)	!A	0.10182	0.72762	6.48233

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (RR)	!B	0.27033	2.30538	20.52890
	A->S (FR)	B	0.57408	2.69298	21.27540
	B->S (RR)	!A	0.28192	2.27286	20.11080
	B->S (FR)	A	0.58892	2.75948	21.77420
	CON->S (FR)	-	0.10021	1.38665	13.88950
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.29148	2.26784	17.48730
	A->S (FR)	B	0.56998	2.63884	18.18510
	B->S (RR)	!A	0.30385	2.25027	17.23820
	B->S (FR)	A	0.58408	2.68672	18.51420
	CON->S (FR)	-	0.13446	1.60274	14.08470

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (FF)	!B	0.62274	4.22156	36.09540
	A->S (RF)	B	0.52486	2.50454	18.19790
	B->S (FF)	!A	0.68540	4.35488	36.40060
	B->S (RF)	A	0.52961	2.49765	18.34270
	CON->S (RF)	-	0.03604	0.67060	7.36129
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.60058	3.54273	25.88190
	A->S (RF)	B	0.50175	2.17124	13.13980
	B->S (FF)	!A	0.66332	3.67167	26.16080
	B->S (RF)	A	0.50679	2.16669	13.29660
	CON->S (RF)	-	0.04303	0.71724	7.38171

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00378	0.00366	0.00351
	B	0.00000	0.00000	0.00000
	B	0.00353	0.00342	0.00327
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00325	0.00310	0.00296
	B	0.00000	0.00000	0.00000
	B	0.00301	0.00285	0.00273

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00582	0.00568	0.00531
	B	0.00000	0.00000	0.00000
	B	0.00606	0.00607	0.00573
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00530	0.00515	0.00485
	B	0.00000	0.00000	0.00000
	B	0.00554	0.00552	0.00526

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00378	0.00365	0.00354
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00511	0.00501	0.00503
	B	A	0.00000	0.00000	0.00000
	B	A	0.00353	0.00341	0.00329
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00552	0.00548	0.00545
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00325	0.00309	0.00295
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00474	0.00463	0.00466
	B	A	0.00000	0.00000	0.00000
	B	A	0.00300	0.00285	0.00270
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00515	0.00509	0.00506

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00581	0.00571	0.00555
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00090	0.00091	0.00078
	B	A	0.00000	0.00000	0.00000
	B	A	0.00606	0.00607	0.00597
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00139	0.00134	0.00126
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00529	0.00516	0.00492
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00043	0.00043	0.00027
	B	A	0.00000	0.00000	0.00000
	B	A	0.00554	0.00552	0.00534
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00092	0.00086	0.00070

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00582	0.00569	0.00557
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00091	0.00094	0.00090
	B	A	0.00000	0.00000	0.00000
	B	A	0.00606	0.00608	0.00601
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00140	0.00136	0.00132
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00531	0.00516	0.00506
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00044	0.00044	0.00034
	B	A	0.00000	0.00000	0.00000
	B	A	0.00555	0.00552	0.00546
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00093	0.00087	0.00080

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00378	0.00367	0.00352
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00511	0.00513	0.00507
	B	A	0.00000	0.00000	0.00000
	B	A	0.00353	0.00341	0.00326
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00552	0.00551	0.00549
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00325	0.00309	0.00297
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00474	0.00472	0.00468
	B	A	0.00000	0.00000	0.00000
	B	A	0.00300	0.00284	0.00272
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00515	0.00510	0.00505

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__and2_1	10.37850
sky130_osu_sc_15T_ls__and2_2	12.82050
sky130_osu_sc_15T_ls__and2_4	17.70450
sky130_osu_sc_15T_ls__and2_6	22.58850
sky130_osu_sc_15T_ls__and2_8	27.47250
sky130_osu_sc_15T_ls__and2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__and2_1	0.00393	0.00400	0.46457
sky130_osu_sc_15T_ls__and2_2	0.00393	0.00400	0.92624
sky130_osu_sc_15T_ls__and2_4	0.00393	0.00400	1.81327
sky130_osu_sc_15T_ls__and2_6	0.00396	0.00400	2.67258
sky130_osu_sc_15T_ls__and2_8	0.00393	0.00401	3.47448
sky130_osu_sc_15T_ls__and2_l	0.00295	0.00304	0.27229

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00012	0.00016
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00018	0.00021
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00029	0.00031
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00041	0.00043
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00052	0.00056
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00029	0.00044

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__and2_1	A->Y (RR)	0.20468	1.32676	9.75573
	B->Y (RR)	0.21221	1.33117	9.97581
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.22510	1.19840	10.08460
	B->Y (RR)	0.23247	1.19525	10.24820
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.30812	1.18423	10.62380
	B->Y (RR)	0.31565	1.17532	10.72780
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.39200	1.22492	10.97000
	B->Y (RR)	0.39933	1.21605	11.03060
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.47433	1.28615	11.23660
	B->Y (RR)	0.48181	1.27929	11.25220
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.27385	1.60302	10.25750
	B->Y (RR)	0.28266	1.60352	10.45430

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__and2_1	**A->Y (FF)**	0.22626	0.96024	7.66625
	B->Y (FF)	0.24435	0.98018	7.76985
sky130_osu_sc_15T_ls__and2_2	**A->Y (FF)**	0.28682	0.99116	8.01219
	B->Y (FF)	0.30533	1.00983	8.08913
sky130_osu_sc_15T_ls__and2_4	**A->Y (FF)**	0.42673	1.12930	8.53264
	B->Y (FF)	0.44439	1.14895	8.59368
sky130_osu_sc_15T_ls__and2_6	**A->Y (FF)**	0.56923	1.28238	8.91411
	B->Y (FF)	0.58579	1.30035	8.95761
sky130_osu_sc_15T_ls__and2_8	**A->Y (FF)**	0.70537	1.42770	9.18430
	B->Y (FF)	0.72147	1.44772	9.22240
sky130_osu_sc_15T_ls__and2_l	**A->Y (FF)**	0.28464	1.05516	7.80570
	B->Y (FF)	0.30960	1.08062	7.91736

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00308	0.00282	0.00267
	B	0.00000	0.00000	0.00000
	B	0.00313	0.00288	0.00304
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00581	0.00571	0.00558
	B	0.00000	0.00000	0.00000
	B	0.00584	0.00580	0.00566
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01179	0.01200	0.01205
	B	0.00000	0.00000	0.00000
	B	0.01185	0.01213	0.01213
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01777	0.01819	0.01862
	B	0.00000	0.00000	0.00000
	B	0.01783	0.01835	0.01873
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02369	0.02449	0.02490
	B	0.00000	0.00000	0.00000
	B	0.02375	0.02472	0.02505
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00220	0.00204	0.00192
	B	0.00000	0.00000	0.00000
	B	0.00226	0.00209	0.00198

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00719	0.00704	0.00695
	B	0.00000	0.00000	0.00000
	B	0.00803	0.00788	0.00779
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00909	0.00929	0.00919
	B	0.00000	0.00000	0.00000
	B	0.00994	0.01010	0.01003
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01375	0.01461	0.01462
	B	0.00000	0.00000	0.00000
	B	0.01460	0.01541	0.01542
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01850	0.01994	0.02019
	B	0.00000	0.00000	0.00000
	B	0.01933	0.02068	0.02092
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02304	0.02497	0.02555
	B	0.00000	0.00000	0.00000
	B	0.02387	0.02571	0.02623
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00541	0.00529	0.00518
	B	0.00000	0.00000	0.00000
	B	0.00599	0.00585	0.00576

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00250	-0.00251	-0.00253
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00251	-0.00253	-0.00253
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00250	-0.00252	-0.00253
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00251	-0.00254	-0.00255
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00250	-0.00252	-0.00253
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00176	-0.00177	-0.00178

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00252	0.00255	0.00254
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00252	0.00255	0.00253
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00252	0.00254	0.00253
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00254	0.00256	0.00255
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00252	0.00254	0.00253
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00178	0.00180	0.00178

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00239	-0.00238
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00239	-0.00239
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00240	-0.00239
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00239	-0.00239
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00239	-0.00239
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00169	-0.00169	-0.00169

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00241	0.00239
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00240	0.00239
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00243	0.00239
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00242	0.00239
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00242	0.00239
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00169	0.00170	0.00169

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__aoi21_l	0.00361	0.00381	0.00373	0.19681

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00007	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi21_l	A0->Y (FR)	0.34184	1.95773	14.08170
	A1->Y (FR)	0.28972	1.86167	13.79710
	B0->Y (FR)	0.27740	1.84357	13.82360

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi21_l	A0->Y (RF)	0.07531	0.68064	6.16185
	A1->Y (RF)	0.06851	0.68853	6.33858
	B0->Y (RF)	0.05270	0.68191	6.65662

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00567	0.00558	0.00557
	A1	0.00000	0.00000	0.00000
	A1	0.00482	0.00470	0.00467
	B0	0.00478	0.00465	0.00461

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00071	0.00057	0.00046
	A1	0.00000	0.00000	0.00000
	A1	0.00072	0.00057	0.00046
	B0	-0.00050	-0.00050	-0.00059

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00208	-0.00214	-0.00213
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00220	-0.00221	-0.00220
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00219	-0.00221	-0.00220

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00213	0.00216	0.00213
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00220	0.00224	0.00221
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00220	0.00224	0.00221

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00205	-0.00210	-0.00210
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00216	-0.00217	-0.00216
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00234	-0.00235	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00208	0.00213	0.00210
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00216	0.00218	0.00217
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00236	0.00239	0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00128	-0.00128	-0.00127

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00139	0.00140	0.00131

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_15T_ls__aoi22_1	0.00360	0.00378	0.00399	0.00377	0.19977

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__aoi22_1	0.00000	0.00011	0.00013

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (FR)	0.42732	2.04852	14.20510
	A1->Y (FR)	0.38077	1.98371	14.09270
	B0->Y (FR)	0.29207	1.84229	13.79080
	B1->Y (FR)	0.33808	1.88150	13.92010

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (RF)	0.09362	0.70315	6.22124
	A1->Y (RF)	0.08669	0.70844	6.40309
	B0->Y (RF)	0.06089	0.67844	6.35104
	B1->Y (RF)	0.06710	0.66954	6.17314

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00695	0.00687	0.00683
	A1	0.00611	0.00598	0.00593
	B0	0.00515	0.00496	0.00489
	B1	0.00595	0.00580	0.00573

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00172	0.00160	0.00145
	A1	0.00174	0.00161	0.00146
	B0	-0.00024	-0.00025	-0.00033
	B1	-0.00024	-0.00023	-0.00032

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00209	-0.00215	-0.00213
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00219	-0.00221	-0.00220
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00219	-0.00221	-0.00220
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00219	-0.00221	-0.00220

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00211	0.00216	0.00213
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00220	0.00224	0.00221
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00220	0.00224	0.00221
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00220	0.00224	0.00221

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00205	-0.00212	-0.00209
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00215	-0.00218	-0.00216
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00233	-0.00235	-0.00236
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00233	-0.00235	-0.00236

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00208	0.00213	0.00209
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00216	0.00218	0.00217
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00236	0.00238	0.00237
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00236	0.00238	0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00127	-0.00129	-0.00128
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00127	-0.00128	-0.00128
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00242	-0.00245	-0.00245
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00242	-0.00245	-0.00245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00139	0.00140	0.00131
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00127	0.00129	0.00128
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00244	0.00249	0.00245
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00244	0.00249	0.00245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00129	-0.00130	-0.00129
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00128	-0.00129	-0.00128
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00224	-0.00226	-0.00225
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00224	-0.00225	-0.00225

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00140	0.00141	0.00132
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00128	0.00130	0.00128
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00225	0.00228	0.00225
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00225	0.00228	0.00225

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__buf_1	7.93650
sky130_osu_sc_15T_ls__buf_2	10.37850
sky130_osu_sc_15T_ls__buf_4	15.26250
sky130_osu_sc_15T_ls__buf_6	20.14650
sky130_osu_sc_15T_ls__buf_8	25.03050
sky130_osu_sc_15T_ls__buf_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__buf_1	0.00402	0.46051
sky130_osu_sc_15T_ls__buf_2	0.00406	0.92229
sky130_osu_sc_15T_ls__buf_4	0.00405	1.81323
sky130_osu_sc_15T_ls__buf_6	0.00093	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00406	3.54904
sky130_osu_sc_15T_ls__buf_l	0.00308	0.27604

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00010	0.00010
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00015	0.00016
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00026	0.00029
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00046	0.00053
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00024	0.00024

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__buf_1	A->Y (RR)	0.15459	1.27130	9.63895
sky130_osu_sc_15T_ls__buf_2	A->Y (RR)	0.16045	1.12696	9.95137
sky130_osu_sc_15T_ls__buf_4	A->Y (RR)	0.21192	1.08172	10.42980
sky130_osu_sc_15T_ls__buf_8	A->Y (RR)	0.31703	1.12259	11.05180
sky130_osu_sc_15T_ls__buf_l	A->Y (RR)	0.20522	1.53497	10.19660

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__buf_1	A->Y (FF)	0.21382	0.94519	7.58287
sky130_osu_sc_15T_ls__buf_2	A->Y (FF)	0.27765	0.98790	8.06153
sky130_osu_sc_15T_ls__buf_4	A->Y (FF)	0.41906	1.12742	8.64262
sky130_osu_sc_15T_ls__buf_8	A->Y (FF)	0.69949	1.43138	9.36490
sky130_osu_sc_15T_ls__buf_l	A->Y (FF)	0.27458	1.04436	7.77771

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00288	0.00256	0.00240
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00559	0.00538	0.00590
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01166	0.01178	0.01170
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02361	0.02430	0.02465
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00215	0.00191	0.00177

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00704	0.00687	0.00676
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00897	0.00907	0.00901
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01367	0.01444	0.01443
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02301	0.02482	0.02535
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00536	0.00518	0.00510

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00046	-0.00046	-0.00046

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
	0.00046	0.00046	0.00046

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffr_1	53.11350
sky130_osu_sc_15T_ls__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_ls__dffr_1	0.00372	0.00379	0.01161	0.45021	0.44668
sky130_osu_sc_15T_ls__dffr_l	0.00372	0.00379	0.01161	0.27330	0.27156

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00069	0.00080
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00083	0.00094

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RR)	1.36473	3.05225	15.26710
	QN->Q (FR)	0.11208	1.49382	14.73180
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	1.35105	3.25126	15.08830
	QN->Q (FR)	0.14399	1.67100	14.51750

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RF)	1.05794	3.05385	18.64380
	QN->Q (RF)	0.04276	0.72552	7.97705
	RN->Q (FF)	0.73344	2.88245	21.37760
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	1.12897	3.45890	18.65250
	QN->Q (RF)	0.04859	0.76127	7.78369
	RN->Q (FF)	0.80686	3.28606	21.38300

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->QN (RR)	0.93871	2.09028	10.74830
	RN->QN (FR)	0.61219	1.91943	13.48980
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.97208	2.28867	10.79790
	RN->QN (FR)	0.64758	2.11836	13.53240

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	**CK->QN (RF)**	1.17211	1.84941	5.70291
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	1.12127	1.79956	5.45246

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.14825	-0.17962	-0.93032
	setup	CK (R)	1.05094	1.04286	1.87795
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.14857	-0.17933	-0.93065
	setup	CK (R)	1.05055	1.04298	1.85769

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.52017	-0.95648	-11.22570
	setup	CK (R)	0.59032	1.00190	11.31300
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.51853	-0.95577	-11.22510
	setup	CK (R)	0.58738	1.00155	11.31400

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.14825	-0.17962	-0.93032
	setup	CK (R)	1.05094	1.04286	1.87795
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.14857	-0.17933	-0.93065
	setup	CK (R)	1.05055	1.04298	1.85769

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.52017	-0.95648	-11.22570
	setup	CK (R)	0.59032	1.00190	11.31300
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.51853	-0.95577	-11.22510
	setup	CK (R)	0.58738	1.00155	11.31400

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.98475	0.98160	1.62148
	removal	CK (R)	-0.18813	-0.21773	-0.16545
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.98612	0.98819	1.61242
	removal	CK (R)	-0.18811	-0.21704	-0.16819

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.98475	0.98160	1.62148
	removal	CK (R)	-0.18813	-0.21773	-0.16545
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.98612	0.98819	1.61242
	removal	CK (R)	-0.18811	-0.21704	-0.16819

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	RN ()	0.46432	0.83459	13.33370
	min_pulse_width	RN ()	0.46115	0.83459	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.47020	0.82809	13.33370
	min_pulse_width	RN ()	0.46393	0.82809	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_15T_ls__dffr_1	min_pulse_width	CK ()	0.63089	0.70239	13.33370
	min_pulse_width	CK ()	0.57453	0.56152	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.55785	0.63954	13.33370
	min_pulse_width	CK ()	0.55733	0.56152	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_15T_ls__dffr_1	min_pulse_width	CK ()	1.33134	1.38724	13.33370
	min_pulse_width	CK ()	0.48824	0.86060	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	1.33016	1.39157	13.33370
	min_pulse_width	CK ()	0.48497	0.86060	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00678	0.00623	0.00259
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00592	0.00544	0.00386

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00781	0.00747	0.00596
	RN	-0.00100	-0.02639	-0.23339
	RN	0.01746	0.01724	0.01555
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00691	0.00663	0.00595
	RN	-0.00100	-0.01956	-0.14168
	RN	0.01655	0.01639	0.01553

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00781	0.00747	0.00597
	RN	-0.00100	-0.02627	-0.23156
	RN	0.01746	0.01724	0.01556
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00692	0.00664	0.00594
	RN	-0.00100	-0.01949	-0.14078
	RN	0.01656	0.01639	0.01554

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00676	0.00620	0.00231
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00589	0.00542	0.00363

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00206	-0.00213	-0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00768	0.00743	0.00717
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00319	0.00297	0.00276
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00206	-0.00213	-0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00768	0.00743	0.00717
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00319	0.00297	0.00276

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00210	0.00214	0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01281	0.01264	0.01246
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00609	0.00592	0.00587
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00210	0.00214	0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01281	0.01265	0.01246
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00609	0.00592	0.00587

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00265	0.00235	0.00216
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00753	0.00709	0.00676
sky130_osu_sc_15T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00265	0.00235	0.00216
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00753	0.00709	0.00676

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00644	0.00617	0.00611
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01330	0.01298	0.01270
sky130_osu_sc_15T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00644	0.00616	0.00611
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01329	0.01298	0.01270

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00043	-0.00079	-0.00104
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00385	0.00328	0.00269
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00060	-0.00099	-0.00124
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00043	-0.00079	-0.00104
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00385	0.00328	0.00269
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00060	-0.00099	-0.00124

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01044	0.01015	0.00999
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02078	0.02042	0.01974
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01590	0.01571	0.01535
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02080	0.02025	0.01982
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01128	0.01094	0.01086
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01044	0.01015	0.00999
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02078	0.02041	0.01974
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01590	0.01571	0.01535
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02080	0.02025	0.01982
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01128	0.01094	0.01086

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffsr_1	57.99750
sky130_osu_sc_15T_ls__dffsr_l	57.99750

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_15T_ls__dffsr_1	0.00368	0.00380	0.00823	0.01186	0.46468	0.46682
sky130_osu_sc_15T_ls__dffsr_l	0.00368	0.00380	0.00822	0.01186	0.27354	0.27369

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00057	0.00067
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00071	0.00080

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RR)	1.15038	2.80308	15.17580
	QN->Q (FR)	0.10184	1.41916	14.20800
	RN->Q (RR)	0.95328	2.62111	15.13250
	SN->Q (FR)	0.94047	2.74317	18.46590
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	1.17830	3.06805	15.02840
	QN->Q (FR)	0.14397	1.65581	14.51280
	RN->Q (RR)	0.98382	2.88709	14.98950
	SN->Q (FR)	0.97150	3.00991	18.28490

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RF)	1.13915	3.11714	18.64830
	QN->Q (RF)	0.04235	0.73266	8.07183
	RN->Q (FF)	0.78177	2.89986	21.42610
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	1.22806	3.56825	18.77420
	QN->Q (RF)	0.04847	0.76056	7.78207
	RN->Q (FF)	0.87228	3.35051	21.54870

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RR)	1.02240	2.16593	10.80380
	RN->QN (FR)	0.66537	1.95027	13.59010
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	1.06875	2.40030	10.96460
	RN->QN (FR)	0.71297	2.18508	13.74030

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RF)	0.98600	1.64598	5.69768
	RN->QN (RF)	0.78688	1.46965	5.65655
	SN->QN (FF)	0.77441	1.59177	8.98414
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.96747	1.63192	5.42712
	RN->QN (RF)	0.76892	1.45642	5.38561
	SN->QN (FF)	0.75297	1.57404	8.68798

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.14988	-0.17945	-1.02810
	setup	CK (R)	0.86334	0.84784	1.67149
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15171	-0.17944	-1.02388
	setup	CK (R)	0.86102	0.84649	1.66623

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.58088	-1.01016	-11.41060
	setup	CK (R)	0.66285	1.04914	11.46300
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.58258	-1.00782	-11.40940
	setup	CK (R)	0.65561	1.04753	11.46340

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.14988	-0.17945	-1.02810
	setup	CK (R)	0.86334	0.84784	1.67149
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15171	-0.17944	-1.02388
	setup	CK (R)	0.86102	0.84649	1.66623

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.58088	-1.01016	-11.41060
	setup	CK (R)	0.66285	1.04914	11.46300
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.58258	-1.00782	-11.40940
	setup	CK (R)	0.65561	1.04753	11.46340

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.73866	0.73067	1.34607
	removal	CK (R)	-0.07696	-0.09259	-0.08943
	hold	SN (R)	-0.76834	-1.06934	-8.75959
	setup	SN (R)	0.79666	1.12591	9.77268
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.73792	0.72810	1.33958
	removal	CK (R)	-0.07625	-0.09406	-0.09901
	hold	SN (R)	-0.71611	-1.01976	-8.68020
	setup	SN (R)	0.79409	1.10403	9.70783

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.73866	0.73067	1.34607
	removal	CK (R)	-0.07696	-0.09259	-0.08943
	hold	SN (R)	-0.77842	-1.07189	-8.75959
	hold	SN (R)	-0.76834	-1.06934	-8.76779
	setup	SN (R)	0.79666	1.11882	9.75177
	setup	SN (R)	0.78643	1.12591	9.77268
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.73792	0.72810	1.33958
	removal	CK (R)	-0.07625	-0.09406	-0.09901
	hold	SN (R)	-0.76399	-1.04544	-8.69034
	hold	SN (R)	-0.71611	-1.01976	-8.68020
	setup	SN (R)	0.79409	1.09117	9.67358
	setup	SN (R)	0.73817	1.10403	9.70783

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	RN ()	0.53453	0.87794	13.33370
	min_pulse_width	RN ()	0.54120	0.87794	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.56704	0.87144	13.33370
	min_pulse_width	RN ()	0.56042	0.87144	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.07526	0.09569	0.75177
	removal	CK (R)	-0.01597	-0.05236	-0.56276
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.06880	0.09518	0.74229
	removal	CK (R)	-0.01597	-0.05236	-0.56571

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.07526	0.09569	0.75177
	removal	CK (R)	-0.01597	-0.05236	-0.56276
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.06880	0.09518	0.74229
	removal	CK (R)	-0.01597	-0.05236	-0.56571

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	SN ()	0.77465	1.15751	13.33370
	min_pulse_width	SN ()	0.77307	1.16184	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.76894	1.12934	13.33370
	min_pulse_width	SN ()	0.72530	1.14234	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_15T_ls__dffsr_1	min_pulse_width	CK ()	0.48065	0.57019	13.33370
	min_pulse_width	CK ()	0.59620	0.56152	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.45032	0.56152	13.33370
	min_pulse_width	CK ()	0.58536	0.56152	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_15T_ls__dffsr_1	min_pulse_width	CK ()	1.14616	1.19652	13.33370
	min_pulse_width	CK ()	0.56302	0.90828	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	1.14180	1.19435	13.33370
	min_pulse_width	CK ()	0.55957	0.90828	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00822	0.00764	0.00362
	RN	0.01559	0.01513	0.01127
	SN	-0.00100	-0.02690	-0.24089
	SN	0.01678	0.01637	0.01270
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00743	0.00699	0.00538
	RN	0.01480	0.01446	0.01289
	SN	-0.00100	-0.01957	-0.14180
	SN	0.01599	0.01571	0.01425

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00875	0.00857	0.00761
	RN	-0.00100	-0.02690	-0.24089
	RN	0.01828	0.01813	0.01701
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00794	0.00773	0.00703
	RN	-0.00100	-0.01957	-0.14180
	RN	0.01746	0.01727	0.01641

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00876	0.00858	0.00761
	RN	-0.00100	-0.02697	-0.24200
	RN	0.01828	0.01814	0.01700
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00795	0.00775	0.00703
	RN	-0.00100	-0.01958	-0.14188
	RN	0.01746	0.01728	0.01639

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00820	0.00762	0.00347
	RN	0.01556	0.01509	0.01102
	SN	-0.00100	-0.02697	-0.24199
	SN	0.01675	0.01634	0.01241
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00741	0.00696	0.00515
	RN	0.01477	0.01443	0.01266
	SN	-0.00100	-0.01958	-0.14187
	SN	0.01596	0.01568	0.01399

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00206	-0.00213	-0.00212
	(!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)	0.00985	0.00963	0.00940
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00368	0.00347	0.00326
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00367	0.00345	0.00325
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00372	0.00351	0.00330
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00206	-0.00213	-0.00212
	(!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)	0.00985	0.00963	0.00940
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00368	0.00347	0.00326
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00367	0.00345	0.00325
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00372	0.00351	0.00330

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00211	0.00214	0.00212
	(!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)	0.01449	0.01433	0.01401
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00658	0.00643	0.00639
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00660	0.00645	0.00641
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00655	0.00639	0.00635
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00211	0.00214	0.00212
	(!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)	0.01448	0.01433	0.01400
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00657	0.00642	0.00638
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00659	0.00644	0.00640
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00654	0.00639	0.00635

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.00273	0.00244	0.00216
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00932	0.00888	0.00844
sky130_osu_sc_15T_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)	0.00273	0.00244	0.00216
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00932	0.00888	0.00845

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.00709	0.00681	0.00675
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01423	0.01389	0.01355
sky130_osu_sc_15T_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)	0.00708	0.00680	0.00675
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01422	0.01388	0.01354

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	-0.00496	-0.00500	-0.00501
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00524	-0.00527	-0.00528
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00499	-0.00506	-0.00503
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00260	0.00236	0.00202
sky130_osu_sc_15T_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)	-0.00496	-0.00501	-0.00501
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00523	-0.00526	-0.00527
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00498	-0.00505	-0.00503
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00261	0.00237	0.00203

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.00501	0.00505	0.00502
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00526	0.00532	0.00528
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00501	0.00507	0.00503
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01061	0.01038	0.01036
sky130_osu_sc_15T_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)	0.00501	0.00505	0.00502
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00524	0.00530	0.00527
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00500	0.00506	0.00503
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01060	0.01036	0.01035

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00048	-0.00079	-0.00105
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00448	0.00398	0.00338
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00443	0.00393	0.00334
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00046	-0.00087	-0.00111
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00322	0.00256	0.00211
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00043	-0.00079	-0.00105
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00447	0.00397	0.00337
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00442	0.00388	0.00333
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00046	-0.00087	-0.00111
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00322	0.00256	0.00211

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_15T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02308	0.02274	0.02204
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01047	0.01019	0.01003
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01625	0.01606	0.01571
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01630	0.01611	0.01575
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02243	0.02185	0.02126
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01117	0.01086	0.01076
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01377	0.01320	0.01296
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02308	0.02274	0.02204
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01047	0.01019	0.01003
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01625	0.01606	0.01571
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01630	0.01612	0.01575
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02242	0.02184	0.02125
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01117	0.01086	0.01076
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01376	0.01319	0.01295

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffs_1	48.22950
sky130_osu_sc_15T_ls__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_ls__dffs_1	0.00371	0.00661	0.01156	0.44058	0.44295
sky130_osu_sc_15T_ls__dffs_l	0.00371	0.00661	0.01154	0.27384	0.27195

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00070	0.00117
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00084	0.00131

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RR)	0.82029	2.43314	14.42770
	QN->Q (FR)	0.11243	1.47805	14.52380
	SN->Q (FR)	0.71996	2.49296	18.03800
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.84174	2.70168	14.57340
	QN->Q (FR)	0.14414	1.67119	14.50880
	SN->Q (FR)	0.73924	2.76082	18.13850

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RF)	1.17503	3.15033	18.41300
	QN->Q (RF)	0.04252	0.72374	7.90581
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	1.23757	3.57022	18.77300
	QN->Q (RF)	0.04837	0.75949	7.77592

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RR)	1.05190	2.20400	10.79180
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	1.07741	2.39768	10.90880

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RF)	0.66214	1.27920	5.11796
	SN->QN (FF)	0.55637	1.34307	8.73205
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.64375	1.27380	4.95751
	SN->QN (FF)	0.53598	1.33690	8.53002

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.11063	-0.14471	-0.88599
	setup	CK (R)	0.59274	0.57729	1.48317
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.11077	-0.14455	-0.88484
	setup	CK (R)	0.59068	0.57463	1.47535

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.53568	-0.97074	-11.28930
	setup	CK (R)	0.66854	1.02289	11.37680
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.53903	-0.97050	-11.28840
	setup	CK (R)	0.66707	1.02206	11.37630

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.11063	-0.14471	-0.88599
	setup	CK (R)	0.59274	0.57729	1.48317
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.11077	-0.14455	-0.88484
	setup	CK (R)	0.59068	0.57463	1.47535

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.53568	-0.97074	-11.28930
	setup	CK (R)	0.66854	1.02289	11.37680
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.53903	-0.97050	-11.28840
	setup	CK (R)	0.66707	1.02206	11.37630

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	recovery	CK (R)	0.13021	0.15848	1.28337
	removal	CK (R)	-0.04314	-0.09401	-1.04414
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.12697	0.15807	1.27540
	removal	CK (R)	-0.04314	-0.09401	-1.04312

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	recovery	CK (R)	0.13021	0.15848	1.28337
	removal	CK (R)	-0.04314	-0.09401	-1.04414
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.12697	0.15807	1.27540
	removal	CK (R)	-0.04314	-0.09401	-1.04312

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	SN ()	0.52784	1.05132	13.33370
	min_pulse_width	SN ()	0.53860	1.04481	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.51773	1.01881	13.33370
	min_pulse_width	SN ()	0.50531	1.02531	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_15T_ls__dffs_1	min_pulse_width	CK ()	0.27199	0.56152	13.33370
	min_pulse_width	CK ()	0.61354	0.56152	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.25311	0.56152	13.33370
	min_pulse_width	CK ()	0.59186	0.56152	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_15T_ls__dffs_1	min_pulse_width	CK ()	0.86929	0.92562	13.33370
	min_pulse_width	CK ()	0.57733	0.88227	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.86726	0.92345	13.33370
	min_pulse_width	CK ()	0.57063	0.88227	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00677	0.00618	0.00267
	SN	-0.00100	-0.02605	-0.22840
	SN	0.01447	0.01407	0.01060
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00589	0.00540	0.00386
	SN	-0.00100	-0.01958	-0.14196
	SN	0.01359	0.01330	0.01173

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00780	0.00750	0.00604
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00691	0.00666	0.00598

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00780	0.00750	0.00604
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00691	0.00666	0.00598

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00675	0.00616	0.00237
	SN	-0.00100	-0.02613	-0.22961
	SN	0.01445	0.01404	0.01025
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00587	0.00537	0.00361
	SN	-0.00100	-0.01950	-0.14097
	SN	0.01356	0.01327	0.01148

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00209	-0.00216	-0.00216
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00756	0.00731	0.00697
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00312	0.00291	0.00269
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00209	-0.00216	-0.00216
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00756	0.00731	0.00697
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00312	0.00291	0.00269

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00214	0.00217	0.00216
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01289	0.01272	0.01256
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00624	0.00608	0.00604
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00214	0.00217	0.00216
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01289	0.01272	0.01256
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00624	0.00608	0.00604

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00357	-0.00360	-0.00361
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00281	0.00262	0.00242
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00357	-0.00360	-0.00361
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00281	0.00262	0.00242

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00359	0.00363	0.00362
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00754	0.00730	0.00718
sky130_osu_sc_15T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00359	0.00363	0.00362
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00754	0.00730	0.00718

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00045	-0.00081	-0.00106
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00057	-0.00096	-0.00121
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00264	0.00196	0.00152
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00045	-0.00081	-0.00106
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00057	-0.00097	-0.00121
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00264	0.00196	0.00152

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02072	0.02036	0.01966
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01045	0.01017	0.01000
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02081	0.02019	0.01977
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01123	0.01092	0.01081
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01338	0.01281	0.01258
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02072	0.02036	0.01966
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01045	0.01017	0.01000
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02081	0.02019	0.01977
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01123	0.01092	0.01081
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01338	0.01281	0.01258

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dff_1	40.29300
sky130_osu_sc_15T_ls__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_ls__dff_1	0.00388	0.01145	0.46416	0.46766
sky130_osu_sc_15T_ls__dff_l	0.00388	0.01143	0.26272	0.26041

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00047	0.00049
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00061	0.00063

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RR)	0.61906	2.21410	14.52910
	QN->Q (FR)	0.10129	1.40665	14.17760
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.67052	2.51769	14.28300
	QN->Q (FR)	0.15512	1.73831	14.79770

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RF)	1.00579	2.97241	18.46070
	QN->Q (RF)	0.04220	0.73531	8.05740
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	1.11233	3.46030	18.52840
	QN->Q (RF)	0.04844	0.75262	7.67977

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RR)	0.89183	2.02709	10.65740
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.95095	2.28726	10.77720

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RF)	0.48042	1.07784	5.08523
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.47772	1.08061	4.74973

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	hold	CK (R)	-0.10557	-0.14108	-0.94628
	setup	CK (R)	0.39238	0.37671	1.36484
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.10908	-0.14148	-0.94991
	setup	CK (R)	0.38749	0.37028	1.35462

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	hold	CK (R)	-0.51603	-0.96953	-11.31610
	setup	CK (R)	0.59983	1.03378	11.44170
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.51936	-0.97122	-11.31760
	setup	CK (R)	0.59742	1.03240	11.44280

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	min_pulse_width	CK ()	0.20485	0.56152	13.33370
	min_pulse_width	CK ()	0.55313	0.56152	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.19856	0.56152	13.33370
	min_pulse_width	CK ()	0.54054	0.56152	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_15T_ls__dff_1	**min_pulse_width**	**CK ()**	0.67036	0.81942	13.33370
	min_pulse_width	**CK ()**	0.48919	0.88661	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.66901	0.82159	13.33370
	min_pulse_width	**CK ()**	0.48582	0.88661	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00719	0.00646	0.00265
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00642	0.00586	0.00434

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00793	0.00775	0.00680
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00713	0.00687	0.00590

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00793	0.00775	0.00680
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00714	0.00688	0.00591

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00717	0.00644	0.00242
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00639	0.00584	0.00412

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00205	-0.00212	-0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00726	0.00704	0.00674
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00205	-0.00212	-0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00726	0.00705	0.00674

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00210	0.00213	0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01350	0.01329	0.01309
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00210	0.00213	0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01351	0.01329	0.01309

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00044	-0.00080	-0.00105
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00055	-0.00094	-0.00120
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00044	-0.00080	-0.00105
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00055	-0.00093	-0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01039	0.01011	0.00994
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02039	0.02006	0.01941
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02125	0.02062	0.02017
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01117	0.01085	0.01075
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01039	0.01011	0.00994
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02040	0.02007	0.01941
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02125	0.02062	0.02017
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01117	0.01085	0.01075

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__inv_1	5.49450
sky130_osu_sc_15T_ls__inv_10	27.47250
sky130_osu_sc_15T_ls__inv_2	7.93650
sky130_osu_sc_15T_ls__inv_3	10.37850
sky130_osu_sc_15T_ls__inv_4	12.82050
sky130_osu_sc_15T_ls__inv_6	17.70450
sky130_osu_sc_15T_ls__inv_8	22.58850
sky130_osu_sc_15T_ls__inv_l	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__inv_1	0.00384	0.46005
sky130_osu_sc_15T_ls__inv_10	0.03535	4.41003
sky130_osu_sc_15T_ls__inv_2	0.00726	0.92334
sky130_osu_sc_15T_ls__inv_3	0.01080	1.34885
sky130_osu_sc_15T_ls__inv_4	0.01426	1.82052
sky130_osu_sc_15T_ls__inv_6	0.02136	2.71856
sky130_osu_sc_15T_ls__inv_8	0.02836	3.56663
sky130_osu_sc_15T_ls__inv_l	0.00284	0.26254

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00005	0.00006
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00052	0.00062
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00010	0.00012
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00015	0.00019
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00021	0.00025
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00031	0.00037
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00041	0.00049
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00012	0.00020

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__inv_1	**A->Y (FR)**	0.09941	1.37708	13.78810
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.10142	0.91538	13.81560
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.07265	1.16863	13.77930
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.07609	1.09325	13.78910
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.07318	1.03186	13.81610
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.07841	0.97249	13.85920
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.08854	0.93514	13.79490
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.14319	1.60673	13.99090

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__inv_1	**A->Y (RF)**	0.03768	0.67802	7.40485
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.05079	0.52971	7.49000
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.03076	0.61790	7.42233
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.03306	0.59563	7.49193
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.03257	0.57486	7.49159
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.03810	0.55323	7.52363
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.04411	0.53826	7.50651
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.04459	0.71222	7.26460

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00364	0.00356	0.00357
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03111	0.03099	0.03145
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00644	0.00633	0.00643
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00991	0.00972	0.00988
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01270	0.01256	0.01273
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01890	0.01867	0.01904
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02503	0.02477	0.02528
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00271	0.00263	0.00261

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00058	-0.00062	-0.00065
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01041	-0.01024	-0.00967
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00191	-0.00200	-0.00199
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00248	-0.00262	-0.00257
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00392	-0.00400	-0.00390
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00594	-0.00604	-0.00582
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00810	-0.00816	-0.00773
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00037	-0.00040	-0.00044

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_15T_ls__mux2_1	0.30770	0.30965	0.00785	0.43090

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00018	0.00019

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__mux2_1	A0->Y (RR)	-	0.05048	0.84182	9.13441
	A1->Y (RR)	-	0.05966	0.84907	9.17212
	S0->Y (RR)	(!A0 * A1)	0.11870	0.99686	8.74125
	S0->Y (FR)	(A0 * !A1)	0.11302	1.18839	10.45510

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__mux2_1	A0->Y (FF)	-	0.03724	0.64786	7.14309
	A1->Y (FF)	-	0.03220	0.64355	7.12431
	S0->Y (FF)	(!A0 * A1)	0.22390	0.93370	7.59808
	S0->Y (RF)	(A0 * !A1)	0.04191	0.67377	6.95902

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00368	-0.00368	-0.00368
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00256	-0.00256	-0.00256
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00471	0.00444	0.00436
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00227	-0.00262	-0.00280

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00368	0.00368	0.00368
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00256	0.00256	0.00256
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00084	0.00050	0.00031
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00957	0.00930	0.00921

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00100	-0.00100	-0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00100	0.00100	0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00120	-0.00120	-0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00120	0.00120	0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00072	-0.00110	-0.00126
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00071	-0.00109	-0.00125

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00733	0.00704	0.00697
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00695	0.00667	0.00660

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__nand2_1	7.93650
sky130_osu_sc_15T_ls__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nand2_1	0.00384	0.00379	0.45706
sky130_osu_sc_15T_ls__nand2_l	0.00284	0.00282	0.26268

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00007	0.00012
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00013	0.00040

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nand2_1	A->Y (FR)	0.10563	1.36992	13.78520
	B->Y (FR)	0.12410	1.39099	13.69270
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.14886	1.62978	14.01600
	B->Y (FR)	0.17271	1.63300	14.02350

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nand2_1	A->Y (RF)	0.05991	0.83981	8.70810
	B->Y (RF)	0.06671	0.83332	8.49800
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.07733	0.93768	8.70354
	B->Y (RF)	0.08403	0.93202	8.47057

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00387	0.00377	0.00378
	B	0.00000	0.00000	0.00000
	B	0.00471	0.00460	0.00461
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00283	0.00277	0.00273
	B	0.00000	0.00000	0.00000
	B	0.00339	0.00324	0.00330

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00029	-0.00035	-0.00039
	B	0.00000	0.00000	0.00000
	B	-0.00027	-0.00033	-0.00035
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00021	-0.00026	-0.00028
	B	0.00000	0.00000	0.00000
	B	-0.00020	-0.00024	-0.00026

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00244	-0.00247	-0.00247
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00169	-0.00169	-0.00170

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00246	0.00250	0.00248
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00170	0.00172	0.00171

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00228	-0.00228	-0.00228
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00157	-0.00158	-0.00158

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00228	0.00230	0.00229
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00158	0.00158	0.00158

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__nor2_1	7.93650
sky130_osu_sc_15T_ls__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nor2_1	0.00376	0.00410	0.20982
sky130_osu_sc_15T_ls__nor2_l	0.00271	0.00307	0.12396

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00006	0.00008
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00013	0.00020

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nor2_1	A->Y (FR)	0.25978	1.85851	14.13380
	B->Y (FR)	0.22402	1.77670	13.88330
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.34530	2.18770	14.23120
	B->Y (FR)	0.31825	2.07875	14.11910

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nor2_1	A->Y (RF)	0.04407	0.59384	5.74379
	B->Y (RF)	0.03927	0.58509	5.72410
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.05033	0.62789	5.79506
	B->Y (RF)	0.04626	0.62158	5.77778

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00474	0.00464	0.00463
	B	0.00000	0.00000	0.00000
	B	0.00397	0.00383	0.00380
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00333	0.00326	0.00324
	B	0.00000	0.00000	0.00000
	B	0.00291	0.00264	0.00275

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00023	0.00009	0.00000
	B	0.00000	0.00000	0.00000
	B	-0.00050	-0.00052	-0.00061
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00013	0.00005	-0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00030	-0.00030	-0.00038

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00207	-0.00214	-0.00213
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00137	-0.00142	-0.00141

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00212	0.00214	0.00213
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00141	0.00142	0.00141

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00128	-0.00129	-0.00128
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00086	-0.00086	-0.00085

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00130	0.00131	0.00129
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00086	0.00087	0.00086

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__oai21_l	0.00382	0.00384	0.00326	0.20627

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00013	0.00026

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai21_l	A0->Y (FR)	0.30916	1.84623	13.95330
	A1->Y (FR)	0.35589	1.96336	14.20870
	B0->Y (FR)	0.18013	1.46230	12.23230

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai21_l	A0->Y (RF)	0.07826	0.70494	6.34736
	A1->Y (RF)	0.08533	0.70235	6.32245
	B0->Y (RF)	0.06463	0.71208	6.66408

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00515	0.00492	0.00497
	A1	0.00000	0.00000	0.00000
	A1	0.00596	0.00586	0.00582
	B0	0.00404	0.00382	0.00384

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00022	0.00020	0.00012
	A1	0.00000	0.00000	0.00000
	A1	0.00098	0.00084	0.00077
	B0	0.00150	0.00145	0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00129	-0.00130	-0.00129
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00209	-0.00215	-0.00214
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00221	-0.00222	-0.00222

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00131	0.00131	0.00129
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00214	0.00215	0.00214
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00221	0.00225	0.00222

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00202	-0.00208	-0.00208
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00207	-0.00213	-0.00212
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00218	-0.00219	-0.00219

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00207	0.00209	0.00208
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00212	0.00214	0.00212
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00218	0.00221	0.00219

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00173	-0.00174	-0.00178

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00178	0.00181	0.00178

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__oai22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_1	0.00362	0.00391	0.00406	0.00390	0.20726

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00011	0.00013

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai22_l	A0->Y (FR)	0.39390	1.99355	14.18930
	A1->Y (FR)	0.35429	1.90393	13.93990
	B0->Y (FR)	0.24523	1.79013	13.82000
	B1->Y (FR)	0.29003	1.87960	14.07430

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai22_l	A0->Y (RF)	0.11053	0.74769	6.42282
	A1->Y (RF)	0.09492	0.72751	6.38775
	B0->Y (RF)	0.08085	0.73240	6.70585
	B1->Y (RF)	0.09750	0.75353	6.76700

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00750	0.00739	0.00737
	A1	0.00666	0.00648	0.00646
	B0	0.00502	0.00487	0.00482
	B1	0.00590	0.00576	0.00573

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00140	0.00127	0.00117
	A1	0.00069	0.00068	0.00056
	B0	0.00070	0.00068	0.00056
	B1	0.00142	0.00129	0.00118

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00207	-0.00214	-0.00212
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00207	-0.00214	-0.00212
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00207	-0.00215	-0.00213
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00219	-0.00220	-0.00219

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00212	0.00214	0.00212
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00212	0.00214	0.00212
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00213	0.00215	0.00213
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00219	0.00221	0.00220

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00128	-0.00128	-0.00127
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00127	-0.00128	-0.00127
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00205	-0.00211	-0.00210
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00217	-0.00219	-0.00218

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00129	0.00130	0.00128
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00129	0.00130	0.00128
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00210	0.00211	0.00210
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00217	0.00219	0.00218

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00126	-0.00127	-0.00126
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00126	-0.00128	-0.00126
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00231	-0.00237	-0.00236
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00236	-0.00238	-0.00243

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00128	0.00129	0.00127
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00128	0.00129	0.00127
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00236	0.00237	0.00236
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00243	0.00247	0.00244

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00203	-0.00210	-0.00208
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00202	-0.00210	-0.00208
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00236	-0.00245	-0.00242
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00241	-0.00243	-0.00248

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00208	0.00210	0.00208
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00208	0.00210	0.00208
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00243	0.00245	0.00242
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00248	0.00250	0.00249

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__or2_1	10.37850
sky130_osu_sc_15T_ls__or2_2	12.82050
sky130_osu_sc_15T_ls__or2_4	17.70450
sky130_osu_sc_15T_ls__or2_8	27.47250
sky130_osu_sc_15T_ls__or2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__or2_1	0.00409	0.00393	0.45967
sky130_osu_sc_15T_ls__or2_2	0.00410	0.00393	0.92163
sky130_osu_sc_15T_ls__or2_4	0.00410	0.00393	1.80453
sky130_osu_sc_15T_ls__or2_8	0.00408	0.00393	3.54416
sky130_osu_sc_15T_ls__or2_l	0.00310	0.00290	0.26034

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00011	0.00014
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00016	0.00021
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00025	0.00033
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00044	0.00058
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00021	0.00028

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (RR)	0.16926	1.30198	9.80607
	B->Y (RR)	0.16124	1.28323	9.66677
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.17315	1.15115	10.06850
	B->Y (RR)	0.16370	1.13463	9.97420
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.22495	1.10141	10.51380
	B->Y (RR)	0.21510	1.08826	10.43040
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.32963	1.13890	11.15630
	B->Y (RR)	0.31971	1.12926	11.11240
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.22220	1.57273	10.24720
	B->Y (RR)	0.21308	1.55435	10.12060

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (FF)	0.48554	1.25708	8.39969
	B->Y (FF)	0.42902	1.16478	7.99177
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.62784	1.39354	8.79334
	B->Y (FF)	0.57155	1.29151	8.46661
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.93756	1.72715	9.44559
	B->Y (FF)	0.88119	1.63299	9.21213
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	1.55028	2.40551	10.41870
	B->Y (FF)	1.49401	2.30524	10.24230
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.62309	1.41317	8.31657
	B->Y (FF)	0.55583	1.31558	8.05491

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00369	0.00340	0.00316
	B	0.00000	0.00000	0.00000
	B	0.00299	0.00275	0.00254
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00645	0.00631	0.00606
	B	0.00000	0.00000	0.00000
	B	0.00569	0.00569	0.00613
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01252	0.01265	0.01255
	B	0.00000	0.00000	0.00000
	B	0.01173	0.01212	0.01209
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02451	0.02505	0.02544
	B	0.00000	0.00000	0.00000
	B	0.02374	0.02459	0.02518
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00268	0.00249	0.00231
	B	0.00000	0.00000	0.00000
	B	0.00220	0.00206	0.00188

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00815	0.00808	0.00802
	B	0.00000	0.00000	0.00000
	B	0.00712	0.00709	0.00700
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01002	0.01030	0.01028
	B	0.00000	0.00000	0.00000
	B	0.00900	0.00927	0.00923
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01464	0.01546	0.01569
	B	0.00000	0.00000	0.00000
	B	0.01360	0.01444	0.01461
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02378	0.02534	0.02655
	B	0.00000	0.00000	0.00000
	B	0.02278	0.02432	0.02540
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00602	0.00589	0.00584
	B	0.00000	0.00000	0.00000
	B	0.00530	0.00524	0.00517

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00208	-0.00216	-0.00214
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00208	-0.00216	-0.00214
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00208	-0.00216	-0.00214
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00208	-0.00216	-0.00214
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00139	-0.00143	-0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00213	0.00216	0.00214
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00213	0.00216	0.00214
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00214	0.00216	0.00214
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00214	0.00216	0.00214
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00143	0.00144	0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00129	-0.00129	-0.00129
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00129	-0.00129	-0.00129
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00129	-0.00129	-0.00129
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00129	-0.00129	-0.00129
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00087	-0.00087	-0.00087

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00131	0.00131	0.00129
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00131	0.00132	0.00129
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00131	0.00132	0.00129
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00131	0.00132	0.00130
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00089	0.00089	0.00087

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__tbufi_1	10.37850
sky130_osu_sc_15T_ls__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tbufi_1	0.00408	0.00521	0.21046
sky130_osu_sc_15T_ls__tbufi_l	0.00307	0.00393	0.12328

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00008	0.00012
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00015	0.00040

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (FR)	0.21133	1.76271	13.86320
	OE->Y (FR)	0.15371	0.65506	5.32907
	OE->Y (RR)	0.27665	1.69407	9.99002
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.30416	2.06173	14.07550
	OE->Y (FR)	0.19287	0.69433	5.58999
	OE->Y (RR)	0.35968	2.04970	10.45980

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (RF)	0.05704	0.68712	6.51484
	OE->Y (FF)	0.15497	0.65672	5.33273
	OE->Y (RF)	0.05665	0.67359	6.32460
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.07531	0.75902	6.63549
	OE->Y (FF)	0.19468	0.69677	5.59189
	OE->Y (RF)	0.07165	0.74140	6.40892

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00369	0.00354	0.00350
	OE	0.00000	0.00000	0.00000
	OE	0.00342	0.00305	0.00299
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00271	0.00243	0.00254
	OE	0.00000	0.00000	0.00000
	OE	0.00240	0.00213	0.00201

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00050	-0.00052	-0.00061
	OE	0.00000	0.00000	0.00000
	OE	0.00254	0.00219	0.00203
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00030	-0.00031	-0.00038
	OE	0.00000	0.00000	0.00000
	OE	0.00171	0.00146	0.00133

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00190	-0.00192	-0.00190
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00179	-0.00181	-0.00180
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00137	-0.00138	-0.00137
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00130	-0.00131	-0.00130

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00190	0.00192	0.00190
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00182	0.00183	0.00182
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00137	0.00138	0.00137
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00131	0.00132	0.00131

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00142	0.00107	0.00091
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00126	0.00089	0.00074
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00094	0.00069	0.00057
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00083	0.00057	0.00045

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00423	0.00387	0.00381
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00439	0.00407	0.00392
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00326	0.00300	0.00293
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00338	0.00314	0.00303

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__tnbufi_1	10.37850
sky130_osu_sc_15T_ls__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tnbufi_1	0.00408	0.00620	0.21047
sky130_osu_sc_15T_ls__tnbufi_l	0.00306	0.00443	0.12326

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00009	0.00010
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00020	0.00024

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tnbufi_1	A->Y (FR)	0.21311	1.76248	13.86300
	OE->Y (RR)	0.04420	0.34266	4.28404
	OE->Y (FR)	0.23251	1.83296	14.09620
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.30621	2.06080	14.07100
	OE->Y (RR)	0.04900	0.36650	4.28392
	OE->Y (FR)	0.31131	2.15541	14.15940

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tnbufi_1	A->Y (RF)	0.05590	0.68658	6.51455
	OE->Y (RF)	0.04377	0.34257	4.28398
	OE->Y (FF)	0.16683	0.90877	6.86065
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.07339	0.75821	6.63457
	OE->Y (RF)	0.04841	0.36700	4.28390
	OE->Y (FF)	0.21790	1.00980	7.09301

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00380	0.00365	0.00360
	OE	0.00000	0.00000	0.00000
	OE	0.00877	0.00856	0.00853
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00282	0.00254	0.00265
	OE	0.00000	0.00000	0.00000
	OE	0.00629	0.00611	0.00608

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00064	-0.00066	-0.00074
	OE	0.00000	0.00000	0.00000
	OE	0.00802	0.00778	0.00774
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00043	-0.00044	-0.00051
	OE	0.00000	0.00000	0.00000
	OE	0.00569	0.00549	0.00546

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00163	-0.00165	-0.00164
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00153	-0.00155	-0.00154
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00112	-0.00112	-0.00111
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00104	-0.00105	-0.00105

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00163	0.00165	0.00164
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00156	0.00157	0.00156
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00112	0.00112	0.00111
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00106	0.00106	0.00106

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00254	-0.00298	-0.00314
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00239	-0.00290	-0.00308
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00162	-0.00193	-0.00205
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00153	-0.00187	-0.00201

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00680	0.00656	0.00650
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00664	0.00641	0.00638
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00486	0.00466	0.00463
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00476	0.00456	0.00453

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xnor2_l	0.00807	0.00709	0.21073

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00021	0.00023

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xnor2_l	A->Y (RR)	B	0.36050	1.78903	10.19920
	A->Y (FR)	!B	0.28749	1.84753	13.94430
	B->Y (RR)	A	0.30521	1.73215	10.09230
	B->Y (FR)	!A	0.32804	1.92536	14.17030

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xnor2_l	A->Y (FF)	B	0.26584	1.01224	7.28890
	A->Y (RF)	!B	0.08016	0.69304	6.34189
	B->Y (FF)	A	0.25410	0.99930	7.27111
	B->Y (RF)	!A	0.08723	0.70144	6.35799

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00331	0.00289	0.00265
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00911	0.00866	0.00854
	B	A	0.00000	0.00000	0.00000
	B	A	0.00176	0.00140	0.00118
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00945	0.00911	0.00906

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01054	0.01018	0.00998
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00253	0.00214	0.00191
	B	A	0.00000	0.00000	0.00000
	B	A	0.00992	0.00977	0.00966
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00285	0.00241	0.00215

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__xor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xor2_l	0.00806	0.00714	0.20685

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00021	0.00023

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xor2_l	A->Y (RR)	!B	0.38166	1.79515	10.09230
	A->Y (FR)	B	0.30214	1.88582	14.05580
	B->Y (RR)	!A	0.31479	1.73665	10.03360
	B->Y (FR)	A	0.33333	1.92711	14.09810

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xor2_l	A->Y (FF)	!B	0.26619	1.01031	7.27768
	A->Y (RF)	B	0.07254	0.70457	6.50805
	B->Y (FF)	!A	0.25320	0.99741	7.24855
	B->Y (RF)	A	0.08327	0.69916	6.32472

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01028	0.00987	0.00979
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00214	0.00156	0.00124
	B	A	0.00000	0.00000	0.00000
	B	A	0.01040	0.01005	0.01000
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00158	0.00120	0.00099

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00188	0.00138	0.00109
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01125	0.01102	0.01092
	B	A	0.00000	0.00000	0.00000
	B	A	0.00188	0.00140	0.00116
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01016	0.01002	0.00990

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__ant	5.49450
sky130_osu_sc_15T_ls__tiehi	5.49450
sky130_osu_sc_15T_ls__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_ls__ant	0.05997
sky130_osu_sc_15T_ls__tiehi	0.00000
sky130_osu_sc_15T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__ant	0.00000	37274.30000	74548.60000
sky130_osu_sc_15T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_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_15T_ls__ant	0.00000	0.00000	0.00000
	-0.00236	0.00291	0.06073

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	0.65039	0.60882	0.09334