sky130_osu_sc_15T_ls_ss_1P60_-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_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.01541	0.01538	0.01206	0.76084	0.33933	0.74095
sky130_osu_sc_15T_ls__addf_l	0.01541	0.01538	0.01201	0.44979	0.34069	0.45526

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00060	0.00067
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00126	0.00192

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)	0.25450	2.10147	21.54800
	B->CO (RR)	0.24095	2.02964	21.01280
	CI->CO (RR)	0.24396	2.11674	21.95340
	CON->CO (FR)	0.06314	1.14204	13.28920
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.27123	2.02788	17.60040
	B->CO (RR)	0.25762	1.97790	17.48550
	CI->CO (RR)	0.26061	2.04392	18.05000
	CON->CO (FR)	0.08616	1.31707	13.45350

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)	0.55325	3.57202	35.08920
	B->CO (FF)	0.50631	3.44151	34.10590
	CI->CO (FF)	0.50103	3.49910	34.99970
	CON->CO (RF)	0.03098	0.63309	7.64831
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.54724	3.03439	24.91500
	B->CO (FF)	0.50096	2.93065	24.30100
	CI->CO (FF)	0.49491	2.96044	24.83640
	CON->CO (RF)	0.03599	0.66864	7.46402

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)	0.41069	1.72667	13.43120
	B->CON (FR)	0.36885	1.64807	13.11860
	CI->CON (FR)	0.35814	1.65303	13.36080
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.38718	1.70520	13.43750
	B->CON (FR)	0.34667	1.62737	13.12420
	CI->CON (FR)	0.33468	1.63148	13.36700

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)	0.11992	0.68937	6.28305
	B->CON (RF)	0.11303	0.68932	6.47270
	CI->CON (RF)	0.10934	0.70808	6.70155
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.11472	0.68486	6.28679
	B->CON (RF)	0.10820	0.68431	6.47707
	CI->CON (RF)	0.10409	0.70358	6.70603

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)	0.75607	3.74234	31.90240
	B->S (-R)	0.73402	3.68228	31.43630
	CI->S (-R)	0.70055	3.66351	31.78280
	CON->S (RR)	0.15385	1.10610	9.22483
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	0.72564	3.35787	25.06630
	B->S (-R)	0.70546	3.31202	24.80310
	CI->S (-R)	0.67012	3.27896	24.96810
	CON->S (RR)	0.16697	1.24450	9.15432

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)	0.48203	1.89378	14.98840
	B->S (-F)	0.48580	1.81599	14.71790
	CI->S (-F)	0.47080	1.90385	15.38790
	CON->S (FF)	0.23432	0.94773	7.36891
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.45279	1.68009	11.87800
	B->S (-F)	0.45759	1.61703	11.88180
	CI->S (-F)	0.44134	1.69147	12.30970
	CON->S (FF)	0.21675	0.96078	7.07479

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	0.00288	0.00279	0.00268
	B	0.00352	0.00357	0.00353
	CI	0.00377	0.00385	0.00380
sky130_osu_sc_15T_ls__addf_l	A	0.00218	0.00205	0.00191
	B	0.00283	0.00279	0.00265
	CI	0.00306	0.00308	0.00300

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01063	0.01062	0.01057
	B	0.01040	0.01051	0.01042
	CI	0.00915	0.00938	0.00928
sky130_osu_sc_15T_ls__addf_l	A	0.00996	0.00993	0.00983
	B	0.00973	0.00979	0.00970
	CI	0.00846	0.00866	0.00856

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01063	0.01057	0.01051
	B	0.01040	0.01047	0.01038
	CI	0.00914	0.00934	0.00924
sky130_osu_sc_15T_ls__addf_l	A	0.00996	0.00989	0.00981
	B	0.00973	0.00976	0.00968
	CI	0.00847	0.00865	0.00854

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00285	0.00277	0.00263
	B	0.00350	0.00354	0.00332
	CI	0.00376	0.00385	0.00372
sky130_osu_sc_15T_ls__addf_l	A	0.00216	0.00201	0.00180
	B	0.00281	0.00278	0.00252
	CI	0.00306	0.00309	0.00293

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01063	0.01063	0.01057
	B	0.01041	0.01051	0.01041
	CI	0.00915	0.00938	0.00932
sky130_osu_sc_15T_ls__addf_l	A	0.00997	0.00993	0.00986
	B	0.00974	0.00980	0.00971
	CI	0.00847	0.00867	0.00857

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.02201	0.02218	0.02210
	B	0.01993	0.01967	0.01942
	CI	0.01774	0.01781	0.01774
sky130_osu_sc_15T_ls__addf_l	A	0.02106	0.02105	0.02094
	B	0.01897	0.01862	0.01829
	CI	0.01681	0.01676	0.01667

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	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	0.00761	0.00830	0.74988	0.36277	0.75959
sky130_osu_sc_15T_ls__addh_l	0.00761	0.00831	0.46003	0.36445	0.46400

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00053	0.00062
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00136	0.00178

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)	0.18554	1.12572	9.07948
	B->CO (RR)	0.18968	1.12005	9.22738
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.20119	1.26903	9.06984
	B->CO (RR)	0.20521	1.26494	9.22952

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)	0.19980	0.90108	7.39767
	B->CO (FF)	0.21161	0.91519	7.46845
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.19281	0.87072	6.70108
	B->CO (FF)	0.20426	0.88480	6.77331

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	0.27042	0.96096	5.40538
	A->CON (FR)	!B	0.24295	1.52558	13.35140
	B->CON (RR)	A	0.27460	0.95412	5.54130
	B->CON (FR)	!A	0.28417	1.58835	13.44720
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.24765	0.93381	5.32411
	A->CON (FR)	!B	0.22043	1.50480	13.36280
	B->CON (RR)	A	0.25183	0.92849	5.47016
	B->CON (FR)	!A	0.26157	1.56734	13.45840

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	0.26281	0.96503	6.92281
	A->CON (RF)	!B	0.07434	0.67295	6.75669
	B->CON (FF)	A	0.26886	0.98926	7.11981
	B->CON (RF)	!A	0.08585	0.67310	6.61420
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.24199	0.94083	6.81762
	A->CON (RF)	!B	0.06937	0.66999	6.76310
	B->CON (FF)	A	0.24769	0.96550	7.02014
	B->CON (RF)	!A	0.08099	0.66887	6.62034

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	0.19116	2.02606	21.59100
	A->S (FR)	B	0.38084	2.29255	21.37160
	B->S (RR)	!A	0.20143	1.98510	21.00420
	B->S (FR)	A	0.38924	2.35799	22.03870
	CON->S (FR)	-	0.06636	1.15728	13.42480
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.20142	1.95517	17.97780
	A->S (FR)	B	0.37552	2.20967	17.74460
	B->S (RR)	!A	0.21211	1.92605	17.61570
	B->S (FR)	A	0.38335	2.26135	18.18550
	CON->S (FR)	-	0.08520	1.32058	13.56970

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	0.35928	3.19883	33.36900
	A->S (RF)	B	0.35171	1.98492	17.18810
	B->S (FF)	!A	0.40043	3.26584	33.50370
	B->S (RF)	A	0.35593	1.97679	17.31940
	CON->S (RF)	-	0.02926	0.62076	7.54535
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.34666	2.72632	24.35200
	A->S (RF)	B	0.33535	1.73592	12.36970
	B->S (FF)	!A	0.38803	2.78826	24.46240
	B->S (RF)	A	0.33963	1.73051	12.51090
	CON->S (RF)	-	0.03410	0.66478	7.49397

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	0.00479	0.00459	0.00432
	B	0.00000	0.00000	0.00000
	B	0.00443	0.00422	0.00399
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00412	0.00386	0.00370
	B	0.00000	0.00000	0.00000
	B	0.00376	0.00350	0.00337

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	0.00736	0.00712	0.00664
	B	0.00000	0.00000	0.00000
	B	0.00766	0.00768	0.00723
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00671	0.00645	0.00608
	B	0.00000	0.00000	0.00000
	B	0.00701	0.00697	0.00666

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	0.00479	0.00457	0.00451
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00647	0.00644	0.00638
	B	A	0.00000	0.00000	0.00000
	B	A	0.00442	0.00422	0.00409
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00707	0.00702	0.00697
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00412	0.00385	0.00379
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00602	0.00595	0.00590
	B	A	0.00000	0.00000	0.00000
	B	A	0.00375	0.00350	0.00339
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00661	0.00654	0.00649

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	0.00736	0.00715	0.00695
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00109	0.00106	0.00079
	B	A	0.00000	0.00000	0.00000
	B	A	0.00766	0.00767	0.00745
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00172	0.00162	0.00149
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00670	0.00646	0.00617
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00048	0.00045	0.00019
	B	A	0.00000	0.00000	0.00000
	B	A	0.00701	0.00698	0.00673
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00111	0.00101	0.00085

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	0.00737	0.00713	0.00691
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00109	0.00110	0.00104
	B	A	0.00000	0.00000	0.00000
	B	A	0.00767	0.00768	0.00756
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00173	0.00165	0.00158
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00672	0.00646	0.00627
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00049	0.00045	0.00031
	B	A	0.00000	0.00000	0.00000
	B	A	0.00702	0.00698	0.00689
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00112	0.00103	0.00095

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	0.00479	0.00458	0.00433
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00647	0.00647	0.00642
	B	A	0.00000	0.00000	0.00000
	B	A	0.00443	0.00422	0.00399
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00707	0.00706	0.00703
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00411	0.00385	0.00368
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00601	0.00597	0.00593
	B	A	0.00000	0.00000	0.00000
	B	A	0.00375	0.00350	0.00330
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00661	0.00656	0.00651

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00407	0.00416	0.75528
sky130_osu_sc_15T_ls__and2_2	0.00407	0.00416	1.50026
sky130_osu_sc_15T_ls__and2_4	0.00407	0.00415	2.91773
sky130_osu_sc_15T_ls__and2_6	0.00412	0.00415	4.36354
sky130_osu_sc_15T_ls__and2_8	0.00408	0.00416	5.65516
sky130_osu_sc_15T_ls__and2_l	0.00304	0.00314	0.45443

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00024	0.00035
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00037	0.00040
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00062	0.00068
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00087	0.00098
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00112	0.00127
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00108	0.00168

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)	0.14314	1.04580	8.71955
	B->Y (RR)	0.14919	1.05052	8.90313
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.16006	0.94750	8.99938
	B->Y (RR)	0.16602	0.94402	9.15607
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.21979	0.94336	9.50458
	B->Y (RR)	0.22578	0.93003	9.59967
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.27887	0.98181	9.95310
	B->Y (RR)	0.28484	0.96500	9.99958
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.33707	1.02910	10.17790
	B->Y (RR)	0.34311	1.01169	10.20250
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.18628	1.26722	9.22812
	B->Y (RR)	0.19327	1.26619	9.39912

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)	0.14726	0.82016	6.94002
	B->Y (FF)	0.15866	0.83864	7.04793
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.18305	0.82556	7.26770
	B->Y (FF)	0.19460	0.84032	7.35124
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.26910	0.89867	7.76368
	B->Y (FF)	0.27988	0.91115	7.82765
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.35730	0.99042	8.15681
	B->Y (FF)	0.36733	1.00152	8.21315
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.44163	1.07607	8.39909
	B->Y (FF)	0.45115	1.08958	8.44480
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.18088	0.89647	7.03081
	B->Y (FF)	0.19649	0.91568	7.14877

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	0.00381	0.00339	0.00321
	B	0.00000	0.00000	0.00000
	B	0.00388	0.00345	0.00330
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00727	0.00710	0.00703
	B	0.00000	0.00000	0.00000
	B	0.00734	0.00720	0.00715
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01492	0.01513	0.01538
	B	0.00000	0.00000	0.00000
	B	0.01497	0.01529	0.01544
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02249	0.02327	0.02677
	B	0.00000	0.00000	0.00000
	B	0.02258	0.02346	0.02364
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03002	0.03095	0.03163
	B	0.00000	0.00000	0.00000
	B	0.03005	0.03114	0.03196
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00273	0.00242	0.00232
	B	0.00000	0.00000	0.00000
	B	0.00279	0.00249	0.00237

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	0.00905	0.00890	0.00879
	B	0.00000	0.00000	0.00000
	B	0.01014	0.00996	0.00986
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01141	0.01172	0.01169
	B	0.00000	0.00000	0.00000
	B	0.01251	0.01278	0.01271
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01716	0.01847	0.01863
	B	0.00000	0.00000	0.00000
	B	0.01826	0.01947	0.01957
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02303	0.02527	0.02575
	B	0.00000	0.00000	0.00000
	B	0.02410	0.02616	0.02656
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02858	0.03160	0.03264
	B	0.00000	0.00000	0.00000
	B	0.02969	0.03249	0.03333
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00680	0.00660	0.00653
	B	0.00000	0.00000	0.00000
	B	0.00754	0.00733	0.00726

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)	-0.00324	-0.00327	-0.00327
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00324	-0.00327	-0.00327
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00323	-0.00327	-0.00327
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00326	-0.00329	-0.00329
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00324	-0.00326	-0.00327
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00226	-0.00229	-0.00229

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)	0.00326	0.00329	0.00328
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00326	0.00328	0.00328
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00326	0.00329	0.00328
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00329	0.00331	0.00330
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00326	0.00329	0.00328
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00228	0.00230	0.00229

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)	-0.00308	-0.00311	-0.00309
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00309	-0.00311	-0.00309
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00309	-0.00311	-0.00309
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00309	-0.00310	-0.00309
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00309	-0.00311	-0.00309
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00217	-0.00219	-0.00218

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)	0.00309	0.00315	0.00310
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00309	0.00313	0.00310
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00309	0.00312	0.00310
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00309	0.00312	0.00310
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00309	0.00312	0.00310
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00217	0.00219	0.00218

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00377	0.00396	0.00387	0.34269

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00013	0.00015

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)	0.21046	1.55582	13.46010
	A1->Y (FR)	0.17657	1.47741	13.12360
	B0->Y (FR)	0.16678	1.48530	13.39970

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)	0.06151	0.61957	6.12997
	A1->Y (RF)	0.05594	0.63441	6.43070
	B0->Y (RF)	0.04219	0.63371	6.74993

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	0.00741	0.00731	0.00728
	A1	0.00000	0.00000	0.00000
	A1	0.00629	0.00615	0.00610
	B0	0.00611	0.00595	0.00589

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	0.00100	0.00080	0.00066
	A1	0.00000	0.00000	0.00000
	A1	0.00102	0.00078	0.00065
	B0	-0.00068	-0.00070	-0.00081

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)	-0.00270	-0.00281	-0.00279
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00286	-0.00288	-0.00287
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00286	-0.00287	-0.00287

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)	0.00277	0.00282	0.00279
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00286	0.00288	0.00288
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00286	0.00291	0.00288

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)	-0.00266	-0.00277	-0.00275
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00282	-0.00283	-0.00282
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00304	-0.00305	-0.00307

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)	0.00273	0.00277	0.00275
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00282	0.00285	0.00283
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00306	0.00309	0.00308

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)	-0.00154	-0.00155	-0.00155

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)	0.00168	0.00168	0.00158

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_l	0.00376	0.00393	0.00413	0.00392	0.34629

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00018	0.00030

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)	0.26198	1.60570	13.48760
	A1->Y (FR)	0.23256	1.56206	13.38670
	B0->Y (FR)	0.17408	1.47195	13.28050
	B1->Y (FR)	0.20355	1.51615	13.41260

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)	0.07834	0.64004	6.17922
	A1->Y (RF)	0.07273	0.65493	6.48464
	B0->Y (RF)	0.04728	0.62148	6.44125
	B1->Y (RF)	0.05263	0.60836	6.13986

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	0.00908	0.00896	0.00893
	A1	0.00798	0.00780	0.00775
	B0	0.00657	0.00633	0.00625
	B1	0.00763	0.00744	0.00738

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00238	0.00219	0.00201
	A1	0.00241	0.00219	0.00201
	B0	-0.00037	-0.00040	-0.00051
	B1	-0.00036	-0.00037	-0.00048

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)	-0.00271	-0.00281	-0.00279
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00286	-0.00289	-0.00287
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00286	-0.00288	-0.00287
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00286	-0.00287	-0.00287

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)	0.00277	0.00281	0.00279
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00287	0.00289	0.00288
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00287	0.00288	0.00288
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00286	0.00288	0.00288

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)	-0.00266	-0.00276	-0.00274
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00281	-0.00283	-0.00282
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00302	-0.00307	-0.00306
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00303	-0.00307	-0.00306

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)	0.00272	0.00276	0.00274
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00282	0.00284	0.00283
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00306	0.00308	0.00307
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00306	0.00308	0.00307

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)	-0.00155	-0.00156	-0.00155
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00154	-0.00155	-0.00155
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00314	-0.00316	-0.00317
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00314	-0.00316	-0.00317

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)	0.00172	0.00173	0.00160
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00154	0.00155	0.00155
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00317	0.00321	0.00318
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00317	0.00321	0.00318

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)	-0.00156	-0.00157	-0.00156
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00155	-0.00157	-0.00156
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00291	-0.00294	-0.00293
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00291	-0.00293	-0.00293

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)	0.00174	0.00174	0.00161
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00155	0.00157	0.00156
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00292	0.00296	0.00293
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00292	0.00296	0.00293

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00417	0.74778
sky130_osu_sc_15T_ls__buf_2	0.00421	1.51204
sky130_osu_sc_15T_ls__buf_4	0.00420	2.93876
sky130_osu_sc_15T_ls__buf_6	0.00093	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00420	5.71213
sky130_osu_sc_15T_ls__buf_l	0.00318	0.44993

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00020	0.00020
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00030	0.00035
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00050	0.00065
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00090	0.00124
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00087	0.00087

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)**	0.10840	1.00140	8.63551
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.11697	0.89556	8.98687
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.15614	0.86712	9.39423
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.23403	0.91107	9.97288
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.13872	1.20026	9.01190

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)**	0.13944	0.80497	6.85053
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.17744	0.82830	7.38689
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.26418	0.90225	7.94209
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.43793	1.08338	8.62156
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.17439	0.88385	6.94931

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	0.00357	0.00302	0.00286
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00703	0.00666	0.00653
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01473	0.01474	0.01493
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02988	0.03081	0.03502
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00265	0.00225	0.00212

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	0.00883	0.00859	0.00852
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01122	0.01142	0.01137
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01701	0.01814	0.01828
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02854	0.03135	0.03214
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00670	0.00645	0.00637

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
	-0.00057	-0.00057	-0.00057

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
	0.00057	0.00057	0.00057

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00388	0.00393	0.01183	0.71778	0.71577
sky130_osu_sc_15T_ls__dffr_l	0.00388	0.00393	0.01181	0.45536	0.45342

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00164	0.00228
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00231	0.00295

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)	0.82298	2.26010	14.55760
	QN->Q (FR)	0.07497	1.26059	14.36190
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.81543	2.45590	14.59390
	QN->Q (FR)	0.09215	1.39426	14.23260

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)	0.67550	2.30654	17.21960
	QN->Q (RF)	0.03500	0.68628	8.25318
	RN->Q (FF)	0.48164	2.28792	19.81790
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.71263	2.62578	17.48320
	QN->Q (RF)	0.03876	0.71700	8.03443
	RN->Q (FF)	0.52045	2.60760	20.07660

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)	0.60114	1.53068	9.39571
	RN->QN (FR)	0.40749	1.51025	11.99810
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.61730	1.68335	9.53056
	RN->QN (FR)	0.42443	1.66366	12.12430

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)**	0.70268	1.27362	4.77006
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.67312	1.25646	4.56511

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)	-0.11024	-0.13855	-0.70962
	setup	CK (R)	0.63725	0.62917	1.67287
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.11249	-0.13855	-0.70914
	setup	CK (R)	0.63297	0.62995	1.66905

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)	-0.31534	-0.69933	-8.66123
	setup	CK (R)	0.35944	0.72360	8.71731
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.31411	-0.70025	-8.66455
	setup	CK (R)	0.35846	0.72356	8.71923

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)	-0.11024	-0.13855	-0.70962
	setup	CK (R)	0.63725	0.62917	1.67287
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.11249	-0.13855	-0.70914
	setup	CK (R)	0.63297	0.62995	1.66905

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)	-0.31534	-0.69933	-8.66123
	setup	CK (R)	0.35944	0.72360	8.71731
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.31411	-0.70025	-8.66455
	setup	CK (R)	0.35846	0.72356	8.71923

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)	0.58247	0.58165	1.42375
	removal	CK (R)	-0.12785	-0.14559	-0.14611
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.58116	0.58309	1.43558
	removal	CK (R)	-0.12785	-0.14559	-0.14611

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)	0.58247	0.58165	1.42375
	removal	CK (R)	-0.12785	-0.14559	-0.14611
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.58116	0.58309	1.43558
	removal	CK (R)	-0.12785	-0.14559	-0.14611

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 ()	0.30056	0.64908	13.33370
	min_pulse_width	RN ()	0.29810	0.64908	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.30104	0.64471	13.33370
	min_pulse_width	RN ()	0.29861	0.64471	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 ()	0.37180	0.52002	13.33370
	min_pulse_width	CK ()	0.36010	0.52002	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.33670	0.52002	13.33370
	min_pulse_width	CK ()	0.34840	0.52002	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 ()	0.80901	0.87221	13.33370
	min_pulse_width	CK ()	0.29613	0.63377	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.80437	0.87439	13.33370
	min_pulse_width	CK ()	0.29374	0.63377	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	0.00846	0.00725	-0.00154
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00737	0.00641	0.00223

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	0.00988	0.00914	0.00438
	RN	-0.00122	-0.04288	-0.45938
	RN	0.02231	0.02171	0.01662
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00876	0.00820	0.00617
	RN	-0.00122	-0.03264	-0.29143
	RN	0.02117	0.02075	0.01842

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	0.00989	0.00915	0.00441
	RN	-0.00122	-0.04281	-0.45809
	RN	0.02231	0.02171	0.01668
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00876	0.00820	0.00617
	RN	-0.00122	-0.03255	-0.29019
	RN	0.02117	0.02075	0.01842

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	0.00844	0.00723	-0.00186
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00734	0.00639	0.00235

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	-0.00268	-0.00278	-0.00277
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00985	0.00939	0.00907
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00413	0.00374	0.00348
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00268	-0.00278	-0.00277
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00985	0.00939	0.00907
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00413	0.00374	0.00348

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	0.00275	0.00278	0.00277
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01663	0.01640	0.01611
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00790	0.00766	0.00763
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00275	0.00278	0.00277
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01663	0.01640	0.01611
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00791	0.00766	0.00763

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)	0.00329	0.00276	0.00255
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00945	0.00873	0.00831
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)	0.00329	0.00276	0.00255
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00945	0.00873	0.00831

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)	0.00813	0.00775	0.00770
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01694	0.01643	0.01604
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)	0.00813	0.00775	0.00770
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01694	0.01643	0.01604

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)	-0.00061	-0.00122	-0.00149
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00494	0.00393	0.00322
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00087	-0.00149	-0.00178
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00061	-0.00122	-0.00149
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00495	0.00393	0.00322
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00087	-0.00149	-0.00177

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)	0.01308	0.01266	0.01244
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02647	0.02577	0.02485
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02030	0.01984	0.01927
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02641	0.02559	0.02503
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01433	0.01389	0.01376
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01308	0.01266	0.01244
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02647	0.02577	0.02484
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02030	0.01984	0.01927
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02641	0.02559	0.02504
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01433	0.01389	0.01376

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00384	0.00394	0.00854	0.01206	0.76376	0.76352
sky130_osu_sc_15T_ls__dffsr_l	0.00384	0.00394	0.00853	0.01205	0.44943	0.45391

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00099	0.00120
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00166	0.00186

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)	0.72014	2.15386	14.90920
	QN->Q (FR)	0.06726	1.19693	13.90660
	RN->Q (RR)	0.59053	2.03937	14.94730
	SN->Q (FR)	0.57153	2.16109	18.11570
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.73805	2.36363	14.43920
	QN->Q (FR)	0.09216	1.38572	14.11570
	RN->Q (RR)	0.60939	2.24964	14.48170
	SN->Q (FR)	0.58835	2.37283	17.62430

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)	0.73130	2.35928	17.55790
	QN->Q (RF)	0.03469	0.69890	8.46427
	RN->Q (FF)	0.51236	2.31066	20.22380
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.78014	2.68687	17.35420
	QN->Q (RF)	0.03867	0.71385	7.99178
	RN->Q (FF)	0.56209	2.63552	20.01890

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)	0.65859	1.58154	9.49076
	RN->QN (FR)	0.43970	1.53003	12.16460
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.68392	1.75848	9.61188
	RN->QN (FR)	0.46543	1.70632	12.27930

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)	0.61558	1.18528	4.94806
	RN->QN (RF)	0.48574	1.07298	4.98741
	SN->QN (FF)	0.46673	1.19492	8.14737
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.60499	1.18213	4.58734
	RN->QN (RF)	0.47547	1.07075	4.62989
	SN->QN (FF)	0.45571	1.19349	7.75990

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)	-0.10969	-0.14089	-0.79459
	setup	CK (R)	0.53696	0.52511	1.58866
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.11061	-0.14143	-0.79625
	setup	CK (R)	0.53423	0.52319	1.58233

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)	-0.35033	-0.73179	-8.83918
	setup	CK (R)	0.40815	0.75050	8.87503
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.34972	-0.73178	-8.83745
	setup	CK (R)	0.40411	0.75246	8.87394

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)	-0.10969	-0.14089	-0.79459
	setup	CK (R)	0.53696	0.52511	1.58866
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.11061	-0.14143	-0.79625
	setup	CK (R)	0.53423	0.52319	1.58233

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)	-0.35033	-0.73179	-8.83918
	setup	CK (R)	0.40815	0.75050	8.87503
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.34972	-0.73178	-8.83745
	setup	CK (R)	0.40411	0.75246	8.87394

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)	0.44800	0.44171	1.30364
	removal	CK (R)	-0.05363	-0.06403	-0.08760
	hold	SN (R)	-0.46629	-0.73216	-6.30018
	setup	SN (R)	0.48692	0.77963	7.67294
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.44664	0.44332	1.30452
	removal	CK (R)	-0.05149	-0.06282	-0.08543
	hold	SN (R)	-0.43955	-0.71186	-6.22561
	setup	SN (R)	0.48633	0.76515	7.61269

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)	0.44800	0.44171	1.30364
	removal	CK (R)	-0.05363	-0.06403	-0.08760
	hold	SN (R)	-0.46714	-0.73216	-6.30018
	hold	SN (R)	-0.46629	-0.73540	-6.30869
	setup	SN (R)	0.48692	0.77509	7.65155
	setup	SN (R)	0.48232	0.77963	7.67294
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.44664	0.44332	1.30452
	removal	CK (R)	-0.05149	-0.06282	-0.08543
	hold	SN (R)	-0.46372	-0.71733	-6.22561
	hold	SN (R)	-0.43955	-0.71186	-6.23018
	setup	SN (R)	0.48633	0.75890	7.54283
	setup	SN (R)	0.45484	0.76515	7.61269

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 ()	0.34293	0.67533	13.33370
	min_pulse_width	RN ()	0.35060	0.67533	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.35855	0.67096	13.33370
	min_pulse_width	RN ()	0.35601	0.67096	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)	0.05827	0.08704	1.28274
	removal	CK (R)	-0.01806	-0.05531	-0.57303
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.05774	0.08757	1.13970
	removal	CK (R)	-0.01806	-0.05531	-0.57197

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)	0.05827	0.08704	1.28274
	removal	CK (R)	-0.01806	-0.05531	-0.57303
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.05774	0.08757	1.13970
	removal	CK (R)	-0.01806	-0.05531	-0.57197

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 ()	0.46401	0.80877	13.33370
	min_pulse_width	SN ()	0.46338	0.81314	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.46143	0.79346	13.33370
	min_pulse_width	SN ()	0.43778	0.80002	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 ()	0.30549	0.52002	13.33370
	min_pulse_width	CK ()	0.37180	0.52002	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.28989	0.52002	13.33370
	min_pulse_width	CK ()	0.36400	0.52002	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 ()	0.70999	0.77158	13.33370
	min_pulse_width	CK ()	0.34509	0.66439	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.70798	0.76939	13.33370
	min_pulse_width	CK ()	0.34257	0.66439	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	0.01041	0.00915	-0.00056
	RN	0.01973	0.01873	0.00899
	SN	-0.00122	-0.04451	-0.48881
	SN	0.02148	0.02057	0.01100
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00943	0.00852	0.00476
	RN	0.01873	0.01809	0.01422
	SN	-0.00122	-0.03238	-0.28763
	SN	0.02047	0.01992	0.01610

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	0.01115	0.01069	0.00775
	RN	-0.00122	-0.04451	-0.48881
	RN	0.02332	0.02286	0.01965
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01012	0.00964	0.00766
	RN	-0.00122	-0.03238	-0.28763
	RN	0.02227	0.02179	0.01958

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	0.01116	0.01070	0.00776
	RN	-0.00122	-0.04450	-0.48865
	RN	0.02332	0.02286	0.01970
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01013	0.00966	0.00766
	RN	-0.00122	-0.03257	-0.29050
	RN	0.02227	0.02179	0.01955

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	0.01038	0.00912	-0.00086
	RN	0.01970	0.01870	0.00871
	SN	-0.00122	-0.04450	-0.48863
	SN	0.02145	0.02054	0.01067
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00939	0.00848	0.00443
	RN	0.01870	0.01805	0.01398
	SN	-0.00122	-0.03257	-0.29048
	SN	0.02044	0.01989	0.01588

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	-0.00268	-0.00278	-0.00278
	(!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)	0.01276	0.01234	0.01205
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00479	0.00440	0.00415
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00476	0.00439	0.00413
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00483	0.00444	0.00420
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00268	-0.00278	-0.00278
	(!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)	0.01277	0.01234	0.01205
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00479	0.00440	0.00415
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00476	0.00439	0.00413
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00483	0.00444	0.00420

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	0.00276	0.00278	0.00278
	(!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)	0.01886	0.01865	0.01825
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00853	0.00831	0.00828
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00855	0.00833	0.00829
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00848	0.00827	0.00823
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00276	0.00278	0.00278
	(!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)	0.01885	0.01864	0.01825
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00852	0.00830	0.00827
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00854	0.00832	0.00828
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00847	0.00826	0.00823

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)	0.00322	0.00271	0.00240
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01167	0.01095	0.01044
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)	0.00322	0.00271	0.00240
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01167	0.01095	0.01044

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)	0.00893	0.00855	0.00848
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01812	0.01753	0.01706
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)	0.00892	0.00854	0.00847
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01811	0.01751	0.01704

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)	-0.00641	-0.00649	-0.00648
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00673	-0.00687	-0.00683
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00647	-0.00651	-0.00651
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00351	0.00306	0.00266
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)	-0.00641	-0.00649	-0.00648
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00672	-0.00686	-0.00681
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00646	-0.00651	-0.00651
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00352	0.00307	0.00267

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)	0.00647	0.00651	0.00650
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00678	0.00688	0.00683
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00649	0.00654	0.00652
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01368	0.01338	0.01330
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)	0.00647	0.00651	0.00650
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00677	0.00687	0.00681
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00649	0.00654	0.00651
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01367	0.01337	0.01329

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)	-0.00062	-0.00123	-0.00150
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00574	0.00481	0.00408
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00567	0.00477	0.00402
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00071	-0.00133	-0.00161
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00393	0.00277	0.00228
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00062	-0.00123	-0.00150
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00573	0.00480	0.00407
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00566	0.00477	0.00402
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00071	-0.00133	-0.00161
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00393	0.00277	0.00228

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)	0.02953	0.02886	0.02789
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01313	0.01270	0.01249
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02078	0.02035	0.01979
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02084	0.02046	0.01984
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02858	0.02771	0.02700
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01421	0.01375	0.01364
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01733	0.01652	0.01624
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02953	0.02886	0.02789
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01313	0.01270	0.01249
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02078	0.02035	0.01979
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02084	0.02046	0.01984
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02857	0.02770	0.02699
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01421	0.01375	0.01364
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01732	0.01651	0.01623

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00387	0.00680	0.01181	0.72017	0.72392
sky130_osu_sc_15T_ls__dffs_l	0.00387	0.00680	0.01181	0.44902	0.45115

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00183	0.00387
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00249	0.00454

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)	0.53551	1.93644	14.27110
	QN->Q (FR)	0.07514	1.25367	14.34450
	SN->Q (FR)	0.45928	2.04686	17.72760
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.54779	2.14573	14.13140
	QN->Q (FR)	0.09223	1.38458	14.09010
	SN->Q (FR)	0.46978	2.25258	17.53890

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)	0.75751	2.39429	17.31760
	QN->Q (RF)	0.03480	0.68461	8.24079
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.78912	2.69041	17.32500
	QN->Q (RF)	0.03859	0.71248	7.97867

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)	0.67994	1.61935	9.54363
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.69155	1.75855	9.55978

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)	0.43275	0.96463	4.50059
	SN->QN (FF)	0.35387	1.07298	7.95869
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.42121	0.96867	4.28124
	SN->QN (FF)	0.34131	1.07744	7.69053

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)	-0.08309	-0.11375	-0.68424
	setup	CK (R)	0.38686	0.38317	1.50799
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.08382	-0.11489	-0.68590
	setup	CK (R)	0.38246	0.38129	1.50677

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)	-0.32235	-0.70552	-8.71262
	setup	CK (R)	0.41020	0.73167	8.77162
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.32464	-0.70694	-8.71309
	setup	CK (R)	0.40630	0.73149	8.77131

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)	-0.08309	-0.11375	-0.68424
	setup	CK (R)	0.38686	0.38317	1.50799
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.08382	-0.11489	-0.68590
	setup	CK (R)	0.38246	0.38129	1.50677

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)	-0.32235	-0.70552	-8.71262
	setup	CK (R)	0.41020	0.73167	8.77162
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.32464	-0.70694	-8.71309
	setup	CK (R)	0.40630	0.73149	8.77131

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)	0.09681	0.13508	1.34555
	removal	CK (R)	-0.03549	-0.08961	-0.96303
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.09452	0.13406	1.27429
	removal	CK (R)	-0.03549	-0.08961	-0.96199

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)	0.09681	0.13508	1.34555
	removal	CK (R)	-0.03549	-0.08961	-0.96303
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.09452	0.13406	1.27429
	removal	CK (R)	-0.03549	-0.08961	-0.96199

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 ()	0.33320	0.78252	13.33370
	min_pulse_width	SN ()	0.33823	0.78033	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.32512	0.76283	13.33370
	min_pulse_width	SN ()	0.31817	0.76721	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 ()	0.19628	0.52002	13.33370
	min_pulse_width	CK ()	0.37960	0.52002	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.18457	0.52002	13.33370
	min_pulse_width	CK ()	0.37180	0.52002	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 ()	0.55697	0.66221	13.33370
	min_pulse_width	CK ()	0.35223	0.64471	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.55514	0.66002	13.33370
	min_pulse_width	CK ()	0.34979	0.64471	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	0.00847	0.00720	-0.00158
	SN	-0.00122	-0.04297	-0.46091
	SN	0.01835	0.01737	0.00851
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00736	0.00638	0.00259
	SN	-0.00122	-0.03236	-0.28737
	SN	0.01722	0.01656	0.01269

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	0.00984	0.00915	0.00449
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00873	0.00821	0.00626

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	0.00985	0.00916	0.00449
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00874	0.00822	0.00624

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	0.00843	0.00717	-0.00183
	SN	-0.00122	-0.04310	-0.46328
	SN	0.01832	0.01734	0.00822
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00733	0.00635	0.00241
	SN	-0.00122	-0.03245	-0.28871
	SN	0.01719	0.01653	0.01246

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	-0.00273	-0.00283	-0.00282
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00964	0.00918	0.00878
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00404	0.00365	0.00339
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00273	-0.00283	-0.00282
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00964	0.00918	0.00878
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00404	0.00365	0.00339

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	0.00280	0.00283	0.00282
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01664	0.01638	0.01615
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00810	0.00786	0.00782
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00280	0.00283	0.00282
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01664	0.01638	0.01615
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00810	0.00786	0.00782

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)	-0.00461	-0.00465	-0.00464
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00361	0.00324	0.00302
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)	-0.00461	-0.00464	-0.00464
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00361	0.00325	0.00302

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)	0.00462	0.00467	0.00465
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00957	0.00918	0.00907
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)	0.00462	0.00467	0.00465
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00957	0.00918	0.00907

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)	-0.00064	-0.00124	-0.00152
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00083	-0.00145	-0.00173
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00321	0.00197	0.00150
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00064	-0.00124	-0.00152
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00083	-0.00145	-0.00173
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00321	0.00197	0.00150

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)	0.02633	0.02564	0.02470
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01310	0.01267	0.01246
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02633	0.02538	0.02485
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01428	0.01381	0.01371
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01683	0.01602	0.01572
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02633	0.02564	0.02470
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01310	0.01267	0.01246
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02633	0.02539	0.02485
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01428	0.01381	0.01371
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01683	0.01602	0.01572

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
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	0.00403	0.01160	0.76266	0.76497
sky130_osu_sc_15T_ls__dff_l	0.00403	0.01160	0.42854	0.42570

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00084	0.00091
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00151	0.00157

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)	0.41406	1.80549	14.50410
	QN->Q (FR)	0.06687	1.18331	13.86820
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.44597	2.03856	13.88080
	QN->Q (FR)	0.10053	1.45951	14.55150

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)	0.63708	2.25516	17.40130
	QN->Q (RF)	0.03456	0.69697	8.44267
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.69844	2.61685	17.13390
	QN->Q (RF)	0.03865	0.70432	7.84904

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)	0.56623	1.48182	9.38400
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.60058	1.67977	9.43016

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)	0.32371	0.84746	4.58430
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.32231	0.84862	4.08587

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)	-0.07641	-0.10953	-0.72242
	setup	CK (R)	0.26346	0.27007	1.46091
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.07585	-0.11351	-0.72187
	setup	CK (R)	0.26264	0.26525	1.44440

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)	-0.30563	-0.70982	-8.75868
	setup	CK (R)	0.35738	0.73718	8.83607
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.30836	-0.70994	-8.76210
	setup	CK (R)	0.35729	0.73713	8.83927

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 ()	0.15337	0.52002	13.33370
	min_pulse_width	CK ()	0.33670	0.52002	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.14557	0.52002	13.33370
	min_pulse_width	CK ()	0.32889	0.52002	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 ()**	0.43444	0.62939	13.33370
	min_pulse_width	**CK ()**	0.28980	0.64689	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.43206	0.62939	13.33370
	min_pulse_width	**CK ()**	0.28735	0.64689	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	0.00900	0.00754	-0.00237
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00802	0.00697	0.00337

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	0.01003	0.00955	0.00668
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00901	0.00838	0.00552

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	0.01003	0.00956	0.00670
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00902	0.00839	0.00556

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	0.00898	0.00752	-0.00219
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00799	0.00694	0.00320

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	-0.00267	-0.00277	-0.00276
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00919	0.00882	0.00845
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00267	-0.00277	-0.00276
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00919	0.00883	0.00846

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	0.00274	0.00279	0.00276
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01734	0.01705	0.01680
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00274	0.00279	0.00276
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01734	0.01706	0.01681

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)	-0.00063	-0.00125	-0.00151
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00081	-0.00143	-0.00169
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00063	-0.00125	-0.00151
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00081	-0.00143	-0.00169

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)	0.01303	0.01260	0.01238
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02588	0.02521	0.02433
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02685	0.02587	0.02530
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01420	0.01375	0.01363
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01303	0.01260	0.01238
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02589	0.02521	0.02434
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02685	0.02588	0.02530
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01420	0.01375	0.01363

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00399	0.75528
sky130_osu_sc_15T_ls__inv_10	0.03680	7.06190
sky130_osu_sc_15T_ls__inv_2	0.00755	1.49708
sky130_osu_sc_15T_ls__inv_3	0.01124	2.19805
sky130_osu_sc_15T_ls__inv_4	0.01484	2.95095
sky130_osu_sc_15T_ls__inv_6	0.02223	4.34026
sky130_osu_sc_15T_ls__inv_8	0.02952	5.80999
sky130_osu_sc_15T_ls__inv_l	0.00294	0.42553

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00010	0.00015
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00100	0.00149
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00020	0.00030
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00030	0.00045
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00040	0.00060
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00060	0.00089
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00080	0.00119
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00043	0.00082

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)**	0.06529	1.15297	13.38180
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.07644	0.77334	13.29960
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.04941	0.98115	13.28500
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.05277	0.91981	13.37090
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.05203	0.86858	13.34940
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.05713	0.81812	13.29540
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.06588	0.79229	13.38580
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.09118	1.33512	13.41770

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)**	0.03059	0.63174	7.63430
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.04396	0.46789	7.68130
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.02527	0.56537	7.62160
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02740	0.54366	7.73734
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02718	0.51910	7.71775
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.03262	0.49362	7.71189
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.03811	0.47987	7.75578
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.03530	0.65793	7.30239

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	0.00462	0.00453	0.00457
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03931	0.03946	0.04025
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00818	0.00810	0.00817
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01256	0.01242	0.01261
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01612	0.01584	0.01611
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02395	0.02383	0.02413
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03169	0.03167	0.03233
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00342	0.00332	0.00333

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	-0.00081	-0.00087	-0.00091
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01454	-0.01404	-0.01283
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00262	-0.00271	-0.00267
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00345	-0.00363	-0.00345
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00541	-0.00543	-0.00520
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00824	-0.00827	-0.00775
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01127	-0.01131	-0.01027
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00051	-0.00057	-0.00061

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.48365	0.48642	0.00814	0.69690

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00033	0.00045

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)	-	0.03269	0.68543	8.39379
	A1->Y (RR)	-	0.03804	0.68936	8.40697
	S0->Y (RR)	(!A0 * A1)	0.08495	0.80721	7.80757
	S0->Y (FR)	(A0 * !A1)	0.07726	0.94485	9.47853

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)	-	0.02772	0.58038	6.97728
	A1->Y (FF)	-	0.02474	0.57547	6.95714
	S0->Y (FF)	(!A0 * A1)	0.14611	0.79532	6.87228
	S0->Y (RF)	(A0 * !A1)	0.03456	0.61282	6.83343

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	-	-0.00459	-0.00460	-0.00460
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00318	-0.00318	-0.00318
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00586	0.00547	0.00541
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00295	-0.00354	-0.00376

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	-	0.00459	0.00460	0.00460
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00318	0.00318	0.00318
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00097	0.00040	0.00020
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01216	0.01178	0.01168

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)	-0.00121	-0.00121	-0.00121

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)	0.00121	0.00121	0.00121

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)	-0.00146	-0.00146	-0.00146

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)	0.00146	0.00146	0.00146

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)	-0.00101	-0.00160	-0.00177
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00098	-0.00159	-0.00177

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)	0.00930	0.00890	0.00883
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00870	0.00829	0.00824

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00399	0.00394	0.74057
sky130_osu_sc_15T_ls__nand2_l	0.00294	0.00292	0.42909

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00012	0.00030
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00045	0.00163

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)	0.06908	1.15316	13.28820
	B->Y (FR)	0.08157	1.15389	13.16820
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.09459	1.34659	13.51050
	B->Y (FR)	0.11093	1.36089	13.50090

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)	0.04656	0.77593	9.08262
	B->Y (RF)	0.05215	0.76633	8.77771
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.05859	0.86636	8.98748
	B->Y (RF)	0.06398	0.85065	8.63401

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	0.00491	0.00481	0.00483
	B	0.00000	0.00000	0.00000
	B	0.00602	0.00589	0.00590
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00358	0.00350	0.00347
	B	0.00000	0.00000	0.00000
	B	0.00433	0.00423	0.00424

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	-0.00046	-0.00056	-0.00059
	B	0.00000	0.00000	0.00000
	B	-0.00044	-0.00051	-0.00056
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00031	-0.00038	-0.00042
	B	0.00000	0.00000	0.00000
	B	-0.00030	-0.00035	-0.00040

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)	-0.00318	-0.00319	-0.00320
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00218	-0.00219	-0.00219

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)	0.00320	0.00321	0.00321
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00219	0.00221	0.00220

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)	-0.00296	-0.00296	-0.00297
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00204	-0.00204	-0.00204

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)	0.00296	0.00300	0.00297
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00204	0.00204	0.00205

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00391	0.00425	0.36227
sky130_osu_sc_15T_ls__nor2_l	0.00281	0.00316	0.21360

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00012	0.00015
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00045	0.00082

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)	0.15723	1.46934	13.37560
	B->Y (FR)	0.13146	1.42003	13.28900
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.20426	1.70935	13.38870
	B->Y (FR)	0.18348	1.66938	13.43790

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)	0.03736	0.54527	5.72655
	B->Y (RF)	0.03210	0.53574	5.70780
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.04111	0.57447	5.67130
	B->Y (RF)	0.03680	0.56720	5.65454

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	0.00616	0.00607	0.00603
	B	0.00000	0.00000	0.00000
	B	0.00502	0.00484	0.00480
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00431	0.00423	0.00419
	B	0.00000	0.00000	0.00000
	B	0.00366	0.00352	0.00346

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	0.00034	0.00012	0.00002
	B	0.00000	0.00000	0.00000
	B	-0.00069	-0.00073	-0.00084
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00020	0.00007	-0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00043	-0.00053

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)	-0.00268	-0.00276	-0.00278
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00178	-0.00184	-0.00184

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)	0.00277	0.00276	0.00278
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00183	0.00184	0.00184

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)	-0.00155	-0.00156	-0.00156
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00103	-0.00104	-0.00104

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)	0.00160	0.00161	0.00157
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00106	0.00107	0.00104

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00397	0.00400	0.00336	0.35858

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00039	0.00097

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)	0.18383	1.48319	13.40180
	A1->Y (FR)	0.21712	1.54301	13.50300
	B0->Y (FR)	0.11281	1.23383	12.00620

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)	0.06195	0.64429	6.38658
	A1->Y (RF)	0.06907	0.64092	6.32957
	B0->Y (RF)	0.05018	0.66410	6.88071

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	0.00661	0.00642	0.00636
	A1	0.00000	0.00000	0.00000
	A1	0.00780	0.00767	0.00762
	B0	0.00526	0.00493	0.00499

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	0.00020	0.00016	0.00005
	A1	0.00000	0.00000	0.00000
	A1	0.00126	0.00106	0.00096
	B0	0.00192	0.00184	0.00175

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)	-0.00155	-0.00159	-0.00156
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00270	-0.00278	-0.00280
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00288	-0.00290	-0.00289

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)	0.00160	0.00161	0.00158
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00279	0.00278	0.00280
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00288	0.00291	0.00289

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)	-0.00262	-0.00275	-0.00272
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00268	-0.00278	-0.00278
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00284	-0.00285	-0.00285

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)	0.00270	0.00275	0.00272
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00276	0.00278	0.00278
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00284	0.00287	0.00286

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)	-0.00224	-0.00226	-0.00229

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)	0.00229	0.00231	0.00229

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00378	0.00406	0.00420	0.00405	0.36640

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00019	0.00030

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)	0.23994	1.56424	13.55870
	A1->Y (FR)	0.21209	1.51118	13.46770
	B0->Y (FR)	0.14447	1.44061	13.39980
	B1->Y (FR)	0.17483	1.49387	13.50000

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)	0.09288	0.68838	6.50873
	A1->Y (RF)	0.07780	0.66884	6.47106
	B0->Y (RF)	0.06639	0.68689	6.97045
	B1->Y (RF)	0.08234	0.70859	7.04237

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	0.00991	0.00980	0.00973
	A1	0.00868	0.00849	0.00842
	B0	0.00653	0.00634	0.00627
	B1	0.00781	0.00767	0.00761

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00191	0.00172	0.00160
	A1	0.00094	0.00089	0.00074
	B0	0.00095	0.00089	0.00074
	B1	0.00194	0.00172	0.00159

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)	-0.00268	-0.00279	-0.00278
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00268	-0.00279	-0.00278
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00269	-0.00280	-0.00279
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00285	-0.00287	-0.00286

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)	0.00277	0.00279	0.00278
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00277	0.00279	0.00278
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00278	0.00280	0.00279
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00285	0.00288	0.00286

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)	-0.00154	-0.00155	-0.00155
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00154	-0.00155	-0.00155
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00265	-0.00277	-0.00275
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00283	-0.00284	-0.00284

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)	0.00159	0.00160	0.00156
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00159	0.00160	0.00156
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00273	0.00277	0.00275
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00283	0.00285	0.00284

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)	-0.00153	-0.00154	-0.00153
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00153	-0.00154	-0.00153
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00297	-0.00309	-0.00307
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00307	-0.00309	-0.00315

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)	0.00158	0.00159	0.00155
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00158	0.00159	0.00155
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00308	0.00310	0.00307
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00315	0.00317	0.00316

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)	-0.00263	-0.00273	-0.00273
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00263	-0.00275	-0.00273
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00305	-0.00316	-0.00315
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00314	-0.00315	-0.00321

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)	0.00272	0.00273	0.00273
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00272	0.00276	0.00273
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00315	0.00316	0.00315
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00321	0.00323	0.00322

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00426	0.00408	0.74485
sky130_osu_sc_15T_ls__or2_2	0.00425	0.00408	1.49330
sky130_osu_sc_15T_ls__or2_4	0.00425	0.00408	2.91118
sky130_osu_sc_15T_ls__or2_8	0.00425	0.00408	5.65048
sky130_osu_sc_15T_ls__or2_l	0.00321	0.00299	0.42624

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00019	0.00025
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00027	0.00040
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00042	0.00070
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00072	0.00130
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00069	0.00092

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)	0.12168	1.03519	8.79899
	B->Y (RR)	0.11405	1.01237	8.64283
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.12856	0.91977	9.04219
	B->Y (RR)	0.11970	0.89905	8.92429
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.16811	0.88718	9.45752
	B->Y (RR)	0.15907	0.87161	9.36783
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.24582	0.92569	10.01960
	B->Y (RR)	0.23659	0.91496	9.96547
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.15306	1.25036	9.18881
	B->Y (RR)	0.14483	1.22705	9.04149

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)	0.29239	0.99178	7.60309
	B->Y (FF)	0.25359	0.93080	7.20683
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.37258	1.04744	7.97466
	B->Y (FF)	0.33406	0.99212	7.65139
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.55184	1.23107	8.56786
	B->Y (FF)	0.51358	1.17375	8.34943
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.90808	1.62136	9.32578
	B->Y (FF)	0.86988	1.56023	9.22235
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.36993	1.08418	7.38251
	B->Y (FF)	0.32445	1.02651	7.11277

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	0.00470	0.00414	0.00389
	B	0.00000	0.00000	0.00000
	B	0.00375	0.00330	0.00311
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00823	0.00788	0.00765
	B	0.00000	0.00000	0.00000
	B	0.00721	0.00710	0.00697
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01591	0.01604	0.01598
	B	0.00000	0.00000	0.00000
	B	0.01491	0.01538	0.01555
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03113	0.03204	0.03227
	B	0.00000	0.00000	0.00000
	B	0.03008	0.03147	0.03608
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00340	0.00305	0.00286
	B	0.00000	0.00000	0.00000
	B	0.00277	0.00247	0.00231

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	0.01040	0.01032	0.01025
	B	0.00000	0.00000	0.00000
	B	0.00894	0.00884	0.00881
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01271	0.01315	0.01313
	B	0.00000	0.00000	0.00000
	B	0.01126	0.01170	0.01168
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01841	0.01973	0.02002
	B	0.00000	0.00000	0.00000
	B	0.01693	0.01823	0.01851
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02973	0.03218	0.03381
	B	0.00000	0.00000	0.00000
	B	0.02827	0.03071	0.03219
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00763	0.00744	0.00739
	B	0.00000	0.00000	0.00000
	B	0.00663	0.00653	0.00647

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)	-0.00271	-0.00280	-0.00280
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00270	-0.00280	-0.00280
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00270	-0.00280	-0.00280
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00270	-0.00280	-0.00280
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00180	-0.00186	-0.00186

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)	0.00279	0.00280	0.00280
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00279	0.00280	0.00280
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00279	0.00280	0.00280
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00279	0.00280	0.00280
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00186	0.00186	0.00186

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)	-0.00155	-0.00156	-0.00156
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00155	-0.00156	-0.00156
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00155	-0.00156	-0.00156
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00155	-0.00156	-0.00156
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00106	-0.00108	-0.00106

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)	0.00162	0.00162	0.00158
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00162	0.00162	0.00158
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00162	0.00162	0.00158
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00162	0.00163	0.00158
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00109	0.00109	0.00107

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00423	0.00539	0.36602
sky130_osu_sc_15T_ls__tbufi_l	0.00316	0.00405	0.21343

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00014	0.00030
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00047	0.00163

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)	0.12440	1.41470	13.31900
	OE->Y (FR)	0.10439	0.52573	4.68868
	OE->Y (RR)	0.17769	1.29749	8.90836
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.17600	1.66373	13.43170
	OE->Y (FR)	0.12669	0.55945	4.68882
	OE->Y (RR)	0.22395	1.56406	9.24358

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)	0.04463	0.63680	6.66473
	OE->Y (FF)	0.10486	0.52379	4.68852
	OE->Y (RF)	0.04389	0.61654	6.35489
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.05733	0.70059	6.69420
	OE->Y (FF)	0.12774	0.56181	4.68895
	OE->Y (RF)	0.05419	0.67527	6.33057

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	0.00468	0.00451	0.00444
	OE	0.00000	0.00000	0.00000
	OE	0.00443	0.00386	0.00370
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00343	0.00330	0.00322
	OE	0.00000	0.00000	0.00000
	OE	0.00308	0.00266	0.00255

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	-0.00069	-0.00074	-0.00084
	OE	0.00000	0.00000	0.00000
	OE	0.00315	0.00260	0.00242
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00041	-0.00043	-0.00053
	OE	0.00000	0.00000	0.00000
	OE	0.00212	0.00170	0.00158

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)	-0.00235	-0.00238	-0.00236
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00219	-0.00221	-0.00220
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00169	-0.00171	-0.00170
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00158	-0.00160	-0.00159

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)	0.00235	0.00238	0.00236
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00223	0.00225	0.00223
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00169	0.00171	0.00170
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00161	0.00162	0.00160

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)	0.00180	0.00122	0.00107
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00158	0.00102	0.00085
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00119	0.00077	0.00065
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00104	0.00062	0.00050

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)	0.00534	0.00487	0.00480
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00556	0.00510	0.00494
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00410	0.00374	0.00366
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00425	0.00391	0.00377

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00422	0.00647	0.36372
sky130_osu_sc_15T_ls__tnbufi_l	0.00315	0.00460	0.21360

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00017	0.00020
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00073	0.00087

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)	0.12557	1.41110	13.27180
	OE->Y (RR)	0.03706	0.35100	4.68898
	OE->Y (FR)	0.14290	1.45356	13.35150
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.17728	1.66390	13.43680
	OE->Y (RR)	0.04016	0.35095	4.68903
	OE->Y (FR)	0.18723	1.69571	13.37780

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)	0.04383	0.63550	6.64669
	OE->Y (RF)	0.03670	0.35099	4.68906
	OE->Y (FF)	0.11102	0.77115	6.05101
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.05603	0.70024	6.69583
	OE->Y (RF)	0.03970	0.35095	4.68897
	OE->Y (FF)	0.14148	0.86355	6.22071

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	0.00482	0.00464	0.00458
	OE	0.00000	0.00000	0.00000
	OE	0.01130	0.01099	0.01098
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00357	0.00343	0.00335
	OE	0.00000	0.00000	0.00000
	OE	0.00805	0.00782	0.00778

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	-0.00086	-0.00089	-0.00100
	OE	0.00000	0.00000	0.00000
	OE	0.01016	0.00989	0.00981
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00057	-0.00059	-0.00069
	OE	0.00000	0.00000	0.00000
	OE	0.00718	0.00695	0.00690

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)	-0.00202	-0.00205	-0.00203
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00187	-0.00189	-0.00188
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00137	-0.00139	-0.00138
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00127	-0.00129	-0.00128

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)	0.00202	0.00205	0.00203
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00191	0.00192	0.00190
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00137	0.00139	0.00138
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00130	0.00130	0.00129

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)	-0.00337	-0.00408	-0.00424
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00315	-0.00396	-0.00418
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00215	-0.00263	-0.00277
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00201	-0.00256	-0.00273

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)	0.00868	0.00839	0.00835
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00850	0.00822	0.00818
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00618	0.00591	0.00588
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00605	0.00579	0.00574

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00837	0.00740	0.36820

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00038	0.00050

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	0.22899	1.36342	9.11543
	A->Y (FR)	!B	0.16983	1.46254	13.38500
	B->Y (RR)	A	0.19014	1.32320	9.03529
	B->Y (FR)	!A	0.20205	1.51531	13.46110

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	0.18167	0.86872	6.49485
	A->Y (RF)	!B	0.06252	0.63226	6.37857
	B->Y (FF)	A	0.17020	0.85549	6.48031
	B->Y (RF)	!A	0.07040	0.64245	6.39216

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	0.00433	0.00366	0.00345
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01153	0.01095	0.01081
	B	A	0.00000	0.00000	0.00000
	B	A	0.00206	0.00151	0.00128
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01217	0.01174	0.01164

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	0.01347	0.01287	0.01261
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00313	0.00255	0.00223
	B	A	0.00000	0.00000	0.00000
	B	A	0.01261	0.01239	0.01235
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00357	0.00286	0.00256

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00836	0.00744	0.36205

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00038	0.00044

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	0.23858	1.36250	9.03287
	A->Y (FR)	B	0.18537	1.49184	13.40110
	B->Y (RR)	!A	0.19759	1.33106	9.00402
	B->Y (FR)	A	0.20560	1.51878	13.42010

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	0.17714	0.86236	6.47412
	A->Y (RF)	B	0.05838	0.65416	6.65986
	B->Y (FF)	!A	0.16845	0.85353	6.45316
	B->Y (RF)	A	0.06825	0.64127	6.35453

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	0.01316	0.01265	0.01254
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00262	0.00161	0.00127
	B	A	0.00000	0.00000	0.00000
	B	A	0.01338	0.01296	0.01286
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00184	0.00125	0.00105

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	0.00232	0.00149	0.00119
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01429	0.01395	0.01391
	B	A	0.00000	0.00000	0.00000
	B	A	0.00233	0.00159	0.00130
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01289	0.01270	0.01266

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60,
Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_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	0.12029
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	73688.00000	147376.00000
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
	-0.00278	0.00970	0.15535

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
	1.28419	1.20804	0.21605