sky130_osu_sc_15T_ls_ff_1P76_-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_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.01472	0.01474	0.01151	1.99634	0.94583	1.89351
sky130_osu_sc_15T_ls__addf_l	0.01474	0.01474	0.01151	1.20930	0.95483	1.24376

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00222	0.00272
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00735	0.01212

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)	0.11411	1.46215	22.81850
	B->CO (RR)	0.10260	1.40327	21.94190
	CI->CO (RR)	0.10806	1.47483	23.10130
	CON->CO (FR)	0.02468	0.75055	11.94110
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.11842	1.36131	17.77570
	B->CO (RR)	0.10703	1.31497	17.28740
	CI->CO (RR)	0.11230	1.37601	18.14500
	CON->CO (FR)	0.03126	0.84361	11.94440

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)	0.17813	1.98356	30.46780
	B->CO (FF)	0.15754	1.88664	29.11150
	CI->CO (FF)	0.15596	1.96143	30.53430
	CON->CO (RF)	0.01785	0.50064	7.98819
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.16785	1.62256	20.89270
	B->CO (FF)	0.14838	1.54930	20.11990
	CI->CO (FF)	0.14568	1.60138	20.99280
	CON->CO (RF)	0.01825	0.46157	6.50247

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)	0.14526	0.99491	11.74700
	B->CON (FR)	0.12466	0.93686	11.30130
	CI->CON (FR)	0.12304	0.97491	11.86480
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.13818	0.99119	11.80960
	B->CON (FR)	0.11819	0.93321	11.35740
	CI->CON (FR)	0.11595	0.97122	11.92540

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)	0.06461	0.50657	6.05975
	B->CON (RF)	0.05338	0.48792	5.97035
	CI->CON (RF)	0.05858	0.52276	6.39761
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.06221	0.50557	6.09295
	B->CON (RF)	0.05121	0.48697	6.00224
	CI->CON (RF)	0.05617	0.52178	6.43236

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)	0.25742	1.86256	24.55070
	B->S (-R)	0.25284	1.82782	23.71900
	CI->S (-R)	0.23379	1.83825	24.62330
	CON->S (RR)	0.06783	0.58167	6.70452
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.24852	1.72987	20.20430
	B->S (-R)	0.24441	1.70674	19.72630
	CI->S (-R)	0.22489	1.70603	20.29180
	CON->S (RR)	0.06970	0.65171	6.69409

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)	0.18892	1.25981	15.80820
	B->S (-F)	0.19850	1.23614	15.40700
	CI->S (-F)	0.18260	1.26829	16.09490
	CON->S (FF)	0.08311	0.62138	6.62323
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.17377	1.10173	12.18260
	B->S (-F)	0.18411	1.08624	11.99440
	CI->S (-F)	0.16740	1.11396	12.54330
	CON->S (FF)	0.07588	0.59575	5.83357

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	0.00297	0.00307	0.00625
	B	0.00436	0.00435	0.00662
	CI	0.00448	0.00468	0.00789
sky130_osu_sc_15T_ls__addf_l	A	0.00226	0.00225	0.00420
	B	0.00365	0.00352	0.00508
	CI	0.00377	0.00384	0.00588

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01149	0.01176	0.01948
	B	0.01195	0.01222	0.01850
	CI	0.00973	0.01004	0.01789
sky130_osu_sc_15T_ls__addf_l	A	0.01082	0.01101	0.01546
	B	0.01127	0.01146	0.01492
	CI	0.00906	0.00923	0.01407

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01147	0.01162	0.01472
	B	0.01194	0.01212	0.01444
	CI	0.01051	0.01085	0.01350
sky130_osu_sc_15T_ls__addf_l	A	0.01081	0.01093	0.01432
	B	0.01127	0.01141	0.01394
	CI	0.00983	0.01015	0.01298

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00296	0.00300	0.00430
	B	0.00433	0.00424	0.00546
	CI	0.00447	0.00460	0.00634
sky130_osu_sc_15T_ls__addf_l	A	0.00225	0.00222	0.00374
	B	0.00362	0.00345	0.00476
	CI	0.00376	0.00381	0.00552

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01149	0.01175	0.01908
	B	0.01195	0.01221	0.01824
	CI	0.00973	0.00998	0.01755
sky130_osu_sc_15T_ls__addf_l	A	0.01081	0.01101	0.01565
	B	0.01128	0.01147	0.01505
	CI	0.00906	0.00923	0.01433

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.02545	0.02559	0.02860
	B	0.02266	0.02220	0.02997
	CI	0.02066	0.02050	0.02397
sky130_osu_sc_15T_ls__addf_l	A	0.02445	0.02433	0.02748
	B	0.02167	0.02117	0.02927
	CI	0.01970	0.01949	0.02319

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00723	0.00803	1.94676	1.04833	1.99091
sky130_osu_sc_15T_ls__addh_l	0.00723	0.00803	1.27137	1.03668	1.28644

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00219	0.00260
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00857	0.01193

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)	0.07849	0.58029	6.46275
	B->CO (RR)	0.08141	0.58633	6.54507
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.08160	0.65634	6.54383
	B->CO (RR)	0.08455	0.66377	6.62137

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)	0.07245	0.59996	6.64614
	B->CO (FF)	0.07785	0.61309	6.67516
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.06724	0.54868	5.35944
	B->CO (FF)	0.07227	0.56202	5.39132

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	0.11215	0.47365	3.21666
	A->CON (FR)	!B	0.07842	0.90660	11.85440
	B->CON (RR)	A	0.11511	0.47928	3.29939
	B->CON (FR)	!A	0.09566	0.93146	11.85990
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.10386	0.45721	3.13831
	A->CON (FR)	!B	0.07181	0.89874	11.76660
	B->CON (RR)	A	0.10686	0.46379	3.21660
	B->CON (FR)	!A	0.08902	0.92080	11.77200

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	0.10639	0.62199	5.66227
	A->CON (RF)	!B	0.03856	0.50323	6.62003
	B->CON (FF)	A	0.10680	0.64855	5.93404
	B->CON (RF)	!A	0.04519	0.49252	6.29407
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.09977	0.60612	5.56437
	A->CON (RF)	!B	0.03634	0.49869	6.57133
	B->CON (FF)	A	0.10006	0.63279	5.83157
	B->CON (RF)	!A	0.04303	0.48822	6.24710

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	0.08205	1.41305	22.58140
	A->S (FR)	B	0.15008	1.50954	21.20920
	B->S (RR)	!A	0.08815	1.36280	21.57400
	B->S (FR)	A	0.15156	1.57487	22.19540
	CON->S (FR)	-	0.02712	0.76815	12.19250
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.08343	1.32929	18.33530
	A->S (FR)	B	0.14713	1.41703	16.97580
	B->S (RR)	!A	0.08972	1.28998	17.64000
	B->S (FR)	A	0.14840	1.47216	17.64430
	CON->S (FR)	-	0.03168	0.85149	12.22730

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	0.10738	1.77424	28.25840
	A->S (RF)	B	0.13802	1.10528	14.71060
	B->S (FF)	!A	0.12462	1.79863	28.30730
	B->S (RF)	A	0.14097	1.11183	14.79230
	CON->S (RF)	-	0.01667	0.48801	7.79219
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.09899	1.49541	20.61720
	A->S (RF)	B	0.12860	0.93563	10.01430
	B->S (FF)	!A	0.11624	1.51954	20.64070
	B->S (RF)	A	0.13160	0.94056	10.09040
	CON->S (RF)	-	0.01712	0.46334	6.65128

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	0.00554	0.00523	0.00694
	B	0.00000	0.00000	0.00000
	B	0.00504	0.00468	0.00612
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00485	0.00451	0.00721
	B	0.00000	0.00000	0.00000
	B	0.00435	0.00402	0.00621

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	0.00826	0.00792	0.01068
	B	0.00000	0.00000	0.00000
	B	0.00864	0.00870	0.01159
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00760	0.00725	0.01029
	B	0.00000	0.00000	0.00000
	B	0.00799	0.00797	0.01078

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	0.00554	0.00523	0.00742
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00735	0.00719	0.00797
	B	A	0.00000	0.00000	0.00000
	B	A	0.00504	0.00468	0.00673
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00817	0.00808	0.00833
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00485	0.00451	0.00709
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00687	0.00684	0.00765
	B	A	0.00000	0.00000	0.00000
	B	A	0.00435	0.00396	0.00623
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00769	0.00759	0.00797

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	0.00826	0.00794	0.01073
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00113	0.00110	0.00147
	B	A	0.00000	0.00000	0.00000
	B	A	0.00864	0.00871	0.01180
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00191	0.00182	0.00160
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00759	0.00726	0.01030
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00051	0.00049	0.00076
	B	A	0.00000	0.00000	0.00000
	B	A	0.00798	0.00798	0.01113
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00130	0.00117	0.00112

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	0.00826	0.00794	0.01077
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00114	0.00114	0.00136
	B	A	0.00000	0.00000	0.00000
	B	A	0.00865	0.00872	0.01179
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00192	0.00185	0.00197
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00760	0.00727	0.01051
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00052	0.00053	0.00068
	B	A	0.00000	0.00000	0.00000
	B	A	0.00799	0.00799	0.01118
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00131	0.00120	0.00098

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	0.00554	0.00524	0.00707
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00735	0.00740	0.00805
	B	A	0.00000	0.00000	0.00000
	B	A	0.00504	0.00469	0.00631
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00818	0.00819	0.00856
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00485	0.00451	0.00715
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00688	0.00689	0.00774
	B	A	0.00000	0.00000	0.00000
	B	A	0.00435	0.00396	0.00633
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00770	0.00765	0.00810

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00391	0.00401	1.96353
sky130_osu_sc_15T_ls__and2_2	0.00391	0.00401	3.84512
sky130_osu_sc_15T_ls__and2_4	0.00391	0.00401	7.33901
sky130_osu_sc_15T_ls__and2_6	0.00395	0.00401	10.79390
sky130_osu_sc_15T_ls__and2_8	0.00392	0.00402	14.05120
sky130_osu_sc_15T_ls__and2_l	0.00304	0.00315	1.21170

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00106	0.00164
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00167	0.00171
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00288	0.00326
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00410	0.00483
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00531	0.00640
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00744	0.01185

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)	0.06009	0.52314	6.26564
	B->Y (RR)	0.06397	0.53456	6.27707
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.06864	0.46820	6.35346
	B->Y (RR)	0.07254	0.47544	6.37209
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.09452	0.47342	6.62760
	B->Y (RR)	0.09841	0.47508	6.65397
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.11954	0.50084	6.86639
	B->Y (RR)	0.12322	0.49865	6.89388
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.14429	0.53433	7.11196
	B->Y (RR)	0.14816	0.52965	7.13386
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.06512	0.58683	5.99205
	B->Y (RR)	0.06910	0.59701	5.98027

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)	0.05596	0.54002	6.24274
	B->Y (FF)	0.05980	0.55425	6.29930
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.06514	0.52128	6.35963
	B->Y (FF)	0.06915	0.53271	6.41290
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.09068	0.54494	6.58200
	B->Y (FF)	0.09425	0.55357	6.62316
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.11833	0.58149	6.79010
	B->Y (FF)	0.12127	0.58657	6.81933
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.14374	0.61273	6.90272
	B->Y (FF)	0.14635	0.61681	6.92869
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.06246	0.55257	5.65335
	B->Y (FF)	0.06833	0.56935	5.72809

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	0.00400	0.00361	0.01494
	B	0.00000	0.00000	0.00000
	B	0.00407	0.00348	0.00973
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00778	0.00766	0.01832
	B	0.00000	0.00000	0.00000
	B	0.00786	0.00759	0.01367
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01609	0.01661	0.02554
	B	0.00000	0.00000	0.00000
	B	0.01617	0.01658	0.02173
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02443	0.02529	0.03397
	B	0.00000	0.00000	0.00000
	B	0.02447	0.02536	0.03097
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03281	0.03413	0.04266
	B	0.00000	0.00000	0.00000
	B	0.03289	0.03418	0.04005
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00290	0.00275	0.01492
	B	0.00000	0.00000	0.00000
	B	0.00298	0.00255	0.00997

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	0.01013	0.01039	0.02014
	B	0.00000	0.00000	0.00000
	B	0.01148	0.01148	0.02061
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01296	0.01370	0.02329
	B	0.00000	0.00000	0.00000
	B	0.01434	0.01473	0.02362
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01996	0.02165	0.03090
	B	0.00000	0.00000	0.00000
	B	0.02133	0.02238	0.03095
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02689	0.02935	0.03886
	B	0.00000	0.00000	0.00000
	B	0.02824	0.03011	0.03857
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03405	0.03696	0.04693
	B	0.00000	0.00000	0.00000
	B	0.03528	0.03743	0.04600
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00786	0.00809	0.01730
	B	0.00000	0.00000	0.00000
	B	0.00885	0.00886	0.01745

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)	-0.00367	-0.00367	-0.00369
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00366	-0.00367	-0.00369
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00366	-0.00368	-0.00369
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00369	-0.00369	-0.00372
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00366	-0.00367	-0.00369
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00266	-0.00267	-0.00268

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)	0.00368	0.00376	0.00370
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00368	0.00376	0.00370
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00368	0.00376	0.00370
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00371	0.00379	0.00373
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00368	0.00376	0.00370
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00267	0.00273	0.00269

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)	-0.00344	-0.00348	-0.00345
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00344	-0.00348	-0.00345
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00345	-0.00346	-0.00346
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00345	-0.00347	-0.00345
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00345	-0.00347	-0.00345
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00251	-0.00251	-0.00252

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)	0.00347	0.00349	0.00346
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00347	0.00349	0.00346
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00347	0.00348	0.00347
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00347	0.00348	0.00346
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00347	0.00348	0.00347
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00254	0.00256	0.00253

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00367	0.00384	0.00374	0.91508

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00049	0.00079

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)	0.07659	0.93626	11.70610
	A1->Y (FR)	0.06313	0.88114	11.22570
	B0->Y (FR)	0.05673	0.91265	11.83710

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)	0.03454	0.45522	5.69917
	A1->Y (RF)	0.03078	0.45506	5.77221
	B0->Y (RF)	0.02133	0.42137	5.40901

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	0.00881	0.00868	0.00892
	A1	0.00000	0.00000	0.00000
	A1	0.00732	0.00711	0.00740
	B0	0.00531	0.00525	0.00721

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	0.00157	0.00127	0.00161
	A1	0.00000	0.00000	0.00000
	A1	0.00161	0.00132	0.00190
	B0	-0.00083	-0.00081	0.00028

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)	-0.00298	-0.00313	-0.00312
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00317	-0.00319	-0.00318
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00317	-0.00320	-0.00318

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)	0.00311	0.00314	0.00312
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00318	0.00323	0.00319
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00320	0.00323	0.00319

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)	-0.00294	-0.00308	-0.00307
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00311	-0.00313	-0.00312
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00342	-0.00345	-0.00345

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)	0.00305	0.00308	0.00307
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00311	0.00314	0.00313
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00344	0.00352	0.00346

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)	-0.00145	-0.00149	-0.00146

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)	0.00158	0.00160	0.00149

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_1	0.00366	0.00381	0.00397	0.00377	0.94430

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_1	0.00000	0.00062	0.00157

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)	0.09395	0.95200	11.76580
	A1->Y (FR)	0.08319	0.93015	11.63070
	B0->Y (FR)	0.05799	0.90043	11.71830
	B1->Y (FR)	0.06892	0.92322	11.90550

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)	0.04470	0.47217	5.82424
	A1->Y (RF)	0.04092	0.47175	5.90165
	B0->Y (RF)	0.02410	0.45024	5.88460
	B1->Y (RF)	0.02788	0.45092	5.80759

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	0.01072	0.01060	0.01080
	A1	0.00925	0.00883	0.00930
	B0	0.00744	0.00703	0.00834
	B1	0.00882	0.00809	0.00975

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00335	0.00304	0.00336
	A1	0.00339	0.00308	0.00364
	B0	-0.00049	-0.00055	0.00007
	B1	-0.00041	-0.00053	-0.00015

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)	-0.00300	-0.00315	-0.00312
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00317	-0.00320	-0.00318
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00317	-0.00320	-0.00318
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00317	-0.00319	-0.00318

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)	0.00310	0.00315	0.00312
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00318	0.00320	0.00319
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00320	0.00323	0.00319
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00320	0.00323	0.00319

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)	-0.00296	-0.00308	-0.00306
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00311	-0.00314	-0.00312
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00341	-0.00344	-0.00344
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00341	-0.00344	-0.00344

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)	0.00305	0.00308	0.00306
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00311	0.00317	0.00313
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00343	0.00352	0.00345
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00343	0.00352	0.00345

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)	-0.00146	-0.00149	-0.00146
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00145	-0.00147	-0.00146
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00355	-0.00359	-0.00358
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00355	-0.00359	-0.00358

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)	0.00165	0.00166	0.00151
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00146	0.00147	0.00146
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00357	0.00359	0.00359
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00357	0.00359	0.00359

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)	-0.00147	-0.00149	-0.00148
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00147	-0.00147	-0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00324	-0.00326	-0.00325
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00324	-0.00325	-0.00325

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)	0.00166	0.00168	0.00152
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00147	0.00148	0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00326	0.00326	0.00326
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00326	0.00325	0.00326

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00401	1.93236
sky130_osu_sc_15T_ls__buf_2	0.00405	3.84140
sky130_osu_sc_15T_ls__buf_4	0.00404	7.35162
sky130_osu_sc_15T_ls__buf_6	0.00091	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00406	14.07804
sky130_osu_sc_15T_ls__buf_l	0.00318	1.21023

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00086	0.00086
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00129	0.00164
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00214	0.00322
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00386	0.00636
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00598	0.00598

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)**	0.04842	0.50308	6.19118
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.05532	0.44282	6.29812
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.07521	0.43809	6.52254
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.11371	0.48383	6.90350
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.05419	0.56217	5.84719

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)**	0.05276	0.52898	6.15172
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.06333	0.52784	6.59807
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.08922	0.55340	6.90401
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.14234	0.61979	7.26617
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.05986	0.54434	5.63131

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	0.00370	0.00325	0.01179
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00748	0.00712	0.01514
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01580	0.01589	0.02346
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03235	0.03343	0.04095
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00278	0.00257	0.01192

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	0.00977	0.00983	0.01919
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01269	0.01306	0.02174
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01965	0.02077	0.02927
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03375	0.03627	0.04452
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00761	0.00770	0.01665

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
	-0.00066	-0.00067	-0.00067

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
	0.00066	0.00067	0.00067

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00377	0.00377	0.01123	1.80557	1.78207
sky130_osu_sc_15T_ls__dffr_l	0.00377	0.00377	0.01122	1.21530	1.21520

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00883	0.01380
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.01395	0.01892

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)	0.26308	1.19602	13.66880
	QN->Q (FR)	0.03162	0.88386	13.76620
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.25032	1.23907	12.45130
	QN->Q (FR)	0.03489	0.93137	13.19560

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)	0.24375	1.19503	14.03510
	QN->Q (RF)	0.02038	0.56528	8.76025
	RN->Q (FF)	0.17879	1.31428	16.64790
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.24697	1.26988	12.97040
	QN->Q (RF)	0.01980	0.52403	7.47621
	RN->Q (FF)	0.18235	1.38871	15.57710

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)	0.21828	0.70459	6.29599
	RN->QN (FR)	0.15322	0.82437	8.90770
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.22119	0.78332	6.43323
	RN->QN (FR)	0.15643	0.90272	9.03675

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)**	0.21933	0.55305	3.58926
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.20247	0.53070	2.97528

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)	-0.04797	-0.07258	-0.27297
	setup	CK (R)	0.20922	0.24991	0.89934
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.04899	-0.07278	-0.27606
	setup	CK (R)	0.21168	0.25296	0.89511

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)	-0.10057	-0.36234	-4.41512
	setup	CK (R)	0.12302	0.37438	4.45079
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.10091	-0.36217	-4.41800
	setup	CK (R)	0.12297	0.37438	4.45095

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)	-0.04797	-0.07258	-0.27297
	setup	CK (R)	0.20922	0.24991	0.89934
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.04899	-0.07278	-0.27606
	setup	CK (R)	0.21168	0.25296	0.89511

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)	-0.10057	-0.36234	-4.41512
	setup	CK (R)	0.12302	0.37438	4.45079
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.10091	-0.36217	-4.41800
	setup	CK (R)	0.12297	0.37438	4.45095

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)	0.18304	0.21604	0.97383
	removal	CK (R)	-0.03637	-0.04660	-0.12293
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.18647	0.21881	0.97171
	removal	CK (R)	-0.03637	-0.04660	-0.12293

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)	0.18304	0.21604	0.97383
	removal	CK (R)	-0.03637	-0.04660	-0.12293
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.18647	0.21881	0.97171
	removal	CK (R)	-0.03637	-0.04660	-0.12293

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 ()	0.10651	0.44556	13.33370
	min_pulse_width	RN ()	0.10651	0.44556	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.10315	0.44556	13.33370
	min_pulse_width	RN ()	0.10315	0.44556	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 ()	0.11993	0.44556	13.33370
	min_pulse_width	CK ()	0.12329	0.44556	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.10986	0.44556	13.33370
	min_pulse_width	CK ()	0.11993	0.44556	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 ()	0.26428	0.44556	13.33370
	min_pulse_width	CK ()	0.09644	0.44556	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.26764	0.44556	13.33370
	min_pulse_width	CK ()	0.09644	0.44556	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	0.00972	0.00642	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00861	0.00613	0.00000

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	0.01130	0.00862	0.00000
	RN	-0.00130	-0.08572	-1.39823
	RN	0.02592	0.02329	-0.00668
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01015	0.00847	0.00000
	RN	-0.00130	-0.06760	-0.94113
	RN	0.02477	0.02313	0.01177

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	0.01130	0.00864	0.00000
	RN	-0.00130	-0.08505	-1.38003
	RN	0.02592	0.02330	-0.00618
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01016	0.00850	0.00000
	RN	-0.00130	-0.06759	-0.94105
	RN	0.02477	0.02311	0.01180

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	0.00970	0.00647	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00857	0.00608	0.00000

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	-0.00283	-0.00309	-0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01213	0.01144	0.01624
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00511	0.00454	0.00940
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00283	-0.00309	-0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01213	0.01144	0.01624
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00511	0.00454	0.00940

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	0.00308	0.00309	0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01933	0.01894	0.02343
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00929	0.00898	0.01340
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00308	0.00309	0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01933	0.01894	0.02343
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00929	0.00899	0.01340

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)	0.00370	0.00321	0.01366
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01105	0.01022	0.02059
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)	0.00370	0.00321	0.01366
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01105	0.01022	0.02059

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)	0.00949	0.00938	0.02055
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01950	0.01903	0.03004
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)	0.00949	0.00937	0.02055
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01950	0.01902	0.03003

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)	-0.00068	-0.00136	0.00898
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00611	0.00445	0.01468
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	-0.00154	0.00860
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00068	-0.00136	0.00898
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00611	0.00445	0.01468
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	-0.00154	0.00860

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)	0.01436	0.01421	0.02545
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03076	0.02969	0.04118
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02318	0.02255	0.03297
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02976	0.02922	0.04960
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01603	0.01576	0.02651
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01436	0.01421	0.02545
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03076	0.02969	0.04117
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02318	0.02255	0.03297
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02977	0.02922	0.04960
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01603	0.01576	0.02651

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00373	0.00378	0.00833	0.01150	2.01343	2.00174
sky130_osu_sc_15T_ls__dffsr_l	0.00373	0.00378	0.00832	0.01149	1.21618	1.21203

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00361	0.00470
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00874	0.00983

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)	0.25922	1.21608	14.61900
	QN->Q (FR)	0.02741	0.81761	13.07100
	RN->Q (RR)	0.21041	1.18065	14.65830
	SN->Q (FR)	0.19538	1.35902	17.60290
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.25528	1.25099	12.49040
	QN->Q (FR)	0.03492	0.92986	13.17660
	RN->Q (RR)	0.20661	1.21513	12.52230
	SN->Q (FR)	0.19200	1.39125	15.43300

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)	0.27969	1.24063	14.81370
	QN->Q (RF)	0.02016	0.58666	9.34487
	RN->Q (FF)	0.18594	1.33535	17.43570
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.28760	1.31418	13.02760
	QN->Q (RF)	0.01976	0.52364	7.47015
	RN->Q (FF)	0.19393	1.40813	15.64110

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)	0.25432	0.73295	6.45630
	RN->QN (FR)	0.16090	0.82813	9.07249
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.26160	0.82656	6.46664
	RN->QN (FR)	0.16794	0.92166	9.07414

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)	0.22013	0.57669	4.13676
	RN->QN (RF)	0.17174	0.54127	4.17828
	SN->QN (FF)	0.15670	0.72059	7.11725
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.20975	0.54334	3.00431
	RN->QN (RF)	0.16225	0.50935	3.04144
	SN->QN (FF)	0.14711	0.68448	5.95559

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)	-0.04730	-0.07754	-0.32278
	setup	CK (R)	0.19730	0.23977	0.95684
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.04741	-0.07760	-0.32346
	setup	CK (R)	0.19969	0.23991	0.95530

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)	-0.12002	-0.38385	-4.54723
	setup	CK (R)	0.14882	0.39518	4.58846
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.11735	-0.38458	-4.54806
	setup	CK (R)	0.14482	0.39518	4.58621

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)	-0.04730	-0.07754	-0.32278
	setup	CK (R)	0.19730	0.23977	0.95684
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.04741	-0.07760	-0.32346
	setup	CK (R)	0.19969	0.23991	0.95530

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)	-0.12002	-0.38385	-4.54723
	setup	CK (R)	0.14882	0.39518	4.58846
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.11735	-0.38458	-4.54806
	setup	CK (R)	0.14482	0.39518	4.58621

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)	0.16029	0.18953	0.94352
	removal	CK (R)	-0.02098	-0.02216	-0.08223
	hold	SN (R)	-0.15310	-0.31851	-1.59603
	setup	SN (R)	0.17355	0.36207	4.15709
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.15908	0.19056	0.93914
	removal	CK (R)	-0.02098	-0.02216	-0.08223
	hold	SN (R)	-0.14521	-0.30682	-1.52317
	setup	SN (R)	0.17536	0.35159	3.91734

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)	0.16029	0.18953	0.94352
	removal	CK (R)	-0.02098	-0.02216	-0.08223
	hold	SN (R)	-0.15310	-0.31851	-1.59603
	hold	SN (R)	-0.15636	-0.31851	-1.60188
	setup	SN (R)	0.17355	0.36207	3.88041
	setup	SN (R)	0.17297	0.36195	4.15709
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.15908	0.19056	0.93914
	removal	CK (R)	-0.02098	-0.02216	-0.08223
	hold	SN (R)	-0.14521	-0.30682	-1.52317
	hold	SN (R)	-0.14599	-0.30682	-1.52688
	setup	SN (R)	0.17536	0.34855	3.64855
	setup	SN (R)	0.16706	0.35159	3.91734

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 ()	0.12329	0.44556	13.33370
	min_pulse_width	RN ()	0.12329	0.44556	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.12329	0.44556	13.33370
	min_pulse_width	RN ()	0.11993	0.44556	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)	0.03378	0.06799	4.00528
	removal	CK (R)	-0.01173	-0.04916	-0.27277
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.03340	0.06784	3.89292
	removal	CK (R)	-0.01173	-0.04916	-0.27277

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)	0.03378	0.06799	4.00528
	removal	CK (R)	-0.01173	-0.04916	-0.27277
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.03340	0.06784	3.89292
	removal	CK (R)	-0.01173	-0.04916	-0.27277

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 ()	0.15686	0.44556	13.33370
	min_pulse_width	SN ()	0.15686	0.44556	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.15686	0.44556	13.33370
	min_pulse_width	SN ()	0.15015	0.44556	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 ()	0.11322	0.44556	13.33370
	min_pulse_width	CK ()	0.14343	0.44556	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.10986	0.44556	13.33370
	min_pulse_width	CK ()	0.14008	0.44556	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 ()	0.25757	0.44556	13.33370
	min_pulse_width	CK ()	0.12329	0.44556	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.25757	0.44556	13.33370
	min_pulse_width	CK ()	0.12329	0.44556	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	0.01216	0.00857	0.00000
	RN	0.02251	0.01899	-0.00634
	SN	-0.00130	-0.09151	-1.55920
	SN	0.02497	0.02143	-0.02966
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01118	0.00871	0.00000
	RN	0.02149	0.01914	-0.00194
	SN	-0.00130	-0.06763	-0.94181
	SN	0.02397	0.02160	-0.00198

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	0.01293	0.01122	0.00000
	RN	-0.00130	-0.09151	-1.55920
	RN	0.02698	0.02521	0.00648
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01187	0.01030	0.00000
	RN	-0.00130	-0.06763	-0.94181
	RN	0.02589	0.02426	0.01304

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	0.01293	0.01126	0.00000
	RN	-0.00130	-0.09119	-1.55015
	RN	0.02698	0.02519	0.00672
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01188	0.01032	0.00000
	RN	-0.00130	-0.06749	-0.93859
	RN	0.02589	0.02427	0.01316

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	0.01213	0.00855	0.00000
	RN	0.02248	0.01898	-0.00661
	SN	-0.00130	-0.09119	-1.55008
	SN	0.02494	0.02143	-0.02831
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01114	0.00870	0.00000
	RN	0.02146	0.01914	-0.00185
	SN	-0.00130	-0.06749	-0.93856
	SN	0.02393	0.02159	-0.00135

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	-0.00299	-0.00310	-0.00310
	(!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)	0.01561	0.01495	0.01967
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00573	0.00517	0.00997
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00571	0.00516	0.00994
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00578	0.00522	0.01002
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00299	-0.00310	-0.00310
	(!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)	0.01561	0.01495	0.01967
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00573	0.00517	0.00997
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00571	0.00516	0.00994
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00578	0.00522	0.01002

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	0.00310	0.00310	0.00310
	(!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)	0.02208	0.02167	0.02563
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00999	0.00972	0.01396
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01001	0.00973	0.01396
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00993	0.00967	0.01391
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00310	0.00310	0.00310
	(!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)	0.02207	0.02166	0.02559
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00998	0.00971	0.01395
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01000	0.00972	0.01395
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00992	0.00966	0.01390

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)	0.00306	0.00251	0.01283
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01324	0.01237	0.02256
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)	0.00306	0.00251	0.01284
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01324	0.01238	0.02257

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)	0.01038	0.01028	0.02158
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02079	0.02017	0.03115
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)	0.01036	0.01026	0.02157
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02077	0.02015	0.03114

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)	-0.00724	-0.00732	-0.00731
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00759	-0.00771	-0.00771
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00724	-0.00735	-0.00731
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00434	0.00376	0.00947
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)	-0.00724	-0.00732	-0.00732
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00757	-0.00769	-0.00769
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00724	-0.00735	-0.00730
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00435	0.00376	0.00948

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)	0.00729	0.00747	0.00734
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00767	0.00771	0.00771
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00729	0.00735	0.00732
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01610	0.01568	0.01953
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)	0.00729	0.00747	0.00734
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00766	0.00769	0.00769
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00728	0.00735	0.00731
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01609	0.01567	0.01952

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)	-0.00069	-0.00136	0.00897
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00702	0.00540	0.01562
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00695	0.00537	0.01555
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00085	-0.00133	0.00879
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00409	0.00284	0.02332
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00069	-0.00136	0.00897
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00701	0.00539	0.01561
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00694	0.00535	0.01554
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00085	-0.00133	0.00879
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00409	0.00284	0.02332

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)	0.03437	0.03331	0.04477
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01442	0.01427	0.02550
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02355	0.02299	0.03333
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02363	0.02311	0.03343
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03244	0.03172	0.05170
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01588	0.01561	0.02635
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01925	0.01885	0.04044
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03437	0.03337	0.04477
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01442	0.01427	0.02550
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02355	0.02299	0.03333
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02363	0.02311	0.03343
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03243	0.03171	0.05169
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01588	0.01561	0.02635
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01924	0.01884	0.04043

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00376	0.00680	0.01121	1.80754	1.80992
sky130_osu_sc_15T_ls__dffs_l	0.00376	0.00680	0.01121	1.22299	1.21364

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.01049	0.02545
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.01562	0.03058

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)	0.20248	1.12303	13.55890
	QN->Q (FR)	0.03161	0.88008	13.72560
	SN->Q (FR)	0.16758	1.32295	16.65070
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.19670	1.17781	12.43860
	QN->Q (FR)	0.03484	0.92936	13.19370
	SN->Q (FR)	0.16117	1.37085	15.49360

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)	0.26091	1.21209	14.02000
	QN->Q (RF)	0.02027	0.56314	8.72814
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.26307	1.28911	13.04300
	QN->Q (RF)	0.01972	0.52268	7.47523

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)	0.23499	0.72604	6.39170
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.23711	0.79935	6.42052

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)	0.16328	0.48580	3.56745
	SN->QN (FF)	0.12801	0.68580	6.66554
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.15345	0.46994	2.89513
	SN->QN (FF)	0.11735	0.66282	5.95639

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)	-0.03572	-0.06429	-0.26081
	setup	CK (R)	0.14853	0.19746	0.83395
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.03769	-0.06429	-0.26114
	setup	CK (R)	0.15001	0.19861	0.82808

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)	-0.10263	-0.36490	-4.44027
	setup	CK (R)	0.13199	0.37751	4.47347
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.10451	-0.36477	-4.44042
	setup	CK (R)	0.13196	0.37751	4.47344

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)	-0.03572	-0.06429	-0.26081
	setup	CK (R)	0.14853	0.19746	0.83395
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.03769	-0.06429	-0.26114
	setup	CK (R)	0.15001	0.19861	0.82808

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)	-0.10263	-0.36490	-4.44027
	setup	CK (R)	0.13199	0.37751	4.47347
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.10451	-0.36477	-4.44042
	setup	CK (R)	0.13196	0.37751	4.47344

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)	0.02859	0.04546	2.68536
	removal	CK (R)	-0.00883	-0.02269	0.07099
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.02816	0.04540	2.55878
	removal	CK (R)	-0.00883	-0.02269	0.07099

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)	0.02859	0.04546	2.68536
	removal	CK (R)	-0.00883	-0.02269	0.07099
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.02816	0.04540	2.55878
	removal	CK (R)	-0.00883	-0.02269	0.07099

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 ()	0.12329	0.44556	13.33370
	min_pulse_width	SN ()	0.12665	0.44556	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.11993	0.44556	13.33370
	min_pulse_width	SN ()	0.11993	0.44556	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 ()	0.08301	0.44556	13.33370
	min_pulse_width	CK ()	0.12665	0.44556	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.07965	0.44556	13.33370
	min_pulse_width	CK ()	0.12329	0.44556	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 ()	0.20721	0.44556	13.33370
	min_pulse_width	CK ()	0.10651	0.44556	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.20721	0.44556	13.33370
	min_pulse_width	CK ()	0.10651	0.44556	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	0.00972	0.00632	0.00000
	SN	-0.00130	-0.08578	-1.39976
	SN	0.02133	0.01810	-0.01888
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00858	0.00606	0.00000
	SN	-0.00130	-0.06785	-0.94708
	SN	0.02019	0.01782	0.00018

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	0.01126	0.00868	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01012	0.00849	0.00000

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	0.01126	0.00868	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01013	0.00851	0.00000

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	0.00970	0.00637	0.00000
	SN	-0.00130	-0.08584	-1.40153
	SN	0.02130	0.01809	-0.01872
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00855	0.00606	0.00000
	SN	-0.00130	-0.06754	-0.93980
	SN	0.02016	0.01780	0.00054

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	-0.00305	-0.00315	-0.00315
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01181	0.01107	0.01597
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00500	0.00442	0.00930
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00305	-0.00315	-0.00315
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01181	0.01107	0.01597
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00500	0.00442	0.00930

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	0.00315	0.00315	0.00315
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01917	0.01871	0.02304
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00952	0.00922	0.01364
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00315	0.00315	0.00315
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01917	0.01871	0.02304
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00952	0.00922	0.01364

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)	-0.00538	-0.00541	-0.00541
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00387	0.00351	0.01400
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)	-0.00538	-0.00541	-0.00541
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00387	0.00351	0.01400

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)	0.00541	0.00546	0.00543
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01129	0.01096	0.02093
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)	0.00541	0.00546	0.00543
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01129	0.01096	0.02093

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)	-0.00071	-0.00139	0.00896
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00099	-0.00148	0.00866
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00332	0.00210	0.02291
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00071	-0.00139	0.00896
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00099	-0.00148	0.00866
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00332	0.00210	0.02291

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)	0.03052	0.02948	0.04121
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01438	0.01423	0.02548
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02946	0.02872	0.04901
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01596	0.01570	0.02645
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01869	0.01833	0.04025
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03052	0.02948	0.04121
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01438	0.01423	0.02548
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02946	0.02872	0.04901
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01596	0.01570	0.02645
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01869	0.01833	0.04023

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00392	0.01106	2.00901	2.01143
sky130_osu_sc_15T_ls__dff_l	0.00392	0.01103	1.11192	1.10934

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00322	0.00359
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00834	0.00872

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)	0.16357	1.09908	14.40170
	QN->Q (FR)	0.02721	0.81404	13.00540
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.16774	1.13666	11.77820
	QN->Q (FR)	0.03952	0.99839	13.78080

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)	0.23639	1.18978	14.69270
	QN->Q (RF)	0.02007	0.58407	9.30710
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.24885	1.26974	12.48150
	QN->Q (RF)	0.01980	0.50665	7.07919

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)	0.21151	0.68567	6.41190
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.22292	0.79995	6.38819

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)	0.12928	0.46623	3.99898
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.12487	0.42603	2.55155

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)	-0.03208	-0.05651	-0.27142
	setup	CK (R)	0.10782	0.16161	0.79989
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.03276	-0.05651	-0.26869
	setup	CK (R)	0.10792	0.16028	0.79669

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)	-0.10024	-0.36532	-4.50868
	setup	CK (R)	0.11978	0.37912	4.53751
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.09963	-0.36532	-4.51003
	setup	CK (R)	0.11977	0.37913	4.53695

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 ()	0.06622	0.44556	13.33370
	min_pulse_width	CK ()	0.12329	0.44556	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.06287	0.44556	13.33370
	min_pulse_width	CK ()	0.11993	0.44556	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 ()**	0.16357	0.44556	13.33370
	min_pulse_width	**CK ()**	0.09308	0.44556	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.16357	0.44556	13.33370
	min_pulse_width	**CK ()**	0.09308	0.44556	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	0.01023	0.00637	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00925	0.00677	0.00000

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	0.01139	0.00970	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01032	0.00817	0.00000

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	0.01139	0.00970	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01032	0.00820	0.00000

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	0.01020	0.00646	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00921	0.00679	0.00000

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	-0.00283	-0.00308	-0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01068	0.01019	0.01506
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00283	-0.00308	-0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01068	0.01019	0.01506

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	0.00307	0.00308	0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01972	0.01924	0.02352
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00307	0.00308	0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01973	0.01924	0.02353

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)	-0.00071	-0.00138	0.00898
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00097	-0.00147	0.00871
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00071	-0.00138	0.00898
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00097	-0.00147	0.00871

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)	0.01429	0.01415	0.02541
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02942	0.02849	0.04052
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02986	0.02915	0.04948
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01586	0.01561	0.02636
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01429	0.01415	0.02541
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02943	0.02849	0.04053
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02986	0.02910	0.04942
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01586	0.01561	0.02636

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00382	1.89383
sky130_osu_sc_15T_ls__inv_10	0.03516	17.35229
sky130_osu_sc_15T_ls__inv_2	0.00722	3.73531
sky130_osu_sc_15T_ls__inv_3	0.01074	5.41729
sky130_osu_sc_15T_ls__inv_4	0.01418	7.23136
sky130_osu_sc_15T_ls__inv_6	0.02124	10.70948
sky130_osu_sc_15T_ls__inv_8	0.02820	14.05368
sky130_osu_sc_15T_ls__inv_l	0.00294	1.07332

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00043	0.00079
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00429	0.00786
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00086	0.00157
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00129	0.00236
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00171	0.00314
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00257	0.00472
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00343	0.00629
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00299	0.00587

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)**	0.02598	0.74905	11.81450
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.03940	0.52750	11.85700
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.02125	0.64892	11.71260
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.02363	0.61259	11.82920
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.02437	0.58247	11.73690
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.02805	0.55038	11.78120
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.03333	0.53567	11.76640
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.03401	0.85091	11.71600

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)**	0.01755	0.49082	7.75862
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.02740	0.30639	7.80587
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.01473	0.41899	7.74966
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.01633	0.39266	7.89353
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.01642	0.36147	7.83675
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.02026	0.33687	7.86871
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.02382	0.31755	7.84331
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.01775	0.43845	5.99779

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	0.00499	0.00497	0.00609
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.04215	0.04475	0.05500
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00880	0.00909	0.01103
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01351	0.01343	0.01709
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01734	0.01818	0.02190
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02564	0.02467	0.03279
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03389	0.03567	0.04363
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00378	0.00377	0.00501

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	-0.00100	-0.00100	-0.00051
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01615	-0.01555	-0.00881
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00315	-0.00301	-0.00194
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00421	-0.00401	-0.00227
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00645	-0.00559	-0.00369
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00982	-0.00921	-0.00541
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01321	-0.01241	-0.00717
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00066	-0.00055	0.00032

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.38413	0.38418	0.00782	0.38554

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00131	0.00236

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)	-	0.01192	0.25655	2.77731
	A1->Y (RR)	-	0.01332	0.25835	2.77789
	S0->Y (RR)	(!A0 * A1)	0.03844	0.22730	0.61017
	S0->Y (FR)	(A0 * !A1)	0.03400	0.40145	3.76612

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)	-	0.01235	0.24706	2.65075
	A1->Y (FF)	-	0.01173	0.24509	2.64194
	S0->Y (FF)	(!A0 * A1)	0.05563	0.37876	2.87631
	S0->Y (RF)	(A0 * !A1)	0.02041	0.25031	1.85864

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	-	-0.00521	-0.00522	-0.00523
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00342	-0.00343	-0.00344
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00623	0.00636	0.01855
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00336	-0.00374	0.00759

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	-	0.00521	0.00522	0.00523
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00342	0.00343	0.00344
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00090	0.00058	0.01236
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01362	0.01363	0.02520

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)	-0.00128	-0.00128	-0.00128

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)	0.00128	0.00128	0.00128

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)	-0.00154	-0.00154	-0.00154

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)	0.00154	0.00154	0.00154

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)	-0.00126	-0.00165	0.01000
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00121	-0.00159	0.01004

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)	0.01035	0.01073	0.02200
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00949	0.00987	0.02171

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_1	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nand2_1	0.00382	0.00379	1.87029
sky130_osu_sc_15T_ls__nand2_1	0.00294	0.00293	1.06540

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00045	0.00157
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00301	0.01173

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)	0.02697	0.75374	11.80760
	B->Y (FR)	0.03200	0.74443	11.59840
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.03517	0.85376	11.70860
	B->Y (FR)	0.04264	0.85559	11.67880

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)	0.02365	0.58633	9.22670
	B->Y (RF)	0.02739	0.58903	9.18346
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.02352	0.52101	7.11853
	B->Y (RF)	0.02677	0.52481	7.02643

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	0.00532	0.00531	0.00635
	B	0.00000	0.00000	0.00000
	B	0.00680	0.00668	0.00764
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00399	0.00398	0.00511
	B	0.00000	0.00000	0.00000
	B	0.00510	0.00473	0.00619

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	-0.00059	-0.00059	-0.00020
	B	0.00000	0.00000	0.00000
	B	-0.00055	-0.00065	-0.00037
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00042	-0.00037	0.00044
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00047	0.00015

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)	-0.00357	-0.00363	-0.00361
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00255	-0.00258	-0.00257

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)	0.00361	0.00368	0.00362
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00256	0.00260	0.00258

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)	-0.00329	-0.00331	-0.00330
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00235	-0.00236	-0.00236

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)	0.00331	0.00332	0.00331
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00238	0.00239	0.00236

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00378	0.00408	1.02553
sky130_osu_sc_15T_ls__nor2_l	0.00283	0.00316	0.64567

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00046	0.00079
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00305	0.00587

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)	0.05471	0.89031	11.76280
	B->Y (FR)	0.04246	0.87424	11.75090
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.06533	0.99503	11.59080
	B->Y (FR)	0.05426	0.98832	11.74300

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)	0.02337	0.40446	5.34825
	B->Y (RF)	0.01864	0.39849	5.33214
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.02203	0.37113	4.23492
	B->Y (RF)	0.01874	0.36384	4.22186

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	0.00714	0.00696	0.00732
	B	0.00000	0.00000	0.00000
	B	0.00548	0.00539	0.00656
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00514	0.00506	0.00562
	B	0.00000	0.00000	0.00000
	B	0.00409	0.00402	0.00552

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	0.00061	0.00048	0.00100
	B	0.00000	0.00000	0.00000
	B	-0.00079	-0.00078	-0.00017
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00036	0.00025	0.00155
	B	0.00000	0.00000	0.00000
	B	-0.00048	-0.00043	0.00080

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)	-0.00285	-0.00310	-0.00311
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00196	-0.00214	-0.00213

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)	0.00309	0.00313	0.00311
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00212	0.00215	0.00213

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)	-0.00146	-0.00150	-0.00147
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00101	-0.00104	-0.00102

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)	0.00154	0.00156	0.00149
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00106	0.00107	0.00103

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__oai21_l	0.00382	0.00389	0.00332	1.00569

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00246	0.00665

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)	0.06002	0.90465	11.87330
	A1->Y (FR)	0.07612	0.92602	11.89690
	B0->Y (FR)	0.04079	0.79941	10.79780

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)	0.03311	0.48723	6.32142
	A1->Y (RF)	0.03809	0.48301	6.19412
	B0->Y (RF)	0.02584	0.50865	6.81671

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	0.00754	0.00740	0.00841
	A1	0.00000	0.00000	0.00000
	A1	0.00924	0.00907	0.00931
	B0	0.00617	0.00603	0.00699

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	0.00024	0.00012	0.00045
	A1	0.00000	0.00000	0.00000
	A1	0.00163	0.00135	0.00168
	B0	0.00227	0.00217	0.00274

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)	-0.00147	-0.00149	-0.00148
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00304	-0.00315	-0.00314
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00319	-0.00322	-0.00320

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)	0.00155	0.00156	0.00150
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00313	0.00315	0.00314
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00319	0.00326	0.00321

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)	-0.00278	-0.00303	-0.00303
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00301	-0.00311	-0.00311
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00315	-0.00317	-0.00316

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)	0.00302	0.00303	0.00303
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00309	0.00311	0.00311
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00315	0.00319	0.00317

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)	-0.00264	-0.00264	-0.00268

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)	0.00268	0.00274	0.00269

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00368	0.00391	0.00404	0.00393	1.01573

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00071	0.00157

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)	0.08238	0.91806	11.74010
	A1->Y (FR)	0.06979	0.89636	11.72970
	B0->Y (FR)	0.04760	0.87516	11.72080
	B1->Y (FR)	0.06108	0.89616	11.73280

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)	0.05380	0.51758	6.41820
	A1->Y (RF)	0.04385	0.50316	6.37287
	B0->Y (RF)	0.03670	0.52299	6.87156
	B1->Y (RF)	0.04728	0.54162	6.98156

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	0.01200	0.01169	0.01208
	A1	0.01027	0.01008	0.01111
	B0	0.00754	0.00713	0.00844
	B1	0.00934	0.00912	0.00942

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00260	0.00233	0.00262
	A1	0.00136	0.00119	0.00147
	B0	-0.00024	-0.00028	0.00029
	B1	0.00264	0.00245	0.00287

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)	-0.00284	-0.00310	-0.00311
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00283	-0.00310	-0.00311
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00301	-0.00311	-0.00312
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00316	-0.00319	-0.00317

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)	0.00310	0.00312	0.00311
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00310	0.00312	0.00311
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00311	0.00313	0.00312
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00316	0.00323	0.00318

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)	-0.00145	-0.00149	-0.00146
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00145	-0.00149	-0.00146
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00298	-0.00309	-0.00308
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00314	-0.00315	-0.00314

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)	0.00153	0.00154	0.00148
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00153	0.00154	0.00148
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00307	0.00309	0.00308
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00314	0.00317	0.00315

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)	-0.00143	-0.00147	-0.00144
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00143	-0.00147	-0.00144
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00339	-0.00349	-0.00351
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00348	-0.00352	-0.00355

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)	0.00151	0.00153	0.00147
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00151	0.00153	0.00147
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00353	0.00357	0.00351
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00355	0.00355	0.00356

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)	-0.00278	-0.00304	-0.00305
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00278	-0.00304	-0.00305
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00347	-0.00358	-0.00359
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00356	-0.00360	-0.00362

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)	0.00303	0.00306	0.00305
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00303	0.00304	0.00305
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00361	0.00364	0.00359
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00362	0.00370	0.00364

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00414	0.00392	1.92003
sky130_osu_sc_15T_ls__or2_2	0.00414	0.00392	3.82269
sky130_osu_sc_15T_ls__or2_4	0.00415	0.00392	7.34213
sky130_osu_sc_15T_ls__or2_8	0.00415	0.00393	13.93658
sky130_osu_sc_15T_ls__or2_l	0.00324	0.00299	1.09654

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00071	0.00093
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00096	0.00171
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00146	0.00329
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00246	0.00643
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00461	0.00610

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)	0.05771	0.53193	6.18206
	B->Y (RR)	0.05171	0.51069	6.14552
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.06357	0.46697	6.31347
	B->Y (RR)	0.05722	0.44818	6.27133
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.08373	0.45936	6.60105
	B->Y (RR)	0.07739	0.44377	6.55894
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.12204	0.49988	6.97779
	B->Y (RR)	0.11586	0.48878	6.93886
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.06272	0.60387	5.79036
	B->Y (RR)	0.05749	0.58532	5.74788

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)	0.09729	0.62177	6.68626
	B->Y (FF)	0.08033	0.59056	6.53181
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.11731	0.61308	6.94711
	B->Y (FF)	0.10051	0.58839	6.76465
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.16561	0.65481	7.33433
	B->Y (FF)	0.14885	0.63832	7.13208
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.26321	0.75925	7.71786
	B->Y (FF)	0.24646	0.74282	7.53595
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.11125	0.60775	5.58968
	B->Y (FF)	0.09222	0.58811	5.56198

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	0.00524	0.00439	0.01022
	B	0.00000	0.00000	0.00000
	B	0.00403	0.00386	0.01225
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00909	0.00848	0.01459
	B	0.00000	0.00000	0.00000
	B	0.00777	0.00801	0.01646
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01741	0.01749	0.02303
	B	0.00000	0.00000	0.00000
	B	0.01608	0.01693	0.02498
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03404	0.03503	0.04025
	B	0.00000	0.00000	0.00000
	B	0.03260	0.03489	0.04252
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00385	0.00339	0.01020
	B	0.00000	0.00000	0.00000
	B	0.00304	0.00303	0.01124

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	0.01198	0.01168	0.01518
	B	0.00000	0.00000	0.00000
	B	0.00999	0.01016	0.02017
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01480	0.01502	0.01832
	B	0.00000	0.00000	0.00000
	B	0.01280	0.01337	0.02261
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02196	0.02293	0.02594
	B	0.00000	0.00000	0.00000
	B	0.01979	0.02095	0.02937
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03682	0.03788	0.04160
	B	0.00000	0.00000	0.00000
	B	0.03490	0.03590	0.04411
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00899	0.00861	0.01346
	B	0.00000	0.00000	0.00000
	B	0.00761	0.00776	0.01739

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)	-0.00289	-0.00312	-0.00313
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00289	-0.00312	-0.00313
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00289	-0.00312	-0.00313
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00289	-0.00312	-0.00313
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00199	-0.00216	-0.00215

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)	0.00312	0.00312	0.00313
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00312	0.00312	0.00313
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00312	0.00312	0.00313
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00312	0.00312	0.00313
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00215	0.00217	0.00215

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)	-0.00147	-0.00149	-0.00148
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00147	-0.00149	-0.00148
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00147	-0.00149	-0.00148
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00147	-0.00149	-0.00148
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00104	-0.00105	-0.00104

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)	0.00156	0.00157	0.00150
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00156	0.00157	0.00150
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00156	0.00157	0.00150
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00156	0.00157	0.00150
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00109	0.00110	0.00106

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00407	0.00528	1.03589
sky130_osu_sc_15T_ls__tbufi_l	0.00316	0.00414	0.64507

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00048	0.00157
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00306	0.01173

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)	0.04005	0.86671	11.75160
	OE->Y (FR)	0.04256	0.33170	5.01988
	OE->Y (RR)	0.06893	0.63634	6.35474
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.05211	0.98296	11.74630
	OE->Y (FR)	0.04941	0.33169	5.01972
	OE->Y (RR)	0.07696	0.71993	5.97866

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)	0.02280	0.47307	6.39401
	OE->Y (FF)	0.04305	0.33169	5.01984
	OE->Y (RF)	0.02315	0.47183	6.30780
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.02309	0.43347	5.07251
	OE->Y (FF)	0.04996	0.33171	5.01980
	OE->Y (RF)	0.02298	0.43001	5.01544

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	0.00508	0.00470	0.00608
	OE	0.00000	0.00000	0.00000
	OE	0.00506	0.00470	0.01488
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00382	0.00370	0.00511
	OE	0.00000	0.00000	0.00000
	OE	0.00361	0.00357	0.01521

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	-0.00080	-0.00082	-0.00024
	OE	0.00000	0.00000	0.00000
	OE	0.00330	0.00293	0.01477
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00049	-0.00044	0.00068
	OE	0.00000	0.00000	0.00000
	OE	0.00225	0.00221	0.01515

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)	-0.00250	-0.00255	-0.00252
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00225	-0.00227	-0.00225
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00186	-0.00189	-0.00187
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00170	-0.00171	-0.00170

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)	0.00250	0.00255	0.00252
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00230	0.00233	0.00228
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00186	0.00189	0.00187
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00173	0.00174	0.00171

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)	0.00190	0.00156	0.01370
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00172	0.00136	0.01351
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00128	0.00127	0.01442
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00114	0.00114	0.01426

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)	0.00590	0.00572	0.01794
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00610	0.00591	0.01804
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00459	0.00460	0.01725
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00475	0.00473	0.01733

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00406	0.00614	1.03580
sky130_osu_sc_15T_ls__tnbufi_l	0.00315	0.00454	0.65304

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00072	0.00086
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00498	0.00598

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)	0.04045	0.86664	11.75090
	OE->Y (RR)	0.02285	0.33194	5.02016
	OE->Y (FR)	0.05148	0.88621	11.76130
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.05238	0.98754	11.83420
	OE->Y (RR)	0.02186	0.33193	5.02033
	OE->Y (FR)	0.06271	0.99830	11.68740

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)	0.02242	0.47293	6.39355
	OE->Y (RF)	0.02254	0.33191	5.02036
	OE->Y (FF)	0.04640	0.49239	5.15471
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.02263	0.43535	5.11618
	OE->Y (RF)	0.02155	0.33192	5.02025
	OE->Y (FF)	0.05180	0.49195	4.65804

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	0.00524	0.00486	0.00623
	OE	0.00000	0.00000	0.00000
	OE	0.01281	0.01306	0.02598
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00398	0.00386	0.00525
	OE	0.00000	0.00000	0.00000
	OE	0.00941	0.00972	0.02276

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	-0.00101	-0.00101	-0.00044
	OE	0.00000	0.00000	0.00000
	OE	0.01126	0.01150	0.02190
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00069	-0.00064	0.00048
	OE	0.00000	0.00000	0.00000
	OE	0.00822	0.00852	0.01899

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)	-0.00210	-0.00213	-0.00211
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00187	-0.00188	-0.00187
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00148	-0.00150	-0.00148
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00132	-0.00134	-0.00132

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)	0.00210	0.00213	0.00211
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00191	0.00193	0.00189
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00148	0.00150	0.00148
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00135	0.00136	0.00133

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)	-0.00373	-0.00435	0.00825
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00356	-0.00426	0.00829
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00249	-0.00268	0.01073
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00235	-0.00263	0.01075

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)	0.00965	0.00994	0.02284
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00950	0.00981	0.02272
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00708	0.00744	0.02059
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00698	0.00734	0.02051

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.00805	0.00713	1.06127

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00140	0.00243

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	0.08751	0.67422	6.54112
	A->Y (FR)	!B	0.05358	0.88658	11.86070
	B->Y (RR)	A	0.06995	0.65459	6.53328
	B->Y (FR)	!A	0.07155	0.90698	11.86890

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	0.07550	0.55455	5.40512
	A->Y (RF)	!B	0.03211	0.48299	6.39786
	B->Y (FF)	A	0.06799	0.54814	5.40505
	B->Y (RF)	!A	0.03832	0.49171	6.39975

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	0.00520	0.00477	0.01456
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01264	0.01250	0.02530
	B	A	0.00000	0.00000	0.00000
	B	A	0.00204	0.00179	0.01363
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01369	0.01363	0.02596

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	0.01543	0.01486	0.02629
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00354	0.00303	0.01480
	B	A	0.00000	0.00000	0.00000
	B	A	0.01419	0.01437	0.02637
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00438	0.00375	0.01550

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_1	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xor2_1	0.00807	0.00717	1.02358

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_1	0.00000	0.00140	0.00182

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	0.08793	0.66287	6.42025
	A->Y (FR)	B	0.06649	0.90106	11.77600
	B->Y (RR)	!A	0.07439	0.65878	6.43468
	B->Y (FR)	A	0.07289	0.90717	11.76750

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	0.07146	0.55240	5.28450
	A->Y (RF)	B	0.03125	0.48724	6.35421
	B->Y (FF)	!A	0.06555	0.54324	5.30253
	B->Y (RF)	A	0.03859	0.48779	6.27056

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	0.01492	0.01489	0.02726
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00283	0.00147	0.01247
	B	A	0.00000	0.00000	0.00000
	B	A	0.01525	0.01526	0.02746
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00186	0.00151	0.01332

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	0.00270	0.00195	0.01410
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01625	0.01627	0.02627
	B	A	0.00000	0.00000	0.00000
	B	A	0.00276	0.00206	0.01367
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01443	0.01474	0.02674

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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	0.47231
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	244062.00000	488123.00000
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
	-0.00205	0.04927	0.74976

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
	4.24802	4.04024	0.93667