sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs Library

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

SKY130_OSU_SC_15T_LS__ADDFx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.01412	0.01415	0.01119	0.19285	0.06891	0.19077
sky130_osu_sc_15T_ls__addf_l	0.01412	0.01415	0.01119	0.11274	0.06982	0.11338

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00023	0.00025
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00025	0.00029

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)	0.58994	2.89869	18.04100
	B->CO (RR)	0.57344	2.84172	17.83200
	CI->CO (RR)	0.57024	2.88225	18.17530
	CON->CO (FR)	0.20366	1.81910	13.99420
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.67190	3.01124	16.13980
	B->CO (RR)	0.64553	2.95775	16.10530
	CI->CO (RR)	0.65209	2.99797	16.32100
	CON->CO (FR)	0.30403	2.18289	14.36760

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)	2.28704	7.75792	41.06210
	B->CO (FF)	2.14020	7.52052	40.43220
	CI->CO (FF)	2.11380	7.50207	40.48090
	CON->CO (RF)	0.05139	0.73585	6.92782
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	2.27471	6.59093	29.12940
	B->CO (FF)	2.12346	6.38147	28.69860
	CI->CO (FF)	2.10071	6.33482	28.54040
	CON->CO (RF)	0.06366	0.78395	7.01173

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)	1.58325	3.56304	14.91250
	B->CON (FR)	1.45966	3.39976	14.66820
	CI->CON (FR)	1.41065	3.30634	14.33940
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	1.50085	3.49198	14.91450
	B->CON (FR)	1.37936	3.33135	14.67050
	CI->CON (FR)	1.32843	3.23473	14.34150

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)	0.21154	0.86300	6.11642
	B->CON (RF)	0.19679	0.84383	6.07601
	CI->CON (RF)	0.19175	0.85022	6.13602
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.20175	0.85533	6.11864
	B->CON (RF)	0.18757	0.83618	6.07861
	CI->CON (RF)	0.18204	0.84219	6.13870

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)	2.93835	8.65989	41.72360
	B->S (-R)	2.79808	8.46395	41.25670
	CI->S (-R)	2.75591	8.38670	41.09550
	CON->S (RR)	0.38973	1.93168	11.21580
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	2.83581	7.64936	31.84970
	B->S (-R)	2.69988	7.47393	31.52000
	CI->S (-R)	2.65151	7.37950	31.20930
	CON->S (RR)	0.47067	2.25716	11.37530

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)	1.53973	3.06471	13.22040
	B->S (-F)	1.75172	3.22641	13.13090
	CI->S (-F)	1.51862	3.04407	13.33520
	CON->S (FF)	0.86483	1.69184	9.05721
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	1.44102	2.76340	11.03600
	B->S (-F)	1.65394	2.91423	11.00820
	CI->S (-F)	1.41941	2.74337	11.18900
	CON->S (FF)	0.81535	1.65979	8.90464

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	0.00181	0.00179	0.00173
	B	0.00208	0.00212	0.00205
	CI	0.00222	0.00226	0.00223
sky130_osu_sc_15T_ls__addf_l	A	0.00139	0.00134	0.00126
	B	0.00165	0.00166	0.00156
	CI	0.00180	0.00181	0.00176

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00624	0.00622	0.00620
	B	0.00615	0.00615	0.00608
	CI	0.00537	0.00546	0.00542
sky130_osu_sc_15T_ls__addf_l	A	0.00583	0.00580	0.00576
	B	0.00574	0.00572	0.00566
	CI	0.00496	0.00502	0.00498

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00624	0.00621	0.00619
	B	0.00614	0.00612	0.00606
	CI	0.00536	0.00541	0.00540
sky130_osu_sc_15T_ls__addf_l	A	0.00584	0.00581	0.00577
	B	0.00574	0.00571	0.00565
	CI	0.00496	0.00501	0.00499

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00178	0.00177	0.00167
	B	0.00205	0.00208	0.00194
	CI	0.00221	0.00225	0.00219
sky130_osu_sc_15T_ls__addf_l	A	0.00136	0.00133	0.00115
	B	0.00163	0.00164	0.00144
	CI	0.00180	0.00181	0.00169

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00624	0.00623	0.00621
	B	0.00615	0.00616	0.00610
	CI	0.00537	0.00546	0.00543
sky130_osu_sc_15T_ls__addf_l	A	0.00584	0.00581	0.00579
	B	0.00575	0.00573	0.00568
	CI	0.00497	0.00503	0.00501

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01272	0.01274	0.01268
	B	0.01174	0.01166	0.01148
	CI	0.01027	0.01028	0.01025
sky130_osu_sc_15T_ls__addf_l	A	0.01210	0.01207	0.01198
	B	0.01116	0.01101	0.01079
	CI	0.00967	0.00964	0.00958

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00704	0.00765	0.19432	0.07431	0.19373
sky130_osu_sc_15T_ls__addh_l	0.00704	0.00766	0.11665	0.07529	0.11428

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00019	0.00022
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00021	0.00024

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)	0.46357	1.97957	11.26050
	B->CO (RR)	0.46947	1.98074	11.43150
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.54853	2.31787	11.53410
	B->CO (RR)	0.55436	2.32001	11.72320

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)	0.67424	1.50650	8.93016
	B->CO (FF)	0.70784	1.55035	8.98906
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.64940	1.46390	8.62547
	B->CO (FF)	0.68360	1.50111	8.68860

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	0.72733	1.73665	7.20219
	A->CON (FR)	!B	1.01516	2.93684	14.28730
	B->CON (RR)	A	0.73357	1.73805	7.37124
	B->CON (FR)	!A	1.14801	3.16164	14.81460
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.66983	1.68509	7.11938
	A->CON (FR)	!B	0.93147	2.86323	14.29190
	B->CON (RR)	A	0.67638	1.68547	7.29114
	B->CON (FR)	!A	1.06417	3.08815	14.81920

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	0.82328	1.58906	8.66073
	A->CON (RF)	!B	0.13690	0.79863	6.13032
	B->CON (FF)	A	0.85418	1.63906	8.74877
	B->CON (RF)	!A	0.15234	0.81241	6.11028
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.75170	1.52567	8.56401
	A->CON (RF)	!B	0.12743	0.78858	6.13348
	B->CON (FF)	A	0.78220	1.57162	8.65747
	B->CON (RF)	!A	0.14294	0.80452	6.11337

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	0.47046	2.75092	17.99390
	A->S (FR)	B	1.17130	3.53109	19.97540
	B->S (RR)	!A	0.48593	2.73997	17.79850
	B->S (FR)	A	1.20531	3.60622	20.26200
	CON->S (FR)	-	0.20763	1.83450	14.09170
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.53744	2.84111	16.15300
	A->S (FR)	B	1.17807	3.57556	18.03220
	B->S (RR)	!A	0.55471	2.84095	16.01550
	B->S (FR)	A	1.21025	3.63666	18.22500
	CON->S (FR)	-	0.29729	2.17232	14.39120

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	1.58189	6.78523	39.25980
	A->S (RF)	B	1.04157	3.62862	19.01890
	B->S (FF)	!A	1.71493	7.00895	39.82190
	B->S (RF)	A	1.04783	3.62775	19.17980
	CON->S (RF)	-	0.04895	0.72877	6.89386
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	1.52586	5.61597	27.70810
	A->S (RF)	B	1.00053	3.11841	13.87980
	B->S (FF)	!A	1.65934	5.84191	28.24410
	B->S (RF)	A	1.00661	3.11749	14.05400
	CON->S (RF)	-	0.06080	0.77933	7.00969

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	0.00289	0.00283	0.00273
	B	0.00000	0.00000	0.00000
	B	0.00273	0.00268	0.00258
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00249	0.00241	0.00230
	B	0.00000	0.00000	0.00000
	B	0.00233	0.00225	0.00215

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	0.00444	0.00438	0.00409
	B	0.00000	0.00000	0.00000
	B	0.00462	0.00464	0.00437
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00404	0.00398	0.00374
	B	0.00000	0.00000	0.00000
	B	0.00423	0.00423	0.00402

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	0.00289	0.00282	0.00271
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00392	0.00386	0.00384
	B	A	0.00000	0.00000	0.00000
	B	A	0.00273	0.00266	0.00256
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00417	0.00412	0.00408
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00248	0.00240	0.00228
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00363	0.00356	0.00354
	B	A	0.00000	0.00000	0.00000
	B	A	0.00232	0.00224	0.00213
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00388	0.00382	0.00378

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	0.00444	0.00440	0.00425
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00073	0.00075	0.00069
	B	A	0.00000	0.00000	0.00000
	B	A	0.00462	0.00464	0.00452
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00109	0.00106	0.00099
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00405	0.00399	0.00380
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00038	0.00038	0.00025
	B	A	0.00000	0.00000	0.00000
	B	A	0.00423	0.00423	0.00406
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00073	0.00070	0.00055

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	0.00445	0.00439	0.00433
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00074	0.00076	0.00073
	B	A	0.00000	0.00000	0.00000
	B	A	0.00463	0.00464	0.00461
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00110	0.00108	0.00105
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00405	0.00399	0.00393
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00038	0.00039	0.00033
	B	A	0.00000	0.00000	0.00000
	B	A	0.00424	0.00424	0.00420
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00075	0.00072	0.00065

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	0.00289	0.00283	0.00273
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00392	0.00391	0.00386
	B	A	0.00000	0.00000	0.00000
	B	A	0.00273	0.00267	0.00258
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00416	0.00414	0.00411
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00248	0.00241	0.00229
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00362	0.00360	0.00356
	B	A	0.00000	0.00000	0.00000
	B	A	0.00232	0.00225	0.00213
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00388	0.00383	0.00380

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00375	0.00382	0.19400
sky130_osu_sc_15T_ls__and2_2	0.00375	0.00382	0.38294
sky130_osu_sc_15T_ls__and2_4	0.00375	0.00382	0.75645
sky130_osu_sc_15T_ls__and2_6	0.00378	0.00382	1.10967
sky130_osu_sc_15T_ls__and2_8	0.00375	0.00382	1.49657
sky130_osu_sc_15T_ls__and2_l	0.00284	0.00292	0.11267

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00008	0.00010
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00012	0.00014
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00019	0.00020
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00026	0.00027
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00033	0.00034
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00011	0.00014

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)	0.36795	1.86214	10.78630
	B->Y (RR)	0.37879	1.87000	11.03650
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.38340	1.65797	11.07640
	B->Y (RR)	0.39387	1.66328	11.25380
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.51493	1.63324	11.66410
	B->Y (RR)	0.52517	1.63893	11.78100
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.65219	1.69826	12.00370
	B->Y (RR)	0.66209	1.70585	12.06860
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.78656	1.80814	12.51560
	B->Y (RR)	0.79722	1.81681	12.54510
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.51667	2.28146	11.47820
	B->Y (RR)	0.52899	2.29029	11.71900

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)**	0.48194	1.28161	8.49646
	B->Y (FF)	0.52251	1.32248	8.58552
sky130_osu_sc_15T_ls__and2_2	**A->Y (FF)**	0.62762	1.42334	8.83669
	B->Y (FF)	0.66889	1.47261	8.90650
sky130_osu_sc_15T_ls__and2_4	**A->Y (FF)**	0.94812	1.76814	9.38426
	B->Y (FF)	0.98930	1.81120	9.43471
sky130_osu_sc_15T_ls__and2_6	**A->Y (FF)**	1.27307	2.12711	9.80531
	B->Y (FF)	1.31218	2.16651	9.85341
sky130_osu_sc_15T_ls__and2_8	**A->Y (FF)**	1.58151	2.46819	10.24100
	B->Y (FF)	1.62058	2.48597	10.28500
sky130_osu_sc_15T_ls__and2_l	**A->Y (FF)**	0.62568	1.45363	8.72585
	B->Y (FF)	0.68176	1.51522	8.82679

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	0.00239	0.00232	0.00217
	B	0.00000	0.00000	0.00000
	B	0.00244	0.00236	0.00223
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00445	0.00445	0.00435
	B	0.00000	0.00000	0.00000
	B	0.00449	0.00452	0.00440
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00902	0.00924	0.00919
	B	0.00000	0.00000	0.00000
	B	0.00906	0.00931	0.00928
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01357	0.01400	0.01408
	B	0.00000	0.00000	0.00000
	B	0.01361	0.01406	0.01411
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01809	0.01872	0.01888
	B	0.00000	0.00000	0.00000
	B	0.01814	0.01875	0.01898
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00172	0.00167	0.00156
	B	0.00000	0.00000	0.00000
	B	0.00176	0.00171	0.00161

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	0.00553	0.00542	0.00533
	B	0.00000	0.00000	0.00000
	B	0.00614	0.00604	0.00594
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00701	0.00709	0.00700
	B	0.00000	0.00000	0.00000
	B	0.00763	0.00773	0.00763
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01068	0.01112	0.01110
	B	0.00000	0.00000	0.00000
	B	0.01130	0.01174	0.01172
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01441	0.01517	0.01529
	B	0.00000	0.00000	0.00000
	B	0.01502	0.01575	0.01588
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01797	0.01899	0.01934
	B	0.00000	0.00000	0.00000
	B	0.01860	0.01958	0.01994
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00417	0.00408	0.00400
	B	0.00000	0.00000	0.00000
	B	0.00460	0.00451	0.00443

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)	-0.00187	-0.00188	-0.00189
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00186	-0.00188	-0.00189
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00187	-0.00189	-0.00189
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00188	-0.00190	-0.00190
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00187	-0.00189	-0.00188
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00133	-0.00133	-0.00134

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)	0.00188	0.00191	0.00189
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00188	0.00191	0.00189
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00188	0.00191	0.00189
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00190	0.00192	0.00190
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00188	0.00191	0.00189
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00134	0.00135	0.00134

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)	-0.00177	-0.00178	-0.00177
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00176	-0.00178	-0.00177
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00176	-0.00178	-0.00177
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00176	-0.00178	-0.00177
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00177	-0.00178	-0.00177
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00126	-0.00126	-0.00126

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)	0.00177	0.00179	0.00178
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00176	0.00178	0.00178
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00176	0.00178	0.00178
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00176	0.00178	0.00178
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00177	0.00178	0.00178
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00126	0.00126	0.00127

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00340	0.00359	0.00357	0.07561

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00005	0.00008

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)	0.80338	2.89376	14.85450
	A1->Y (FR)	0.68908	2.73541	14.59000
	B0->Y (FR)	0.67064	2.64537	14.30220

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)	0.10174	0.75833	6.05217
	A1->Y (RF)	0.09244	0.74970	6.03617
	B0->Y (RF)	0.07397	0.74708	6.40103

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	0.00416	0.00410	0.00406
	A1	0.00000	0.00000	0.00000
	A1	0.00354	0.00345	0.00341
	B0	0.00360	0.00337	0.00346

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	0.00043	0.00036	0.00026
	A1	0.00000	0.00000	0.00000
	A1	0.00044	0.00037	0.00026
	B0	-0.00034	-0.00035	-0.00041

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)	-0.00155	-0.00158	-0.00157
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00162	-0.00163	-0.00163
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00162	-0.00163	-0.00163

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)	0.00157	0.00159	0.00157
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00163	0.00164	0.00163
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00163	0.00164	0.00163

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)	-0.00152	-0.00156	-0.00154
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00159	-0.00160	-0.00160
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00174	-0.00175	-0.00176

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)	0.00153	0.00157	0.00154
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00159	0.00161	0.00160
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00175	0.00179	0.00176

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)	-0.00103	-0.00104	-0.00103

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)	0.00110	0.00111	0.00105

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_l	0.00339	0.00356	0.00381	0.00359	0.07528

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00008	0.00010

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)	1.01112	3.09348	15.00730
	A1->Y (FR)	0.90433	2.96393	14.84440
	B0->Y (FR)	0.71540	2.65351	14.21400
	B1->Y (FR)	0.81966	2.78342	14.38070

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)	0.12223	0.78003	6.08768
	A1->Y (RF)	0.11295	0.77464	6.07538
	B0->Y (RF)	0.08850	0.74269	6.00174
	B1->Y (RF)	0.09686	0.74784	6.02152

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	0.00510	0.00504	0.00500
	A1	0.00449	0.00440	0.00434
	B0	0.00389	0.00362	0.00369
	B1	0.00446	0.00421	0.00430

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00113	0.00107	0.00093
	A1	0.00113	0.00108	0.00094
	B0	-0.00014	-0.00014	-0.00021
	B1	-0.00014	-0.00014	-0.00020

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)	-0.00155	-0.00158	-0.00157
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00162	-0.00163	-0.00163
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00162	-0.00163	-0.00163
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00162	-0.00163	-0.00163

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)	0.00155	0.00158	0.00157
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00163	0.00164	0.00163
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00163	0.00164	0.00163
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00163	0.00164	0.00163

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)	-0.00153	-0.00155	-0.00154
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00159	-0.00160	-0.00160
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00173	-0.00175	-0.00175
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00173	-0.00175	-0.00175

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)	0.00154	0.00156	0.00154
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00159	0.00161	0.00160
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00174	0.00178	0.00176
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00174	0.00179	0.00176

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)	-0.00102	-0.00105	-0.00103
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00102	-0.00103	-0.00103
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00181	-0.00181	-0.00182
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00181	-0.00181	-0.00182

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)	0.00106	0.00107	0.00104
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00103	0.00103	0.00103
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00182	0.00184	0.00183
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00182	0.00184	0.00183

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)	-0.00104	-0.00105	-0.00104
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00103	-0.00104	-0.00103
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00166	-0.00167	-0.00166
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00166	-0.00167	-0.00166

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)	0.00107	0.00108	0.00105
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00103	0.00104	0.00103
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00166	0.00167	0.00167
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00166	0.00167	0.00167

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00385	0.19288
sky130_osu_sc_15T_ls__buf_2	0.00388	0.39369
sky130_osu_sc_15T_ls__buf_4	0.00388	0.76150
sky130_osu_sc_15T_ls__buf_6	0.00092	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00388	1.51200
sky130_osu_sc_15T_ls__buf_l	0.00297	0.11379

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00007	0.00007
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00010	0.00010
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00017	0.00018
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00031	0.00032
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00009	0.00009

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)**	0.28597	1.78324	10.64600
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.27203	1.57113	11.09060
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.34486	1.47765	11.45540
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.50553	1.52198	12.17320
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.40332	2.18448	11.36010

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)**	0.45430	1.24938	8.41468
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.60555	1.40875	8.87464
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.93039	1.75959	9.43197
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	1.56775	2.43604	10.30820
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.60319	1.42729	8.67666

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	0.00224	0.00211	0.00195
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00429	0.00425	0.00411
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00890	0.00902	0.00893
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01802	0.01850	0.01867
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00168	0.00159	0.00146

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	0.00543	0.00532	0.00522
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00693	0.00700	0.00690
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01063	0.01105	0.01101
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01797	0.01896	0.01931
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00415	0.00405	0.00396

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
	-0.00037	-0.00036	-0.00036

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
	0.00037	0.00036	0.00036

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00353	0.00361	0.01130	0.18859	0.18736
sky130_osu_sc_15T_ls__dffr_l	0.00353	0.00361	0.01130	0.11305	0.11163

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00040	0.00042
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00042	0.00044

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)	3.23266	5.30295	16.42460
	QN->Q (FR)	0.22683	1.92327	14.62110
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	3.19005	5.52181	16.43170
	QN->Q (FR)	0.31291	2.22979	14.70900

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)	2.32803	4.93484	20.16410
	QN->Q (RF)	0.05733	0.77683	7.34949
	RN->Q (FF)	1.53027	4.28022	22.54300
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	2.52722	5.59983	20.54010
	QN->Q (RF)	0.06772	0.81126	7.30939
	RN->Q (FF)	1.73274	4.95026	22.91590

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)	2.05862	3.57140	12.66250
	RN->QN (FR)	1.25717	2.91127	15.04430
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	2.16101	3.91021	12.88470
	RN->QN (FR)	1.36110	3.25425	15.26520

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)**	2.79695	3.64220	7.87281
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	2.67236	3.49307	7.58786

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)	-0.24013	-0.27956	-1.26638
	setup	CK (R)	2.49748	2.49155	3.03196
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.24375	-0.28320	-1.26464
	setup	CK (R)	2.49846	2.49560	3.03783

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)	-1.25764	-1.71943	-14.42710
	setup	CK (R)	1.40600	1.85443	14.57170
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-1.25789	-1.71768	-14.42600
	setup	CK (R)	1.39973	1.85338	14.57230

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)	-0.24013	-0.27956	-1.26638
	setup	CK (R)	2.49748	2.49155	3.03196
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.24375	-0.28320	-1.26464
	setup	CK (R)	2.49846	2.49560	3.03783

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)	-1.25764	-1.71943	-14.42710
	setup	CK (R)	1.40600	1.85443	14.57170
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-1.25789	-1.71768	-14.42600
	setup	CK (R)	1.39973	1.85338	14.57230

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)	2.41980	2.41533	2.73257
	removal	CK (R)	-0.38789	-0.42975	-0.29395
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	2.41946	2.41735	2.73766
	removal	CK (R)	-0.38959	-0.42975	-0.29395

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)	2.41980	2.41533	2.73257
	removal	CK (R)	-0.38789	-0.42975	-0.29395
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	2.41946	2.41735	2.73766
	removal	CK (R)	-0.38959	-0.42975	-0.29395

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 ()	0.98708	1.32962	14.13770
	min_pulse_width	RN ()	0.98455	1.32962	14.13450
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	1.01429	1.32536	14.10520
	min_pulse_width	RN ()	1.01682	1.32536	14.10190

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 ()	1.55824	1.68771	13.33370
	min_pulse_width	CK ()	1.34972	1.19747	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	1.37392	1.50653	13.33370
	min_pulse_width	CK ()	1.32627	1.18468	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 ()	3.14372	3.20105	13.43790
	min_pulse_width	CK ()	1.17590	1.55769	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	3.14372	3.20105	13.43140
	min_pulse_width	CK ()	1.16993	1.55769	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	0.00527	0.00514	0.00427
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00461	0.00447	0.00401

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	0.00596	0.00586	0.00557
	RN	-0.00080	-0.01244	-0.07725
	RN	0.01318	0.01314	0.01280
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00528	0.00517	0.00498
	RN	-0.00080	-0.00915	-0.04631
	RN	0.01249	0.01245	0.01220

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	0.00597	0.00586	0.00558
	RN	-0.00080	-0.01239	-0.07674
	RN	0.01319	0.01314	0.01280
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00529	0.00518	0.00500
	RN	-0.00080	-0.00908	-0.04572
	RN	0.01249	0.01245	0.01221

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	0.00526	0.00512	0.00401
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00459	0.00445	0.00379

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	-0.00152	-0.00155	-0.00156
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00576	0.00566	0.00548
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00237	0.00227	0.00211
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00152	-0.00155	-0.00156
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00576	0.00566	0.00548
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00237	0.00227	0.00211

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	0.00155	0.00155	0.00156
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00950	0.00940	0.00920
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00450	0.00440	0.00434
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00155	0.00155	0.00156
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00950	0.00940	0.00920
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00450	0.00440	0.00434

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)	0.00207	0.00196	0.00182
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00582	0.00562	0.00537
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)	0.00207	0.00196	0.00182
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00582	0.00562	0.00537

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)	0.00494	0.00477	0.00472
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01011	0.00994	0.00976
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)	0.00494	0.00477	0.00471
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01010	0.00993	0.00976

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)	-0.00035	-0.00046	-0.00064
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00287	0.00265	0.00222
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00043	-0.00059	-0.00077
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00035	-0.00046	-0.00064
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00287	0.00265	0.00222
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00043	-0.00059	-0.00077

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)	0.00812	0.00790	0.00781
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01580	0.01563	0.01283
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01210	0.01201	0.01180
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01585	0.01552	0.01518
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00863	0.00838	0.00829
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00812	0.00790	0.00781
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01580	0.01563	0.01283
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01210	0.01201	0.01179
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01586	0.01552	0.01518
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00863	0.00838	0.00829

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00348	0.00362	0.00780	0.01150	0.19388	0.19335
sky130_osu_sc_15T_ls__dffsr_l	0.00348	0.00362	0.00780	0.01150	0.11289	0.11153

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00040	0.00046
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00042	0.00048

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)	2.60298	4.61367	15.90200
	QN->Q (FR)	0.21075	1.85224	14.32160
	RN->Q (RR)	2.19886	4.24288	15.63320
	SN->Q (FR)	2.22992	4.38432	18.78800
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	2.65887	4.95759	15.98030
	QN->Q (FR)	0.31291	2.22691	14.68950
	RN->Q (RR)	2.27015	4.58382	15.71390
	SN->Q (FR)	2.30101	4.72621	18.87470

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)	2.48773	5.09008	20.36310
	QN->Q (RF)	0.05666	0.78030	7.40940
	RN->Q (FF)	1.63667	4.36498	22.70180
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	2.72043	5.81046	20.73920
	QN->Q (RF)	0.06755	0.81064	7.30391
	RN->Q (FF)	1.87012	5.08362	23.07160

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)	2.22319	3.73769	12.82940
	RN->QN (FR)	1.37372	3.00778	15.18060
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	2.34818	4.11640	13.08860
	RN->QN (FR)	1.49934	3.39020	15.43510

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)	2.24012	3.03847	7.39671
	RN->QN (RF)	1.82711	2.67200	7.13643
	SN->QN (FF)	1.85777	2.81315	10.29580
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	2.19255	2.97663	7.18726
	RN->QN (RF)	1.78369	2.61639	6.92551
	SN->QN (FF)	1.81545	2.75794	10.08700

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)	-0.25005	-0.26471	-1.36992
	setup	CK (R)	1.99641	1.97612	2.45739
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.25150	-0.27099	-1.36827
	setup	CK (R)	1.98695	1.96958	2.46009

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)	-1.40844	-1.85233	-14.62040
	setup	CK (R)	1.55752	1.96767	14.72290
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-1.40815	-1.85359	-14.62150
	setup	CK (R)	1.54774	1.96510	14.72190

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)	-0.25005	-0.26471	-1.36992
	setup	CK (R)	1.99641	1.97612	2.45739
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.25150	-0.27099	-1.36827
	setup	CK (R)	1.98695	1.96958	2.46009

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)	-1.40844	-1.85233	-14.62040
	setup	CK (R)	1.55752	1.96767	14.72290
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-1.40815	-1.85359	-14.62150
	setup	CK (R)	1.54774	1.96510	14.72190

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)	1.78293	1.77226	2.03018
	removal	CK (R)	-0.16667	-0.19687	-0.15394
	hold	SN (R)	-1.81497	-2.11108	-11.94560
	setup	SN (R)	1.87386	2.17937	12.59470
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	1.77326	1.76726	2.01792
	removal	CK (R)	-0.16614	-0.20077	-0.15310
	hold	SN (R)	-1.67054	-1.96887	-11.82260
	setup	SN (R)	1.86215	2.14005	12.55150

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)	1.78293	1.77226	2.03018
	removal	CK (R)	-0.16667	-0.19687	-0.15394
	hold	SN (R)	-1.84944	-2.12396	-11.94560
	hold	SN (R)	-1.81497	-2.11108	-11.95630
	setup	SN (R)	1.87386	2.17450	12.57020
	setup	SN (R)	1.84210	2.17937	12.59470
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	1.77326	1.76726	2.01792
	removal	CK (R)	-0.16614	-0.20077	-0.15310
	hold	SN (R)	-1.82051	-2.07849	-11.87750
	hold	SN (R)	-1.67054	-1.96887	-11.82260
	setup	SN (R)	1.86215	2.14005	12.48670
	setup	SN (R)	1.71402	2.13521	12.55150

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 ()	1.15363	1.44685	14.38190
	min_pulse_width	RN ()	1.15746	1.44472	14.38190
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	1.24915	1.46817	14.35260
	min_pulse_width	RN ()	1.23534	1.46177	14.35260

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)	0.09496	0.10776	0.75716
	removal	CK (R)	-0.01502	-0.04504	-0.53966
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.08335	0.10254	0.75613
	removal	CK (R)	-0.01502	-0.04504	-0.54466

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)	0.09496	0.10776	0.75716
	removal	CK (R)	-0.01502	-0.04504	-0.53966
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.08335	0.10254	0.75613
	removal	CK (R)	-0.01502	-0.04504	-0.54466

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 ()	1.87261	2.24189	15.48530
	min_pulse_width	SN ()	1.87320	2.25041	15.50810
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	1.86164	2.19073	15.38770
	min_pulse_width	SN ()	1.74471	2.20565	15.43970

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 ()	1.11591	1.22305	13.33370
	min_pulse_width	CK ()	1.42747	1.27847	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	1.01338	1.12926	13.33370
	min_pulse_width	CK ()	1.40745	1.26142	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 ()	2.65114	2.68736	13.45420
	min_pulse_width	CK ()	1.33955	1.68131	13.45420
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	2.64144	2.68736	13.44770
	min_pulse_width	CK ()	1.32820	1.67918	13.45420

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	0.00628	0.00615	0.00521
	RN	0.01189	0.01177	0.01086
	SN	-0.00080	-0.01265	-0.07941
	SN	0.01264	0.01251	0.01169
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00568	0.00556	0.00506
	RN	0.01129	0.01118	0.01075
	SN	-0.00080	-0.00914	-0.04624
	SN	0.01204	0.01191	0.01157

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	0.00661	0.00656	0.00635
	RN	-0.00080	-0.01265	-0.07941
	RN	0.01384	0.01383	0.01352
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00600	0.00593	0.00573
	RN	-0.00080	-0.00914	-0.04624
	RN	0.01322	0.01318	0.01291

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	0.00663	0.00658	0.00636
	RN	-0.00080	-0.01263	-0.07919
	RN	0.01385	0.01383	0.01353
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00601	0.00594	0.00574
	RN	-0.00080	-0.00908	-0.04568
	RN	0.01322	0.01319	0.01291

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	0.00626	0.00612	0.00492
	RN	0.01186	0.01174	0.01059
	SN	-0.00080	-0.01263	-0.07919
	SN	0.01261	0.01248	0.01140
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00566	0.00553	0.00484
	RN	0.01126	0.01114	0.01049
	SN	-0.00080	-0.00908	-0.04568
	SN	0.01201	0.01187	0.01131

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	-0.00153	-0.00156	-0.00156
	(!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)	0.00730	0.00721	0.00704
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00270	0.00262	0.00247
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00269	0.00261	0.00245
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00273	0.00265	0.00250
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00153	-0.00156	-0.00156
	(!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)	0.00730	0.00721	0.00704
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00270	0.00262	0.00247
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00269	0.00261	0.00245
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00273	0.00265	0.00249

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	0.00155	0.00158	0.00156
	(!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)	0.01068	0.01059	0.01018
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00488	0.00479	0.00472
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00490	0.00481	0.00473
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00486	0.00476	0.00469
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00155	0.00158	0.00156
	(!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)	0.01067	0.01059	0.01018
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00488	0.00478	0.00472
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00489	0.00480	0.00472
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00485	0.00476	0.00468

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)	0.00222	0.00210	0.00188
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00720	0.00701	0.00667
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)	0.00222	0.00210	0.00188
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00721	0.00701	0.00667

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)	0.00545	0.00528	0.00523
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01084	0.01066	0.01044
sky130_osu_sc_15T_ls__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00544	0.00527	0.00522
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01083	0.01065	0.01043

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)	-0.00369	-0.00372	-0.00373
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00392	-0.00397	-0.00395
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00372	-0.00374	-0.00375
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00179	0.00172	0.00146
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)	-0.00369	-0.00372	-0.00373
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00391	-0.00396	-0.00393
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00372	-0.00376	-0.00375
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00179	0.00172	0.00146

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)	0.00372	0.00381	0.00374
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00392	0.00401	0.00395
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00373	0.00380	0.00375
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00794	0.00778	0.00736
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)	0.00372	0.00381	0.00374
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00391	0.00400	0.00393
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00373	0.00380	0.00375
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00793	0.00777	0.00735

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)	-0.00035	-0.00047	-0.00065
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00338	0.00318	0.00277
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00334	0.00314	0.00271
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00049	-0.00069
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00253	0.00230	0.00193
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00035	-0.00047	-0.00065
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00337	0.00318	0.00277
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00333	0.00314	0.00270
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00049	-0.00069
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00253	0.00230	0.00193

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)	0.01745	0.01729	0.01443
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00814	0.00793	0.00784
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01233	0.01223	0.01204
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01236	0.01227	0.01204
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01700	0.01665	0.01614
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00854	0.00830	0.00821
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01063	0.01023	0.01005
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01745	0.01729	0.01444
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00814	0.00793	0.00784
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01233	0.01223	0.01204
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01236	0.01227	0.01204
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01699	0.01665	0.01613
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00854	0.00830	0.00821
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01062	0.01022	0.01005

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00351	0.00642	0.01130	0.18731	0.18724
sky130_osu_sc_15T_ls__dffs_l	0.00351	0.00640	0.01130	0.11338	0.11148

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00038	0.00049
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00040	0.00051

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)	1.71435	3.67386	14.69410
	QN->Q (FR)	0.22749	1.91377	14.54690
	SN->Q (FR)	1.57622	3.65999	18.06040
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	1.76432	4.02353	14.97210
	QN->Q (FR)	0.31311	2.22874	14.71490
	SN->Q (FR)	1.64374	4.01126	18.30480

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)	2.51399	5.11307	20.24190
	QN->Q (RF)	0.05700	0.77498	7.32430
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	2.69597	5.78328	20.74490
	QN->Q (RF)	0.06741	0.81037	7.30556

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)	2.23766	3.75296	12.84540
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	2.32430	4.07524	13.04210

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)	1.38181	2.12138	6.29748
	SN->QN (FF)	1.22456	2.13206	9.64412
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	1.33832	2.07570	6.13401
	SN->QN (FF)	1.18834	2.07933	9.49978

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)	-0.17132	-0.19776	-1.19441
	setup	CK (R)	1.24931	1.23669	1.89564
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.17091	-0.19935	-1.19482
	setup	CK (R)	1.24154	1.23411	1.88473

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)	-1.30760	-1.75806	-14.50310
	setup	CK (R)	1.56250	1.92077	14.64830
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-1.30871	-1.75781	-14.50240
	setup	CK (R)	1.55463	1.91861	14.65000

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)	-0.17132	-0.19776	-1.19441
	setup	CK (R)	1.24931	1.23669	1.89564
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.17091	-0.19935	-1.19482
	setup	CK (R)	1.24154	1.23411	1.88473

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)	-1.30760	-1.75806	-14.50310
	setup	CK (R)	1.56250	1.92077	14.64830
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-1.30871	-1.75781	-14.50240
	setup	CK (R)	1.55463	1.91861	14.65000

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)	0.20343	0.21136	1.47046
	removal	CK (R)	-0.05743	-0.10419	-1.14823
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.18907	0.20475	1.46728
	removal	CK (R)	-0.05743	-0.10419	-1.14715

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)	0.20343	0.21136	1.47046
	removal	CK (R)	-0.05743	-0.10419	-1.14823
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.18907	0.20475	1.46728
	removal	CK (R)	-0.05743	-0.10419	-1.14715

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 ()	1.17545	1.81773	15.18580
	min_pulse_width	SN ()	1.20884	1.80494	15.20860
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	1.15329	1.75165	15.12070
	min_pulse_width	SN ()	1.12162	1.77083	15.13380

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 ()	0.46033	0.79463	13.33370
	min_pulse_width	CK ()	1.38257	1.25076	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.42626	0.77544	13.33370
	min_pulse_width	CK ()	1.34806	1.19960	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 ()	1.90073	1.94561	13.41840
	min_pulse_width	CK ()	1.34721	1.62803	13.35330
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	1.89283	1.94135	13.42160
	min_pulse_width	CK ()	1.33785	1.62803	13.35330

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	0.00526	0.00511	0.00418
	SN	-0.00080	-0.01239	-0.07672
	SN	0.01105	0.01097	0.01006
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00459	0.00444	0.00394
	SN	-0.00080	-0.00917	-0.04644
	SN	0.01037	0.01030	0.00983

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	0.00597	0.00588	0.00560
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00528	0.00520	0.00500

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	0.00597	0.00588	0.00567
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00529	0.00520	0.00503

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	0.00524	0.00509	0.00390
	SN	-0.00080	-0.01239	-0.07669
	SN	0.01102	0.01094	0.00976
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00457	0.00442	0.00370
	SN	-0.00080	-0.00907	-0.04566
	SN	0.01034	0.01027	0.00958

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	-0.00156	-0.00159	-0.00159
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00572	0.00562	0.00537
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00231	0.00222	0.00206
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00156	-0.00159	-0.00159
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00572	0.00562	0.00537
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00231	0.00222	0.00206

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	0.00158	0.00161	0.00159
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00963	0.00954	0.00939
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00463	0.00452	0.00446
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00158	0.00161	0.00159
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00963	0.00954	0.00939
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00463	0.00452	0.00446

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)	-0.00269	-0.00271	-0.00271
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00210	0.00202	0.00190
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)	-0.00269	-0.00271	-0.00271
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00210	0.00202	0.00190

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)	0.00271	0.00272	0.00271
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00576	0.00562	0.00549
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)	0.00271	0.00272	0.00271
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00576	0.00562	0.00549

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)	-0.00036	-0.00048	-0.00066
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00040	-0.00056	-0.00075
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00213	0.00188	0.00152
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00036	-0.00048	-0.00066
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00040	-0.00056	-0.00075
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00213	0.00188	0.00152

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01581	0.01565	0.01462
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00813	0.00791	0.00782
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01594	0.01556	0.01524
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00859	0.00835	0.00826
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01034	0.00992	0.00978
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01581	0.01563	0.01462
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00813	0.00791	0.00782
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01594	0.01556	0.01524
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00859	0.00835	0.00826
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01034	0.00992	0.00978

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00368	0.01127	0.19551	0.19354
sky130_osu_sc_15T_ls__dff_l	0.00368	0.01127	0.11248	0.10856

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00033	0.00034
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00035	0.00036

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)	1.24166	3.15744	14.45090
	QN->Q (FR)	0.20991	1.85532	14.36060
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	1.35236	3.60403	14.70540
	QN->Q (FR)	0.33094	2.32396	15.08940

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)	2.25443	4.85660	20.20700
	QN->Q (RF)	0.05649	0.78205	7.41594
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	2.51544	5.65653	20.78610
	QN->Q (RF)	0.06764	0.81356	7.29262

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)	1.99575	3.49668	12.58040
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	2.14102	3.91330	12.86380

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)	0.95211	1.64261	5.90220
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.94297	1.63372	5.73451

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)	-0.16875	-0.19565	-1.24617
	setup	CK (R)	0.78470	0.77870	1.64964
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.17177	-0.19543	-1.24447
	setup	CK (R)	0.77233	0.77038	1.64032

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)	-1.26022	-1.74116	-14.50300
	setup	CK (R)	1.46366	1.93608	14.72150
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-1.26349	-1.74193	-14.50290
	setup	CK (R)	1.45928	1.93585	14.72140

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 ()	0.32680	0.73281	13.33370
	min_pulse_width	CK ()	1.34191	1.19321	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.31944	0.73494	13.33370
	min_pulse_width	CK ()	1.31806	1.17616	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** ()	1.43659	1.49374	13.40210
	min_pulse_width	**CK** ()	1.22088	1.63016	13.41510
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK** ()	1.42555	1.48522	13.38260
	min_pulse_width	**CK** ()	1.21463	1.63016	13.41840

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	0.00557	0.00535	0.00432
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00498	0.00479	0.00429

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	0.00606	0.00601	0.00580
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00545	0.00538	0.00515

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	0.00606	0.00601	0.00581
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00546	0.00538	0.00517

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	0.00556	0.00533	0.00407
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00496	0.00477	0.00405

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	-0.00152	-0.00154	-0.00155
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00553	0.00544	0.00521
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00152	-0.00154	-0.00155
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00553	0.00544	0.00521

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	0.00154	0.00154	0.00155
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01013	0.01000	0.00980
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00154	0.00154	0.00155
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01013	0.01000	0.00981

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)	-0.00036	-0.00047	-0.00066
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00040	-0.00055	-0.00075
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00036	-0.00047	-0.00066
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00040	-0.00055	-0.00075

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)	0.00808	0.00786	0.00778
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01558	0.01542	0.01495
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01629	0.01591	0.01559
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00850	0.00830	0.00821
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00808	0.00786	0.00778
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01558	0.01542	0.01496
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01630	0.01591	0.01559
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00850	0.00830	0.00821

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00367	0.19068
sky130_osu_sc_15T_ls__inv_10	0.03363	1.88439
sky130_osu_sc_15T_ls__inv_2	0.00691	0.38311
sky130_osu_sc_15T_ls__inv_3	0.01028	0.56320
sky130_osu_sc_15T_ls__inv_4	0.01357	0.75609
sky130_osu_sc_15T_ls__inv_6	0.02033	1.13678
sky130_osu_sc_15T_ls__inv_8	0.02698	1.48750
sky130_osu_sc_15T_ls__inv_l	0.00273	0.11122

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00003	0.00004
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00034	0.00036
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00007	0.00007
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00010	0.00011
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00014	0.00014
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00021	0.00021
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00027	0.00029
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00004	0.00006

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)**	0.20775	1.79892	13.97140
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.16665	1.17048	14.11870
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.14486	1.51425	13.96600
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.14737	1.42650	13.95730
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.13634	1.34343	13.93790
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.13991	1.25439	14.03490
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.15090	1.19802	13.94770
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.31271	2.18504	14.44000

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)**	0.05090	0.73274	6.91033
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.06263	0.61116	7.00421
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.04116	0.68029	6.91865
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.04363	0.66455	6.96383
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.04260	0.64492	6.95751
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.04821	0.62779	6.98868
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.05487	0.61498	6.97050
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.06268	0.78027	6.98469

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	0.00278	0.00248	0.00254
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02376	0.02292	0.02355
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00491	0.00463	0.00469
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00755	0.00732	0.00683
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.00968	0.00947	0.00765
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01441	0.01414	0.01305
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.01910	0.01873	0.01792
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00208	0.00187	0.00198

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	-0.00039	-0.00042	-0.00044
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00708	-0.00712	-0.00697
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00137	-0.00142	-0.00144
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00172	-0.00181	-0.00183
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00273	-0.00283	-0.00283
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00411	-0.00425	-0.00422
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00557	-0.00570	-0.00561
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00026	-0.00027	-0.00030

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.15598	0.15717	0.00751	0.18646

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00012	0.00012

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)	-	0.10653	1.15069	9.94793
	A1->Y (RR)	-	0.12701	1.16000	9.96306
	S0->Y (RR)	(!A0 * A1)	0.20856	1.35894	9.77942
	S0->Y (FR)	(A0 * !A1)	0.22629	1.72503	11.70610

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)	-	0.05756	0.73820	7.07678
	A1->Y (FF)	-	0.04647	0.72854	7.05700
	S0->Y (FF)	(!A0 * A1)	0.47434	1.25415	8.45438
	S0->Y (RF)	(A0 * !A1)	0.05613	0.73857	6.81486

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	-	-0.00285	-0.00285	-0.00285
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00200	-0.00200	-0.00200
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00369	0.00350	0.00343
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00170	-0.00186	-0.00201

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	-	0.00285	0.00285	0.00286
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00200	0.00200	0.00201
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00070	0.00054	0.00040
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00730	0.00711	0.00702

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)	-0.00080	-0.00080	-0.00080

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)	0.00080	0.00080	0.00080

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)	-0.00096	-0.00096	-0.00096

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)	0.00097	0.00096	0.00096

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)	-0.00050	-0.00068	-0.00081
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00050	-0.00066	-0.00081

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)	0.00559	0.00539	0.00533
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00539	0.00521	0.00514

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__nand2_1	7.93650
sky130_osu_sc_15T_ls__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nand2_1	0.00367	0.00361	0.18961
sky130_osu_sc_15T_ls__nand2_l	0.00273	0.00271	0.11026

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00005	0.00007
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00006	0.00011

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)	0.22280	1.81457	13.97160
	B->Y (FR)	0.26009	1.84284	13.93560
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.32640	2.19517	14.41580
	B->Y (FR)	0.37477	2.24432	14.46450

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)	0.08645	0.89661	7.85798
	B->Y (RF)	0.09576	0.90395	7.76093
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.11602	1.00653	8.01855
	B->Y (RF)	0.12546	1.01846	7.91784

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	0.00295	0.00263	0.00270
	B	0.00000	0.00000	0.00000
	B	0.00355	0.00323	0.00325
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00217	0.00196	0.00206
	B	0.00000	0.00000	0.00000
	B	0.00257	0.00237	0.00247

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	-0.00018	-0.00020	-0.00023
	B	0.00000	0.00000	0.00000
	B	-0.00016	-0.00019	-0.00021
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00014	-0.00016	-0.00018
	B	0.00000	0.00000	0.00000
	B	-0.00013	-0.00015	-0.00016

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)	-0.00183	-0.00184	-0.00184
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00127	-0.00128	-0.00128

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)	0.00184	0.00187	0.00185
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00127	0.00128	0.00128

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)	-0.00169	-0.00170	-0.00169
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00117	-0.00118	-0.00118

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)	0.00169	0.00171	0.00169
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00117	0.00118	0.00118

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00354	0.00393	0.07889
sky130_osu_sc_15T_ls__nor2_l	0.00257	0.00296	0.04643

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00004	0.00007
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00005	0.00007

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)	0.62391	2.70658	14.75880
	B->Y (FR)	0.55856	2.51763	14.23900
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.84506	3.21502	14.89480
	B->Y (FR)	0.80269	3.07247	14.54890

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)	0.05669	0.65704	5.58848
	B->Y (RF)	0.05306	0.64662	5.56459
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.06799	0.69660	5.75020
	B->Y (RF)	0.06524	0.69044	5.72961

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	0.00349	0.00341	0.00339
	B	0.00000	0.00000	0.00000
	B	0.00304	0.00280	0.00266
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00247	0.00242	0.00240
	B	0.00000	0.00000	0.00000
	B	0.00223	0.00215	0.00207

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	0.00012	0.00005	-0.00003
	B	0.00000	0.00000	0.00000
	B	-0.00035	-0.00036	-0.00042
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00006	0.00003	-0.00003
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00021	-0.00026

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)	-0.00153	-0.00157	-0.00156
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00102	-0.00105	-0.00104

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)	0.00155	0.00157	0.00156
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00104	0.00105	0.00104

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)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00069	-0.00069	-0.00069

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)	0.00103	0.00104	0.00103
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00069	0.00069	0.00069

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00363	0.00364	0.00314	0.07730

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00006	0.00010

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)	0.76046	2.73824	14.37490
	A1->Y (FR)	0.84780	2.93775	14.91630
	B0->Y (FR)	0.40383	1.94922	12.22340

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)	0.11116	0.77794	6.11719
	A1->Y (RF)	0.11708	0.77942	6.12938
	B0->Y (RF)	0.09375	0.76701	6.17077

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	0.00387	0.00365	0.00350
	A1	0.00000	0.00000	0.00000
	A1	0.00437	0.00429	0.00425
	B0	0.00298	0.00268	0.00281

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	0.00021	0.00021	0.00015
	A1	0.00000	0.00000	0.00000
	A1	0.00072	0.00066	0.00058
	B0	0.00111	0.00109	0.00103

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)	-0.00103	-0.00104	-0.00104
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00155	-0.00158	-0.00157
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00163	-0.00164	-0.00164

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)	0.00103	0.00105	0.00104
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00157	0.00158	0.00157
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00163	0.00164	0.00164

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)	-0.00150	-0.00153	-0.00152
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00154	-0.00157	-0.00156
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00161	-0.00161	-0.00161

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)	0.00152	0.00154	0.00152
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00155	0.00158	0.00156
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00161	0.00161	0.00162

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)	-0.00130	-0.00130	-0.00133

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)	0.00133	0.00135	0.00134

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00343	0.00373	0.00389	0.00369	0.07761

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00008	0.00010

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)	0.94215	3.02633	14.99480
	A1->Y (FR)	0.86437	2.82615	14.50570
	B0->Y (FR)	0.60942	2.55128	14.21780
	B1->Y (FR)	0.69800	2.76475	14.71150

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)	0.14375	0.82089	6.19818
	A1->Y (RF)	0.12829	0.80279	6.16455
	B0->Y (RF)	0.10912	0.78321	6.21838
	B1->Y (RF)	0.12592	0.80816	6.27263

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	0.00542	0.00534	0.00530
	A1	0.00490	0.00466	0.00451
	B0	0.00371	0.00347	0.00354
	B1	0.00427	0.00416	0.00412

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00093	0.00086	0.00076
	A1	0.00046	0.00047	0.00038
	B0	0.00048	0.00048	0.00038
	B1	0.00096	0.00089	0.00079

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)	-0.00153	-0.00157	-0.00156
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00153	-0.00157	-0.00156
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00154	-0.00158	-0.00156
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00162	-0.00163	-0.00162

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)	0.00155	0.00157	0.00156
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00155	0.00157	0.00156
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00156	0.00158	0.00156
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00162	0.00165	0.00163

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)	-0.00102	-0.00104	-0.00103
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00102	-0.00104	-0.00103
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00152	-0.00155	-0.00154
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00160	-0.00162	-0.00161

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)	0.00102	0.00104	0.00103
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00102	0.00104	0.00103
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00154	0.00155	0.00154
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00160	0.00163	0.00161

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)	-0.00101	-0.00103	-0.00102
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00101	-0.00102	-0.00102
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00173	-0.00175	-0.00175
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00174	-0.00176	-0.00180

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)	0.00102	0.00103	0.00102
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00102	0.00102	0.00102
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00175	0.00175	0.00175
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00180	0.00184	0.00181

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)	-0.00150	-0.00154	-0.00153
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00150	-0.00154	-0.00153
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00177	-0.00181	-0.00180
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00179	-0.00180	-0.00184

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)	0.00153	0.00154	0.00153
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00153	0.00154	0.00153
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00179	0.00181	0.00180
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00185	0.00188	0.00185

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00389	0.00376	0.19622
sky130_osu_sc_15T_ls__or2_2	0.00389	0.00375	0.38750
sky130_osu_sc_15T_ls__or2_4	0.00389	0.00375	0.76784
sky130_osu_sc_15T_ls__or2_8	0.00389	0.00375	1.50549
sky130_osu_sc_15T_ls__or2_l	0.00299	0.00279	0.10994

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00008	0.00010
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00011	0.00014
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00018	0.00021
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00031	0.00035
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00009	0.00012

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (RR)	0.30397	1.82419	10.91820
	B->Y (RR)	0.29535	1.80912	10.81500
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.28720	1.58652	11.09970
	B->Y (RR)	0.27671	1.57217	11.01880
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.36004	1.50062	11.61260
	B->Y (RR)	0.34913	1.48620	11.54450
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.52018	1.53876	12.23930
	B->Y (RR)	0.50901	1.52562	12.19160
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.42619	2.22436	11.45870
	B->Y (RR)	0.41566	2.20931	11.35640

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)	1.17116	2.04707	9.47628
	B->Y (FF)	1.05516	1.86370	9.02617
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	1.53875	2.45450	9.99575
	B->Y (FF)	1.42376	2.26937	9.57083
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	2.31670	3.32165	11.07350
	B->Y (FF)	2.20154	3.10937	10.61550
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	3.84540	5.00567	13.11780
	B->Y (FF)	3.72999	4.79438	12.63720
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	1.51402	2.40036	9.65741
	B->Y (FF)	1.37282	2.20260	9.30303

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	0.00278	0.00269	0.00252
	B	0.00000	0.00000	0.00000
	B	0.00229	0.00223	0.00203
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00486	0.00484	0.00468
	B	0.00000	0.00000	0.00000
	B	0.00435	0.00441	0.00424
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.00948	0.00961	0.00952
	B	0.00000	0.00000	0.00000
	B	0.00895	0.00918	0.00912
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01863	0.01910	0.01931
	B	0.00000	0.00000	0.00000
	B	0.01809	0.01873	0.01897
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00202	0.00196	0.00183
	B	0.00000	0.00000	0.00000
	B	0.00170	0.00166	0.00151

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	0.00617	0.00612	0.00608
	B	0.00000	0.00000	0.00000
	B	0.00550	0.00546	0.00539
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00763	0.00777	0.00778
	B	0.00000	0.00000	0.00000
	B	0.00696	0.00710	0.00708
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01124	0.01165	0.01188
	B	0.00000	0.00000	0.00000
	B	0.01056	0.01100	0.01116
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.01842	0.01920	0.02012
	B	0.00000	0.00000	0.00000
	B	0.01776	0.01856	0.01935
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00459	0.00452	0.00448
	B	0.00000	0.00000	0.00000
	B	0.00410	0.00407	0.00401

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)	-0.00155	-0.00159	-0.00157
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00154	-0.00159	-0.00157
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00155	-0.00159	-0.00157
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00154	-0.00159	-0.00157
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00104	-0.00106	-0.00105

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)	0.00157	0.00159	0.00157
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00157	0.00159	0.00157
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00157	0.00159	0.00157
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00157	0.00159	0.00157
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00106	0.00106	0.00105

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)	-0.00103	-0.00104	-0.00104
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00104
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00104
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00104
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00070	-0.00070	-0.00070

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)	0.00104	0.00105	0.00104
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00104	0.00105	0.00104
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00104	0.00105	0.00104
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00104	0.00105	0.00104
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00070	0.00071	0.00070

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00391	0.00500	0.07943
sky130_osu_sc_15T_ls__tbufi_l	0.00296	0.00379	0.04670

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00006	0.00007
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00007	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (FR)	0.52607	2.48504	14.23750
	OE->Y (FR)	0.31393	0.90007	6.86635
	OE->Y (RR)	0.60868	2.55232	11.18930
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.76466	3.04754	14.56450
	OE->Y (FR)	0.40904	0.99109	7.14266
	OE->Y (RR)	0.81751	3.08678	11.77140

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)	0.08208	0.74653	6.10053
	OE->Y (FF)	0.31360	0.90026	6.86688
	OE->Y (RF)	0.08225	0.74302	6.09915
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.11274	0.82543	6.31995
	OE->Y (FF)	0.40997	0.99093	7.14587
	OE->Y (RF)	0.10777	0.81815	6.29323

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	0.00281	0.00257	0.00241
	OE	0.00000	0.00000	0.00000
	OE	0.00251	0.00235	0.00221
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00207	0.00199	0.00192
	OE	0.00000	0.00000	0.00000
	OE	0.00178	0.00166	0.00156

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	-0.00036	-0.00036	-0.00043
	OE	0.00000	0.00000	0.00000
	OE	0.00198	0.00181	0.00168
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00022	-0.00021	-0.00026
	OE	0.00000	0.00000	0.00000
	OE	0.00133	0.00121	0.00111

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)	-0.00150	-0.00151	-0.00150
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00144	-0.00145	-0.00144
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00108	-0.00109	-0.00108
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00103	-0.00105	-0.00103

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)	0.00150	0.00151	0.00150
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00145	0.00147	0.00145
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00108	0.00109	0.00108
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00105	0.00105	0.00104

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)	0.00108	0.00091	0.00078
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00096	0.00080	0.00067
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00072	0.00060	0.00050
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00063	0.00052	0.00042

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)	0.00323	0.00301	0.00295
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00334	0.00315	0.00305
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00252	0.00234	0.00229
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00260	0.00244	0.00236

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00391	0.00586	0.07984
sky130_osu_sc_15T_ls__tnbufi_l	0.00295	0.00419	0.04693

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00006	0.00007
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00008	0.00009

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)	0.52960	2.48936	14.32070
	OE->Y (RR)	0.05768	0.46703	3.77753
	OE->Y (FR)	0.54723	2.65541	14.76510
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.76867	3.05181	14.59580
	OE->Y (RR)	0.06601	0.51130	3.77880
	OE->Y (FR)	0.74692	3.15121	14.89880

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)	0.07985	0.74315	6.10841
	OE->Y (RF)	0.05703	0.46512	3.77755
	OE->Y (FF)	0.34098	1.13088	7.80341
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.10914	0.82377	6.32684
	OE->Y (RF)	0.06552	0.50828	3.77856
	OE->Y (FF)	0.45838	1.28240	8.09860

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	0.00290	0.00266	0.00272
	OE	0.00000	0.00000	0.00000
	OE	0.00657	0.00640	0.00637
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00216	0.00208	0.00200
	OE	0.00000	0.00000	0.00000
	OE	0.00475	0.00462	0.00458

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	-0.00047	-0.00046	-0.00053
	OE	0.00000	0.00000	0.00000
	OE	0.00612	0.00595	0.00591
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00032	-0.00032	-0.00036
	OE	0.00000	0.00000	0.00000
	OE	0.00436	0.00422	0.00418

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)	-0.00130	-0.00130	-0.00129
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00124	-0.00125	-0.00123
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00088	-0.00089	-0.00088
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00084	-0.00084	-0.00084

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)	0.00130	0.00130	0.00129
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00125	0.00126	0.00125
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00088	0.00089	0.00088
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00085	0.00085	0.00084

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)	-0.00182	-0.00206	-0.00220
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00176	-0.00199	-0.00215
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00117	-0.00132	-0.00143
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00113	-0.00127	-0.00140

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)	0.00514	0.00498	0.00493
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00504	0.00487	0.00481
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00369	0.00356	0.00352
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00362	0.00349	0.00345

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.00772	0.00673	0.07713

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00015	0.00017

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	0.80615	2.72362	11.29700
	A->Y (FR)	!B	0.71506	2.71435	14.28810
	B->Y (RR)	A	0.70138	2.61570	11.11430
	B->Y (FR)	!A	0.77319	2.84344	14.72760

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	0.52989	1.31753	8.21348
	A->Y (RF)	!B	0.11651	0.76939	6.08717
	B->Y (FF)	A	0.51782	1.30467	8.18738
	B->Y (RF)	!A	0.12176	0.77497	6.10679

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	0.00240	0.00221	0.00199
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00695	0.00661	0.00651
	B	A	0.00000	0.00000	0.00000
	B	A	0.00145	0.00126	0.00105
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00708	0.00683	0.00676

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	0.00795	0.00778	0.00762
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00196	0.00179	0.00158
	B	A	0.00000	0.00000	0.00000
	B	A	0.00754	0.00745	0.00734
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00217	0.00196	0.00173

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__xor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xor2_l	0.00768	0.00678	0.07740

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00015	0.00017

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	0.87640	2.79526	11.36350
	A->Y (FR)	B	0.71043	2.76862	14.68720
	B->Y (RR)	!A	0.71721	2.64009	11.19010
	B->Y (FR)	A	0.78210	2.86451	14.79650

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	0.54616	1.33419	8.24152
	A->Y (RF)	B	0.09998	0.76492	6.10787
	B->Y (FF)	!A	0.51987	1.30447	8.19938
	B->Y (RF)	A	0.11224	0.77160	6.11460

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	0.00775	0.00745	0.00736
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00169	0.00142	0.00118
	B	A	0.00000	0.00000	0.00000
	B	A	0.00778	0.00754	0.00746
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00129	0.00112	0.00091

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	0.00144	0.00121	0.00096
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00855	0.00843	0.00833
	B	A	0.00000	0.00000	0.00000
	B	A	0.00144	0.00122	0.00099
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00773	0.00764	0.00753

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
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	0.02105
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	13310.40000	26620.80000
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
	-0.00194	-0.00050	0.01403

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	0.23323	0.21608	0.02786