sky130_osu_sc_15T_ls_tt_1P80_100C.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_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.01621	0.01613	0.01248	1.79512	0.83907	1.71256
sky130_osu_sc_15T_ls__addf_l	0.01620	0.01612	0.01250	1.07730	0.84063	1.10073

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.08861	0.09409
sky130_osu_sc_15T_ls__addf_l	0.00000	0.09246	0.09794

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)	0.16710	1.81221	25.91760
	B->CO (RR)	0.16418	1.77375	25.28010
	CI->CO (RR)	0.15852	1.84730	26.55240
	CON->CO (FR)	0.02912	0.77120	11.34850
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.17255	1.65786	19.64670
	B->CO (RR)	0.16951	1.63650	19.50480
	CI->CO (RR)	0.16393	1.69438	20.32440
	CON->CO (FR)	0.03695	0.86931	11.30900

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.22232	2.20599	31.19570
	B->CO (FF)	0.19934	2.12158	30.31090
	CI->CO (FF)	0.19437	2.20107	31.61040
	CON->CO (RF)	0.02518	0.62154	9.16554
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.21463	1.84387	21.56170
	B->CO (FF)	0.19219	1.78051	21.20420
	CI->CO (FF)	0.18663	1.83995	22.01110
	CON->CO (RF)	0.02693	0.60920	7.96714

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.17067	1.00046	10.52440
	B->CON (FR)	0.14877	0.96245	10.53510
	CI->CON (FR)	0.14270	0.99772	10.99460
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.16121	0.99182	10.52820
	B->CON (FR)	0.13991	0.95447	10.53860
	CI->CON (FR)	0.13319	0.98908	10.99820

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)	0.10580	0.65725	7.02005
	B->CON (RF)	0.10447	0.67354	7.38828
	CI->CON (RF)	0.09718	0.69515	7.74532
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.10133	0.65323	7.02386
	B->CON (RF)	0.10021	0.67121	7.39189
	CI->CON (RF)	0.09269	0.69059	7.74909

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	0.32628	2.03148	24.65980
	B->S (-R)	0.33979	2.03122	23.98890
	CI->S (-R)	0.29605	2.02239	25.07630
	CON->S (RR)	0.09145	0.66460	7.12878
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.31357	1.86096	19.67160
	B->S (-R)	0.29900	1.82737	19.42730
	CI->S (-R)	0.28323	1.85210	20.11440
	CON->S (RR)	0.09359	0.73554	7.06244

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-F)	0.27266	1.62138	18.74890
	B->S (-F)	0.27078	1.56810	18.36860
	CI->S (-F)	0.26346	1.65303	19.38870
	CON->S (FF)	0.10877	0.70416	6.96783
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.25434	1.42379	14.27720
	B->S (-F)	0.25338	1.39063	14.28650
	CI->S (-F)	0.24507	1.45649	14.94910
	CON->S (FF)	0.10255	0.69122	6.19145

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	0.00339	0.00412	0.01941
	B	0.00525	0.00575	0.01931
	CI	0.00536	0.00622	0.02191
sky130_osu_sc_15T_ls__addf_l	A	0.00248	0.00287	0.01228
	B	0.00435	0.00449	0.01305
	CI	0.00444	0.00498	0.01456

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01362	0.01488	0.04037
	B	0.01429	0.01538	0.03812
	CI	0.01139	0.01273	0.03878
sky130_osu_sc_15T_ls__addf_l	A	0.01273	0.01353	0.02818
	B	0.01339	0.01411	0.02699
	CI	0.01051	0.01139	0.02675

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01359	0.01430	0.02652
	B	0.01426	0.01491	0.02548
	CI	0.01138	0.01217	0.02496
sky130_osu_sc_15T_ls__addf_l	A	0.01271	0.01336	0.02512
	B	0.01338	0.01397	0.02412
	CI	0.01051	0.01123	0.02358

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00398	0.00402	0.01119
	B	0.00521	0.00539	0.01305
	CI	0.00534	0.00589	0.01431
sky130_osu_sc_15T_ls__addf_l	A	0.00307	0.00302	0.00981
	B	0.00431	0.00440	0.01164
	CI	0.00443	0.00489	0.01286

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01361	0.01484	0.03909
	B	0.01429	0.01534	0.03700
	CI	0.01139	0.01272	0.03732
sky130_osu_sc_15T_ls__addf_l	A	0.01273	0.01355	0.02855
	B	0.01340	0.01412	0.02729
	CI	0.01051	0.01140	0.02705

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.03019	0.03043	0.05091
	B	0.02701	0.02732	0.05174
	CI	0.02480	0.02479	0.04463
sky130_osu_sc_15T_ls__addf_l	A	0.02895	0.02897	0.04994
	B	0.02581	0.02612	0.05125
	CI	0.02359	0.02355	0.04410

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00794	0.00875	1.75514	0.89741	1.80136
sky130_osu_sc_15T_ls__addh_l	0.00794	0.00875	1.12185	0.90124	1.13749

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.08103	0.08657
sky130_osu_sc_15T_ls__addh_l	0.00000	0.08294	0.09042

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)	0.11264	0.69258	7.12882
	B->CO (RR)	0.11662	0.68065	7.15067
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.11664	0.76836	7.13366
	B->CO (RR)	0.12060	0.75824	7.12803

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)	0.09377	0.66943	6.89625
	B->CO (FF)	0.10000	0.68572	6.95956
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.08907	0.61914	5.50466
	B->CO (FF)	0.09498	0.63542	5.56633

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	0.15674	0.57349	3.74814
	A->CON (FR)	!B	0.09309	0.92546	10.86530
	B->CON (RR)	A	0.16033	0.56057	3.76622
	B->CON (FR)	!A	0.11508	0.92787	10.51430
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.14391	0.55399	3.73134
	A->CON (FR)	!B	0.08442	0.91797	10.88520
	B->CON (RR)	A	0.14759	0.54286	3.73661
	B->CON (FR)	!A	0.10638	0.92013	10.53430

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	0.14726	0.73022	5.93794
	A->CON (RF)	!B	0.06214	0.65996	7.88382
	B->CON (FF)	A	0.14352	0.75711	6.23426
	B->CON (RF)	!A	0.07667	0.66052	7.65291
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.13694	0.71062	5.88113
	A->CON (RF)	!B	0.05794	0.65629	7.89893
	B->CON (FF)	A	0.13331	0.73819	6.18038
	B->CON (RF)	!A	0.07250	0.65718	7.66762

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	0.11638	1.77195	26.21040
	A->S (FR)	B	0.20271	1.82679	24.05260
	B->S (RR)	!A	0.13180	1.74034	25.38920
	B->S (FR)	A	0.19888	1.88651	24.94370
	CON->S (FR)	-	0.03158	0.78801	11.58950
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.11804	1.63306	20.61240
	A->S (FR)	B	0.19844	1.67535	18.42700
	B->S (RR)	!A	0.13363	1.61165	20.06330
	B->S (FR)	A	0.19442	1.72508	19.05390
	CON->S (FR)	-	0.03722	0.87713	11.56270

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (FF)	!B	0.13788	2.02039	29.80490
	A->S (RF)	B	0.19585	1.37311	17.01350
	B->S (FF)	!A	0.15982	2.02799	29.50730
	B->S (RF)	A	0.19947	1.36018	17.02300
	CON->S (RF)	-	0.02393	0.61080	9.01840
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.13020	1.72856	21.77810
	A->S (RF)	B	0.18377	1.19244	12.08890
	B->S (FF)	!A	0.15218	1.73464	21.44770
	B->S (RF)	A	0.18745	1.18140	12.08660
	CON->S (RF)	-	0.02559	0.61142	8.12506

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	0.00636	0.00647	0.01568
	B	0.00000	0.00000	0.00000
	B	0.00567	0.00561	0.01560
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00551	0.00554	0.01548
	B	0.00000	0.00000	0.00000
	B	0.00481	0.00469	0.01495

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	0.00966	0.00971	0.02174
	B	0.00000	0.00000	0.00000
	B	0.01002	0.01061	0.02315
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00883	0.00882	0.02005
	B	0.00000	0.00000	0.00000
	B	0.00920	0.00964	0.02102

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	0.00636	0.00646	0.01569
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00853	0.00891	0.01400
	B	A	0.00000	0.00000	0.00000
	B	A	0.00567	0.00562	0.01569
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00972	0.00986	0.01419
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00550	0.00553	0.01520
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00793	0.00822	0.01254
	B	A	0.00000	0.00000	0.00000
	B	A	0.00481	0.00468	0.01469
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00913	0.00916	0.01260

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	0.00966	0.00971	0.02090
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00142	0.00168	0.00553
	B	A	0.00000	0.00000	0.00000
	B	A	0.01002	0.01055	0.02239
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00225	0.00233	0.00611
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00882	0.00882	0.01985
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00065	0.00084	0.00389
	B	A	0.00000	0.00000	0.00000
	B	A	0.00920	0.00964	0.02100
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00148	0.00149	0.00454

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	0.00966	0.00973	0.02188
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00144	0.00178	0.00621
	B	A	0.00000	0.00000	0.00000
	B	A	0.01003	0.01065	0.02339
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00227	0.00242	0.00643
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00884	0.00884	0.02022
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00066	0.00086	0.00399
	B	A	0.00000	0.00000	0.00000
	B	A	0.00920	0.00964	0.02097
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00150	0.00151	0.00429

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	0.00637	0.00647	0.01586
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00855	0.00903	0.01560
	B	A	0.00000	0.00000	0.00000
	B	A	0.00567	0.00562	0.01567
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00974	0.01004	0.01602
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00551	0.00554	0.01550
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00795	0.00822	0.01265
	B	A	0.00000	0.00000	0.00000
	B	A	0.00481	0.00470	0.01483
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00914	0.00920	0.01279

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00428	0.00440	1.76996
sky130_osu_sc_15T_ls__and2_2	0.00428	0.00440	3.46658
sky130_osu_sc_15T_ls__and2_4	0.00428	0.00440	6.63604
sky130_osu_sc_15T_ls__and2_6	0.00432	0.00439	9.76639
sky130_osu_sc_15T_ls__and2_8	0.00429	0.00441	12.69583
sky130_osu_sc_15T_ls__and2_l	0.00323	0.00335	1.07727

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.03391	0.04391
sky130_osu_sc_15T_ls__and2_2	0.00000	0.04389	0.05888
sky130_osu_sc_15T_ls__and2_4	0.00000	0.07140	0.09216
sky130_osu_sc_15T_ls__and2_6	0.00000	0.09892	0.12544
sky130_osu_sc_15T_ls__and2_8	0.00000	0.12644	0.15872
sky130_osu_sc_15T_ls__and2_l	0.00000	0.03638	0.04914

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)	0.08612	0.62332	6.99690
	B->Y (RR)	0.09153	0.61883	6.88489
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.09890	0.57338	7.06906
	B->Y (RR)	0.10429	0.56275	6.95497
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.13576	0.59641	7.31358
	B->Y (RR)	0.14121	0.57554	7.19225
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.17234	0.64129	7.53675
	B->Y (RR)	0.17765	0.61366	7.40344
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.20844	0.68851	7.73751
	B->Y (RR)	0.21386	0.65716	7.59346
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.09591	0.71371	6.82180
	B->Y (RR)	0.10142	0.70738	6.70848

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)	0.07272	0.59975	6.53018
	B->Y (FF)	0.07707	0.61565	6.60361
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.08340	0.56993	6.60890
	B->Y (FF)	0.08811	0.58298	6.68575
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.11544	0.59540	6.79526
	B->Y (FF)	0.11975	0.60646	6.86522
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.15014	0.64105	6.98741
	B->Y (FF)	0.15383	0.64831	7.05037
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.18264	0.68137	7.07843
	B->Y (FF)	0.18603	0.68679	7.13955
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.08236	0.63218	5.87916
	B->Y (FF)	0.08861	0.65069	5.97023

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	0.00467	0.00545	0.03898
	B	0.00000	0.00000	0.00000
	B	0.00475	0.00485	0.02957
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00923	0.01019	0.04300
	B	0.00000	0.00000	0.00000
	B	0.00932	0.00976	0.03369
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01948	0.02067	0.05301
	B	0.00000	0.00000	0.00000
	B	0.01963	0.02043	0.04435
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03058	0.03146	0.06247
	B	0.00000	0.00000	0.00000
	B	0.03068	0.03116	0.05423
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04234	0.04203	0.07410
	B	0.00000	0.00000	0.00000
	B	0.04255	0.04179	0.06700
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00334	0.00396	0.02804
	B	0.00000	0.00000	0.00000
	B	0.00343	0.00352	0.02131

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	0.01173	0.01319	0.04388
	B	0.00000	0.00000	0.00000
	B	0.01327	0.01471	0.04343
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01498	0.01692	0.04717
	B	0.00000	0.00000	0.00000
	B	0.01653	0.01828	0.04689
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02336	0.02600	0.05556
	B	0.00000	0.00000	0.00000
	B	0.02493	0.02693	0.05517
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03241	0.03513	0.06445
	B	0.00000	0.00000	0.00000
	B	0.03374	0.03589	0.06376
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04244	0.04396	0.07315
	B	0.00000	0.00000	0.00000
	B	0.04360	0.04456	0.07217
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00888	0.00982	0.03082
	B	0.00000	0.00000	0.00000
	B	0.00998	0.01085	0.03052

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)	-0.00439	-0.00440	-0.00442
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00439	-0.00440	-0.00442
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00439	-0.00440	-0.00442
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00441	-0.00443	-0.00444
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00438	-0.00440	-0.00442
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00310	-0.00311	-0.00312

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)	0.00441	0.00442	0.00443
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00441	0.00444	0.00443
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00441	0.00443	0.00443
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00445	0.00453	0.00446
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00441	0.00451	0.00443
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00312	0.00313	0.00313

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)	-0.00418	-0.00419	-0.00418
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00418	-0.00418	-0.00418
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00418	-0.00419	-0.00418
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00418	-0.00419	-0.00418
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00418	-0.00420	-0.00418
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00296	-0.00298	-0.00296

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)	0.00426	0.00426	0.00419
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00427	0.00418	0.00419
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00427	0.00426	0.00419
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00427	0.00425	0.00419
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00427	0.00426	0.00419
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00303	0.00299	0.00297

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00406	0.00422	0.00409	0.82091

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.02396	0.03983

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)	0.09097	0.92986	10.49800
	A1->Y (FR)	0.07667	0.88248	10.13830
	B0->Y (FR)	0.06546	0.92859	10.97210

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)	0.05814	0.58838	6.65740
	A1->Y (RF)	0.05322	0.61807	7.24505
	B0->Y (RF)	0.03266	0.56336	6.81354

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	0.01065	0.01057	0.01464
	A1	0.00000	0.00000	0.00000
	A1	0.00898	0.00887	0.01289
	B0	0.00628	0.00652	0.01305

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	0.00220	0.00191	0.00608
	A1	0.00000	0.00000	0.00000
	A1	0.00224	0.00216	0.00708
	B0	-0.00102	-0.00072	0.00452

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)	-0.00339	-0.00384	-0.00382
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00389	-0.00391	-0.00390
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00389	-0.00391	-0.00389

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)	0.00380	0.00384	0.00382
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00389	0.00394	0.00391
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00398	0.00395	0.00391

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)	-0.00336	-0.00378	-0.00377
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00383	-0.00385	-0.00384
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00413	-0.00415	-0.00416

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)	0.00374	0.00378	0.00377
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00383	0.00386	0.00385
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00416	0.00418	0.00418

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)	-0.00162	-0.00162	-0.00162

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)	0.00177	0.00178	0.00167

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00405	0.00419	0.00434	0.00415	0.82192

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.02381	0.03373

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (FR)	0.11145	0.94216	10.37960
	A1->Y (FR)	0.09974	0.92108	10.28460
	B0->Y (FR)	0.06729	0.90863	10.72540
	B1->Y (FR)	0.07930	0.93397	10.87150

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)	0.07803	0.61004	6.68695
	A1->Y (RF)	0.07300	0.64004	7.27425
	B0->Y (RF)	0.03882	0.60496	7.23539
	B1->Y (RF)	0.04383	0.57108	6.64812

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	0.01316	0.01303	0.01701
	A1	0.01150	0.01106	0.01529
	B0	0.00686	0.00707	0.01392
	B1	0.00851	0.00827	0.01536

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00455	0.00426	0.00856
	A1	0.00459	0.00446	0.00956
	B0	-0.00064	-0.00047	0.00473
	B1	-0.00055	-0.00058	0.00378

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)	-0.00343	-0.00384	-0.00382
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00389	-0.00390	-0.00390
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00389	-0.00391	-0.00389
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00389	-0.00391	-0.00389

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)	0.00380	0.00384	0.00382
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00389	0.00395	0.00391
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00398	0.00395	0.00391
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00398	0.00395	0.00391

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)	-0.00342	-0.00379	-0.00376
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00382	-0.00384	-0.00383
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00412	-0.00415	-0.00415
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00412	-0.00415	-0.00415

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)	0.00374	0.00379	0.00376
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00382	0.00387	0.00385
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00415	0.00419	0.00417
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00415	0.00419	0.00417

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)	-0.00162	-0.00163	-0.00163
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00162	-0.00163	-0.00162
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00426	-0.00427	-0.00430
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00426	-0.00427	-0.00430

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)	0.00186	0.00186	0.00169
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00162	0.00163	0.00162
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00429	0.00432	0.00431
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00428	0.00432	0.00431

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)	-0.00163	-0.00167	-0.00164
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00163	-0.00164	-0.00163
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00396	-0.00396	-0.00397
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00396	-0.00398	-0.00397

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)	0.00188	0.00187	0.00170
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00163	0.00165	0.00163
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00405	0.00400	0.00398
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00405	0.00400	0.00398

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00438	1.73508
sky130_osu_sc_15T_ls__buf_2	0.00442	3.44644
sky130_osu_sc_15T_ls__buf_4	0.00442	6.69043
sky130_osu_sc_15T_ls__buf_6	0.00092	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00442	12.86591
sky130_osu_sc_15T_ls__buf_l	0.00337	1.07606

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.03560	0.03560
sky130_osu_sc_15T_ls__buf_2	0.00000	0.04724	0.05057
sky130_osu_sc_15T_ls__buf_4	0.00000	0.07668	0.08385
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.13556	0.15041
sky130_osu_sc_15T_ls__buf_l	0.00000	0.03945	0.03945

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)**	0.06411	0.58145	6.71927
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.07286	0.52311	6.81368
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.09817	0.52860	7.07924
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.14733	0.59313	7.45300
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.07275	0.66678	6.54486

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)**	0.06870	0.58631	6.45442
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.08109	0.57475	6.84082
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.11349	0.60514	7.16705
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.18092	0.68934	7.52117
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.07896	0.62387	5.90568

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	0.00436	0.00519	0.03306
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00881	0.00970	0.04263
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01881	0.02019	0.04715
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03988	0.04155	0.06924
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00323	0.00384	0.02493

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	0.01128	0.01294	0.04363
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01458	0.01650	0.04466
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02292	0.02517	0.05316
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.04170	0.04300	0.07066
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00861	0.00965	0.03084

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
	-0.00072	-0.00073	-0.00071

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
	0.00072	0.00073	0.00071

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00417	0.00414	0.01204	1.63566	1.62001
sky130_osu_sc_15T_ls__dffr_l	0.00417	0.00414	0.01203	1.07931	1.07434

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.15603	0.19449
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.15987	0.19833

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RR)	0.34973	1.47962	15.68290
	QN->Q (FR)	0.03609	0.88529	12.77800
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.33944	1.56579	14.70670
	QN->Q (FR)	0.04058	0.94558	12.31990

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RF)	0.32821	1.46627	15.99400
	QN->Q (RF)	0.02800	0.67290	9.68682
	RN->Q (FF)	0.24020	1.48908	17.34550
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.33417	1.59200	15.23240
	QN->Q (RF)	0.02860	0.66121	8.66776
	RN->Q (FF)	0.24673	1.61544	16.57410

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->QN (RR)	0.29093	0.84304	6.88823
	RN->QN (FR)	0.20283	0.86622	8.23695
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.29341	0.92401	6.95008
	RN->QN (FR)	0.20571	0.94729	8.29229

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	**CK->QN (RF)**	0.29873	0.75884	5.19869
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.28162	0.74717	4.58904

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)	-0.08692	-0.09559	-0.04602
	setup	CK (R)	0.27610	0.30490	1.09651
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08645	-0.09621	-0.04738
	setup	CK (R)	0.28003	0.30482	1.10208

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.12960	-0.35685	-2.72859
	setup	CK (R)	0.15668	0.36895	3.45914
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.13032	-0.35711	-2.71695
	setup	CK (R)	0.15656	0.36895	3.45914

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)	-0.08692	-0.09559	-0.04602
	setup	CK (R)	0.27610	0.30490	1.09651
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08645	-0.09621	-0.04738
	setup	CK (R)	0.28003	0.30482	1.10208

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.12960	-0.35685	-2.72859
	setup	CK (R)	0.15668	0.36895	3.45914
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.13032	-0.35711	-2.71695
	setup	CK (R)	0.15656	0.36895	3.45914

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.23210	0.26258	1.25051
	removal	CK (R)	-0.05832	-0.06656	-0.13520
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.23274	0.26479	1.26899
	removal	CK (R)	-0.05832	-0.06656	-0.13520

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.23210	0.26258	1.25051
	removal	CK (R)	-0.05832	-0.06656	-0.13520
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.23274	0.26479	1.26899
	removal	CK (R)	-0.05832	-0.06656	-0.13520

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 ()	0.14105	0.49439	13.33370
	min_pulse_width	RN ()	0.13733	0.49439	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.13733	0.49439	13.33370
	min_pulse_width	RN ()	0.13733	0.49439	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	CK ()	0.16708	0.49439	13.33370
	min_pulse_width	CK ()	0.17080	0.49439	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.15593	0.49439	13.33370
	min_pulse_width	CK ()	0.16336	0.49439	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	CK ()	0.34561	0.49439	13.33370
	min_pulse_width	CK ()	0.12989	0.49439	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.34933	0.49439	13.33370
	min_pulse_width	CK ()	0.12989	0.49439	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	0.01133	0.00990	0.00820
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00992	0.00919	0.02289

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	0.01324	0.01121	-0.00282
	RN	-0.00147	-0.08716	-1.32488
	RN	0.03016	0.02845	0.01515
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01185	0.01083	0.01534
	RN	-0.00147	-0.06792	-0.87424
	RN	0.02874	0.02808	0.03300

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	0.01324	0.01121	-0.00257
	RN	-0.00147	-0.08666	-1.31217
	RN	0.03015	0.02846	0.01506
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01185	0.01084	0.01540
	RN	-0.00147	-0.06773	-0.87021
	RN	0.02874	0.02806	0.03295

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	0.01128	0.00988	0.00821
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00987	0.00917	0.02229

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	-0.00324	-0.00380	-0.00380
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01396	0.01365	0.03760
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00606	0.00586	0.02988
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00324	-0.00380	-0.00380
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01396	0.01365	0.03760
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00606	0.00586	0.02988

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	0.00378	0.00380	0.00380
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02325	0.02316	0.04785
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01118	0.01113	0.03521
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00378	0.00380	0.00380
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02325	0.02316	0.04785
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01118	0.01113	0.03521

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)	0.00409	0.00459	0.04045
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01231	0.01252	0.04875
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)	0.00409	0.00459	0.04045
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01231	0.01252	0.04875

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)	0.01071	0.01186	0.04776
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02261	0.02345	0.05955
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)	0.01071	0.01186	0.04776
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02261	0.02344	0.05954

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)	-0.00092	-0.00050	0.03511
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00692	0.00656	0.04310
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00131	-0.00085	0.03457
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00092	-0.00050	0.03511
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00692	0.00657	0.04310
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00131	-0.00085	0.03457

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)	0.01606	0.01731	0.05334
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03558	0.03565	0.07721
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02703	0.02778	0.06358
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03460	0.03660	0.09685
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01868	0.01958	0.05487
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01606	0.01731	0.05334
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03556	0.03565	0.07721
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02703	0.02778	0.06358
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03460	0.03660	0.09685
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01868	0.01958	0.05487

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00412	0.00415	0.00911	0.01227	1.79502	1.80727
sky130_osu_sc_15T_ls__dffsr_l	0.00412	0.00415	0.00910	0.01227	1.07701	1.07616

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.15737	0.18239
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.16122	0.18623

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RR)	0.34203	1.49634	16.61530
	QN->Q (FR)	0.03184	0.82850	12.20810
	RN->Q (RR)	0.27339	1.44105	16.63380
	SN->Q (FR)	0.24897	1.51904	18.12450
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.34235	1.57101	14.67970
	QN->Q (FR)	0.04060	0.94319	12.28420
	RN->Q (RR)	0.27421	1.51596	14.69350
	SN->Q (FR)	0.24963	1.59029	16.17130

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RF)	0.38294	1.53852	16.79510
	QN->Q (RF)	0.02768	0.69567	10.26720
	RN->Q (FF)	0.24993	1.52085	18.14410
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.39440	1.65768	15.26790
	QN->Q (RF)	0.02855	0.66009	8.65016
	RN->Q (FF)	0.26181	1.63939	16.60160

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RR)	0.34540	0.89934	7.13960
	RN->QN (FR)	0.21308	0.88140	8.47994
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.35286	0.99164	7.03401
	RN->QN (FR)	0.22038	0.97413	8.38150

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RF)	0.29582	0.77995	5.79432
	RN->QN (RF)	0.22763	0.72510	5.80928
	SN->QN (FF)	0.20328	0.80273	7.30061
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.28682	0.75550	4.61042
	RN->QN (RF)	0.21909	0.70155	4.62154
	SN->QN (FF)	0.19469	0.77539	6.09610

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)	-0.08833	-0.10115	-0.10389
	setup	CK (R)	0.25939	0.28864	1.13314
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.08639	-0.10215	-0.10319
	setup	CK (R)	0.25952	0.28846	1.13835

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.15352	-0.38205	-2.77217
	setup	CK (R)	0.19087	0.39351	3.54282
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15170	-0.38028	-2.76679
	setup	CK (R)	0.19031	0.39351	3.54183

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)	-0.08833	-0.10115	-0.10389
	setup	CK (R)	0.25939	0.28864	1.13314
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.08639	-0.10215	-0.10319
	setup	CK (R)	0.25952	0.28846	1.13835

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.15352	-0.38205	-2.77217
	setup	CK (R)	0.19087	0.39351	3.54282
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15170	-0.38028	-2.76679
	setup	CK (R)	0.19031	0.39351	3.54183

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.18949	0.22204	1.16020
	removal	CK (R)	-0.02855	-0.03182	-0.07089
	hold	SN (R)	-0.19636	-0.35803	-1.41089
	setup	SN (R)	0.22447	0.40398	5.82141
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.18902	0.22232	1.16510
	removal	CK (R)	-0.02855	-0.03182	-0.07089
	hold	SN (R)	-0.18798	-0.34681	-1.35051
	setup	SN (R)	0.22304	0.39596	5.76982

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.18949	0.22204	1.16020
	removal	CK (R)	-0.02855	-0.03182	-0.07089
	hold	SN (R)	-0.19792	-0.35803	-1.41089
	hold	SN (R)	-0.19636	-0.36085	-1.42188
	setup	SN (R)	0.22447	0.40185	5.69506
	setup	SN (R)	0.22136	0.40398	5.82141
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.18902	0.22232	1.16510
	removal	CK (R)	-0.02855	-0.03182	-0.07089
	hold	SN (R)	-0.18811	-0.34681	-1.35051
	hold	SN (R)	-0.18798	-0.34801	-1.36410
	setup	SN (R)	0.22304	0.39120	5.64433
	setup	SN (R)	0.21332	0.39596	5.76982

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	RN ()	0.16336	0.49439	13.33370
	min_pulse_width	RN ()	0.16708	0.49439	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.16336	0.49439	13.33370
	min_pulse_width	RN ()	0.15965	0.49439	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.05286	0.09216	5.67197
	removal	CK (R)	-0.02600	-0.07170	-0.34785
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.05180	0.09212	5.40017
	removal	CK (R)	-0.02600	-0.07170	-0.34679

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)	0.05286	0.09216	5.67197
	removal	CK (R)	-0.02600	-0.07170	-0.34785
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.05180	0.09212	5.40017
	removal	CK (R)	-0.02600	-0.07170	-0.34679

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	SN ()	0.19684	0.49439	13.33370
	min_pulse_width	SN ()	0.20056	0.49439	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.19684	0.49439	13.33370
	min_pulse_width	SN ()	0.18940	0.49439	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	CK ()	0.15593	0.49439	13.33370
	min_pulse_width	CK ()	0.19312	0.49439	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.15221	0.49439	13.33370
	min_pulse_width	CK ()	0.18940	0.49439	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	CK ()	0.33073	0.49439	13.33370
	min_pulse_width	CK ()	0.16708	0.49439	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.33073	0.49439	13.33370
	min_pulse_width	CK ()	0.16708	0.49439	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01437	0.01272	0.00682
	RN	0.02623	0.02432	0.00877
	SN	-0.00147	-0.09216	-1.45396
	SN	0.02946	0.02695	0.01065
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01311	0.01236	0.02597
	RN	0.02495	0.02394	0.02756
	SN	-0.00147	-0.06783	-0.87238
	SN	0.02819	0.02659	0.02998

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	0.01538	0.01437	0.01283
	RN	-0.00147	-0.09216	-1.45395
	RN	0.03133	0.03049	0.02950
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01407	0.01320	0.01778
	RN	-0.00147	-0.06783	-0.87237
	RN	0.02997	0.02926	0.03464

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	0.01536	0.01436	0.01212
	RN	-0.00147	-0.09253	-1.46373
	RN	0.03131	0.03046	0.02890
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01406	0.01317	0.01779
	RN	-0.00147	-0.06780	-0.87169
	RN	0.02997	0.02930	0.03470

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	0.01432	0.01270	0.00358
	RN	0.02618	0.02426	0.00867
	SN	-0.00147	-0.09253	-1.46375
	SN	0.02941	0.02690	0.01098
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01306	0.01232	0.02524
	RN	0.02490	0.02389	0.02739
	SN	-0.00147	-0.06780	-0.87162
	SN	0.02813	0.02653	0.03003

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	-0.00372	-0.00381	-0.00379
	(!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)	0.01826	0.01797	0.04175
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00697	0.00676	0.03059
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00692	0.00673	0.03055
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00700	0.00680	0.03064
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00372	-0.00381	-0.00379
	(!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)	0.01826	0.01797	0.04176
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00697	0.00676	0.03059
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00692	0.00673	0.03056
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00700	0.00680	0.03064

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	0.00387	0.00381	0.00379
	(!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)	0.02676	0.02655	0.05052
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01189	0.01188	0.03571
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01194	0.01190	0.03569
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01183	0.01182	0.03564
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00387	0.00381	0.00379
	(!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)	0.02675	0.02655	0.05051
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01188	0.01187	0.03570
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01193	0.01189	0.03568
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01182	0.01180	0.03563

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)	0.00328	0.00382	0.03939
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01486	0.01508	0.05138
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)	0.00328	0.00382	0.03939
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01487	0.01508	0.05139

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)	0.01155	0.01278	0.04895
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02401	0.02475	0.06151
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)	0.01154	0.01280	0.04894
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02399	0.02474	0.06149

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)	-0.00870	-0.00875	-0.00876
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00853	-0.00924	-0.00921
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00843	-0.00881	-0.00878
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00571	0.00567	0.03097
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)	-0.00870	-0.00875	-0.00876
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00851	-0.00922	-0.00919
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00843	-0.00880	-0.00878
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00571	0.00568	0.03098

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)	0.00875	0.00882	0.00879
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00917	0.00924	0.00922
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00875	0.00883	0.00880
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01881	0.01848	0.04175
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)	0.00875	0.00882	0.00879
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00915	0.00922	0.00920
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00874	0.00882	0.00879
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01880	0.01847	0.04174

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)	-0.00092	-0.00050	0.03510
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00786	0.00753	0.04413
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00775	0.00748	0.04403
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00110	-0.00062	0.03480
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00474	0.00556	0.07166
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00092	-0.00050	0.03510
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00785	0.00752	0.04412
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00774	0.00747	0.04402
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00110	-0.00062	0.03480
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00474	0.00556	0.07166

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)	0.04005	0.04019	0.08161
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01612	0.01736	0.05340
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02762	0.02838	0.06416
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02771	0.02844	0.06427
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03803	0.03971	0.10005
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01853	0.01942	0.05471
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02189	0.02398	0.09040
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04005	0.04022	0.08160
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01612	0.01736	0.05340
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02762	0.02847	0.06416
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02771	0.02844	0.06428
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03801	0.03963	0.10005
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01853	0.01942	0.05471
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02188	0.02397	0.09040

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00415	0.00718	0.01204	1.63046	1.62563
sky130_osu_sc_15T_ls__dffs_l	0.00415	0.00718	0.01204	1.07804	1.08448

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.12556	0.15539
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.12941	0.15924

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RR)	0.27074	1.38127	15.49730
	QN->Q (FR)	0.03608	0.88168	12.69150
	SN->Q (FR)	0.20945	1.49116	17.25250
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.26809	1.47912	14.57480
	QN->Q (FR)	0.04055	0.94183	12.27040
	SN->Q (FR)	0.20725	1.58357	16.28850

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RF)	0.36751	1.50891	15.94810
	QN->Q (RF)	0.02786	0.66978	9.63561
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.37147	1.63289	15.22510
	QN->Q (RF)	0.02849	0.65827	8.63931

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RR)	0.32891	0.88940	6.93380
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.32963	0.96919	7.03978

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RF)	0.22447	0.66614	5.10804
	SN->QN (FF)	0.16273	0.77730	6.85967
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.21502	0.66619	4.53467
	SN->QN (FF)	0.15359	0.77086	6.24754

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)	-0.06813	-0.08182	-0.04113
	setup	CK (R)	0.19811	0.23546	1.17774
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.06715	-0.08144	-0.04103
	setup	CK (R)	0.20091	0.23613	1.22247

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.13365	-0.36052	-1.72144
	setup	CK (R)	0.17424	0.37175	3.47469
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.13272	-0.36025	-1.55958
	setup	CK (R)	0.17416	0.37172	3.47470

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)	-0.06813	-0.08182	-0.04113
	setup	CK (R)	0.19811	0.23546	1.17774
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.06715	-0.08144	-0.04103
	setup	CK (R)	0.20091	0.23613	1.22247

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.13365	-0.36052	-1.72144
	setup	CK (R)	0.17424	0.37175	3.47469
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.13272	-0.36025	-1.55958
	setup	CK (R)	0.17416	0.37172	3.47470

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)	0.05202	0.08018	4.25021
	removal	CK (R)	-0.02306	-0.05756	-0.19190
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.05128	0.08018	4.12654
	removal	CK (R)	-0.02306	-0.05756	-0.19190

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)	0.05202	0.08018	4.25021
	removal	CK (R)	-0.02306	-0.05756	-0.19190
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.05128	0.08018	4.12654
	removal	CK (R)	-0.02306	-0.05756	-0.19190

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	SN ()	0.14477	0.49439	13.33370
	min_pulse_width	SN ()	0.15221	0.49439	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.14477	0.49439	13.33370
	min_pulse_width	SN ()	0.14105	0.49439	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	CK ()	0.12245	0.49439	13.33370
	min_pulse_width	CK ()	0.18196	0.49439	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.11501	0.49439	13.33370
	min_pulse_width	CK ()	0.17824	0.49439	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	CK ()	0.26751	0.49439	13.33370
	min_pulse_width	CK ()	0.15221	0.49439	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.26751	0.49439	13.33370
	min_pulse_width	CK ()	0.14849	0.49439	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01130	0.00995	0.00905
	SN	-0.00147	-0.08699	-1.32067
	SN	0.02453	0.02284	0.01262
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00990	0.00921	0.02301
	SN	-0.00147	-0.06787	-0.87321
	SN	0.02312	0.02216	0.02660

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	0.01317	0.01123	-0.00180
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01178	0.01084	0.01586

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	0.01316	0.01124	-0.00182
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01178	0.01084	0.01572

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	0.01126	0.00993	0.00852
	SN	-0.00147	-0.08684	-1.31663
	SN	0.02449	0.02283	0.01193
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00986	0.00920	0.02232
	SN	-0.00147	-0.06811	-0.87835
	SN	0.02308	0.02210	0.02603

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	-0.00378	-0.00386	-0.00385
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01338	0.01309	0.03757
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00597	0.00574	0.02978
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00378	-0.00386	-0.00385
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01338	0.01309	0.03757
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00597	0.00574	0.02978

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	0.00393	0.00387	0.00385
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02280	0.02255	0.04699
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01136	0.01135	0.03549
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00393	0.00387	0.00385
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02280	0.02255	0.04699
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01136	0.01135	0.03549

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)	-0.00627	-0.00631	-0.00630
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00481	0.00484	0.02751
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)	-0.00627	-0.00631	-0.00630
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00481	0.00484	0.02751

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)	0.00637	0.00636	0.00632
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01285	0.01295	0.03510
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)	0.00637	0.00636	0.00632
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01285	0.01295	0.03510

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)	-0.00095	-0.00053	0.03511
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00125	-0.00080	0.03465
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00367	0.00457	0.07112
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00095	-0.00053	0.03511
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00125	-0.00080	0.03465
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00367	0.00457	0.07112

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)	0.03511	0.03548	0.07748
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01608	0.01733	0.05339
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03399	0.03576	0.09600
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01861	0.01953	0.05483
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02125	0.02342	0.09034
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03511	0.03548	0.07748
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01608	0.01734	0.05339
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03399	0.03575	0.09600
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01861	0.01953	0.05483
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02125	0.02341	0.09034

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00431	0.01196	1.80853	1.80111
sky130_osu_sc_15T_ls__dff_l	0.00431	0.01196	0.99009	0.98331

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.12629	0.13915
sky130_osu_sc_15T_ls__dff_l	0.00000	0.13014	0.14300

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RR)	0.22501	1.36330	16.55890
	QN->Q (FR)	0.03165	0.82666	12.22670
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.23293	1.42441	13.81510
	QN->Q (FR)	0.04519	1.00138	12.73640

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RF)	0.31361	1.46335	16.81120
	QN->Q (RF)	0.02758	0.69541	10.29090
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.33008	1.57605	14.58000
	QN->Q (RF)	0.02862	0.64026	8.24890

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RR)	0.27735	0.81911	7.01461
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.28903	0.92895	6.83150

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)	0.18360	0.64318	5.61310
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.18004	0.60926	4.07158

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)	-0.05874	-0.07463	-0.04841
	setup	CK (R)	0.15247	0.19312	1.36146
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.05660	-0.07664	-0.04849
	setup	CK (R)	0.15355	0.19164	1.30976

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	hold	CK (R)	-0.12675	-0.36122	-0.51999
	setup	CK (R)	0.15044	0.37369	3.49947
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.12452	-0.36122	-0.78002
	setup	CK (R)	0.14993	0.37369	3.49947

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 ()	0.10014	0.49439	13.33370
	min_pulse_width	CK ()	0.16708	0.49439	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.09642	0.49439	13.33370
	min_pulse_width	CK ()	0.16336	0.49439	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	**min_pulse_width**	**CK ()**	0.22287	0.49439	13.33370
	min_pulse_width	**CK ()**	0.11873	0.49439	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.21915	0.49439	13.33370
	min_pulse_width	**CK ()**	0.11873	0.49439	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01194	0.01035	0.00490
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01071	0.01013	0.02522

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	0.01341	0.01243	0.01110
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01209	0.01060	0.00946

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	0.01341	0.01242	0.01098
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01209	0.01060	0.00953

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	0.01191	0.01035	0.00498
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01067	0.01007	0.02485

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	-0.00324	-0.00379	-0.00379
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01257	0.01240	0.03681
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00324	-0.00379	-0.00379
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01258	0.01237	0.03705

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	0.00377	0.00379	0.00379
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02359	0.02342	0.04849
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00377	0.00379	0.00379
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02360	0.02343	0.04850

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)	-0.00095	-0.00053	0.03514
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00124	-0.00077	0.03472
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00095	-0.00053	0.03514
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00124	-0.00077	0.03472

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)	0.01599	0.01725	0.05332
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03430	0.03449	0.07763
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03452	0.03644	0.09758
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01851	0.01939	0.05475
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01599	0.01725	0.05332
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03430	0.03449	0.07763
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03453	0.03644	0.09759
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01851	0.01939	0.05475

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00419	1.70163
sky130_osu_sc_15T_ls__inv_10	0.03888	15.39160
sky130_osu_sc_15T_ls__inv_2	0.00796	3.36949
sky130_osu_sc_15T_ls__inv_3	0.01186	4.86036
sky130_osu_sc_15T_ls__inv_4	0.01567	6.51504
sky130_osu_sc_15T_ls__inv_6	0.02347	9.62235
sky130_osu_sc_15T_ls__inv_8	0.03118	12.73082
sky130_osu_sc_15T_ls__inv_l	0.00313	0.95714

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.01780	0.01831
sky130_osu_sc_15T_ls__inv_10	0.00000	0.14719	0.16640
sky130_osu_sc_15T_ls__inv_2	0.00000	0.02944	0.03328
sky130_osu_sc_15T_ls__inv_3	0.00000	0.04724	0.05159
sky130_osu_sc_15T_ls__inv_4	0.00000	0.05888	0.06656
sky130_osu_sc_15T_ls__inv_6	0.00000	0.08832	0.09984
sky130_osu_sc_15T_ls__inv_8	0.00000	0.11775	0.13312
sky130_osu_sc_15T_ls__inv_l	0.00000	0.01972	0.02373

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)**	0.03043	0.76890	11.16940
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.04169	0.51711	11.00880
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.02455	0.65866	11.09160
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.02696	0.61863	11.10590
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.02744	0.58611	11.07040
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.03083	0.55208	11.07120
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.03589	0.53144	11.08720
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.03976	0.87044	10.99420

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)**	0.02491	0.61118	8.89277
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.03552	0.38533	8.76428
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.02042	0.52545	8.88009
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02228	0.48894	8.94562
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02215	0.45692	8.91603
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.02682	0.42381	8.91608
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.03113	0.40276	8.92019
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.02648	0.58409	7.42779

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	0.00591	0.00634	0.01000
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.05042	0.06207	0.10709
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01046	0.01116	0.01855
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01604	0.01837	0.02854
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02060	0.02475	0.04212
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.03054	0.03566	0.06333
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.04044	0.04790	0.07493
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00440	0.00464	0.00868

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	-0.00124	-0.00090	0.00286
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	-0.01947	-0.01365	0.02579
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00387	-0.00303	0.00466
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00519	-0.00377	0.00774
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00785	-0.00566	0.00960
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	-0.01201	-0.00851	0.01459
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	-0.01604	-0.01147	0.01980
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00078	-0.00057	0.00306

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.46823	0.46853	0.00856	0.48712

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.04132	0.04132

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)	-	0.01605	0.29609	3.05345
	A1->Y (RR)	-	0.01791	0.29772	3.05546
	S0->Y (RR)	(!A0 * A1)	0.05243	0.32025	1.74637
	S0->Y (FR)	(A0 * !A1)	0.03883	0.42935	3.90650

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)	-	0.01611	0.29877	3.10168
	A1->Y (FF)	-	0.01482	0.29630	3.09449
	S0->Y (FF)	(!A0 * A1)	0.06751	0.40721	2.84119
	S0->Y (RF)	(A0 * !A1)	0.02835	0.34669	2.97889

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	-	-0.00595	-0.00597	-0.00597
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00407	-0.00405	-0.00407
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00696	0.00851	0.04591
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00406	-0.00324	0.03340

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	-	0.00596	0.00597	0.00597
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00407	0.00408	0.00408
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00111	0.00210	0.03923
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01590	0.01716	0.05367

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)	-0.00147	-0.00146	-0.00147

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)	0.00147	0.00146	0.00147

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)	-0.00175	-0.00175	-0.00175

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)	0.00175	0.00175	0.00175

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)	-0.00151	-0.00050	0.03626
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00146	-0.00042	0.03638

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)	0.01210	0.01326	0.05002
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01076	0.01218	0.04948

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00419	0.00418	1.41796
sky130_osu_sc_15T_ls__nand2_l	0.00313	0.00313	0.95276

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.01637	0.02560
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.01866	0.02541

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)	0.03179	0.72929	10.11090
	B->Y (FR)	0.03739	0.72488	9.97548
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.04125	0.87244	10.99480
	B->Y (FR)	0.04915	0.87813	10.97390

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)	0.03714	0.74415	10.28770
	B->Y (RF)	0.04223	0.71365	9.77036
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.03964	0.76336	9.52785
	B->Y (RF)	0.04415	0.73176	8.94983

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	0.00631	0.00673	0.01181
	B	0.00000	0.00000	0.00000
	B	0.00800	0.00829	0.01337
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00465	0.00488	0.00842
	B	0.00000	0.00000	0.00000
	B	0.00585	0.00600	0.00961

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	-0.00080	-0.00067	0.00315
	B	0.00000	0.00000	0.00000
	B	-0.00075	-0.00077	0.00243
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00053	-0.00034	0.00275
	B	0.00000	0.00000	0.00000
	B	-0.00049	-0.00049	0.00225

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)	-0.00430	-0.00431	-0.00433
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00298	-0.00299	-0.00300

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)	0.00431	0.00433	0.00434
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00301	0.00306	0.00301

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)	-0.00402	-0.00402	-0.00402
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00279	-0.00280	-0.00279

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)	0.00411	0.00402	0.00403
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00286	0.00282	0.00280

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00417	0.00446	0.89318
sky130_osu_sc_15T_ls__nor2_l	0.00303	0.00335	0.55190

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.01777	0.03328
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.02026	0.04494

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)	0.06662	0.88379	10.51360
	B->Y (FR)	0.05021	0.88778	10.86460
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.08020	1.00355	10.42490
	B->Y (FR)	0.06539	1.01421	10.88710

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)	0.03468	0.50890	6.15768
	B->Y (RF)	0.02668	0.49516	6.13757
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.03404	0.49746	5.35266
	B->Y (RF)	0.02804	0.48648	5.33510

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	0.00871	0.00867	0.01309
	B	0.00000	0.00000	0.00000
	B	0.00643	0.00667	0.01331
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00611	0.00607	0.01000
	B	0.00000	0.00000	0.00000
	B	0.00472	0.00489	0.01006

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	0.00091	0.00093	0.00628
	B	0.00000	0.00000	0.00000
	B	-0.00095	-0.00057	0.00462
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00057	0.00064	0.00545
	B	0.00000	0.00000	0.00000
	B	-0.00056	-0.00028	0.00436

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)	-0.00326	-0.00383	-0.00381
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00223	-0.00256	-0.00255

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)	0.00380	0.00383	0.00381
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00253	0.00256	0.00255

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)	-0.00163	-0.00163	-0.00163
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00111	-0.00113	-0.00111

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)	0.00171	0.00172	0.00166
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00117	0.00117	0.00113

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00420	0.00429	0.00354	0.87420

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.02236	0.03300

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)	0.07070	0.91554	10.91280
	A1->Y (FR)	0.09087	0.91757	10.57920
	B0->Y (FR)	0.04896	0.81835	10.05370

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)	0.05120	0.61709	7.22710
	A1->Y (RF)	0.06270	0.61445	7.06093
	B0->Y (RF)	0.03953	0.65698	8.02573

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	0.00891	0.00911	0.01487
	A1	0.00000	0.00000	0.00000
	A1	0.01119	0.01109	0.01511
	B0	0.00748	0.00764	0.01228

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	0.00015	0.00406
	A1	0.00000	0.00000	0.00000
	A1	0.00207	0.00180	0.00574
	B0	0.00082	0.00094	0.00499

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)	-0.00163	-0.00167	-0.00164
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00379	-0.00385	-0.00383
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00391	-0.00392	-0.00392

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)	0.00173	0.00174	0.00167
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00382	0.00385	0.00383
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00395	0.00394	0.00393

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)	-0.00317	-0.00376	-0.00374
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00374	-0.00383	-0.00380
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00386	-0.00387	-0.00387

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)	0.00371	0.00376	0.00374
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00378	0.00383	0.00380
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00390	0.00390	0.00388

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)	-0.00305	-0.00307	-0.00311

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)	0.00311	0.00313	0.00313

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00407	0.00430	0.00441	0.00431	0.89418

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.02234	0.03346

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)	0.09312	0.91500	10.56530
	A1->Y (FR)	0.08223	0.92028	10.91570
	B0->Y (FR)	0.05710	0.89634	10.90200
	B1->Y (FR)	0.07496	0.89537	10.55560

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)	0.08961	0.67044	7.42371
	A1->Y (RF)	0.07116	0.64635	7.36137
	B0->Y (RF)	0.06045	0.68252	8.16335
	B1->Y (RF)	0.07955	0.71343	8.25970

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	0.01472	0.01462	0.01847
	A1	0.01240	0.01253	0.01825
	B0	0.00912	0.00938	0.01501
	B1	0.01154	0.01146	0.01529

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00350	0.00322	0.00704
	A1	0.00183	0.00168	0.00544
	B0	-0.00032	-0.00015	0.00471
	B1	0.00148	0.00138	0.00619

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)	-0.00325	-0.00383	-0.00381
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00325	-0.00383	-0.00381
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00375	-0.00382	-0.00380
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00387	-0.00389	-0.00388

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)	0.00379	0.00383	0.00381
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00379	0.00383	0.00381
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00378	0.00382	0.00380
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00391	0.00390	0.00389

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)	-0.00161	-0.00161	-0.00162
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00161	-0.00161	-0.00162
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00371	-0.00379	-0.00377
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00385	-0.00386	-0.00385

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)	0.00169	0.00171	0.00165
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00170	0.00171	0.00165
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00376	0.00379	0.00377
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00388	0.00388	0.00387

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)	-0.00160	-0.00161	-0.00160
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00160	-0.00161	-0.00160
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00414	-0.00420	-0.00419
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00416	-0.00419	-0.00426

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)	0.00168	0.00169	0.00163
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00168	0.00170	0.00163
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00419	0.00420	0.00419
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00426	0.00429	0.00428

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)	-0.00319	-0.00377	-0.00375
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00319	-0.00376	-0.00375
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00422	-0.00432	-0.00428
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00425	-0.00427	-0.00434

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)	0.00372	0.00378	0.00375
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00372	0.00376	0.00375
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00427	0.00432	0.00428
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00434	0.00438	0.00436

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00452	0.00429	1.73542
sky130_osu_sc_15T_ls__or2_2	0.00452	0.00429	3.42449
sky130_osu_sc_15T_ls__or2_4	0.00453	0.00429	6.60998
sky130_osu_sc_15T_ls__or2_8	0.00453	0.00430	12.70491
sky130_osu_sc_15T_ls__or2_l	0.00343	0.00318	0.98761

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.03594	0.05057
sky130_osu_sc_15T_ls__or2_2	0.00000	0.04924	0.05888
sky130_osu_sc_15T_ls__or2_4	0.00000	0.08060	0.08447
sky130_osu_sc_15T_ls__or2_8	0.00000	0.14332	0.15041
sky130_osu_sc_15T_ls__or2_l	0.00000	0.04209	0.06065

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)	0.07885	0.62542	6.76045
	B->Y (RR)	0.06807	0.58978	6.65486
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.08653	0.55884	6.81687
	B->Y (RR)	0.07533	0.52745	6.70364
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.11224	0.55817	7.07974
	B->Y (RR)	0.10076	0.53312	6.97090
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.16137	0.61629	7.47877
	B->Y (RR)	0.14975	0.59717	7.39788
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.08627	0.71698	6.49322
	B->Y (RR)	0.07647	0.68546	6.35703

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (FF)	0.12612	0.68075	6.91248
	B->Y (FF)	0.10444	0.66549	6.97656
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.15011	0.66037	7.07773
	B->Y (FF)	0.12864	0.65469	7.13597
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.21152	0.71305	7.41539
	B->Y (FF)	0.19013	0.71445	7.47458
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.33769	0.84864	7.81120
	B->Y (FF)	0.31639	0.85234	7.90330
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.14653	0.68710	5.78901
	B->Y (FF)	0.12241	0.68261	5.89480

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	0.00646	0.00647	0.02859
	B	0.00000	0.00000	0.00000
	B	0.00474	0.00555	0.03146
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01102	0.01136	0.03993
	B	0.00000	0.00000	0.00000
	B	0.00922	0.01041	0.03585
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02112	0.02206	0.04474
	B	0.00000	0.00000	0.00000
	B	0.01920	0.02101	0.04604
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04217	0.04327	0.06786
	B	0.00000	0.00000	0.00000
	B	0.04040	0.04277	0.06976
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00465	0.00483	0.02118
	B	0.00000	0.00000	0.00000
	B	0.00352	0.00417	0.02137

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	0.01414	0.01414	0.03457
	B	0.00000	0.00000	0.00000
	B	0.01151	0.01296	0.04367
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01755	0.01799	0.03805
	B	0.00000	0.00000	0.00000
	B	0.01489	0.01653	0.04602
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02670	0.02680	0.04646
	B	0.00000	0.00000	0.00000
	B	0.02409	0.02564	0.05319
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.05012	0.04533	0.06393
	B	0.00000	0.00000	0.00000
	B	0.04750	0.04350	0.06905
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.01036	0.01016	0.02619
	B	0.00000	0.00000	0.00000
	B	0.00858	0.00940	0.03023

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)	-0.00329	-0.00387	-0.00384
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00328	-0.00387	-0.00384
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00328	-0.00387	-0.00384
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00328	-0.00387	-0.00384
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00224	-0.00259	-0.00258

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)	0.00381	0.00387	0.00384
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00381	0.00387	0.00384
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00381	0.00387	0.00384
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00382	0.00387	0.00384
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00256	0.00259	0.00258

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)	-0.00163	-0.00167	-0.00164
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00163	-0.00167	-0.00164
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00163	-0.00167	-0.00164
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00163	-0.00167	-0.00164
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00114	-0.00116	-0.00114

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)	0.00173	0.00175	0.00167
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00173	0.00175	0.00167
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00173	0.00175	0.00167
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00173	0.00175	0.00167
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00120	0.00121	0.00116

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00444	0.00567	0.90018
sky130_osu_sc_15T_ls__tbufi_l	0.00335	0.00432	0.55114

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.02784	0.03560
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.03148	0.03945

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)	0.04780	0.88282	10.85800
	OE->Y (FR)	0.05211	0.36580	5.09360
	OE->Y (RR)	0.08980	0.71735	6.69784
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.06307	1.01243	10.87670
	OE->Y (FR)	0.06022	0.36565	5.09341
	OE->Y (RR)	0.10144	0.83199	6.50669

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)	0.03626	0.62648	7.75754
	OE->Y (FF)	0.05316	0.36582	5.09360
	OE->Y (RF)	0.03408	0.59046	7.16695
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.03929	0.62070	6.79604
	OE->Y (FF)	0.06110	0.36565	5.09342
	OE->Y (RF)	0.03625	0.57926	6.15070

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	0.00605	0.00637	0.01214
	OE	0.00000	0.00000	0.00000
	OE	0.00627	0.00717	0.04053
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00446	0.00460	0.00914
	OE	0.00000	0.00000	0.00000
	OE	0.00435	0.00505	0.02921

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	-0.00097	-0.00067	0.00391
	OE	0.00000	0.00000	0.00000
	OE	0.00394	0.00484	0.04204
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00057	-0.00035	0.00373
	OE	0.00000	0.00000	0.00000
	OE	0.00265	0.00336	0.03035

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)	-0.00288	-0.00291	-0.00288
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00246	-0.00247	-0.00246
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00209	-0.00212	-0.00210
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00183	-0.00184	-0.00183

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)	0.00288	0.00291	0.00288
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00252	0.00253	0.00249
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00209	0.00212	0.00210
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00186	0.00186	0.00184

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)	0.00235	0.00332	0.04093
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00206	0.00305	0.04060
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00155	0.00232	0.02937
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00135	0.00216	0.02915

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)	0.00708	0.00813	0.04551
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00721	0.00831	0.04564
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00536	0.00611	0.03266
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00550	0.00625	0.03278

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00443	0.00688	0.89964
sky130_osu_sc_15T_ls__tnbufi_l	0.00334	0.00495	0.55129

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.02750	0.03663
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.02881	0.04746

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)	0.04829	0.88262	10.85380
	OE->Y (RR)	0.03185	0.36633	5.09412
	OE->Y (FR)	0.06200	0.87776	10.47670
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.06359	1.01246	10.87840
	OE->Y (RR)	0.03167	0.36629	5.09407
	OE->Y (FR)	0.07579	1.00061	10.37940

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)	0.03568	0.62614	7.75391
	OE->Y (RF)	0.03169	0.36633	5.09416
	OE->Y (FF)	0.06117	0.56709	5.51068
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.03859	0.62044	6.79700
	OE->Y (RF)	0.03149	0.36628	5.09410
	OE->Y (FF)	0.06970	0.58947	4.93312

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	0.00622	0.00653	0.01231
	OE	0.00000	0.00000	0.00000
	OE	0.01531	0.01710	0.05516
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00463	0.00477	0.00931
	OE	0.00000	0.00000	0.00000
	OE	0.01096	0.01215	0.03911

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	-0.00120	-0.00088	0.00371
	OE	0.00000	0.00000	0.00000
	OE	0.01321	0.01498	0.04767
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00079	-0.00055	0.00352
	OE	0.00000	0.00000	0.00000
	OE	0.00941	0.01071	0.03471

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)	-0.00242	-0.00247	-0.00244
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00206	-0.00207	-0.00206
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00167	-0.00170	-0.00168
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00144	-0.00145	-0.00144

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)	0.00242	0.00247	0.00244
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00211	0.00212	0.00209
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00167	0.00170	0.00168
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00147	0.00146	0.00145

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)	-0.00445	-0.00388	0.03425
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00436	-0.00379	0.03430
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00292	-0.00237	0.02495
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00283	-0.00229	0.02497

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)	0.01138	0.01332	0.05148
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01120	0.01318	0.05137
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00814	0.00945	0.03660
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00804	0.00935	0.03650

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00881	0.00789	0.93021

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.06290	0.06894

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	0.11313	0.76346	6.95354
	A->Y (FR)	!B	0.06438	0.90602	11.03630
	B->Y (RR)	A	0.08990	0.74082	6.98499
	B->Y (FR)	!A	0.08535	0.90751	10.69490

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	0.10964	0.66330	5.91254
	A->Y (RF)	!B	0.04980	0.61097	7.34886
	B->Y (FF)	A	0.09303	0.64782	5.90475
	B->Y (RF)	!A	0.06341	0.62795	7.35809

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	0.00644	0.00706	0.04042
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01495	0.01665	0.05930
	B	A	0.00000	0.00000	0.00000
	B	A	0.00208	0.00312	0.04063
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01655	0.01784	0.05842

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	0.01827	0.01890	0.05542
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00407	0.00483	0.04558
	B	A	0.00000	0.00000	0.00000
	B	A	0.01661	0.01817	0.05565
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00515	0.00578	0.04620

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00883	0.00794	0.90440

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.06290	0.06996

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	0.11021	0.75148	6.89642
	A->Y (FR)	B	0.08032	0.90020	10.63230
	B->Y (RR)	!A	0.09432	0.74452	6.90977
	B->Y (FR)	A	0.08769	0.90804	10.62100

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	0.09576	0.64582	5.71483
	A->Y (RF)	B	0.05355	0.65287	7.79487
	B->Y (FF)	!A	0.09060	0.64322	5.79709
	B->Y (RF)	A	0.06258	0.62360	7.23603

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	0.01768	0.01902	0.05991
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00315	0.00307	0.03916
	B	A	0.00000	0.00000	0.00000
	B	A	0.01822	0.01959	0.05982
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00188	0.00278	0.04009

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	0.00333	0.00382	0.04541
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01883	0.02025	0.05235
	B	A	0.00000	0.00000	0.00000
	B	A	0.00337	0.00386	0.04394
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01691	0.01857	0.05589

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.50245
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	228011.00000	456022.00000
sky130_osu_sc_15T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	-0.00226	0.05969	0.82669

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
	3.96876	3.76257	1.00272