sky130_osu_sc_15T_ls_ss_1P60_150C.ccs Library

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

SKY130_OSU_SC_15T_LS__ADDFx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.01670	0.01662	0.01284	1.14626	0.53331	1.11148
sky130_osu_sc_15T_ls__addf_l	0.01669	0.01662	0.01284	0.66979	0.53461	0.68023

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.60929	0.78162
sky130_osu_sc_15T_ls__addf_l	0.00000	0.51566	0.68799

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)	0.29447	2.49559	28.56230
	B->CO (RR)	0.29501	2.46778	28.20210
	CI->CO (RR)	0.28040	2.52619	29.15920
	CON->CO (FR)	0.04685	0.95553	11.80490
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.30683	2.28052	21.47660
	B->CO (RR)	0.30701	2.26691	21.50120
	CI->CO (RR)	0.29267	2.31049	22.09900
	CON->CO (FR)	0.06181	1.09443	11.83070

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)	0.38985	3.01663	34.02270
	B->CO (FF)	0.35790	2.91503	33.34050
	CI->CO (FF)	0.34632	2.98360	34.35190
	CON->CO (RF)	0.03959	0.79162	9.76098
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.38888	2.59710	23.97040
	B->CO (FF)	0.35674	2.51280	23.68820
	CI->CO (FF)	0.34510	2.56347	24.32290
	CON->CO (RF)	0.04706	0.84439	9.26404

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)	0.27848	1.31613	11.09400
	B->CON (FR)	0.24937	1.26389	11.13550
	CI->CON (FR)	0.23487	1.28401	11.46080
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.26206	1.30121	11.09530
	B->CON (FR)	0.23383	1.24974	11.13720
	CI->CON (FR)	0.21863	1.26908	11.46210

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)	0.18350	0.92812	8.15622
	B->CON (RF)	0.18575	0.95215	8.56679
	CI->CON (RF)	0.16924	0.96016	8.79831
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.17526	0.92077	8.15950
	B->CON (RF)	0.17775	0.94495	8.56986
	CI->CON (RF)	0.16099	0.95281	8.80156

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)	0.56854	2.88059	27.11170
	B->S (-R)	0.60093	2.92168	26.83350
	CI->S (-R)	0.52162	2.84053	27.42450
	CON->S (RR)	0.15505	0.95913	8.14208
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.54692	2.59370	21.05300
	B->S (-R)	0.53409	2.56901	21.04150
	CI->S (-R)	0.49954	2.55397	21.39000
	CON->S (RR)	0.16169	1.05661	7.99375

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)	0.48775	2.31898	20.59540
	B->S (-F)	0.48970	2.25332	20.37830
	CI->S (-F)	0.47218	2.34197	21.17900
	CON->S (FF)	0.18317	0.96379	7.13244
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.46674	2.06456	15.89390
	B->S (-F)	0.46503	2.01432	15.99160
	CI->S (-F)	0.45063	2.08678	16.50150
	CON->S (FF)	0.18353	0.99951	6.75399

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	0.00274	0.00292	0.00618
	B	0.00419	0.00434	0.00728
	CI	0.00435	0.00464	0.00794
sky130_osu_sc_15T_ls__addf_l	A	0.00243	0.00225	0.00379
	B	0.00342	0.00339	0.00493
	CI	0.00358	0.00369	0.00549

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01113	0.01147	0.01667
	B	0.01172	0.01213	0.01656
	CI	0.01034	0.01087	0.01544
sky130_osu_sc_15T_ls__addf_l	A	0.01123	0.01126	0.01348
	B	0.01096	0.01124	0.01344
	CI	0.00958	0.01001	0.01235

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01194	0.01205	0.01382
	B	0.01169	0.01196	0.01374
	CI	0.01032	0.01072	0.01257
sky130_osu_sc_15T_ls__addf_l	A	0.01121	0.01126	0.01292
	B	0.01095	0.01117	0.01283
	CI	0.00957	0.00993	0.01166

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00318	0.00307	0.00434
	B	0.00415	0.00417	0.00551
	CI	0.00433	0.00451	0.00601
sky130_osu_sc_15T_ls__addf_l	A	0.00241	0.00224	0.00341
	B	0.00339	0.00334	0.00458
	CI	0.00356	0.00367	0.00509

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01112	0.01147	0.01639
	B	0.01171	0.01212	0.01632
	CI	0.01034	0.01086	0.01521
sky130_osu_sc_15T_ls__addf_l	A	0.01123	0.01126	0.01352
	B	0.01097	0.01124	0.01345
	CI	0.00958	0.01001	0.01239

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.02474	0.02497	0.02804
	B	0.02221	0.02199	0.02717
	CI	0.02014	0.02022	0.02356
sky130_osu_sc_15T_ls__addf_l	A	0.02369	0.02367	0.02695
	B	0.02118	0.02081	0.02630
	CI	0.01911	0.01905	0.02258

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00823	0.00899	1.12780	0.56009	1.14655
sky130_osu_sc_15T_ls__addh_l	0.00823	0.00899	0.69010	0.56344	0.69614

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.74095	0.87532
sky130_osu_sc_15T_ls__addh_l	0.00000	0.64260	0.78169

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)	0.20126	1.01892	8.23706
	B->CO (RR)	0.20730	0.99943	8.24018
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.21125	1.12475	8.15526
	B->CO (RR)	0.21737	1.10707	8.16168

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)	0.16095	0.89646	7.04155
	B->CO (FF)	0.17003	0.91540	7.11620
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.15968	0.88082	6.04665
	B->CO (FF)	0.16837	0.90116	6.12294

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	0.27377	0.87586	4.71184
	A->CON (FR)	!B	0.15892	1.18913	11.35210
	B->CON (RR)	A	0.27941	0.85477	4.71097
	B->CON (FR)	!A	0.19346	1.21293	11.04810
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.24964	0.84596	4.64541
	A->CON (FR)	!B	0.14349	1.17609	11.37840
	B->CON (RR)	A	0.25550	0.82726	4.65075
	B->CON (FR)	!A	0.17803	1.19951	11.07480

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	0.25628	1.04322	6.57789
	A->CON (RF)	!B	0.10911	0.89653	8.86848
	B->CON (FF)	A	0.24832	1.06602	6.81674
	B->CON (RF)	!A	0.13701	0.91556	8.73158
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.23669	1.01177	6.47703
	A->CON (RF)	!B	0.10115	0.89044	8.88825
	B->CON (FF)	A	0.22880	1.03715	6.72071
	B->CON (RF)	!A	0.12907	0.90945	8.75094

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	0.20657	2.41083	28.76680
	A->S (FR)	B	0.35575	2.53856	26.32410
	B->S (RR)	!A	0.23613	2.39593	28.17380
	B->S (FR)	A	0.34705	2.59210	27.02420
	CON->S (FR)	-	0.04952	0.96973	11.95880
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.21216	2.20819	22.26470
	A->S (FR)	B	0.35040	2.31756	19.74360
	B->S (RR)	!A	0.24213	2.20459	21.88520
	B->S (FR)	A	0.34119	2.36252	20.22910
	CON->S (FR)	-	0.06154	1.09705	12.01460

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	0.25221	2.75743	32.82220
	A->S (RF)	B	0.34871	1.95831	18.97460
	B->S (FF)	!A	0.28685	2.78758	32.57010
	B->S (RF)	A	0.35437	1.93785	18.96860
	CON->S (RF)	-	0.03793	0.77920	9.63232
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.24738	2.40449	24.08020
	A->S (RF)	B	0.33234	1.76148	13.93370
	B->S (FF)	!A	0.28219	2.43002	23.79910
	B->S (RF)	A	0.33811	1.74244	13.92770
	CON->S (RF)	-	0.04509	0.84136	9.37223

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	0.00522	0.00505	0.00673
	B	0.00000	0.00000	0.00000
	B	0.00466	0.00445	0.00586
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00449	0.00426	0.00619
	B	0.00000	0.00000	0.00000
	B	0.00394	0.00367	0.00526

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	0.00804	0.00780	0.00984
	B	0.00000	0.00000	0.00000
	B	0.00830	0.00844	0.01060
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00732	0.00703	0.00900
	B	0.00000	0.00000	0.00000
	B	0.00760	0.00762	0.00966

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	0.00522	0.00504	0.00683
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00700	0.00706	0.00786
	B	A	0.00000	0.00000	0.00000
	B	A	0.00466	0.00445	0.00598
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00794	0.00796	0.00851
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00449	0.00426	0.00613
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00650	0.00652	0.00711
	B	A	0.00000	0.00000	0.00000
	B	A	0.00393	0.00366	0.00535
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00745	0.00741	0.00775

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	0.00804	0.00781	0.00978
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00130	0.00133	0.00187
	B	A	0.00000	0.00000	0.00000
	B	A	0.00830	0.00842	0.01046
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00194	0.00185	0.00237
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00732	0.00704	0.00911
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00063	0.00064	0.00101
	B	A	0.00000	0.00000	0.00000
	B	A	0.00760	0.00763	0.00964
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00128	0.00116	0.00153

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	0.00805	0.00781	0.00999
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00132	0.00141	0.00207
	B	A	0.00000	0.00000	0.00000
	B	A	0.00832	0.00845	0.01077
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00197	0.00191	0.00257
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00733	0.00705	0.00904
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00064	0.00066	0.00104
	B	A	0.00000	0.00000	0.00000
	B	A	0.00761	0.00765	0.00973
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00129	0.00116	0.00153

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	0.00523	0.00505	0.00683
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00701	0.00717	0.00822
	B	A	0.00000	0.00000	0.00000
	B	A	0.00467	0.00445	0.00585
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00795	0.00805	0.00894
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00450	0.00426	0.00615
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00651	0.00657	0.00713
	B	A	0.00000	0.00000	0.00000
	B	A	0.00394	0.00366	0.00536
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00745	0.00744	0.00782

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00441	0.00452	1.13577
sky130_osu_sc_15T_ls__and2_2	0.00441	0.00452	2.26577
sky130_osu_sc_15T_ls__and2_4	0.00441	0.00452	4.39172
sky130_osu_sc_15T_ls__and2_6	0.00445	0.00452	6.43052
sky130_osu_sc_15T_ls__and2_8	0.00442	0.00453	8.41044
sky130_osu_sc_15T_ls__and2_l	0.00326	0.00337	0.67687

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.28757	0.35700
sky130_osu_sc_15T_ls__and2_2	0.00000	0.18380	0.22105
sky130_osu_sc_15T_ls__and2_4	0.00000	0.26020	0.28975
sky130_osu_sc_15T_ls__and2_6	0.00000	0.33659	0.36714
sky130_osu_sc_15T_ls__and2_8	0.00000	0.41299	0.46662
sky130_osu_sc_15T_ls__and2_l	0.00000	0.20600	0.25724

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)	0.15338	0.92154	7.91872
	B->Y (RR)	0.16219	0.91401	7.92750
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.17695	0.87213	8.22456
	B->Y (RR)	0.18587	0.85380	8.20702
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.24350	0.91409	8.68560
	B->Y (RR)	0.25253	0.88558	8.62116
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.30919	0.98014	9.00062
	B->Y (RR)	0.31799	0.94833	8.89928
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.37297	1.05355	9.30504
	B->Y (RR)	0.38188	1.02016	9.19006
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.19266	1.09860	8.06944
	B->Y (RR)	0.20291	1.08675	8.07877

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)	0.12301	0.79988	6.57737
	B->Y (FF)	0.13030	0.82466	6.69453
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.14343	0.78055	6.90336
	B->Y (FF)	0.15134	0.79829	6.99158
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.20202	0.82756	7.32306
	B->Y (FF)	0.20958	0.83935	7.41535
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.26345	0.89012	7.64798
	B->Y (FF)	0.27030	0.89955	7.71935
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.32104	0.95085	7.89136
	B->Y (FF)	0.32770	0.95883	7.94998
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.14922	0.90787	6.45894
	B->Y (FF)	0.15928	0.93533	6.57710

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	0.00405	0.00376	0.01033
	B	0.00000	0.00000	0.00000
	B	0.00412	0.00361	0.00844
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00782	0.00788	0.01401
	B	0.00000	0.00000	0.00000
	B	0.00789	0.00777	0.01227
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01627	0.01678	0.02250
	B	0.00000	0.00000	0.00000
	B	0.01630	0.01670	0.02112
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02497	0.02535	0.03150
	B	0.00000	0.00000	0.00000
	B	0.02498	0.02540	0.03029
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03373	0.03419	0.04078
	B	0.00000	0.00000	0.00000
	B	0.03388	0.03434	0.03978
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00289	0.00266	0.00633
	B	0.00000	0.00000	0.00000
	B	0.00296	0.00255	0.00524

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	0.00975	0.01000	0.01642
	B	0.00000	0.00000	0.00000
	B	0.01100	0.01117	0.01721
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01221	0.01303	0.01930
	B	0.00000	0.00000	0.00000
	B	0.01347	0.01411	0.02007
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01837	0.02017	0.02641
	B	0.00000	0.00000	0.00000
	B	0.01964	0.02120	0.02710
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02479	0.02736	0.03398
	B	0.00000	0.00000	0.00000
	B	0.02609	0.02824	0.03439
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03118	0.03421	0.04118
	B	0.00000	0.00000	0.00000
	B	0.03246	0.03499	0.04172
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00725	0.00724	0.01071
	B	0.00000	0.00000	0.00000
	B	0.00810	0.00807	0.01130

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)	-0.00362	-0.00364	-0.00366
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00362	-0.00364	-0.00366
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00362	-0.00364	-0.00366
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00364	-0.00366	-0.00368
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00362	-0.00364	-0.00365
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00251	-0.00253	-0.00253

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)	0.00366	0.00369	0.00367
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00366	0.00369	0.00367
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00366	0.00369	0.00367
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00368	0.00371	0.00369
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00366	0.00369	0.00367
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00253	0.00256	0.00254

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)	-0.00348	-0.00348	-0.00348
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00348	-0.00349	-0.00348
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00348	-0.00349	-0.00348
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00348	-0.00349	-0.00348
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00348	-0.00348	-0.00348
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00242	-0.00242	-0.00242

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)	0.00352	0.00353	0.00349
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00352	0.00353	0.00349
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00353	0.00355	0.00349
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00353	0.00355	0.00349
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00353	0.00355	0.00350
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00245	0.00247	0.00243

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00417	0.00434	0.00420	0.52321

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.20371	0.45233

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)	0.14716	1.19179	10.97900
	A1->Y (FR)	0.12571	1.13769	10.69980
	B0->Y (FR)	0.10837	1.15638	11.34410

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)	0.10281	0.82524	7.80977
	A1->Y (RF)	0.09504	0.85470	8.40057
	B0->Y (RF)	0.05747	0.78844	8.24228

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	0.00870	0.00862	0.00905
	A1	0.00000	0.00000	0.00000
	A1	0.00740	0.00728	0.00774
	B0	0.00675	0.00631	0.00728

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	0.00183	0.00148	0.00199
	A1	0.00000	0.00000	0.00000
	A1	0.00185	0.00156	0.00224
	B0	-0.00080	-0.00089	-0.00037

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)	-0.00304	-0.00320	-0.00318
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00325	-0.00326	-0.00326
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00326	-0.00326	-0.00325

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)	0.00317	0.00320	0.00318
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00325	0.00329	0.00327
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00330	0.00330	0.00327

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)	-0.00301	-0.00315	-0.00314
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00320	-0.00321	-0.00321
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00342	-0.00342	-0.00346

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)	0.00311	0.00315	0.00314
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00320	0.00323	0.00322
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00345	0.00349	0.00347

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)	-0.00142	-0.00144	-0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00158	0.00159	0.00148

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_1	0.00416	0.00431	0.00447	0.00428	0.53707

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_1	0.00000	0.19115	0.50260

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)	0.18097	1.23219	11.09550
	A1->Y (FR)	0.16233	1.20397	11.01160
	B0->Y (FR)	0.11249	1.15720	11.34890
	B1->Y (FR)	0.13121	1.18956	11.46620

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)	0.13859	0.87086	7.96805
	A1->Y (RF)	0.13067	0.89867	8.55251
	B0->Y (RF)	0.06882	0.82946	8.48483
	B1->Y (RF)	0.07670	0.80062	7.89765

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	0.01071	0.01056	0.01099
	A1	0.00941	0.00929	0.00964
	B0	0.00725	0.00701	0.00802
	B1	0.00849	0.00837	0.00930

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00378	0.00343	0.00390
	A1	0.00380	0.00348	0.00415
	B0	-0.00047	-0.00056	0.00017
	B1	-0.00041	-0.00058	-0.00005

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)	-0.00304	-0.00319	-0.00318
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00325	-0.00327	-0.00326
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00325	-0.00327	-0.00325
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00326	-0.00326	-0.00325

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)	0.00316	0.00319	0.00318
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00325	0.00329	0.00327
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00330	0.00330	0.00327
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00330	0.00330	0.00327

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)	-0.00300	-0.00315	-0.00313
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00320	-0.00322	-0.00321
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00342	-0.00341	-0.00345
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00342	-0.00341	-0.00345

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)	0.00311	0.00315	0.00313
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00320	0.00323	0.00322
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00345	0.00348	0.00346
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00345	0.00348	0.00346

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)	-0.00143	-0.00145	-0.00144
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00142	-0.00143	-0.00143
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00351	-0.00354	-0.00356
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00351	-0.00354	-0.00356

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)	0.00166	0.00167	0.00150
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00143	0.00145	0.00144
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00355	0.00362	0.00357
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00355	0.00362	0.00357

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)	-0.00145	-0.00146	-0.00145
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00143	-0.00144	-0.00144
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00330	-0.00332	-0.00331
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00330	-0.00332	-0.00331

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)	0.00167	0.00168	0.00151
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00144	0.00145	0.00145
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00336	0.00335	0.00332
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00336	0.00335	0.00332

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00451	1.12763
sky130_osu_sc_15T_ls__buf_2	0.00455	2.24960
sky130_osu_sc_15T_ls__buf_4	0.00454	4.36547
sky130_osu_sc_15T_ls__buf_6	0.00093	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00455	8.49234
sky130_osu_sc_15T_ls__buf_l	0.00340	0.67640

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.31135	0.31135
sky130_osu_sc_15T_ls__buf_2	0.00000	0.23977	0.30413
sky130_osu_sc_15T_ls__buf_4	0.00000	0.32386	0.40361
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.49204	0.60257
sky130_osu_sc_15T_ls__buf_l	0.00000	0.21772	0.21772

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)**	0.10546	0.85415	7.75301
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.11878	0.78452	7.98714
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.15952	0.79385	8.36498
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.23827	0.87679	8.96227
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.13062	1.01209	7.82638

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)**	0.11673	0.78800	6.52388
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.13928	0.78212	7.03277
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.19863	0.83147	7.54334
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.31835	0.95694	8.20833
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.14379	0.89537	6.41574

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	0.00382	0.00342	0.00968
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00756	0.00744	0.01334
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01590	0.01642	0.02279
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03267	0.03412	0.04024
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00282	0.00244	0.00611

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	0.00946	0.00965	0.01612
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01196	0.01262	0.01876
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01820	0.01973	0.02593
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03104	0.03367	0.04032
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00711	0.00707	0.01058

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
	-0.00058	-0.00058	-0.00057

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
	0.00058	0.00058	0.00057

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00428	0.00428	0.01242	1.06939	1.07334
sky130_osu_sc_15T_ls__dffr_l	0.00428	0.00428	0.01242	0.67652	0.67049

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	1.20443	1.40319
sky130_osu_sc_15T_ls__dffr_l	0.00000	1.11080	1.30956

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)	0.64648	2.17880	17.38830
	QN->Q (FR)	0.05534	1.05260	12.80320
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.64911	2.41374	17.42800
	QN->Q (FR)	0.06612	1.16465	12.60380

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)	0.58666	2.17368	18.38850
	QN->Q (RF)	0.04325	0.83552	10.16090
	RN->Q (FF)	0.42869	2.09464	19.00990
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.61100	2.46237	18.49320
	QN->Q (RF)	0.04928	0.89058	9.80243
	RN->Q (FF)	0.45456	2.38329	19.11500

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)	0.51653	1.31183	8.27766
	RN->QN (FR)	0.35825	1.23339	8.90327
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.52405	1.42157	8.25036
	RN->QN (FR)	0.36658	1.34369	8.86957

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)**	0.55841	1.23203	6.32254
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.54131	1.25422	6.03559

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)	-0.15720	-0.16423	-0.34110
	setup	CK (R)	0.50918	0.50399	1.32909
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.16250	-0.16498	-0.34093
	setup	CK (R)	0.50923	0.50518	1.33078

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)	-0.22869	-0.52339	-3.31190
	setup	CK (R)	0.27909	0.54045	3.35195
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.22896	-0.52357	-3.31260
	setup	CK (R)	0.27570	0.54045	3.35195

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)	-0.15720	-0.16423	-0.34110
	setup	CK (R)	0.50918	0.50399	1.32909
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.16250	-0.16498	-0.34093
	setup	CK (R)	0.50923	0.50518	1.33078

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)	-0.22869	-0.52339	-3.31190
	setup	CK (R)	0.27909	0.54045	3.35195
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.22896	-0.52357	-3.31260
	setup	CK (R)	0.27570	0.54045	3.35195

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)	0.41969	0.43018	1.36957
	removal	CK (R)	-0.11025	-0.12099	-0.19641
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.41903	0.42934	1.37244
	removal	CK (R)	-0.11025	-0.12099	-0.19641

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)	0.41969	0.43018	1.36957
	removal	CK (R)	-0.11025	-0.12099	-0.19641
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.41903	0.42934	1.37244
	removal	CK (R)	-0.11025	-0.12099	-0.19641

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 ()	0.25570	0.56763	13.33370
	min_pulse_width	RN ()	0.25358	0.56763	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.25358	0.56763	13.33370
	min_pulse_width	RN ()	0.25146	0.56763	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 ()	0.31512	0.56763	13.33370
	min_pulse_width	CK ()	0.31300	0.56763	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.28965	0.56763	13.33370
	min_pulse_width	CK ()	0.30239	0.56763	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 ()	0.62638	0.68017	13.33370
	min_pulse_width	CK ()	0.23661	0.56763	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.62638	0.68017	13.33370
	min_pulse_width	CK ()	0.23448	0.56763	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	0.00938	0.00822	0.00447
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00818	0.00728	0.00950

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	0.01101	0.00979	0.00180
	RN	-0.00126	-0.05513	-0.68441
	RN	0.02470	0.02367	0.01550
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00980	0.00904	0.00791
	RN	-0.00126	-0.04188	-0.43297
	RN	0.02348	0.02287	0.02167

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	0.01100	0.00982	0.00171
	RN	-0.00126	-0.05525	-0.68691
	RN	0.02469	0.02365	0.01547
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00980	0.00903	0.00788
	RN	-0.00126	-0.04166	-0.42910
	RN	0.02347	0.02285	0.02160

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	0.00934	0.00818	0.00442
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00815	0.00725	0.00935

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	-0.00285	-0.00316	-0.00317
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01115	0.01050	0.01448
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00495	0.00435	0.00844
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00285	-0.00316	-0.00317
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01115	0.01050	0.01448
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00495	0.00435	0.00844

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	0.00315	0.00318	0.00317
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01914	0.01885	0.02281
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00912	0.00890	0.01297
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00315	0.00318	0.00317
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01914	0.01885	0.02281
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00912	0.00890	0.01297

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)	0.00343	0.00297	0.00930
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00998	0.00928	0.01550
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)	0.00342	0.00297	0.00930
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00998	0.00928	0.01549

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)	0.00866	0.00852	0.01528
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01847	0.01799	0.02450
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)	0.00866	0.00852	0.01528
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01847	0.01799	0.02450

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)	-0.00066	-0.00129	0.00493
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00548	0.00446	0.01072
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00098	-0.00165	0.00462
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00066	-0.00129	0.00493
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00548	0.00446	0.01072
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00098	-0.00165	0.00462

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)	0.01343	0.01329	0.01994
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02916	0.02831	0.03445
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02234	0.02191	0.02817
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02876	0.02832	0.04059
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01554	0.01526	0.02174
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01343	0.01328	0.01994
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02916	0.02828	0.03445
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02234	0.02191	0.02817
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02876	0.02829	0.04059
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01554	0.01526	0.02174

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00424	0.00428	0.00933	0.01267	1.14562	1.15049
sky130_osu_sc_15T_ls__dffsr_l	0.00424	0.00428	0.00932	0.01267	0.67136	0.67130

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	1.39376	1.98458
sky130_osu_sc_15T_ls__dffsr_l	0.00000	1.30013	1.89095

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)	0.59896	2.14783	18.11350
	QN->Q (FR)	0.04999	1.00318	12.41040
	RN->Q (RR)	0.47657	2.04563	18.10390
	SN->Q (FR)	0.43278	2.05664	19.01260
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.61911	2.37648	17.31190
	QN->Q (FR)	0.06611	1.16046	12.53500
	RN->Q (RR)	0.49731	2.27438	17.29400
	SN->Q (FR)	0.45297	2.28436	18.17310

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)	0.67286	2.27832	19.03810
	QN->Q (RF)	0.04279	0.85529	10.57660
	RN->Q (FF)	0.45000	2.13371	19.67730
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.70631	2.56018	18.47280
	QN->Q (RF)	0.04918	0.88754	9.75761
	RN->Q (FF)	0.48372	2.41789	19.11070

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)	0.60246	1.40207	8.45658
	RN->QN (FR)	0.37983	1.25960	9.09787
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.61735	1.52749	8.37312
	RN->QN (FR)	0.39534	1.38558	9.00898

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)	0.51934	1.20215	6.69085
	RN->QN (RF)	0.39730	1.10060	6.67585
	SN->QN (FF)	0.35386	1.11170	7.58241
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.51653	1.22667	6.05961
	RN->QN (RF)	0.39459	1.12591	6.04159
	SN->QN (FF)	0.35085	1.13577	6.91940

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)	-0.15601	-0.16762	-0.40976
	setup	CK (R)	0.45107	0.44685	1.35236
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15950	-0.16802	-0.41045
	setup	CK (R)	0.44895	0.44327	1.34681

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)	-0.26424	-0.54922	-3.45686
	setup	CK (R)	0.33443	0.56869	3.48687
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.26455	-0.55030	-3.45548
	setup	CK (R)	0.33230	0.56807	3.48697

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)	-0.15601	-0.16762	-0.40976
	setup	CK (R)	0.45107	0.44685	1.35236
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15950	-0.16802	-0.41045
	setup	CK (R)	0.44895	0.44327	1.34681

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)	-0.26424	-0.54922	-3.45686
	setup	CK (R)	0.33443	0.56869	3.48687
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.26455	-0.55030	-3.45548
	setup	CK (R)	0.33230	0.56807	3.48697

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)	0.32377	0.33518	1.27233
	removal	CK (R)	-0.04643	-0.05226	-0.10155
	hold	SN (R)	-0.34438	-0.57643	-2.52301
	setup	SN (R)	0.38433	0.63377	4.72289
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.32200	0.33196	1.26852
	removal	CK (R)	-0.04578	-0.05062	-0.09901
	hold	SN (R)	-0.34088	-0.56779	-2.44749
	setup	SN (R)	0.38194	0.62381	4.61112

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)	0.32377	0.33518	1.27233
	removal	CK (R)	-0.04643	-0.05226	-0.10155
	hold	SN (R)	-0.34438	-0.57643	-2.52301
	hold	SN (R)	-0.34625	-0.57910	-2.54055
	setup	SN (R)	0.38433	0.62763	4.52921
	setup	SN (R)	0.38168	0.63377	4.72289
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.32200	0.33196	1.26852
	removal	CK (R)	-0.04578	-0.05062	-0.09901
	hold	SN (R)	-0.34341	-0.56779	-2.44749
	hold	SN (R)	-0.34088	-0.56939	-2.46885
	setup	SN (R)	0.38194	0.61660	4.38528
	setup	SN (R)	0.36378	0.62381	4.61112

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 ()	0.29602	0.56763	13.33370
	min_pulse_width	RN ()	0.30239	0.56763	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.29602	0.56763	13.33370
	min_pulse_width	RN ()	0.28965	0.56763	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)	0.09567	0.13067	3.21686
	removal	CK (R)	-0.03995	-0.09491	-0.52958
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.09313	0.12989	3.07941
	removal	CK (R)	-0.03995	-0.09491	-0.52856

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)	0.09567	0.13067	3.21686
	removal	CK (R)	-0.03995	-0.09491	-0.52958
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.09313	0.12989	3.07941
	removal	CK (R)	-0.03995	-0.09491	-0.52856

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 ()	0.33569	0.59360	13.33370
	min_pulse_width	SN ()	0.34133	0.59576	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.33631	0.58278	13.33370
	min_pulse_width	SN ()	0.32334	0.58710	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 ()	0.27692	0.56763	13.33370
	min_pulse_width	CK ()	0.33209	0.56763	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.26631	0.56763	13.33370
	min_pulse_width	CK ()	0.32573	0.56763	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 ()	0.56842	0.61957	13.33370
	min_pulse_width	CK ()	0.30026	0.56763	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.56644	0.61740	13.33370
	min_pulse_width	CK ()	0.29814	0.56763	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	0.01186	0.01065	0.00563
	RN	0.02167	0.02069	0.01282
	SN	-0.00126	-0.05745	-0.73320
	SN	0.02414	0.02311	0.01536
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01077	0.00990	0.01211
	RN	0.02057	0.01993	0.01901
	SN	-0.00126	-0.04169	-0.42967
	SN	0.02304	0.02235	0.02114

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	0.01278	0.01209	0.00861
	RN	-0.00126	-0.05745	-0.73319
	RN	0.02559	0.02485	0.02142
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01165	0.01098	0.00991
	RN	-0.00126	-0.04169	-0.42967
	RN	0.02444	0.02371	0.02265

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	0.01276	0.01208	0.00851
	RN	-0.00126	-0.05760	-0.73624
	RN	0.02558	0.02484	0.02127
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01165	0.01097	0.00985
	RN	-0.00126	-0.04169	-0.42962
	RN	0.02443	0.02369	0.02258

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	0.01182	0.01061	0.00558
	RN	0.02164	0.02065	0.01257
	SN	-0.00126	-0.05760	-0.73624
	SN	0.02410	0.02307	0.01524
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01073	0.00986	0.01191
	RN	0.02053	0.01989	0.01894
	SN	-0.00126	-0.04169	-0.42958
	SN	0.02300	0.02232	0.02137

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	-0.00309	-0.00315	-0.00316
	(!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)	0.01472	0.01410	0.01804
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00576	0.00518	0.00918
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00572	0.00515	0.00916
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00579	0.00522	0.00923
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00309	-0.00315	-0.00316
	(!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)	0.01472	0.01410	0.01804
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00576	0.00518	0.00918
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00572	0.00515	0.00916
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00579	0.00521	0.00922

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	0.00319	0.00319	0.00316
	(!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)	0.02204	0.02172	0.02540
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00974	0.00955	0.01353
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00976	0.00956	0.01353
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00970	0.00952	0.01348
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00319	0.00318	0.00316
	(!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)	0.02203	0.02171	0.02541
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00974	0.00954	0.01352
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00976	0.00955	0.01352
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00969	0.00951	0.01347

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)	0.00297	0.00244	0.00865
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01222	0.01147	0.01753
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)	0.00297	0.00244	0.00866
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01222	0.01147	0.01753

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)	0.00944	0.00932	0.01615
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01971	0.01909	0.02561
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)	0.00943	0.00931	0.01614
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01970	0.01908	0.02559

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)	-0.00719	-0.00717	-0.00725
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00740	-0.00764	-0.00762
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00720	-0.00733	-0.00729
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00479	0.00428	0.00869
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)	-0.00719	-0.00718	-0.00725
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00739	-0.00762	-0.00761
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00720	-0.00732	-0.00728
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00479	0.00429	0.00870

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)	0.00725	0.00734	0.00729
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00760	0.00767	0.00764
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00728	0.00735	0.00732
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01525	0.01491	0.01844
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)	0.00725	0.00734	0.00729
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00758	0.00765	0.00762
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00727	0.00734	0.00731
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01524	0.01490	0.01843

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)	-0.00066	-0.00128	0.00493
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00626	0.00532	0.01157
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00620	0.00527	0.01152
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00081	-0.00149	0.00478
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00418	0.00289	0.01513
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00066	-0.00129	0.00493
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00625	0.00531	0.01156
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00619	0.00526	0.01151
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00081	-0.00149	0.00478
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00418	0.00289	0.01513

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)	0.03278	0.03199	0.03815
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01348	0.01333	0.01999
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02293	0.02259	0.02880
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02301	0.02267	0.02878
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03160	0.03096	0.04307
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01543	0.01515	0.02162
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01823	0.01787	0.03074
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03278	0.03199	0.03815
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01348	0.01333	0.01999
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02293	0.02259	0.02880
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02301	0.02266	0.02878
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03159	0.03095	0.04311
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01542	0.01515	0.02162
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01822	0.01786	0.03073

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00427	0.00724	0.01245	1.08501	1.08258
sky130_osu_sc_15T_ls__dffs_l	0.00427	0.00724	0.01245	0.66999	0.67427

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.91380	0.98964
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.82017	0.89602

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)	0.47561	1.98472	17.40820
	QN->Q (FR)	0.05534	1.05824	12.87210
	SN->Q (FR)	0.35930	2.01901	18.66480
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.48946	2.22015	17.08430
	QN->Q (FR)	0.06611	1.15808	12.50510
	SN->Q (FR)	0.37138	2.24826	18.26970

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)	0.69217	2.30926	18.72380
	QN->Q (RF)	0.04305	0.83837	10.21490
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.71192	2.56706	18.42120
	QN->Q (RF)	0.04911	0.88352	9.73608

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)	0.61692	1.43852	8.44259
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.62042	1.53761	8.39033

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)	0.39674	1.03485	6.17530
	SN->QN (FF)	0.27982	1.07018	7.43086
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.39120	1.07541	5.89149
	SN->QN (FF)	0.27218	1.10414	7.07859

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)	-0.12733	-0.13793	-0.31967
	setup	CK (R)	0.34792	0.35462	1.26504
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.12443	-0.13784	-0.32008
	setup	CK (R)	0.34630	0.35212	1.26478

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)	-0.24088	-0.52828	-3.33091
	setup	CK (R)	0.33746	0.54770	3.37552
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.24474	-0.52611	-3.32941
	setup	CK (R)	0.33357	0.54770	3.37541

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)	-0.12733	-0.13793	-0.31967
	setup	CK (R)	0.34792	0.35462	1.26504
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.12443	-0.13784	-0.32008
	setup	CK (R)	0.34630	0.35212	1.26478

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)	-0.24088	-0.52828	-3.33091
	setup	CK (R)	0.33746	0.54770	3.37552
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.24474	-0.52611	-3.32941
	setup	CK (R)	0.33357	0.54770	3.37541

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)	0.12644	0.16130	2.21600
	removal	CK (R)	-0.05406	-0.11341	-0.60313
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.12469	0.15976	2.07224
	removal	CK (R)	-0.05299	-0.11537	-0.60529

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)	0.12644	0.16130	2.21600
	removal	CK (R)	-0.05406	-0.11341	-0.60313
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.12469	0.15976	2.07224
	removal	CK (R)	-0.05299	-0.11537	-0.60529

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 ()	0.24298	0.62606	13.33370
	min_pulse_width	SN ()	0.24849	0.62823	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.23965	0.60442	13.33370
	min_pulse_width	SN ()	0.23748	0.61091	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 ()	0.21539	0.56763	13.33370
	min_pulse_width	CK ()	0.34058	0.56763	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.20478	0.56763	13.33370
	min_pulse_width	CK ()	0.32997	0.56763	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 ()	0.46365	0.56763	13.33370
	min_pulse_width	CK ()	0.31087	0.56763	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.46153	0.56763	13.33370
	min_pulse_width	CK ()	0.30875	0.56763	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	0.00939	0.00822	0.00451
	SN	-0.00126	-0.05561	-0.69441
	SN	0.02004	0.01897	0.01179
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00819	0.00727	0.00945
	SN	-0.00126	-0.04164	-0.42879
	SN	0.01883	0.01805	0.01637

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	0.01092	0.00981	0.00193
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00973	0.00902	0.00804

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	0.01092	0.00981	0.00192
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00972	0.00901	0.00797

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	0.00935	0.00819	0.00458
	SN	-0.00126	-0.05553	-0.69278
	SN	0.02001	0.01895	0.01200
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00815	0.00727	0.00927
	SN	-0.00126	-0.04180	-0.43147
	SN	0.01879	0.01802	0.01680

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	-0.00314	-0.00320	-0.00320
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01070	0.01004	0.01399
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00486	0.00426	0.00834
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00315	-0.00320	-0.00320
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01070	0.01004	0.01399
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00486	0.00426	0.00834

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	0.00323	0.00322	0.00320
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01877	0.01842	0.02233
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00930	0.00908	0.01318
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00323	0.00322	0.00320
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01877	0.01842	0.02233
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00930	0.00908	0.01317

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)	-0.00508	-0.00511	-0.00512
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00411	0.00364	0.00663
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)	-0.00508	-0.00509	-0.00512
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00411	0.00363	0.00663

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)	0.00517	0.00520	0.00515
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01028	0.00994	0.01281
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)	0.00516	0.00520	0.00515
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01028	0.00994	0.01281

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)	-0.00068	-0.00131	0.00491
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00094	-0.00162	0.00466
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00323	0.00197	0.01438
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00068	-0.00131	0.00491
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00094	-0.00162	0.00466
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00323	0.00197	0.01438

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)	0.02871	0.02793	0.03418
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01344	0.01330	0.01996
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02829	0.02763	0.03997
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01548	0.01519	0.02168
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01771	0.01744	0.03040
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02871	0.02792	0.03418
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01344	0.01330	0.01996
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02828	0.02764	0.03997
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01548	0.01519	0.02168
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01771	0.01744	0.03040

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00443	0.01241	1.14940	1.15930
sky130_osu_sc_15T_ls__dff_l	0.00443	0.01241	0.63710	0.63134

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	1.08648	1.28457
sky130_osu_sc_15T_ls__dff_l	0.00000	0.99285	1.19094

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)	0.39386	1.91115	17.90010
	QN->Q (FR)	0.04973	1.00353	12.40840
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.42265	2.13682	16.58950
	QN->Q (FR)	0.07189	1.21639	12.92990

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)	0.54226	2.13302	18.91320
	QN->Q (RF)	0.04265	0.85409	10.57840
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.58341	2.42795	18.01440
	QN->Q (RF)	0.04927	0.87002	9.48963

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)	0.47556	1.25878	8.34373
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.49590	1.40203	8.16377

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)	0.32253	0.96820	6.47446
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.32522	0.98544	5.52723

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)	-0.11191	-0.13227	-0.32548
	setup	CK (R)	0.26708	0.28204	1.25105
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.11267	-0.13280	-0.32949
	setup	CK (R)	0.26619	0.27765	1.24519

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)	-0.21837	-0.52663	-3.37721
	setup	CK (R)	0.25847	0.54569	3.41191
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.21943	-0.53036	-3.37848
	setup	CK (R)	0.25744	0.54569	3.41191

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 ()	0.17932	0.56763	13.33370
	min_pulse_width	CK ()	0.29390	0.56763	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.17507	0.56763	13.33370
	min_pulse_width	CK ()	0.28541	0.56763	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 ()**	0.38302	0.56763	13.33370
	min_pulse_width	**CK ()**	0.20902	0.56763	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.38090	0.56763	13.33370
	min_pulse_width	**CK ()**	0.20690	0.56763	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	0.00999	0.00865	0.00410
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00891	0.00795	0.01032

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	0.01118	0.01047	0.00725
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01005	0.00908	0.00585

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	0.01117	0.01046	0.00718
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01005	0.00908	0.00589

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	0.00996	0.00863	0.00395
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00887	0.00792	0.01026

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	-0.00284	-0.00315	-0.00316
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01030	0.00964	0.01370
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00284	-0.00315	-0.00316
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01031	0.00964	0.01371

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	0.00314	0.00317	0.00316
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01949	0.01913	0.02313
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00314	0.00317	0.00316
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01949	0.01913	0.02313

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)	-0.00068	-0.00130	0.00492
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00093	-0.00160	0.00469
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00068	-0.00131	0.00492
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00093	-0.00160	0.00469

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)	0.01337	0.01323	0.01990
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02836	0.02750	0.03391
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02877	0.02812	0.04066
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01540	0.01510	0.02161
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01337	0.01324	0.01990
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02836	0.02750	0.03392
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02877	0.02813	0.04066
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01540	0.01510	0.02161

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00433	1.11191
sky130_osu_sc_15T_ls__inv_10	0.04023	10.55235
sky130_osu_sc_15T_ls__inv_2	0.00823	2.21663
sky130_osu_sc_15T_ls__inv_3	0.01226	3.23118
sky130_osu_sc_15T_ls__inv_4	0.01621	4.33726
sky130_osu_sc_15T_ls__inv_6	0.02429	6.35883
sky130_osu_sc_15T_ls__inv_8	0.03226	8.50248
sky130_osu_sc_15T_ls__inv_l	0.00316	0.62106

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.15568	0.20465
sky130_osu_sc_15T_ls__inv_10	0.00000	0.42045	0.49740
sky130_osu_sc_15T_ls__inv_2	0.00000	0.08409	0.09948
sky130_osu_sc_15T_ls__inv_3	0.00000	0.23977	0.27335
sky130_osu_sc_15T_ls__inv_4	0.00000	0.16818	0.19896
sky130_osu_sc_15T_ls__inv_6	0.00000	0.25227	0.29844
sky130_osu_sc_15T_ls__inv_8	0.00000	0.33636	0.39792
sky130_osu_sc_15T_ls__inv_l	0.00000	0.10886	0.14286

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)**	0.04848	0.95633	11.72930
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.05721	0.64443	11.74220
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.03779	0.81731	11.68830
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.04031	0.76262	11.70110
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.04009	0.72293	11.68830
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.04377	0.67981	11.61110
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.04995	0.65728	11.68730
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.06528	1.09694	11.65490

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)**	0.03928	0.78215	9.61284
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.04971	0.53390	9.65869
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.03136	0.68024	9.62010
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.03347	0.64386	9.69460
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.03271	0.60978	9.68059
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.03830	0.57064	9.62801
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.04386	0.54965	9.68115
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.04650	0.82014	8.91080

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	0.00503	0.00506	0.00575
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.04281	0.04519	0.05242
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00891	0.00914	0.01059
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01366	0.01405	0.01623
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01753	0.01759	0.02108
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02598	0.02692	0.03161
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03443	0.03597	0.04203
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00368	0.00354	0.00405

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	-0.00097	-0.00098	-0.00044
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01690	-0.01567	-0.00803
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00310	-0.00290	-0.00176
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00413	-0.00392	-0.00205
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00636	-0.00605	-0.00338
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00977	-0.00913	-0.00496
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01333	-0.01212	-0.00651
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00059	-0.00064	-0.00030

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.24395	0.24393	0.00883	0.24679

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.51107	0.64590

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)	-	0.02802	0.42630	3.88605
	A1->Y (RR)	-	0.03210	0.42957	3.88931
	S0->Y (RR)	(!A0 * A1)	0.08809	0.48357	2.17867
	S0->Y (FR)	(A0 * !A1)	0.05816	0.56271	4.06655

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)	-	0.02841	0.40802	3.65476
	A1->Y (FF)	-	0.02508	0.40461	3.64787
	S0->Y (FF)	(!A0 * A1)	0.11274	0.53749	2.60506
	S0->Y (RF)	(A0 * !A1)	0.04344	0.48563	3.55707

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	-	-0.00497	-0.00498	-0.00498
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00350	-0.00351	-0.00350
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00586	0.00591	0.01317
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00337	-0.00388	0.00292

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	-	0.00498	0.00499	0.00499
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00351	0.00352	0.00352
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00106	0.00063	0.00762
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01328	0.01318	0.02009

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)	-0.00126	-0.00126	-0.00126

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)	0.00126	0.00126	0.00127

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)	-0.00151	-0.00151	-0.00151

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)	0.00151	0.00151	0.00151

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)	-0.00118	-0.00166	0.00528
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00114	-0.00167	0.00528

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)	0.01011	0.01012	0.01700
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00904	0.00913	0.01626

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00433	0.00430	0.84672
sky130_osu_sc_15T_ls__nand2_l	0.00315	0.00315	0.51736

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.10740	0.15235
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.08014	0.11438

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)	0.05096	0.87645	10.10940
	B->Y (FR)	0.05944	0.87937	10.02480
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.06776	1.03117	10.54140
	B->Y (FR)	0.07897	1.04247	10.53550

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)	0.06567	0.98410	11.13440
	B->Y (RF)	0.07387	0.95518	10.59070
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.08276	1.12055	11.12790
	B->Y (RF)	0.09103	1.09426	10.55010

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	0.00535	0.00512	0.00620
	B	0.00000	0.00000	0.00000
	B	0.00666	0.00658	0.00744
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00387	0.00384	0.00423
	B	0.00000	0.00000	0.00000
	B	0.00475	0.00469	0.00508

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00059	-0.00071	-0.00011
	B	0.00000	0.00000	0.00000
	B	-0.00054	-0.00070	-0.00029
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00037	-0.00047	-0.00013
	B	0.00000	0.00000	0.00000
	B	-0.00035	-0.00046	-0.00023

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)	-0.00356	-0.00358	-0.00359
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00242	-0.00243	-0.00244

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)	0.00360	0.00362	0.00360
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00244	0.00247	0.00245

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)	-0.00335	-0.00336	-0.00335
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00229	-0.00229	-0.00229

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)	0.00340	0.00340	0.00336
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00231	0.00232	0.00229

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00429	0.00459	0.56257
sky130_osu_sc_15T_ls__nor2_l	0.00305	0.00338	0.33172

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.18689	0.24082
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.13238	0.18041

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)	0.11135	1.13905	11.05700
	B->Y (FR)	0.08645	1.12336	11.36250
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.14156	1.33243	11.10560
	B->Y (FR)	0.11921	1.32692	11.52470

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)	0.05411	0.66232	6.94232
	B->Y (RF)	0.04189	0.64614	6.91697
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.05979	0.69930	6.69032
	B->Y (RF)	0.04906	0.68423	6.66636

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	0.00721	0.00711	0.00761
	B	0.00000	0.00000	0.00000
	B	0.00545	0.00537	0.00638
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00498	0.00490	0.00517
	B	0.00000	0.00000	0.00000
	B	0.00393	0.00385	0.00437

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	0.00078	0.00055	0.00130
	B	0.00000	0.00000	0.00000
	B	-0.00074	-0.00074	-0.00002
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00049	0.00034	0.00082
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00043	-0.00000

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)	-0.00287	-0.00318	-0.00317
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00195	-0.00210	-0.00209

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)	0.00315	0.00319	0.00317
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00207	0.00210	0.00209

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)	-0.00144	-0.00145	-0.00144
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00096	-0.00097	-0.00096

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)	0.00152	0.00153	0.00147
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00102	0.00102	0.00098

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00433	0.00440	0.00359	0.54946

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.22141	0.38368

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)	0.11984	1.15509	11.35800
	A1->Y (FR)	0.14985	1.18388	11.06110
	B0->Y (FR)	0.08154	1.03673	10.61060

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)	0.08772	0.84657	8.26148
	A1->Y (RF)	0.10994	0.85354	8.12447
	B0->Y (RF)	0.06871	0.86996	8.94210

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	0.00739	0.00691	0.00817
	A1	0.00000	0.00000	0.00000
	A1	0.00919	0.00906	0.00951
	B0	0.00617	0.00608	0.00667

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00024	0.00008	0.00056
	A1	0.00000	0.00000	0.00000
	A1	0.00177	0.00144	0.00192
	B0	0.00247	0.00238	0.00285

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)	-0.00144	-0.00145	-0.00144
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00316	-0.00318	-0.00317
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00327	-0.00328	-0.00327

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)	0.00153	0.00154	0.00148
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00317	0.00318	0.00317
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00330	0.00331	0.00328

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)	-0.00281	-0.00312	-0.00311
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00311	-0.00318	-0.00315
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00323	-0.00324	-0.00324

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)	0.00309	0.00312	0.00311
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00314	0.00319	0.00315
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00325	0.00327	0.00325

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)	-0.00246	-0.00248	-0.00253

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)	0.00253	0.00256	0.00254

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_l	0.00418	0.00443	0.00455	0.00443	0.56187

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_l	0.00000	0.14475	0.33451

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)	0.16456	1.19604	11.11250
	A1->Y (FR)	0.13857	1.17186	11.41750
	B0->Y (FR)	0.09679	1.13457	11.38150
	B1->Y (FR)	0.12467	1.15010	11.07830

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)	0.15327	0.93473	8.48374
	A1->Y (RF)	0.12176	0.89581	8.41252
	B0->Y (RF)	0.10473	0.92065	9.09507
	B1->Y (RF)	0.13730	0.96156	9.18558

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	0.01203	0.01190	0.01233
	A1	0.01019	0.00991	0.01092
	B0	0.00756	0.00741	0.00839
	B1	0.00947	0.00921	0.00981

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00294	0.00264	0.00306
	A1	0.00154	0.00135	0.00175
	B0	0.00153	0.00143	0.00201
	B1	0.00297	0.00268	0.00331

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)	-0.00287	-0.00318	-0.00317
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00287	-0.00318	-0.00317
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00313	-0.00319	-0.00316
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00324	-0.00325	-0.00324

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)	0.00315	0.00319	0.00317
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00315	0.00319	0.00317
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00314	0.00319	0.00316
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00327	0.00328	0.00326

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)	-0.00143	-0.00144	-0.00143
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00142	-0.00144	-0.00143
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00310	-0.00314	-0.00312
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00322	-0.00324	-0.00322

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)	0.00152	0.00152	0.00146
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00152	0.00152	0.00146
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00312	0.00314	0.00312
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00324	0.00325	0.00323

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)	-0.00141	-0.00143	-0.00142
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00142	-0.00144	-0.00142
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00341	-0.00348	-0.00345
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00341	-0.00344	-0.00353

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)	0.00150	0.00151	0.00145
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00150	0.00150	0.00145
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00345	0.00349	0.00345
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00353	0.00360	0.00355

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)	-0.00282	-0.00313	-0.00312
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00282	-0.00312	-0.00312
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00349	-0.00355	-0.00353
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00349	-0.00351	-0.00359

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)	0.00310	0.00314	0.00312
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00310	0.00312	0.00312
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00353	0.00360	0.00353
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00361	0.00364	0.00362

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00464	0.00442	1.13270
sky130_osu_sc_15T_ls__or2_2	0.00464	0.00442	2.22730
sky130_osu_sc_15T_ls__or2_4	0.00464	0.00442	4.33838
sky130_osu_sc_15T_ls__or2_8	0.00463	0.00443	8.46184
sky130_osu_sc_15T_ls__or2_l	0.00345	0.00321	0.63708

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.32086	0.35831
sky130_osu_sc_15T_ls__or2_2	0.00000	0.28146	0.35109
sky130_osu_sc_15T_ls__or2_4	0.00000	0.37324	0.45057
sky130_osu_sc_15T_ls__or2_8	0.00000	0.55681	0.64953
sky130_osu_sc_15T_ls__or2_l	0.00000	0.22694	0.26599

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)	0.12804	0.91664	7.99458
	B->Y (RR)	0.11100	0.86715	7.79353
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.13978	0.83255	8.09970
	B->Y (RR)	0.12213	0.78974	7.91849
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.18092	0.83366	8.49535
	B->Y (RR)	0.16281	0.80007	8.34070
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.25976	0.90762	9.11720
	B->Y (RR)	0.24118	0.88301	8.99305
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.15361	1.08182	7.99975
	B->Y (RR)	0.13555	1.03438	7.78712

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)	0.22136	0.93895	7.11470
	B->Y (FF)	0.18826	0.90423	6.98946
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.26753	0.92927	7.36894
	B->Y (FF)	0.23437	0.90725	7.28537
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.38130	1.02877	7.93521
	B->Y (FF)	0.34826	1.00958	7.91921
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.60942	1.27544	8.69520
	B->Y (FF)	0.57649	1.25457	8.76872
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.27655	1.03242	6.50965
	B->Y (FF)	0.23860	1.00624	6.43970

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	0.00553	0.00501	0.00995
	B	0.00000	0.00000	0.00000
	B	0.00407	0.00370	0.00967
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00932	0.00916	0.01401
	B	0.00000	0.00000	0.00000
	B	0.00782	0.00787	0.01370
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01771	0.01808	0.02293
	B	0.00000	0.00000	0.00000
	B	0.01612	0.01695	0.02233
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03448	0.03577	0.04157
	B	0.00000	0.00000	0.00000
	B	0.03305	0.03476	0.04107
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00394	0.00356	0.00650
	B	0.00000	0.00000	0.00000
	B	0.00299	0.00268	0.00603

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	0.01163	0.01155	0.01543
	B	0.00000	0.00000	0.00000
	B	0.00956	0.00986	0.01619
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01410	0.01466	0.01831
	B	0.00000	0.00000	0.00000
	B	0.01202	0.01284	0.01887
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02049	0.02177	0.02551
	B	0.00000	0.00000	0.00000
	B	0.01842	0.01978	0.02578
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03472	0.03533	0.04008
	B	0.00000	0.00000	0.00000
	B	0.03274	0.03334	0.04046
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00840	0.00818	0.01038
	B	0.00000	0.00000	0.00000
	B	0.00702	0.00707	0.01037

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)	-0.00291	-0.00320	-0.00319
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00291	-0.00320	-0.00319
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00291	-0.00320	-0.00319
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00291	-0.00320	-0.00319
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00198	-0.00211	-0.00211

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)	0.00317	0.00320	0.00319
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00317	0.00320	0.00319
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00317	0.00321	0.00319
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00317	0.00321	0.00319
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00210	0.00212	0.00211

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)	-0.00144	-0.00145	-0.00144
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00144	-0.00145	-0.00144
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00144	-0.00145	-0.00144
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00143	-0.00145	-0.00144
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00098	-0.00099	-0.00098

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)	0.00154	0.00155	0.00148
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00154	0.00155	0.00148
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00154	0.00155	0.00148
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00154	0.00155	0.00148
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00104	0.00105	0.00101

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00457	0.00578	0.57937
sky130_osu_sc_15T_ls__tbufi_l	0.00338	0.00430	0.32613

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.27591	0.40930
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.19662	0.28573

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)	0.08204	1.12719	11.53220
	OE->Y (FR)	0.07943	0.37670	4.68856
	OE->Y (RR)	0.15039	1.05600	7.87171
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.11461	1.31243	11.40590
	OE->Y (FR)	0.09461	0.37635	4.68832
	OE->Y (RR)	0.18393	1.25340	7.74149

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)	0.06386	0.85129	8.91062
	OE->Y (FF)	0.08088	0.37677	4.68853
	OE->Y (RF)	0.05809	0.81341	8.32982
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.08186	0.94008	8.54068
	OE->Y (FF)	0.09600	0.37782	4.68832
	OE->Y (RF)	0.07250	0.89331	7.91003

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	0.00513	0.00497	0.00600
	OE	0.00000	0.00000	0.00000
	OE	0.00527	0.00485	0.01160
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00372	0.00365	0.00410
	OE	0.00000	0.00000	0.00000
	OE	0.00360	0.00325	0.00714

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	-0.00075	-0.00075	-0.00010
	OE	0.00000	0.00000	0.00000
	OE	0.00342	0.00298	0.01007
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00042	-0.00043	-0.00006
	OE	0.00000	0.00000	0.00000
	OE	0.00229	0.00191	0.00593

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)	-0.00243	-0.00246	-0.00243
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00210	-0.00211	-0.00210
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00173	-0.00176	-0.00174
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00153	-0.00154	-0.00153

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)	0.00243	0.00246	0.00243
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00216	0.00218	0.00214
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00173	0.00176	0.00174
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00157	0.00157	0.00155

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)	0.00203	0.00170	0.00873
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00177	0.00140	0.00846
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00134	0.00099	0.00499
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00115	0.00080	0.00480

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)	0.00587	0.00564	0.01275
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00606	0.00586	0.01291
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00441	0.00414	0.00800
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00457	0.00428	0.00810

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00456	0.00716	0.57214
sky130_osu_sc_15T_ls__tnbufi_l	0.00337	0.00504	0.33241

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.30856	0.35695
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.21929	0.25723

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)	0.08308	1.12195	11.44090
	OE->Y (RR)	0.04755	0.37646	4.68915
	OE->Y (FR)	0.10193	1.13326	11.12490
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.11593	1.32291	11.54140
	OE->Y (RR)	0.05301	0.37638	4.68917
	OE->Y (FR)	0.13071	1.32528	11.11340

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)	0.06282	0.85092	8.84968
	OE->Y (RF)	0.04731	0.37647	4.68919
	OE->Y (FF)	0.10420	0.79531	5.89132
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.08039	0.94631	8.62460
	OE->Y (RF)	0.05227	0.37641	4.68924
	OE->Y (FF)	0.13171	0.92474	5.77912

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	0.00526	0.00511	0.00611
	OE	0.00000	0.00000	0.00000
	OE	0.01272	0.01280	0.02055
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00386	0.00378	0.00425
	OE	0.00000	0.00000	0.00000
	OE	0.00896	0.00891	0.01310

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	-0.00093	-0.00092	-0.00026
	OE	0.00000	0.00000	0.00000
	OE	0.01106	0.01112	0.01840
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00060	-0.00060	-0.00022
	OE	0.00000	0.00000	0.00000
	OE	0.00776	0.00769	0.01175

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)	-0.00208	-0.00210	-0.00208
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00178	-0.00179	-0.00178
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00140	-0.00142	-0.00141
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00122	-0.00122	-0.00121

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)	0.00208	0.00210	0.00208
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00183	0.00185	0.00182
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00140	0.00142	0.00141
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00125	0.00125	0.00123

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)	-0.00376	-0.00443	0.00289
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00362	-0.00435	0.00293
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00243	-0.00293	0.00119
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00231	-0.00286	0.00122

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)	0.00947	0.00961	0.01726
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00932	0.00948	0.01712
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00668	0.00665	0.01081
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00657	0.00656	0.01068

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00907	0.00814	0.58188

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.46798	0.54570

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	0.18981	1.11329	8.01066
	A->Y (FR)	!B	0.11142	1.15877	11.55430
	B->Y (RR)	A	0.15249	1.07543	7.97040
	B->Y (FR)	!A	0.14036	1.17470	11.24930

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	0.19071	0.94875	6.36202
	A->Y (RF)	!B	0.08674	0.83781	8.37043
	B->Y (FF)	A	0.15955	0.91504	6.33367
	B->Y (RF)	!A	0.11029	0.86799	8.40117

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	0.00536	0.00479	0.01132
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01264	0.01256	0.02062
	B	A	0.00000	0.00000	0.00000
	B	A	0.00185	0.00157	0.00861
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01388	0.01365	0.02152

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	0.01524	0.01469	0.02161
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00346	0.00283	0.01026
	B	A	0.00000	0.00000	0.00000
	B	A	0.01383	0.01394	0.02125
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00429	0.00355	0.01100

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.00908	0.00819	0.57131

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.46798	0.57667

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	0.18489	1.09950	7.94103
	A->Y (FR)	B	0.13210	1.16209	11.19520
	B->Y (RR)	!A	0.15827	1.08089	7.92931
	B->Y (FR)	A	0.14468	1.17638	11.20380

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	0.16588	0.91624	6.23828
	A->Y (RF)	B	0.09662	0.89532	8.88481
	B->Y (FF)	!A	0.15734	0.91219	6.25824
	B->Y (RF)	A	0.10787	0.86410	8.31850

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	0.01470	0.01448	0.02230
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00274	0.00177	0.00850
	B	A	0.00000	0.00000	0.00000
	B	A	0.01515	0.01495	0.02280
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00167	0.00131	0.00836

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	0.00289	0.00208	0.00972
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01561	0.01556	0.02240
	B	A	0.00000	0.00000	0.00000
	B	A	0.00294	0.00214	0.00955
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01408	0.01426	0.02152

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

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	0.29103
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	111817.00000	223634.00000
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
	-0.00236	0.02892	0.37581

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	1.94700	1.83297	0.46488