sky130_osu_sc_15T_hs_tt_1P68_25C.ccs Library

Cell Groups
SKY130_OSU_SC_15T_HS__ADDFx
SKY130_OSU_SC_15T_HS__ADDHx
SKY130_OSU_SC_15T_HS__AND2x
SKY130_OSU_SC_15T_HS__AOI21
SKY130_OSU_SC_15T_HS__AOI22
SKY130_OSU_SC_15T_HS__BUFx
SKY130_OSU_SC_15T_HS__DFFRx
SKY130_OSU_SC_15T_HS__DFFSRx
SKY130_OSU_SC_15T_HS__DFFSx
SKY130_OSU_SC_15T_HS__DFFx
SKY130_OSU_SC_15T_HS__INVx
SKY130_OSU_SC_15T_HS__MUX2
SKY130_OSU_SC_15T_HS__NAND2x
SKY130_OSU_SC_15T_HS__NOR2x
SKY130_OSU_SC_15T_HS__OAI21
SKY130_OSU_SC_15T_HS__OAI22
SKY130_OSU_SC_15T_HS__OR2x
SKY130_OSU_SC_15T_HS__TBUFIx
SKY130_OSU_SC_15T_HS__TNBUFIx
SKY130_OSU_SC_15T_HS__XNOR2
SKY130_OSU_SC_15T_HS__XOR2
SKY130_OSU_SC_15T_HS_x

SKY130_OSU_SC_15T_HS__ADDFx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__addf_1	39.07200
sky130_osu_sc_15T_hs__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_hs__addf_1	0.01466	0.01465	0.01141	1.86442	0.85869	1.78205
sky130_osu_sc_15T_hs__addf_l	0.01466	0.01464	0.01142	1.12948	0.85964	1.14908

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.30013	0.38497
sky130_osu_sc_15T_hs__addf_l	0.00000	0.19320	0.27804

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CO (RR)	0.14126	1.65693	25.32400
	B->CO (RR)	0.13728	1.61001	24.53750
	CI->CO (RR)	0.13417	1.69271	25.98430
	CON->CO (FR)	0.02463	0.71737	11.24280
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.14854	1.53267	19.46230
	B->CO (RR)	0.14432	1.50234	19.18720
	CI->CO (RR)	0.14142	1.57000	20.16160
	CON->CO (FR)	0.03209	0.81849	11.39490

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CO (FF)	0.18909	2.06185	31.20220
	B->CO (FF)	0.16840	1.97492	30.00890
	CI->CO (FF)	0.16399	2.03897	31.31960
	CON->CO (RF)	0.02141	0.56867	8.95851
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.18366	1.70877	21.49400
	B->CO (FF)	0.16196	1.62584	20.79930
	CI->CO (FF)	0.15859	1.68667	21.65850
	CON->CO (RF)	0.02170	0.53393	7.47068

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CON (FR)	0.14800	0.95038	10.80030
	B->CON (FR)	0.12672	0.89260	10.50640
	CI->CON (FR)	0.12291	0.92978	10.98930
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.14007	0.94314	10.80030
	B->CON (FR)	0.11938	0.88584	10.50650
	CI->CON (FR)	0.11501	0.92261	10.98920

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->CON (RF)	0.08834	0.58501	6.66365
	B->CON (RF)	0.08619	0.59935	6.99121
	CI->CON (RF)	0.08126	0.62354	7.40786
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.08509	0.58199	6.66523
	B->CON (RF)	0.08314	0.59663	6.99260
	CI->CON (RF)	0.07799	0.62056	7.40930

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->S (-R)	0.27816	1.87962	24.70280
	B->S (-R)	0.28866	1.87535	23.95520
	CI->S (-R)	0.25107	1.85290	24.82910
	CON->S (RR)	0.07962	0.60713	7.00758
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.27077	1.73045	19.80630
	B->S (-R)	0.28159	1.73764	19.39400
	CI->S (-R)	0.24354	1.70385	19.95970
	CON->S (RR)	0.08332	0.67958	6.98054

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addf_1	A->S (-F)	0.23005	1.47975	18.50360
	B->S (-F)	0.22526	1.42404	17.98990
	CI->S (-F)	0.22242	1.51253	19.16220
	CON->S (FF)	0.09181	0.66049	7.18553
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.21606	1.26990	13.59480
	B->S (-F)	0.21207	1.23110	13.51420
	CI->S (-F)	0.20839	1.30385	14.29470
	CON->S (FF)	0.08662	0.61632	5.88741

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00254	0.00303	0.01467
	B	0.00394	0.00418	0.01374
	CI	0.00402	0.00461	0.01650
sky130_osu_sc_15T_hs__addf_l	A	0.00192	0.00218	0.00911
	B	0.00332	0.00334	0.00952
	CI	0.00340	0.00376	0.01098

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01056	0.01134	0.03105
	B	0.01117	0.01183	0.02914
	CI	0.00885	0.00967	0.03002
sky130_osu_sc_15T_hs__addf_l	A	0.00997	0.01045	0.02173
	B	0.01058	0.01099	0.02070
	CI	0.00825	0.00879	0.02087

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01054	0.01093	0.01976
	B	0.01083	0.01119	0.01929
	CI	0.00883	0.00931	0.01900
sky130_osu_sc_15T_hs__addf_l	A	0.00995	0.01032	0.01889
	B	0.01025	0.01057	0.01844
	CI	0.00825	0.00869	0.01814

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00252	0.00280	0.00862
	B	0.00280	0.00307	0.00819
	CI	0.00400	0.00437	0.01056
sky130_osu_sc_15T_hs__addf_l	A	0.00191	0.00211	0.00754
	B	0.00219	0.00238	0.00725
	CI	0.00338	0.00369	0.00950

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01056	0.01131	0.03000
	B	0.01117	0.01181	0.02827
	CI	0.00884	0.00964	0.02902
sky130_osu_sc_15T_hs__addf_l	A	0.00997	0.01046	0.02201
	B	0.01058	0.01101	0.02081
	CI	0.00825	0.00881	0.02109

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.02318	0.02331	0.03551
	B	0.02086	0.02100	0.04114
	CI	0.01897	0.01897	0.03156
sky130_osu_sc_15T_hs__addf_l	A	0.02239	0.02238	0.03490
	B	0.02011	0.02022	0.04105
	CI	0.01822	0.01819	0.03133

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__addh_1	23.19900
sky130_osu_sc_15T_hs__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_hs__addh_1	0.00748	0.00824	1.82929	0.92059	1.86318
sky130_osu_sc_15T_hs__addh_l	0.00760	0.00849	1.18297	0.92424	1.19232

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.32905	0.37653
sky130_osu_sc_15T_hs__addh_l	0.00000	0.19873	0.27332

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CO (RR)	0.10005	0.62544	6.80641
	B->CO (RR)	0.10300	0.61731	6.85507
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.08779	0.66336	6.68935
	B->CO (RR)	0.09099	0.65871	6.72097

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CO (FF)	0.07675	0.55206	5.76069
	B->CO (FF)	0.08130	0.56372	5.78958
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.07520	0.54351	5.15884
	B->CO (FF)	0.08109	0.55963	5.19831

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CON (RR)	B	0.13976	0.51145	3.41441
	A->CON (FR)	!B	0.08365	0.86911	10.86710
	B->CON (RR)	A	0.14236	0.50231	3.46469
	B->CON (FR)	!A	0.10260	0.88721	10.78660
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.11108	0.45806	3.21616
	A->CON (FR)	!B	0.07653	0.86272	10.88710
	B->CON (RR)	A	0.11407	0.45298	3.24497
	B->CON (FR)	!A	0.09541	0.88104	10.80600

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->CON (FF)	B	0.11262	0.57285	4.75977
	A->CON (RF)	!B	0.04153	0.50373	6.39221
	B->CON (FF)	A	0.11170	0.59629	5.01560
	B->CON (RF)	!A	0.04917	0.49739	6.11446
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.10561	0.55863	4.78682
	A->CON (RF)	!B	0.03935	0.50130	6.40449
	B->CON (FF)	A	0.10630	0.58615	5.05398
	B->CON (RF)	!A	0.04699	0.49547	6.12656

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->S (RR)	!B	0.08420	1.40207	22.01970
	A->S (FR)	B	0.15617	1.45064	19.94150
	B->S (RR)	!A	0.09202	1.36114	21.14160
	B->S (FR)	A	0.15601	1.50918	20.83770
	CON->S (FR)	-	0.02694	0.73274	11.48990
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.08812	1.33088	17.99130
	A->S (FR)	B	0.15535	1.37350	16.03670
	B->S (RR)	!A	0.09602	1.29970	17.38470
	B->S (FR)	A	0.15672	1.42636	16.67540
	CON->S (FR)	-	0.03242	0.82460	11.62900

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__addh_1	A->S (FF)	!B	0.12092	1.89078	29.65180
	A->S (RF)	B	0.17348	1.26215	16.59430
	B->S (FF)	!A	0.13986	1.91285	29.63950
	B->S (RF)	A	0.17608	1.25217	16.65110
	CON->S (RF)	-	0.02100	0.56973	9.00384
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.11398	1.58802	21.35940
	A->S (RF)	B	0.14389	1.02015	11.09380
	B->S (FF)	!A	0.13286	1.60750	21.30370
	B->S (RF)	A	0.14685	1.01405	11.12050
	CON->S (RF)	-	0.02048	0.53514	7.61507

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00524	0.00513	0.01141
	B	0.00000	0.00000	0.00000
	B	0.00474	0.00456	0.01185
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00458	0.00443	0.01240
	B	0.00000	0.00000	0.00000
	B	0.00409	0.00387	0.01536

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00787	0.00791	0.01661
	B	0.00000	0.00000	0.00000
	B	0.00810	0.00852	0.01760
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00728	0.00736	0.01696
	B	0.00000	0.00000	0.00000
	B	0.00764	0.00803	0.01785

Internal switching power(pJ) to CON rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00522	0.00513	0.01167
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00688	0.00708	0.01085
	B	A	0.00000	0.00000	0.00000
	B	A	0.00473	0.00455	0.01203
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00772	0.00771	0.00996
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00456	0.00443	0.01242
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00653	0.00667	0.00990
	B	A	0.00000	0.00000	0.00000
	B	A	0.00408	0.00386	0.01253
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00735	0.00727	0.00900

Internal switching power(pJ) to CON falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00787	0.00792	0.01676
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00104	0.00113	0.00305
	B	A	0.00000	0.00000	0.00000
	B	A	0.00810	0.00850	0.01749
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00181	0.00180	0.00316
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00727	0.00736	0.01698
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00049	0.00055	0.00179
	B	A	0.00000	0.00000	0.00000
	B	A	0.00764	0.00802	0.01790
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00125	0.00118	0.00263

Internal switching power(pJ) to S rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00788	0.00793	0.01689
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00105	0.00119	0.00311
	B	A	0.00000	0.00000	0.00000
	B	A	0.00811	0.00854	0.01799
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00184	0.00183	0.00333
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00729	0.00738	0.01727
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00050	0.00054	0.00189
	B	A	0.00000	0.00000	0.00000
	B	A	0.00764	0.00804	0.01810
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00127	0.00119	0.00235

Internal switching power(pJ) to S falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00524	0.00513	0.01184
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00688	0.00715	0.01101
	B	A	0.00000	0.00000	0.00000
	B	A	0.00474	0.00456	0.01176
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00775	0.00783	0.01074
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00458	0.00443	0.01263
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00653	0.00666	0.00975
	B	A	0.00000	0.00000	0.00000
	B	A	0.00409	0.00386	0.01273
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00736	0.00729	0.00905

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__and2_1	10.37850
sky130_osu_sc_15T_hs__and2_2	12.82050
sky130_osu_sc_15T_hs__and2_4	17.70450
sky130_osu_sc_15T_hs__and2_6	22.58850
sky130_osu_sc_15T_hs__and2_8	27.47250
sky130_osu_sc_15T_hs__and2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__and2_1	0.00386	0.00398	1.84367
sky130_osu_sc_15T_hs__and2_2	0.00385	0.00397	3.61986
sky130_osu_sc_15T_hs__and2_4	0.00386	0.00398	6.86607
sky130_osu_sc_15T_hs__and2_6	0.00389	0.00398	10.14306
sky130_osu_sc_15T_hs__and2_8	0.00387	0.00399	13.11043
sky130_osu_sc_15T_hs__and2_l	0.00304	0.00317	1.12014

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.15668	0.24934
sky130_osu_sc_15T_hs__and2_2	0.00000	0.24913	0.25778
sky130_osu_sc_15T_hs__and2_4	0.00000	0.43402	0.49023
sky130_osu_sc_15T_hs__and2_6	0.00000	0.61891	0.73113
sky130_osu_sc_15T_hs__and2_8	0.00000	0.80380	0.97202
sky130_osu_sc_15T_hs__and2_l	0.00000	0.02568	0.04038

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.07234	0.55177	6.68446
	B->Y (RR)	0.07671	0.55077	6.55149
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.08127	0.50145	6.74660
	B->Y (RR)	0.08547	0.49467	6.62410
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.11428	0.52098	6.92603
	B->Y (RR)	0.11861	0.50788	6.80852
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.14501	0.56066	7.15153
	B->Y (RR)	0.14927	0.54178	7.03808
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.17531	0.60219	7.30980
	B->Y (RR)	0.17965	0.57989	7.18658
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.07879	0.64122	6.52236
	B->Y (RR)	0.08333	0.63861	6.41915

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__and2_1	A->Y (FF)	0.06176	0.57065	6.77115
	B->Y (FF)	0.06468	0.58242	6.82320
sky130_osu_sc_15T_hs__and2_2	A->Y (FF)	0.06914	0.52506	6.65856
	B->Y (FF)	0.07241	0.53553	6.70477
sky130_osu_sc_15T_hs__and2_4	A->Y (FF)	0.09620	0.55617	7.04347
	B->Y (FF)	0.09906	0.56273	7.10031
sky130_osu_sc_15T_hs__and2_6	A->Y (FF)	0.12504	0.59188	7.25966
	B->Y (FF)	0.12735	0.59721	7.30457
sky130_osu_sc_15T_hs__and2_8	A->Y (FF)	0.15176	0.62379	7.31457
	B->Y (FF)	0.15374	0.62793	7.35663
sky130_osu_sc_15T_hs__and2_l	A->Y (FF)	0.07000	0.56097	5.43502
	B->Y (FF)	0.07562	0.57795	5.50936

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00355	0.00370	0.03076
	B	0.00000	0.00000	0.00000
	B	0.00362	0.00329	0.02113
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00710	0.00756	0.03689
	B	0.00000	0.00000	0.00000
	B	0.00718	0.00722	0.02475
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01502	0.01553	0.03965
	B	0.00000	0.00000	0.00000
	B	0.01509	0.01534	0.04198
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02340	0.02394	0.04620
	B	0.00000	0.00000	0.00000
	B	0.02351	0.02375	0.03856
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03222	0.03215	0.05418
	B	0.00000	0.00000	0.00000
	B	0.03228	0.03200	0.04642
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00268	0.00278	0.01921
	B	0.00000	0.00000	0.00000
	B	0.00276	0.00251	0.01338

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00918	0.01026	0.03440
	B	0.00000	0.00000	0.00000
	B	0.01022	0.01130	0.03410
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01147	0.01309	0.03850
	B	0.00000	0.00000	0.00000
	B	0.01253	0.01387	0.03783
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01760	0.01963	0.04344
	B	0.00000	0.00000	0.00000
	B	0.01869	0.02031	0.04307
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02398	0.02666	0.05026
	B	0.00000	0.00000	0.00000
	B	0.02499	0.02711	0.04959
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03114	0.03334	0.05702
	B	0.00000	0.00000	0.00000
	B	0.03193	0.03349	0.05586
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00726	0.00792	0.02277
	B	0.00000	0.00000	0.00000
	B	0.00814	0.00863	0.02278

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00349	-0.00350	-0.00352
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00348	-0.00349	-0.00351
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00349	-0.00350	-0.00351
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00351	-0.00352	-0.00354
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00348	-0.00349	-0.00351
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00248	-0.00248	-0.00250

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00351	0.00359	0.00353
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00350	0.00358	0.00352
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00351	0.00359	0.00353
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00354	0.00361	0.00356
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00351	0.00359	0.00353
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00250	0.00255	0.00251

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00334	-0.00337	-0.00335
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00334	-0.00335	-0.00334
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00334	-0.00336	-0.00335
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00334	-0.00336	-0.00334
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00334	-0.00335	-0.00334
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00236	-0.00237	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00343	0.00341	0.00336
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00342	0.00341	0.00336
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00343	0.00341	0.00337
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00343	0.00342	0.00337
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00343	0.00342	0.00337
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00241	0.00238	0.00237

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_hs__aoi21_l	0.00365	0.00380	0.00384	0.82746

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.06157	0.12045

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi21_l	A0->Y (FR)	0.07698	0.88440	10.69490
	A1->Y (FR)	0.06606	0.83992	10.31420
	B0->Y (FR)	0.05544	0.86853	10.88820

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi21_l	A0->Y (RF)	0.04752	0.52709	6.33955
	A1->Y (RF)	0.04346	0.54841	6.80465
	B0->Y (RF)	0.02585	0.48720	6.23886

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00795	0.00789	0.00980
	A1	0.00000	0.00000	0.00000
	A1	0.00680	0.00672	0.00861
	B0	0.00495	0.00507	0.00990

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00182	0.00155	0.00339
	A1	0.00000	0.00000	0.00000
	A1	0.00186	0.00169	0.00413
	B0	-0.00084	-0.00076	0.00136

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00262	-0.00306	-0.00305
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00309	-0.00311	-0.00310
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00309	-0.00311	-0.00309

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00304	0.00306	0.00305
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00309	0.00312	0.00311
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00317	0.00314	0.00311

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00259	-0.00299	-0.00301
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00304	-0.00307	-0.00305
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00326	-0.00329	-0.00329

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00299	0.00302	0.00301
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00304	0.00307	0.00306
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00328	0.00336	0.00330

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00150	-0.00153	-0.00150

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00164	0.00166	0.00154

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_15T_hs__aoi22_l	0.00364	0.00377	0.00392	0.00373	0.84386

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.07080	0.24089

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi22_l	A0->Y (FR)	0.09274	0.89698	10.68690
	A1->Y (FR)	0.08406	0.87938	10.58840
	B0->Y (FR)	0.05545	0.85198	10.75130
	B1->Y (FR)	0.06429	0.87296	10.90160

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__aoi22_l	A0->Y (RF)	0.06310	0.54897	6.44161
	A1->Y (RF)	0.05916	0.57000	6.90794
	B0->Y (RF)	0.03214	0.54009	6.87599
	B1->Y (RF)	0.03616	0.51738	6.41036

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00968	0.00960	0.01140
	A1	0.00853	0.00841	0.01021
	B0	0.00530	0.00540	0.01046
	B1	0.00642	0.00658	0.01138

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00374	0.00346	0.00531
	A1	0.00377	0.00357	0.00603
	B0	-0.00056	-0.00050	0.00203
	B1	-0.00049	-0.00057	0.00134

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00266	-0.00305	-0.00306
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00309	-0.00312	-0.00310
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00309	-0.00310	-0.00309
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00309	-0.00310	-0.00309

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00303	0.00306	0.00306
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00309	0.00313	0.00311
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00317	0.00316	0.00311
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00317	0.00316	0.00311

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00263	-0.00301	-0.00300
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00304	-0.00305	-0.00304
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00326	-0.00328	-0.00328
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00326	-0.00328	-0.00328

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00298	0.00302	0.00300
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00304	0.00307	0.00306
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00327	0.00335	0.00329
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00327	0.00335	0.00329

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00151	-0.00154	-0.00151
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00150	-0.00151	-0.00151
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00338	-0.00340	-0.00340
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00338	-0.00338	-0.00341

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00171	0.00173	0.00156
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00150	0.00152	0.00151
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00339	0.00341	0.00341
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00339	0.00342	0.00341

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00152	-0.00155	-0.00152
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00151	-0.00152	-0.00152
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00315	-0.00316	-0.00316
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00315	-0.00316	-0.00316

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00173	0.00174	0.00157
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00151	0.00154	0.00152
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00323	0.00318	0.00317
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00323	0.00317	0.00317

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__buf_1	7.93650
sky130_osu_sc_15T_hs__buf_2	10.37850
sky130_osu_sc_15T_hs__buf_4	15.26250
sky130_osu_sc_15T_hs__buf_6	20.14650
sky130_osu_sc_15T_hs__buf_8	25.03050
sky130_osu_sc_15T_hs__buf_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_hs__buf_1	0.00398	1.80740
sky130_osu_sc_15T_hs__buf_2	0.00398	3.56259
sky130_osu_sc_15T_hs__buf_4	0.00398	6.90239
sky130_osu_sc_15T_hs__buf_6	0.00090	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00399	13.30203
sky130_osu_sc_15T_hs__buf_l	0.00318	1.12850

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.12889	0.12889
sky130_osu_sc_15T_hs__buf_2	0.00000	0.19334	0.24934
sky130_osu_sc_15T_hs__buf_4	0.00000	0.32222	0.49023
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	0.58000	0.97202
sky130_osu_sc_15T_hs__buf_l	0.00000	0.02197	0.02197

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__buf_1	**A->Y (RR)**	0.05579	0.52013	6.42847
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.06200	0.46031	6.44614
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.08407	0.46285	6.68652
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.12659	0.51957	7.03843
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.06147	0.60749	6.34600

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__buf_1	**A->Y (FF)**	0.05869	0.55898	6.67142
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.06730	0.52942	6.80827
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.09374	0.55181	7.09011
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.14922	0.62184	7.40780
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.06733	0.55425	5.46818

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00331	0.00351	0.02423
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00681	0.00716	0.02758
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01456	0.01533	0.03446
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03080	0.03186	0.05002
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00262	0.00267	0.01571

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00888	0.01000	0.03381
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01120	0.01253	0.03633
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01732	0.01907	0.04251
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03070	0.03245	0.05551
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00705	0.00759	0.02246

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00062	-0.00062	-0.00061

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
	0.00062	0.00062	0.00061

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__dffr_1	53.11350
sky130_osu_sc_15T_hs__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_hs__dffr_1	0.00374	0.00372	0.01106	1.67863	1.67411
sky130_osu_sc_15T_hs__dffr_l	0.00374	0.00372	0.01105	1.13443	1.11943

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.37271	0.60614
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.26389	0.49732

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->Q (RR)	0.29593	1.32166	14.99760
	QN->Q (FR)	0.03099	0.83388	12.80070
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.29805	1.51537	15.63700
	QN->Q (FR)	0.03469	0.89802	12.52530

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->Q (RF)	0.28980	1.31865	15.20450
	QN->Q (RF)	0.02359	0.61287	9.40146
	RN->Q (FF)	0.21542	1.37161	16.88240
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.29832	1.52732	15.85410
	QN->Q (RF)	0.02683	0.67022	9.37139
	RN->Q (FF)	0.22451	1.57917	17.52700

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	CK->QN (RR)	0.25884	0.75534	6.51665
	RN->QN (FR)	0.18441	0.80846	8.19380
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.26005	0.82998	6.59440
	RN->QN (FR)	0.18583	0.88287	8.26388

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffr_1	**CK->QN (RF)**	0.25188	0.65987	4.83542
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.24644	0.70789	4.95029

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_hs__dffr_1	hold	CK (R)	-0.06486	-0.07723	-0.03885
	setup	CK (R)	0.23487	0.26462	1.18609
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.06700	-0.07972	-0.03804
	setup	CK (R)	0.23356	0.26399	1.17357

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.11554	-0.33537	-2.29955
	setup	CK (R)	0.14083	0.34661	3.63218
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.11407	-0.33632	-2.44146
	setup	CK (R)	0.14059	0.34661	3.63218

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.06486	-0.07723	-0.03885
	setup	CK (R)	0.23487	0.26462	1.18609
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.06700	-0.07972	-0.03804
	setup	CK (R)	0.23356	0.26399	1.17357

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	hold	CK (R)	-0.11554	-0.33537	-2.29955
	setup	CK (R)	0.14083	0.34661	3.63218
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.11407	-0.33632	-2.44146
	setup	CK (R)	0.14059	0.34661	3.63218

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	recovery	CK (R)	0.19845	0.23245	1.31902
	removal	CK (R)	-0.04921	-0.05773	-0.13220
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.19760	0.23200	1.31025
	removal	CK (R)	-0.04921	-0.05773	-0.13220

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	recovery	CK (R)	0.19845	0.23245	1.31902
	removal	CK (R)	-0.04921	-0.05773	-0.13220
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.19760	0.23200	1.31025
	removal	CK (R)	-0.04921	-0.05773	-0.13220

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffr_1	min_pulse_width	RN ()	0.12822	0.45166	13.33370
	min_pulse_width	RN ()	0.12822	0.45166	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.12822	0.45166	13.33370
	min_pulse_width	RN ()	0.12822	0.45166	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_hs__dffr_1	min_pulse_width	CK ()	0.14184	0.45166	13.33370
	min_pulse_width	CK ()	0.15205	0.45166	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.13163	0.45166	13.33370
	min_pulse_width	CK ()	0.14525	0.45166	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_hs__dffr_1	min_pulse_width	CK ()	0.29164	0.45166	13.33370
	min_pulse_width	CK ()	0.11801	0.45166	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.29164	0.45166	13.33370
	min_pulse_width	CK ()	0.11801	0.45166	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00898	0.00732	0.00019
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00784	0.00695	0.01595

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01005	0.00811	-0.00019
	RN	-0.00115	-0.07390	-1.18444
	RN	0.02303	0.02142	0.00769
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00892	0.00780	0.00959
	RN	-0.00115	-0.05841	-0.80045
	RN	0.02188	0.02110	0.02323

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01005	0.00813	-0.00031
	RN	-0.00115	-0.07378	-1.18124
	RN	0.02302	0.02142	0.00765
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00892	0.00780	0.00976
	RN	-0.00115	-0.05795	-0.78986
	RN	0.02188	0.02109	0.02316

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00894	0.00728	0.00031
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00780	0.00693	0.01602

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00251	-0.00300	-0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01073	0.01030	0.02529
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00480	0.00446	0.01962
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00251	-0.00300	-0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01073	0.01030	0.02529
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00480	0.00446	0.01962

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00302	0.00305	0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01787	0.01769	0.03322
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00821	0.00806	0.02346
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00301	0.00305	0.00304
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01787	0.01769	0.03322
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00821	0.00806	0.02346

Passive power(pJ) for RN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00344	0.00351	0.03288
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00961	0.00940	0.03880
sky130_osu_sc_15T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00344	0.00352	0.03288
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00961	0.00942	0.03880

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00829	0.00912	0.03910
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01785	0.01844	0.04826
sky130_osu_sc_15T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00829	0.00912	0.03910
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01785	0.01843	0.04826

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00070	-0.00079	0.02830
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00484	0.00411	0.03415
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00105	-0.00096	0.02776
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00071	-0.00079	0.02830
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00484	0.00411	0.03415
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00105	-0.00096	0.02775

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01309	0.01383	0.04391
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02770	0.02766	0.06269
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02137	0.02183	0.05214
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02730	0.02852	0.07919
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01475	0.01533	0.04490
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01309	0.01383	0.04391
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02769	0.02766	0.06269
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02137	0.02183	0.05214
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02730	0.02854	0.07919
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01475	0.01533	0.04490

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__dffsr_1	57.99750
sky130_osu_sc_15T_hs__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_hs__dffsr_1	0.00370	0.00373	0.00824	0.01131	1.87831	1.87950
sky130_osu_sc_15T_hs__dffsr_l	0.00370	0.00373	0.00823	0.01131	1.12171	1.12246

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.45711	0.61629
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.34830	0.50747

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->Q (RR)	0.28847	1.34612	16.16790
	QN->Q (FR)	0.02702	0.77647	12.26000
	RN->Q (RR)	0.23344	1.30257	16.17660
	SN->Q (FR)	0.21215	1.41450	18.07960
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.29915	1.51434	15.47510
	QN->Q (FR)	0.03468	0.89255	12.41740
	RN->Q (RR)	0.24445	1.47154	15.47910
	SN->Q (FR)	0.22293	1.58121	17.37620

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->Q (RF)	0.32033	1.37078	16.19950
	QN->Q (RF)	0.02330	0.63858	10.08540
	RN->Q (FF)	0.22382	1.40506	17.88500
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.33497	1.56095	15.71730
	QN->Q (RF)	0.02678	0.66699	9.30279
	RN->Q (FF)	0.23775	1.59418	17.39590

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->QN (RR)	0.28946	0.78329	6.71313
	RN->QN (FR)	0.19332	0.81871	8.41157
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.29613	0.87216	6.65682
	RN->QN (FR)	0.19911	0.90664	8.33344

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffsr_1	CK->QN (RF)	0.24874	0.68214	5.46692
	RN->QN (RF)	0.19404	0.63906	5.47699
	SN->QN (FF)	0.17293	0.75091	7.37448
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.24941	0.71649	4.98818
	RN->QN (RF)	0.19486	0.67410	4.99530
	SN->QN (FF)	0.17358	0.78321	6.88894

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_hs__dffsr_1	hold	CK (R)	-0.06462	-0.08266	-0.07590
	setup	CK (R)	0.21982	0.25087	1.32906
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.06789	-0.08261	-0.06800
	setup	CK (R)	0.21774	0.24920	1.37400

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.12738	-0.35175	-2.04275
	setup	CK (R)	0.16065	0.36153	3.68633
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.12522	-0.35071	-1.92009
	setup	CK (R)	0.16020	0.36153	3.95081

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.06462	-0.08266	-0.07590
	setup	CK (R)	0.21982	0.25087	1.32906
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.06789	-0.08261	-0.06800
	setup	CK (R)	0.21774	0.24920	1.37400

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	hold	CK (R)	-0.12738	-0.35175	-2.04275
	setup	CK (R)	0.16065	0.36153	3.68633
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.12522	-0.35071	-1.92009
	setup	CK (R)	0.16020	0.36153	3.95081

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.16510	0.19807	1.22609
	removal	CK (R)	-0.02465	-0.03021	-0.06703
	hold	SN (R)	-0.16945	-0.31832	-1.36820
	setup	SN (R)	0.19205	0.36310	6.84647
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.16484	0.19605	1.22465
	removal	CK (R)	-0.02465	-0.03021	-0.06811
	hold	SN (R)	-0.16721	-0.31415	-1.33437
	setup	SN (R)	0.19186	0.35669	6.89820

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.16510	0.19807	1.22609
	removal	CK (R)	-0.02465	-0.03021	-0.06703
	hold	SN (R)	-0.16945	-0.31832	-1.36820
	hold	SN (R)	-0.17082	-0.32035	-1.37496
	setup	SN (R)	0.19205	0.35910	6.66619
	setup	SN (R)	0.19001	0.36310	6.84647
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.16484	0.19605	1.22465
	removal	CK (R)	-0.02465	-0.03021	-0.06811
	hold	SN (R)	-0.17012	-0.31425	-1.33437
	hold	SN (R)	-0.16721	-0.31415	-1.33823
	setup	SN (R)	0.19186	0.35423	6.66975
	setup	SN (R)	0.18098	0.35669	6.89820

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	RN ()	0.15205	0.45166	13.33370
	min_pulse_width	RN ()	0.15546	0.45166	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.15205	0.45166	13.33370
	min_pulse_width	RN ()	0.14865	0.45166	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_hs__dffsr_1	recovery	CK (R)	0.04129	0.08007	7.80722
	removal	CK (R)	-0.01990	-0.05696	-0.28761
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.04331	0.07595	8.01141
	removal	CK (R)	-0.01888	-0.06076	-0.28674

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	recovery	CK (R)	0.04129	0.08007	7.80722
	removal	CK (R)	-0.01990	-0.05696	-0.28761
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.04331	0.07595	8.01141
	removal	CK (R)	-0.01888	-0.06076	-0.28674

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	min_pulse_width	SN ()	0.16908	0.45166	13.33370
	min_pulse_width	SN ()	0.16908	0.45166	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.16908	0.45166	13.33370
	min_pulse_width	SN ()	0.15886	0.45166	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_hs__dffsr_1	min_pulse_width	CK ()	0.13163	0.45166	13.33370
	min_pulse_width	CK ()	0.16227	0.45166	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.12482	0.45166	13.33370
	min_pulse_width	CK ()	0.15886	0.45166	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_hs__dffsr_1	min_pulse_width	CK ()	0.27803	0.45166	13.33370
	min_pulse_width	CK ()	0.13844	0.45166	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.27803	0.45166	13.33370
	min_pulse_width	CK ()	0.13844	0.45166	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01121	0.00933	-0.00250
	RN	0.02073	0.01874	-0.00008
	SN	-0.00115	-0.07905	-1.32534
	SN	0.02304	0.02075	-0.00154
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01019	0.00931	0.01840
	RN	0.01969	0.01868	0.02095
	SN	-0.00115	-0.05802	-0.79148
	SN	0.02201	0.02072	0.01982

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01186	0.01076	0.00658
	RN	-0.00115	-0.07905	-1.32533
	RN	0.02413	0.02320	0.01975
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01080	0.00979	0.01180
	RN	-0.00115	-0.05802	-0.79148
	RN	0.02304	0.02220	0.02476

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01185	0.01074	0.00687
	RN	-0.00115	-0.07908	-1.32610
	RN	0.02411	0.02317	0.01933
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01079	0.00979	0.01181
	RN	-0.00115	-0.05804	-0.79200
	RN	0.02303	0.02219	0.02459

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01116	0.00930	-0.00270
	RN	0.02068	0.01867	-0.00019
	SN	-0.00115	-0.07908	-1.32609
	SN	0.02299	0.02069	-0.00087
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01014	0.00928	0.01814
	RN	0.01964	0.01862	0.02075
	SN	-0.00115	-0.05804	-0.79196
	SN	0.02196	0.02067	0.01963

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00297	-0.00302	-0.00303
	(!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)	0.01380	0.01338	0.02824
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00552	0.00516	0.02011
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00548	0.00512	0.02012
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00553	0.00519	0.02015
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00297	-0.00302	-0.00303
	(!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)	0.01380	0.01338	0.02824
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00552	0.00516	0.02011
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00548	0.00512	0.02012
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00553	0.00519	0.02015

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00309	0.00305	0.00303
	(!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)	0.02083	0.02056	0.03563
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00882	0.00873	0.02391
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00891	0.00879	0.02389
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00876	0.00868	0.02384
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00308	0.00305	0.00303
	(!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)	0.02082	0.02057	0.03562
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00880	0.00872	0.02390
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00890	0.00878	0.02388
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00875	0.00866	0.02383

Passive power(pJ) for RN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__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)	0.00312	0.00312	0.03220
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01167	0.01138	0.04064
sky130_osu_sc_15T_hs__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)	0.00312	0.00313	0.03221
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01167	0.01138	0.04065

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__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)	0.00897	0.00989	0.03995
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01893	0.01949	0.04939
sky130_osu_sc_15T_hs__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)	0.00896	0.00988	0.03994
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01892	0.01947	0.04938

Passive power(pJ) for SN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__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)	-0.00690	-0.00694	-0.00695
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00669	-0.00737	-0.00743
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00668	-0.00704	-0.00706
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00464	0.00437	0.02102
sky130_osu_sc_15T_hs__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)	-0.00690	-0.00694	-0.00695
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00667	-0.00736	-0.00742
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00668	-0.00703	-0.00705
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00464	0.00438	0.02103

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__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)	0.00694	0.00709	0.00697
	(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	0.00749	0.00745
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00704	0.00710	0.00708
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01449	0.01416	0.02915
sky130_osu_sc_15T_hs__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)	0.00694	0.00709	0.00697
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00738	0.00747	0.00743
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00703	0.00710	0.00708
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01448	0.01415	0.02914

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00070	-0.00079	0.02829
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00571	0.00502	0.03497
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00557	0.00494	0.03490
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00087	-0.00077	0.02793
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00398	0.00420	0.05810
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00071	-0.00079	0.02829
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00570	0.00500	0.03496
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00556	0.00493	0.03489
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00087	-0.00077	0.02793
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00398	0.00420	0.05810

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_15T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03099	0.03100	0.06590
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01314	0.01387	0.04396
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02185	0.02236	0.05256
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02190	0.02230	0.05239
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03017	0.03118	0.08171
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01462	0.01529	0.04476
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01725	0.01858	0.07412
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03099	0.03100	0.06590
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01314	0.01387	0.04395
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02185	0.02236	0.05256
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02190	0.02230	0.05239
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03016	0.03117	0.08170
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01462	0.01529	0.04476
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01724	0.01857	0.07411

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__dffs_1	48.22950
sky130_osu_sc_15T_hs__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_hs__dffs_1	0.00373	0.00647	0.01104	1.69830	1.69953
sky130_osu_sc_15T_hs__dffs_l	0.00373	0.00647	0.01104	1.13583	1.12344

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.32600	0.48214
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.21718	0.37332

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->Q (RR)	0.22710	1.24491	15.05050
	QN->Q (FR)	0.03098	0.83438	12.82650
	SN->Q (FR)	0.17645	1.37631	16.97270
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.23369	1.44139	15.55220
	QN->Q (FR)	0.03466	0.89494	12.48910
	SN->Q (FR)	0.18382	1.56859	17.44110

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->Q (RF)	0.32493	1.36550	15.38520
	QN->Q (RF)	0.02347	0.61323	9.43357
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.33205	1.56554	15.88040
	QN->Q (RF)	0.02674	0.66815	9.35643

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->QN (RR)	0.29281	0.80046	6.63349
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.29256	0.86909	6.63735

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dffs_1	CK->QN (RF)	0.18722	0.58241	4.81326
	SN->QN (FF)	0.13644	0.71536	6.73910
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.18628	0.63616	4.88097
	SN->QN (FF)	0.13471	0.76260	6.77640

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_hs__dffs_1	hold	CK (R)	-0.04921	-0.06312	-0.00294
	setup	CK (R)	0.16267	0.20200	0.98107
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.04793	-0.06342	-0.00351
	setup	CK (R)	0.16272	0.20102	0.97258

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.11737	-0.33523	-3.00355
	setup	CK (R)	0.15892	0.34859	3.64661
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.11569	-0.33416	-3.00178
	setup	CK (R)	0.15462	0.34859	3.64732

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.04921	-0.06312	-0.00294
	setup	CK (R)	0.16267	0.20200	0.98107
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.04793	-0.06342	-0.00351
	setup	CK (R)	0.16272	0.20102	0.97258

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	hold	CK (R)	-0.11737	-0.33523	-3.00355
	setup	CK (R)	0.15892	0.34859	3.64661
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.11569	-0.33416	-3.00178
	setup	CK (R)	0.15462	0.34859	3.64732

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	recovery	CK (R)	0.05328	0.09436	7.35137
	removal	CK (R)	-0.02806	-0.07284	-0.41239
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.05306	0.09326	7.38554
	removal	CK (R)	-0.02569	-0.07522	-0.41329

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	recovery	CK (R)	0.05328	0.09436	7.35137
	removal	CK (R)	-0.02806	-0.07284	-0.41239
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.05306	0.09326	7.38554
	removal	CK (R)	-0.02569	-0.07522	-0.41329

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dffs_1	min_pulse_width	SN ()	0.12141	0.45166	13.33370
	min_pulse_width	SN ()	0.12482	0.45166	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.12141	0.45166	13.33370
	min_pulse_width	SN ()	0.11801	0.45166	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_hs__dffs_1	min_pulse_width	CK ()	0.10099	0.45166	13.33370
	min_pulse_width	CK ()	0.16227	0.45166	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.09418	0.45166	13.33370
	min_pulse_width	CK ()	0.15546	0.45166	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_hs__dffs_1	min_pulse_width	CK ()	0.22355	0.45166	13.33370
	min_pulse_width	CK ()	0.13844	0.45166	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.22015	0.45166	13.33370
	min_pulse_width	CK ()	0.13844	0.45166	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00900	0.00737	0.00049
	SN	-0.00115	-0.07442	-1.19832
	SN	0.01933	0.01744	0.00048
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00786	0.00701	0.01630
	SN	-0.00115	-0.05846	-0.80144
	SN	0.01817	0.01712	0.01699

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00999	0.00813	-0.00049
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00885	0.00781	0.00999

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00998	0.00812	-0.00046
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00885	0.00781	0.01014

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00895	0.00734	0.00046
	SN	-0.00115	-0.07445	-1.19910
	SN	0.01928	0.01742	0.00090
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00782	0.00701	0.01615
	SN	-0.00115	-0.05807	-0.79266
	SN	0.01812	0.01707	0.01682

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00302	-0.00307	-0.00307
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01016	0.00970	0.02496
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00470	0.00435	0.01948
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00302	-0.00308	-0.00307
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01016	0.00970	0.02496
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00470	0.00434	0.01948

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00313	0.00310	0.00307
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01755	0.01725	0.03267
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00834	0.00825	0.02367
sky130_osu_sc_15T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00313	0.00310	0.00307
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01755	0.01725	0.03267
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00834	0.00825	0.02367

Passive power(pJ) for SN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00498	-0.00503	-0.00502
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00385	0.00351	0.01616
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00498	-0.00503	-0.00501
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00385	0.00354	0.01616

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00505	0.00507	0.00503
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01001	0.00987	0.02360
sky130_osu_sc_15T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00505	0.00507	0.00503
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01000	0.00987	0.02360

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00073	-0.00082	0.02830
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00101	-0.00093	0.02783
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00311	0.00340	0.05787
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00073	-0.00082	0.02830
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00101	-0.00093	0.02783
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00311	0.00340	0.05787

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02729	0.02730	0.06290
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01310	0.01385	0.04395
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02684	0.02790	0.07855
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01469	0.01528	0.04486
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01669	0.01809	0.07409
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02729	0.02729	0.06290
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01310	0.01386	0.04395
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02684	0.02790	0.07855
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01469	0.01528	0.04486
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01669	0.01809	0.07409

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__dff_1	40.29300
sky130_osu_sc_15T_hs__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_hs__dff_1	0.00389	0.01093	1.88923	1.87463
sky130_osu_sc_15T_hs__dff_l	0.00389	0.01091	1.02376	1.02385

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.41700	0.51303
sky130_osu_sc_15T_hs__dff_l	0.00000	0.31007	0.40610

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->Q (RR)	0.18786	1.22884	16.07690
	QN->Q (FR)	0.02684	0.77568	12.26120
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.19528	1.23521	12.62890
	QN->Q (FR)	0.04013	0.95223	12.91510

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->Q (RF)	0.26528	1.31043	16.19650
	QN->Q (RF)	0.02322	0.63820	10.09850
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.28217	1.39155	13.61850
	QN->Q (RF)	0.02322	0.56556	7.80497

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->QN (RR)	0.23535	0.71963	6.60810
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.24842	0.83085	6.52062

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__dff_1	CK->QN (RF)	0.15252	0.56316	5.28777
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.14932	0.49963	3.32489

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_hs__dff_1	hold	CK (R)	-0.04337	-0.05751	-0.04960
	setup	CK (R)	0.12495	0.16905	0.90325
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.04346	-0.05751	-0.04746
	setup	CK (R)	0.12550	0.16772	0.91353

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	hold	CK (R)	-0.10319	-0.33450	-3.37338
	setup	CK (R)	0.12474	0.34439	3.64535
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.10420	-0.33260	-3.37744
	setup	CK (R)	0.12474	0.34439	3.64520

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_hs__dff_1	min_pulse_width	CK ()	0.08396	0.45166	13.33370
	min_pulse_width	CK ()	0.14184	0.45166	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.08056	0.45166	13.33370
	min_pulse_width	CK ()	0.13844	0.45166	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_hs__dff_1	min_pulse_width	CK ()	0.18269	0.45166	13.33370
	min_pulse_width	CK ()	0.10099	0.45166	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.18269	0.45166	13.33370
	min_pulse_width	CK ()	0.10099	0.45166	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00955	0.00763	-0.00335
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00875	0.00764	0.01569

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01021	0.00911	0.00554
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00934	0.00787	0.00494

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01021	0.00911	0.00577
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00934	0.00787	0.00511

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00951	0.00764	-0.00367
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00869	0.00763	0.01491

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00250	-0.00299	-0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00971	0.00937	0.02482
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00251	-0.00299	-0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00972	0.00937	0.02483

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00301	0.00304	0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01825	0.01793	0.03383
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00300	0.00304	0.00303
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01825	0.01794	0.03384

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00073	-0.00081	0.02833
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00099	-0.00089	0.02787
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00073	-0.00081	0.02833
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00099	-0.00089	0.02787

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01303	0.01379	0.04390
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02688	0.02694	0.06286
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02734	0.02846	0.07976
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01461	0.01520	0.04480
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01303	0.01380	0.04390
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02688	0.02694	0.06286
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02734	0.02843	0.07976
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01461	0.01520	0.04480

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__inv_1	5.49450
sky130_osu_sc_15T_hs__inv_10	27.47250
sky130_osu_sc_15T_hs__inv_2	7.93650
sky130_osu_sc_15T_hs__inv_3	10.37850
sky130_osu_sc_15T_hs__inv_4	12.82050
sky130_osu_sc_15T_hs__inv_6	17.70450
sky130_osu_sc_15T_hs__inv_8	22.58850
sky130_osu_sc_15T_hs__inv_l	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_hs__inv_1	0.00376	1.76182
sky130_osu_sc_15T_hs__inv_10	0.03450	15.87932
sky130_osu_sc_15T_hs__inv_2	0.00710	3.49274
sky130_osu_sc_15T_hs__inv_3	0.01056	5.01477
sky130_osu_sc_15T_hs__inv_4	0.01394	6.71625
sky130_osu_sc_15T_hs__inv_6	0.02088	9.92153
sky130_osu_sc_15T_hs__inv_8	0.02767	13.19850
sky130_osu_sc_15T_hs__inv_l	0.00294	0.99254

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.06445	0.12045
sky130_osu_sc_15T_hs__inv_10	0.00000	0.64445	1.20448
sky130_osu_sc_15T_hs__inv_2	0.00000	0.12889	0.24089
sky130_osu_sc_15T_hs__inv_3	0.00000	0.19334	0.36134
sky130_osu_sc_15T_hs__inv_4	0.00000	0.25778	0.48179
sky130_osu_sc_15T_hs__inv_6	0.00000	0.38667	0.72269
sky130_osu_sc_15T_hs__inv_8	0.00000	0.51556	0.96358
sky130_osu_sc_15T_hs__inv_l	0.00000	0.01098	0.01841

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__inv_1	**A->Y (FR)**	0.02570	0.71626	11.09020
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.03655	0.48495	10.95750
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.02072	0.61474	11.03360
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.02301	0.57773	11.03590
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.02355	0.54771	10.98580
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.02605	0.51580	10.99580
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.03121	0.49848	11.06040
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.03479	0.81966	11.05470

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__inv_1	**A->Y (RF)**	0.02098	0.55541	8.65590
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.02961	0.34212	8.50787
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.01698	0.47626	8.65113
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.01848	0.44157	8.68693
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.01816	0.41028	8.65441
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.02174	0.37849	8.65364
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.02607	0.35957	8.68541
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.02123	0.51062	6.91811

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00461	0.00492	0.00833
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.03919	0.04754	0.07993
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00814	0.00855	0.01570
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01251	0.01407	0.02398
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01607	0.01887	0.03149
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02381	0.02795	0.04730
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.03140	0.03665	0.06291
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00355	0.00368	0.00553

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	-0.00099	-0.00086	0.00097
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	-0.01576	-0.01327	0.00670
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00312	-0.00274	0.00104
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00412	-0.00361	0.00221
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00628	-0.00535	0.00231
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00964	-0.00814	0.00355
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	-0.01291	-0.01083	0.00486
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00061	-0.00053	0.00084

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_15T_hs__mux2_1	0.50503	0.50538	0.00769	0.52516

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.12913	0.12913

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__mux2_1	A0->Y (RR)	-	0.01289	0.26508	2.93950
	A1->Y (RR)	-	0.01427	0.26682	2.94026
	S0->Y (RR)	(!A0 * A1)	0.04407	0.28047	1.62152
	S0->Y (FR)	(A0 * !A1)	0.03334	0.40006	3.95877

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__mux2_1	A0->Y (FF)	-	0.01343	0.27200	3.02916
	A1->Y (FF)	-	0.01248	0.27042	3.02039
	S0->Y (FF)	(!A0 * A1)	0.05708	0.38055	2.97397
	S0->Y (RF)	(A0 * !A1)	0.02375	0.30998	2.84923

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00481	-0.00482	-0.00481
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00333	-0.00334	-0.00334
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00561	0.00674	0.03792
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00331	-0.00297	0.02724

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00481	0.00482	0.00481
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00333	0.00334	0.00334
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00093	0.00136	0.03203
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01255	0.01347	0.04403

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00121	-0.00121	-0.00120

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00121	0.00121	0.00121

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00143	-0.00143	-0.00143

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00143	0.00143	0.00143

Passive power(pJ) for S0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00121	-0.00090	0.02958
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00118	-0.00092	0.02971

Passive power(pJ) for S0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00951	0.01041	0.04104
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00866	0.00973	0.04077

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__nand2_1	7.93650
sky130_osu_sc_15T_hs__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__nand2_1	0.00376	0.00375	1.57769
sky130_osu_sc_15T_hs__nand2_l	0.00294	0.00294	0.98569

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.06424	0.24089
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.01099	0.03682

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nand2_1	A->Y (FR)	0.02660	0.69465	10.46570
	B->Y (FR)	0.03072	0.68879	10.30750
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.03580	0.82180	11.04520
	B->Y (FR)	0.04286	0.82608	11.02750

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nand2_1	A->Y (RF)	0.03005	0.67448	10.17420
	B->Y (RF)	0.03393	0.65348	9.75842
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.03048	0.64109	8.60939
	B->Y (RF)	0.03411	0.61295	8.03251

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00490	0.00522	0.00876
	B	0.00000	0.00000	0.00000
	B	0.00606	0.00625	0.00991
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00375	0.00391	0.00541
	B	0.00000	0.00000	0.00000
	B	0.00472	0.00477	0.00705

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00067	-0.00057	0.00113
	B	0.00000	0.00000	0.00000
	B	-0.00063	-0.00069	0.00064
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00044	-0.00037	0.00082
	B	0.00000	0.00000	0.00000
	B	-0.00041	-0.00046	0.00055

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00341	-0.00340	-0.00343
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00238	-0.00238	-0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00342	0.00350	0.00344
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00239	0.00244	0.00240

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00320	-0.00320	-0.00320
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00221	-0.00221	-0.00222

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00328	0.00327	0.00321
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00227	0.00221	0.00222

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__nor2_1	7.93650
sky130_osu_sc_15T_hs__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__nor2_1	0.00373	0.00402	0.91425
sky130_osu_sc_15T_hs__nor2_l	0.00284	0.00316	0.56923

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.04825	0.12045
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.00891	0.01841

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nor2_1	A->Y (FR)	0.05638	0.84572	10.76830
	B->Y (FR)	0.04291	0.83229	10.84270
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.07027	0.96782	10.79630
	B->Y (FR)	0.05812	0.96122	10.99380

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__nor2_1	A->Y (RF)	0.02875	0.45672	5.86670
	B->Y (RF)	0.02230	0.44587	5.84880
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.02640	0.43139	4.95232
	B->Y (RF)	0.02235	0.42290	4.93776

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00652	0.00649	0.00854
	B	0.00000	0.00000	0.00000
	B	0.00495	0.00510	0.00998
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00477	0.00470	0.00634
	B	0.00000	0.00000	0.00000
	B	0.00380	0.00385	0.00719

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00078	0.00077	0.00331
	B	0.00000	0.00000	0.00000
	B	-0.00078	-0.00063	0.00196
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00047	0.00046	0.00232
	B	0.00000	0.00000	0.00000
	B	-0.00045	-0.00036	0.00149

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00253	-0.00302	-0.00305
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00172	-0.00201	-0.00202

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00303	0.00305	0.00305
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00200	0.00203	0.00202

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00151	-0.00154	-0.00151
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00099	-0.00100	-0.00099

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00158	0.00161	0.00154
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00104	0.00104	0.00100

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_hs__oai21_l	0.00379	0.00386	0.00317	0.89383

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.03392	0.13886

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai21_l	A0->Y (FR)	0.05925	0.85631	10.89860
	A1->Y (FR)	0.07654	0.87527	10.84430
	B0->Y (FR)	0.04151	0.76254	10.00850

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai21_l	A0->Y (RF)	0.04127	0.54480	6.79667
	A1->Y (RF)	0.05000	0.54193	6.65484
	B0->Y (RF)	0.03245	0.58068	7.53326

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00673	0.00690	0.01115
	A1	0.00000	0.00000	0.00000
	A1	0.00831	0.00823	0.01014
	B0	0.00563	0.00566	0.00860

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00018	0.00010	0.00184
	A1	0.00000	0.00000	0.00000
	A1	0.00174	0.00148	0.00324
	B0	0.00071	0.00073	0.00267

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00152	-0.00154	-0.00152
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00303	-0.00308	-0.00306
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00311	-0.00312	-0.00312

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00160	0.00161	0.00154
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00305	0.00308	0.00306
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00314	0.00315	0.00312

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00245	-0.00294	-0.00298
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00299	-0.00302	-0.00303
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00307	-0.00309	-0.00307

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00296	0.00300	0.00298
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00301	0.00302	0.00303
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00310	0.00311	0.00308

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00241	-0.00242	-0.00246

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00245	0.00251	0.00247

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__oai22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_hs__oai22_l	0.00365	0.00387	0.00398	0.00388	0.89748

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.07181	0.24089

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai22_l	A0->Y (FR)	0.08094	0.86655	10.68290
	A1->Y (FR)	0.06703	0.85120	10.75890
	B0->Y (FR)	0.04831	0.83306	10.75060
	B1->Y (FR)	0.06319	0.84921	10.67830

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__oai22_l	A0->Y (RF)	0.07056	0.58346	6.88431
	A1->Y (RF)	0.05612	0.56433	6.83226
	B0->Y (RF)	0.04797	0.59755	7.57435
	B1->Y (RF)	0.06295	0.61956	7.66850

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.01074	0.01067	0.01251
	A1	0.00911	0.00921	0.01347
	B0	0.00686	0.00702	0.01123
	B1	0.00855	0.00848	0.01033

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00287	0.00261	0.00431
	A1	-0.00029	-0.00036	0.00138
	B0	-0.00031	-0.00026	0.00221
	B1	0.00290	0.00279	0.00494

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00252	-0.00302	-0.00305
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00252	-0.00302	-0.00305
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00300	-0.00305	-0.00304
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00308	-0.00309	-0.00308

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00302	0.00305	0.00305
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00302	0.00305	0.00305
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00302	0.00306	0.00304
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00310	0.00309	0.00309

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00150	-0.00153	-0.00150
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00150	-0.00153	-0.00150
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00297	-0.00301	-0.00301
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00305	-0.00307	-0.00306

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00157	0.00159	0.00153
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00157	0.00159	0.00153
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00300	0.00301	0.00301
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00308	0.00308	0.00307

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00148	-0.00152	-0.00149
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00148	-0.00152	-0.00149
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00329	-0.00333	-0.00332
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00330	-0.00333	-0.00338

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00156	0.00158	0.00151
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00156	0.00157	0.00151
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00332	0.00333	0.00332
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00337	0.00338	0.00339

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00247	-0.00296	-0.00299
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00247	-0.00296	-0.00299
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00336	-0.00341	-0.00340
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00337	-0.00338	-0.00344

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00297	0.00300	0.00299
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00297	0.00298	0.00299
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00339	0.00343	0.00340
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00343	0.00345	0.00345

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__or2_1	10.37850
sky130_osu_sc_15T_hs__or2_2	12.82050
sky130_osu_sc_15T_hs__or2_4	17.70450
sky130_osu_sc_15T_hs__or2_8	27.47250
sky130_osu_sc_15T_hs__or2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__or2_1	0.00409	0.00386	1.80230
sky130_osu_sc_15T_hs__or2_2	0.00409	0.00386	3.55263
sky130_osu_sc_15T_hs__or2_4	0.00409	0.00386	6.83893
sky130_osu_sc_15T_hs__or2_8	0.00410	0.00387	13.08295
sky130_osu_sc_15T_hs__or2_l	0.00325	0.00299	1.02121

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.08470	0.13733
sky130_osu_sc_15T_hs__or2_2	0.00000	0.12114	0.25778
sky130_osu_sc_15T_hs__or2_4	0.00000	0.19403	0.49867
sky130_osu_sc_15T_hs__or2_8	0.00000	0.33980	0.98047
sky130_osu_sc_15T_hs__or2_l	0.00000	0.01618	0.02552

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__or2_1	A->Y (RR)	0.06638	0.55310	6.36234
	B->Y (RR)	0.05733	0.52359	6.33795
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.07313	0.49085	6.42071
	B->Y (RR)	0.06371	0.46449	6.38074
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.09553	0.48827	6.66402
	B->Y (RR)	0.08591	0.46685	6.61502
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.13802	0.53956	7.03628
	B->Y (RR)	0.12830	0.52290	6.98247
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.07164	0.65106	6.24048
	B->Y (RR)	0.06459	0.62668	6.16987

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__or2_1	A->Y (FF)	0.10629	0.64021	6.96842
	B->Y (FF)	0.08764	0.61275	6.96024
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.12612	0.61936	7.13125
	B->Y (FF)	0.10762	0.59868	7.07950
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.17735	0.66034	7.43552
	B->Y (FF)	0.15890	0.64769	7.37074
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.28309	0.77311	7.78519
	B->Y (FF)	0.26472	0.76173	7.71360
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.12765	0.62421	5.39738
	B->Y (FF)	0.10669	0.60586	5.38738

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00510	0.00480	0.01898
	B	0.00000	0.00000	0.00000
	B	0.00364	0.00401	0.02377
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00864	0.00855	0.02314
	B	0.00000	0.00000	0.00000
	B	0.00711	0.00775	0.02731
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01641	0.01689	0.03101
	B	0.00000	0.00000	0.00000
	B	0.01486	0.01604	0.03448
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03269	0.03340	0.04778
	B	0.00000	0.00000	0.00000
	B	0.03117	0.03278	0.05038
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00376	0.00353	0.01212
	B	0.00000	0.00000	0.00000
	B	0.00285	0.00300	0.01349

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.01078	0.01067	0.02371
	B	0.00000	0.00000	0.00000
	B	0.00889	0.01006	0.03541
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01314	0.01343	0.02616
	B	0.00000	0.00000	0.00000
	B	0.01124	0.01268	0.03701
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01969	0.02016	0.03236
	B	0.00000	0.00000	0.00000
	B	0.01782	0.01927	0.04186
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03609	0.03372	0.04505
	B	0.00000	0.00000	0.00000
	B	0.03419	0.03281	0.05340
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00830	0.00801	0.01651
	B	0.00000	0.00000	0.00000
	B	0.00698	0.00753	0.02177

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00254	-0.00303	-0.00307
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00254	-0.00307	-0.00307
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00254	-0.00307	-0.00307
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00254	-0.00307	-0.00307
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00173	-0.00203	-0.00204

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00304	0.00309	0.00307
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00304	0.00309	0.00307
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00304	0.00309	0.00307
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00304	0.00309	0.00307
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00203	0.00205	0.00204

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00152	-0.00154	-0.00152
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00154	-0.00152
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00154	-0.00152
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00151	-0.00154	-0.00152
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00101	-0.00102	-0.00101

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00160	0.00162	0.00155
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00160	0.00162	0.00155
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00160	0.00162	0.00155
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00160	0.00162	0.00155
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00106	0.00107	0.00103

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__tbufi_1	10.37850
sky130_osu_sc_15T_hs__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_hs__tbufi_1	0.00400	0.00503	0.92163
sky130_osu_sc_15T_hs__tbufi_l	0.00316	0.00411	0.56875

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.06810	0.24090
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.01257	0.03682

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tbufi_1	A->Y (FR)	0.04091	0.82780	10.83620
	OE->Y (FR)	0.04406	0.32496	4.86211
	OE->Y (RR)	0.07725	0.65249	6.46758
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.05607	0.96003	10.99170
	OE->Y (FR)	0.05188	0.32484	4.86192
	OE->Y (RR)	0.08684	0.77165	6.38617

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tbufi_1	A->Y (RF)	0.02934	0.55084	7.25435
	OE->Y (FF)	0.04467	0.32494	4.86206
	OE->Y (RF)	0.02746	0.52455	6.77879
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.03021	0.52781	6.16124
	OE->Y (FF)	0.05281	0.32477	4.86189
	OE->Y (RF)	0.02857	0.49107	5.58111

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00470	0.00491	0.00921
	OE	0.00000	0.00000	0.00000
	OE	0.00469	0.00505	0.03204
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00359	0.00363	0.00663
	OE	0.00000	0.00000	0.00000
	OE	0.00337	0.00347	0.01934

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00078	-0.00066	0.00165
	OE	0.00000	0.00000	0.00000
	OE	0.00317	0.00354	0.03407
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00045	-0.00039	0.00125
	OE	0.00000	0.00000	0.00000
	OE	0.00214	0.00226	0.02047

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00247	-0.00251	-0.00248
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00222	-0.00224	-0.00223
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00177	-0.00181	-0.00178
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00161	-0.00163	-0.00161

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00247	0.00251	0.00248
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00227	0.00230	0.00225
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00177	0.00181	0.00178
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00164	0.00165	0.00161

Passive power(pJ) for OE rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00190	0.00232	0.03342
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00169	0.00214	0.03318
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00124	0.00139	0.01979
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00109	0.00125	0.01963

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00563	0.00641	0.03759
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00566	0.00652	0.03768
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00441	0.00477	0.02322
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00447	0.00486	0.02329

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__tnbufi_1	10.37850
sky130_osu_sc_15T_hs__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_hs__tnbufi_1	0.00399	0.00623	0.92150
sky130_osu_sc_15T_hs__tnbufi_l	0.00315	0.00460	0.56861

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.10543	0.12889
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.01752	0.02197

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tnbufi_1	A->Y (FR)	0.04136	0.82774	10.83510
	OE->Y (RR)	0.02627	0.32538	4.86259
	OE->Y (FR)	0.05321	0.84076	10.75490
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.05651	0.95983	10.98980
	OE->Y (RR)	0.02572	0.32536	4.86253
	OE->Y (FR)	0.06653	0.96543	10.78640

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_hs__tnbufi_1	A->Y (RF)	0.02885	0.55061	7.25355
	OE->Y (RF)	0.02601	0.32538	4.86260
	OE->Y (FF)	0.05002	0.50600	5.27851
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.02961	0.52741	6.16009
	OE->Y (RF)	0.02556	0.32536	4.86255
	OE->Y (FF)	0.05854	0.50678	4.43769

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00485	0.00505	0.00935
	OE	0.00000	0.00000	0.00000
	OE	0.01166	0.01305	0.04489
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00375	0.00378	0.00677
	OE	0.00000	0.00000	0.00000
	OE	0.00873	0.00942	0.02828

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00098	-0.00084	0.00148
	OE	0.00000	0.00000	0.00000
	OE	0.01031	0.01189	0.03905
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00063	-0.00057	0.00108
	OE	0.00000	0.00000	0.00000
	OE	0.00765	0.00845	0.02506

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00210	-0.00214	-0.00211
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00187	-0.00189	-0.00188
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00142	-0.00145	-0.00143
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00127	-0.00129	-0.00127

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00210	0.00214	0.00211
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00191	0.00194	0.00190
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00142	0.00145	0.00143
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00129	0.00130	0.00127

Passive power(pJ) for OE rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00351	-0.00335	0.02837
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00351	-0.00327	0.02841
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00224	-0.00230	0.01641
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00223	-0.00219	0.01644

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00884	0.01042	0.04222
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00872	0.01045	0.04211
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00659	0.00739	0.02624
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00651	0.00737	0.02618

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__xnor2_l	0.00794	0.00703	0.96732

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.22349	0.36979

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xnor2_l	A->Y (RR)	B	0.09587	0.69563	6.80801
	A->Y (FR)	!B	0.05232	0.84972	11.10810
	B->Y (RR)	A	0.07587	0.67518	6.83906
	B->Y (FR)	!A	0.07049	0.86777	11.04830

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xnor2_l	A->Y (FF)	B	0.08904	0.59169	5.71018
	A->Y (RF)	!B	0.03966	0.54404	7.00796
	B->Y (FF)	A	0.07685	0.57968	5.70931
	B->Y (RF)	!A	0.05007	0.55723	7.01533

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00446	0.00463	0.03249
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01131	0.01255	0.04771
	B	A	0.00000	0.00000	0.00000
	B	A	0.00141	0.00195	0.03311
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01233	0.01331	0.04578

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01452	0.01520	0.04546
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00316	0.00339	0.03532
	B	A	0.00000	0.00000	0.00000
	B	A	0.01299	0.01439	0.04551
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00433	0.00449	0.03626

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

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_hs__xor2_1	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_hs__xor2_1	0.00796	0.00708	0.92855

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.22349	0.34804

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xor2_l	A->Y (RR)	!B	0.09178	0.67903	6.66928
	A->Y (FR)	B	0.06800	0.86079	10.91150
	B->Y (RR)	!A	0.07985	0.67527	6.68479
	B->Y (FR)	A	0.07220	0.86478	10.89600

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_hs__xor2_l	A->Y (FF)	!B	0.07904	0.57623	5.46233
	A->Y (RF)	B	0.04196	0.57353	7.30065
	B->Y (FF)	!A	0.07470	0.57339	5.55019
	B->Y (RF)	A	0.04946	0.55138	6.84027

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01348	0.01447	0.04722
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00205	0.00166	0.03171
	B	A	0.00000	0.00000	0.00000
	B	A	0.01365	0.01467	0.04689
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00128	0.00171	0.03265

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00290	0.00300	0.03574
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01474	0.01599	0.04261
	B	A	0.00000	0.00000	0.00000
	B	A	0.00293	0.00297	0.03450
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01322	0.01460	0.04559

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_hs__ant	5.49450
sky130_osu_sc_15T_hs__tiehi	5.49450
sky130_osu_sc_15T_hs__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_hs__ant	0.51992
sky130_osu_sc_15T_hs__tiehi	0.00000
sky130_osu_sc_15T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__ant	0.00000	216293.00000	432585.00000
sky130_osu_sc_15T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__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_hs__ant	0.00000	0.00000	0.00000
	-0.00193	0.05041	0.74788

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_hs__ant	0.00000	0.00000	0.00000
	3.76493	3.58062	0.91400