sky130_osu_sc_15T_hs_tt_1P35_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_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.01397	0.01396	0.01090	1.13734	0.49593	1.08123
sky130_osu_sc_15T_hs__addf_l	0.01395	0.01395	0.01089	0.68402	0.49499	0.69113

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addf_1	0.00000	0.11455	0.14319
sky130_osu_sc_15T_hs__addf_l	0.00000	0.07556	0.10420

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)	0.20966	2.04975	25.50920
	B->CO (RR)	0.20208	1.98761	24.77380
	CI->CO (RR)	0.19941	2.06900	25.95330
	CON->CO (FR)	0.03851	0.90835	12.24920
sky130_osu_sc_15T_hs__addf_l	A->CO (RR)	0.22113	1.90384	19.83920
	B->CO (RR)	0.21333	1.85983	19.55460
	CI->CO (RR)	0.21089	1.92356	20.31450
	CON->CO (FR)	0.05195	1.03665	12.34780

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)	0.33778	2.86400	35.01930
	B->CO (FF)	0.30594	2.75901	33.95240
	CI->CO (FF)	0.29735	2.79600	34.74550
	CON->CO (RF)	0.02753	0.63693	8.60714
sky130_osu_sc_15T_hs__addf_l	A->CO (FF)	0.32802	2.35728	24.03810
	B->CO (FF)	0.29650	2.27350	23.39560
	CI->CO (FF)	0.28730	2.28909	23.79540
	CON->CO (RF)	0.02814	0.60465	7.43077

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)	0.25196	1.31620	12.28840
	B->CON (FR)	0.22192	1.25179	11.97910
	CI->CON (FR)	0.21094	1.24905	12.06510
sky130_osu_sc_15T_hs__addf_l	A->CON (FR)	0.23929	1.30300	12.26260
	B->CON (FR)	0.21022	1.23954	11.95440
	CI->CON (FR)	0.19860	1.23586	12.04060

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)	0.11536	0.69524	6.88201
	B->CON (RF)	0.11125	0.69925	7.11648
	CI->CON (RF)	0.10524	0.71742	7.39877
sky130_osu_sc_15T_hs__addf_l	A->CON (RF)	0.11124	0.69076	6.86935
	B->CON (RF)	0.10734	0.69509	7.10545
	CI->CON (RF)	0.10110	0.71296	7.38724

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)	0.48317	2.77250	28.32990
	B->S (-R)	0.48603	2.75785	27.88680
	CI->S (-R)	0.43948	2.69740	28.03660
	CON->S (RR)	0.11906	0.85853	7.97573
sky130_osu_sc_15T_hs__addf_l	A->S (-R)	0.47062	2.52480	22.75070
	B->S (-R)	0.47345	2.52162	22.53730
	CI->S (-R)	0.42662	2.44968	22.48230
	CON->S (RR)	0.12651	0.96054	7.98372

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)	0.35985	1.84408	17.65700
	B->S (-F)	0.35473	1.76518	17.24200
	CI->S (-F)	0.34885	1.85825	18.09070
	CON->S (FF)	0.14567	0.83667	6.94913
sky130_osu_sc_15T_hs__addf_l	A->S (-F)	0.33719	1.58790	13.35260
	B->S (-F)	0.33316	1.52655	13.25230
	CI->S (-F)	0.32603	1.60231	13.81920
	CON->S (FF)	0.13664	0.79113	5.91988

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	0.00199	0.00188	0.00223
	B	0.00245	0.00242	0.00284
	CI	0.00249	0.00257	0.00311
sky130_osu_sc_15T_hs__addf_l	A	0.00162	0.00146	0.00166
	B	0.00208	0.00199	0.00226
	CI	0.00212	0.00215	0.00246

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00697	0.00700	0.00794
	B	0.00687	0.00701	0.00794
	CI	0.00605	0.00628	0.00724
sky130_osu_sc_15T_hs__addf_l	A	0.00661	0.00661	0.00706
	B	0.00651	0.00661	0.00704
	CI	0.00568	0.00588	0.00636

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00696	0.00695	0.00723
	B	0.00685	0.00695	0.00722
	CI	0.00603	0.00622	0.00653
sky130_osu_sc_15T_hs__addf_l	A	0.00661	0.00659	0.00686
	B	0.00650	0.00659	0.00684
	CI	0.00568	0.00585	0.00616

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00196	0.00185	0.00195
	B	0.00241	0.00237	0.00249
	CI	0.00248	0.00254	0.00275
sky130_osu_sc_15T_hs__addf_l	A	0.00159	0.00145	0.00154
	B	0.00205	0.00197	0.00207
	CI	0.00211	0.00213	0.00232

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.00697	0.00700	0.00788
	B	0.00686	0.00700	0.00789
	CI	0.00604	0.00627	0.00717
sky130_osu_sc_15T_hs__addf_l	A	0.00662	0.00662	0.00708
	B	0.00651	0.00662	0.00707
	CI	0.00569	0.00589	0.00639

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__addf_1	A	0.01421	0.01405	0.01412
	B	0.01283	0.01259	0.01384
	CI	0.01156	0.01161	0.01182
sky130_osu_sc_15T_hs__addf_l	A	0.01374	0.01356	0.01363
	B	0.01238	0.01206	0.01338
	CI	0.01110	0.01107	0.01132

SKY130_OSU_SC_15T_HS__ADDHx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00716	0.00785	1.11660	0.52377	1.11856
sky130_osu_sc_15T_hs__addh_l	0.00728	0.00809	0.69833	0.53108	0.71390

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__addh_1	0.00000	0.12176	0.13842
sky130_osu_sc_15T_hs__addh_l	0.00000	0.07485	0.10152

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)	0.15316	0.89139	7.91670
	B->CO (RR)	0.15705	0.88747	8.03031
sky130_osu_sc_15T_hs__addh_l	A->CO (RR)	0.13573	0.94198	7.65371
	B->CO (RR)	0.13984	0.94215	7.77536

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)	0.12402	0.72177	5.94151
	B->CO (FF)	0.13015	0.73319	5.99881
sky130_osu_sc_15T_hs__addh_l	A->CO (FF)	0.12057	0.70421	5.27838
	B->CO (FF)	0.12894	0.72010	5.36280

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	0.21261	0.74444	4.24657
	A->CON (FR)	!B	0.14952	1.16573	11.97290
	B->CON (RR)	A	0.21616	0.73931	4.35648
	B->CON (FR)	!A	0.17961	1.22385	12.23800
sky130_osu_sc_15T_hs__addh_l	A->CON (RR)	B	0.16933	0.68259	4.02714
	A->CON (FR)	!B	0.13747	1.15957	12.06010
	B->CON (RR)	A	0.17348	0.67959	4.14577
	B->CON (FR)	!A	0.16736	1.21743	12.32640

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	0.17309	0.76442	5.21387
	A->CON (RF)	!B	0.05580	0.58810	6.52239
	B->CON (FF)	A	0.17454	0.78622	5.41515
	B->CON (RF)	!A	0.06512	0.58787	6.33904
sky130_osu_sc_15T_hs__addh_l	A->CON (FF)	B	0.16247	0.74685	5.15521
	A->CON (RF)	!B	0.05285	0.58701	6.56329
	B->CON (FF)	A	0.16615	0.77376	5.38804
	B->CON (RF)	!A	0.06222	0.58687	6.37864

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	0.12848	1.70393	21.90210
	A->S (FR)	B	0.24738	1.85998	20.16740
	B->S (RR)	!A	0.13766	1.66709	21.20650
	B->S (FR)	A	0.24993	1.91824	20.90890
	CON->S (FR)	-	0.04104	0.91793	12.31470
sky130_osu_sc_15T_hs__addh_l	A->S (RR)	!B	0.13552	1.63643	18.22780
	A->S (FR)	B	0.24682	1.78122	16.50600
	B->S (RR)	!A	0.14493	1.60878	17.76730
	B->S (FR)	A	0.25166	1.83422	17.03920
	CON->S (FR)	-	0.05173	1.04186	12.53870

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	0.22226	2.58075	32.81060
	A->S (RF)	B	0.26961	1.66611	17.25170
	B->S (FF)	!A	0.25271	2.64167	33.13420
	B->S (RF)	A	0.27313	1.66024	17.35700
	CON->S (RF)	-	0.02700	0.63522	8.57180
sky130_osu_sc_15T_hs__addh_l	A->S (FF)	!B	0.20980	2.14822	23.51680
	A->S (RF)	B	0.22437	1.36413	11.68970
	B->S (FF)	!A	0.23980	2.20931	23.80370
	B->S (RF)	A	0.22843	1.36381	11.79660
	CON->S (RF)	-	0.02662	0.60379	7.51170

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	0.00329	0.00314	0.00330
	B	0.00000	0.00000	0.00000
	B	0.00304	0.00289	0.00289
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00290	0.00269	0.00310
	B	0.00000	0.00000	0.00000
	B	0.00264	0.00245	0.00271

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	0.00495	0.00478	0.00496
	B	0.00000	0.00000	0.00000
	B	0.00508	0.00509	0.00527
sky130_osu_sc_15T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00460	0.00439	0.00474
	B	0.00000	0.00000	0.00000
	B	0.00480	0.00477	0.00511

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	0.00329	0.00313	0.00344
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00428	0.00427	0.00438
	B	A	0.00000	0.00000	0.00000
	B	A	0.00303	0.00288	0.00321
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00475	0.00470	0.00472
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00289	0.00275	0.00294
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00408	0.00405	0.00414
	B	A	0.00000	0.00000	0.00000
	B	A	0.00263	0.00244	0.00256
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00452	0.00445	0.00445

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	0.00495	0.00479	0.00516
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00074	0.00074	0.00035
	B	A	0.00000	0.00000	0.00000
	B	A	0.00508	0.00508	0.00547
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00123	0.00116	0.00117
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00460	0.00440	0.00479
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00040	0.00039	0.00027
	B	A	0.00000	0.00000	0.00000
	B	A	0.00480	0.00477	0.00514
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00089	0.00081	0.00080

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	0.00496	0.00480	0.00513
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00075	0.00078	0.00077
	B	A	0.00000	0.00000	0.00000
	B	A	0.00509	0.00510	0.00548
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00125	0.00120	0.00117
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00461	0.00441	0.00473
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00041	0.00041	0.00032
	B	A	0.00000	0.00000	0.00000
	B	A	0.00481	0.00477	0.00527
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00090	0.00083	0.00076

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	0.00329	0.00314	0.00324
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00428	0.00430	0.00443
	B	A	0.00000	0.00000	0.00000
	B	A	0.00304	0.00289	0.00294
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00476	0.00475	0.00481
sky130_osu_sc_15T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00289	0.00269	0.00295
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00407	0.00405	0.00415
	B	A	0.00000	0.00000	0.00000
	B	A	0.00263	0.00244	0.00260
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00453	0.00447	0.00446

SKY130_OSU_SC_15T_HS__AND2x

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00368	0.00379	1.12175
sky130_osu_sc_15T_hs__and2_2	0.00367	0.00378	2.20642
sky130_osu_sc_15T_hs__and2_4	0.00368	0.00379	4.23624
sky130_osu_sc_15T_hs__and2_6	0.00371	0.00379	6.25604
sky130_osu_sc_15T_hs__and2_8	0.00368	0.00379	8.23633
sky130_osu_sc_15T_hs__and2_l	0.00292	0.00304	0.67925

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__and2_1	0.00000	0.05760	0.09130
sky130_osu_sc_15T_hs__and2_2	0.00000	0.09124	0.09608
sky130_osu_sc_15T_hs__and2_4	0.00000	0.15852	0.17783
sky130_osu_sc_15T_hs__and2_6	0.00000	0.22580	0.26435
sky130_osu_sc_15T_hs__and2_8	0.00000	0.29308	0.35088
sky130_osu_sc_15T_hs__and2_l	0.00000	0.01028	0.01598

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)	0.11080	0.80066	7.50452
	B->Y (RR)	0.11672	0.80783	7.63345
sky130_osu_sc_15T_hs__and2_2	A->Y (RR)	0.12433	0.73406	7.71294
	B->Y (RR)	0.13006	0.73311	7.83568
sky130_osu_sc_15T_hs__and2_4	A->Y (RR)	0.17541	0.75495	8.14470
	B->Y (RR)	0.18142	0.74569	8.23213
sky130_osu_sc_15T_hs__and2_6	A->Y (RR)	0.22312	0.79966	8.49719
	B->Y (RR)	0.22877	0.78680	8.55680
sky130_osu_sc_15T_hs__and2_8	A->Y (RR)	0.26940	0.85282	8.85493
	B->Y (RR)	0.27522	0.83762	8.89951
sky130_osu_sc_15T_hs__and2_1	A->Y (RR)	0.12199	0.92038	7.53638
	B->Y (RR)	0.12821	0.92446	7.65509

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)	0.09573	0.72307	6.49986
	B->Y (FF)	0.10086	0.73843	6.59898
sky130_osu_sc_15T_hs__and2_2	A->Y (FF)	0.11146	0.69244	6.59028
	B->Y (FF)	0.11707	0.70464	6.69543
sky130_osu_sc_15T_hs__and2_4	A->Y (FF)	0.16001	0.73883	7.27061
	B->Y (FF)	0.16510	0.74715	7.32908
sky130_osu_sc_15T_hs__and2_6	A->Y (FF)	0.20984	0.78626	7.64459
	B->Y (FF)	0.21416	0.79361	7.69947
sky130_osu_sc_15T_hs__and2_8	A->Y (FF)	0.25652	0.83053	7.89968
	B->Y (FF)	0.26061	0.83847	7.96289
sky130_osu_sc_15T_hs__and2_l	A->Y (FF)	0.11173	0.72069	5.53215
	B->Y (FF)	0.12121	0.74128	5.65618

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	0.00237	0.00207	0.00334
	B	0.00000	0.00000	0.00000
	B	0.00242	0.00205	0.00279
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00454	0.00446	0.00582
	B	0.00000	0.00000	0.00000
	B	0.00459	0.00449	0.00523
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00929	0.00949	0.01063
	B	0.00000	0.00000	0.00000
	B	0.00935	0.00957	0.01009
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01409	0.01453	0.01579
	B	0.00000	0.00000	0.00000
	B	0.01414	0.01470	0.01518
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01885	0.01942	0.02111
	B	0.00000	0.00000	0.00000
	B	0.01890	0.01973	0.02089
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00180	0.00157	0.00229
	B	0.00000	0.00000	0.00000
	B	0.00185	0.00158	0.00197

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	0.00580	0.00572	0.00731
	B	0.00000	0.00000	0.00000
	B	0.00646	0.00636	0.00781
sky130_osu_sc_15T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00718	0.00742	0.00896
	B	0.00000	0.00000	0.00000
	B	0.00785	0.00805	0.00947
sky130_osu_sc_15T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01075	0.01167	0.01316
	B	0.00000	0.00000	0.00000
	B	0.01145	0.01224	0.01360
sky130_osu_sc_15T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01442	0.01590	0.01757
	B	0.00000	0.00000	0.00000
	B	0.01506	0.01642	0.01792
sky130_osu_sc_15T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01789	0.01990	0.02187
	B	0.00000	0.00000	0.00000
	B	0.01863	0.02038	0.02212
sky130_osu_sc_15T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00460	0.00449	0.00541
	B	0.00000	0.00000	0.00000
	B	0.00516	0.00502	0.00586

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)	-0.00211	-0.00212	-0.00214
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00211	-0.00212	-0.00213
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00211	-0.00212	-0.00213
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00213	-0.00214	-0.00215
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00211	-0.00212	-0.00213
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00151	-0.00152	-0.00153

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)	0.00214	0.00214	0.00214
sky130_osu_sc_15T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00213	0.00214	0.00214
sky130_osu_sc_15T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00214	0.00218	0.00214
sky130_osu_sc_15T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00215	0.00220	0.00216
sky130_osu_sc_15T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00214	0.00218	0.00214
sky130_osu_sc_15T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00153	0.00154	0.00153

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)	-0.00202	-0.00203	-0.00202
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00202	-0.00203	-0.00202
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00202	-0.00203	-0.00202
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00202	-0.00203	-0.00202
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00202	-0.00203	-0.00202
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00144	-0.00145	-0.00144

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)	0.00207	0.00206	0.00203
sky130_osu_sc_15T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00207	0.00206	0.00203
sky130_osu_sc_15T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00207	0.00205	0.00203
sky130_osu_sc_15T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00207	0.00205	0.00204
sky130_osu_sc_15T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00207	0.00205	0.00204
sky130_osu_sc_15T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00147	0.00146	0.00145

SKY130_OSU_SC_15T_HS__AOI21

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00346	0.00361	0.00366	0.48326

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__aoi21_l	0.00000	0.02341	0.04326

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)	0.13114	1.20247	12.15450
	A1->Y (FR)	0.11348	1.14860	11.83190
	B0->Y (FR)	0.09692	1.13889	11.93750

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)	0.06097	0.62548	6.63745
	A1->Y (RF)	0.05558	0.63797	6.97399
	B0->Y (RF)	0.03285	0.55442	6.32965

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	0.00480	0.00476	0.00478
	A1	0.00000	0.00000	0.00000
	A1	0.00411	0.00405	0.00406
	B0	0.00387	0.00378	0.00390

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	0.00115	0.00098	0.00095
	A1	0.00000	0.00000	0.00000
	A1	0.00116	0.00098	0.00100
	B0	-0.00043	-0.00047	-0.00047

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)	-0.00166	-0.00183	-0.00183
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00186	-0.00187	-0.00186
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00186	-0.00187	-0.00186

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)	0.00182	0.00184	0.00183
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00186	0.00188	0.00187
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00190	0.00188	0.00187

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)	-0.00164	-0.00180	-0.00180
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00183	-0.00183	-0.00183
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00197	-0.00198	-0.00199

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)	0.00179	0.00180	0.00180
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00183	0.00184	0.00184
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00198	0.00200	0.00199

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)	-0.00099	-0.00100	-0.00100

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)	0.00112	0.00112	0.00103

SKY130_OSU_SC_15T_HS__AOI22

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00345	0.00359	0.00373	0.00355	0.48956

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__aoi22_l	0.00000	0.02741	0.08652

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)	0.16009	1.22916	12.15640
	A1->Y (FR)	0.14530	1.20415	12.06540
	B0->Y (FR)	0.09808	1.12397	11.81760
	B1->Y (FR)	0.11290	1.15193	11.93880

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)	0.07891	0.64883	6.70609
	A1->Y (RF)	0.07361	0.65942	7.04490
	B0->Y (RF)	0.04386	0.62417	7.00341
	B1->Y (RF)	0.04894	0.61213	6.66541

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	0.00583	0.00578	0.00579
	A1	0.00515	0.00507	0.00507
	B0	0.00409	0.00398	0.00412
	B1	0.00474	0.00465	0.00481

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__aoi22_l	A0	0.00229	0.00214	0.00207
	A1	0.00230	0.00215	0.00212
	B0	-0.00024	-0.00030	-0.00026
	B1	-0.00021	-0.00028	-0.00029

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)	-0.00169	-0.00183	-0.00183
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00186	-0.00187	-0.00186
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00186	-0.00187	-0.00186
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00186	-0.00187	-0.00186

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)	0.00182	0.00184	0.00183
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00187	0.00188	0.00187
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00191	0.00188	0.00187
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00191	0.00188	0.00187

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)	-0.00166	-0.00179	-0.00179
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00182	-0.00184	-0.00183
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00195	-0.00198	-0.00198
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00196	-0.00198	-0.00198

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)	0.00179	0.00180	0.00179
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00183	0.00186	0.00184
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00198	0.00199	0.00199
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00198	0.00199	0.00199

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)	-0.00100	-0.00100	-0.00100
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00100	-0.00100	-0.00100
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00204	-0.00205	-0.00206
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00204	-0.00205	-0.00206

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)	0.00118	0.00118	0.00105
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00100	0.00100	0.00100
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00206	0.00208	0.00207
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00206	0.00208	0.00207

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)	-0.00101	-0.00103	-0.00101
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00101	-0.00101	-0.00101
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00189	-0.00191	-0.00190
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00189	-0.00191	-0.00190

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)	0.00118	0.00118	0.00105
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00101	0.00101	0.00101
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00195	0.00193	0.00191
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00195	0.00193	0.00191

SKY130_OSU_SC_15T_HS__BUFx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00380	1.09986
sky130_osu_sc_15T_hs__buf_2	0.00380	2.18795
sky130_osu_sc_15T_hs__buf_4	0.00379	4.29935
sky130_osu_sc_15T_hs__buf_6	0.00089	1.80000
sky130_osu_sc_15T_hs__buf_8	0.00380	8.26908
sky130_osu_sc_15T_hs__buf_l	0.00306	0.68066

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__buf_1	0.00000	0.04804	0.04804
sky130_osu_sc_15T_hs__buf_2	0.00000	0.07206	0.09130
sky130_osu_sc_15T_hs__buf_4	0.00000	0.12011	0.17783
sky130_osu_sc_15T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_hs__buf_8	0.00000	0.21619	0.35088
sky130_osu_sc_15T_hs__buf_l	0.00000	0.00905	0.00905

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)**	0.08130	0.75707	7.36749
sky130_osu_sc_15T_hs__buf_2	**A->Y (RR)**	0.08907	0.67877	7.57937
sky130_osu_sc_15T_hs__buf_4	**A->Y (RR)**	0.12063	0.67460	8.08094
sky130_osu_sc_15T_hs__buf_8	**A->Y (RR)**	0.18179	0.73028	8.57535
sky130_osu_sc_15T_hs__buf_l	**A->Y (RR)**	0.09209	0.87564	7.43950

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)**	0.09111	0.70979	6.35725
sky130_osu_sc_15T_hs__buf_2	**A->Y (FF)**	0.10856	0.69491	6.71410
sky130_osu_sc_15T_hs__buf_4	**A->Y (FF)**	0.15631	0.73480	7.29852
sky130_osu_sc_15T_hs__buf_8	**A->Y (FF)**	0.25314	0.82895	7.89476
sky130_osu_sc_15T_hs__buf_l	**A->Y (FF)**	0.10809	0.71295	5.47857

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	0.00223	0.00186	0.00301
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00440	0.00417	0.00540
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00918	0.00931	0.01039
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01862	0.01945	0.02054
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00176	0.00146	0.00212

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	0.00567	0.00555	0.00711
sky130_osu_sc_15T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00706	0.00721	0.00868
sky130_osu_sc_15T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01065	0.01139	0.01282
sky130_osu_sc_15T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01782	0.01963	0.02137
sky130_osu_sc_15T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00453	0.00436	0.00527

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
	-0.00039	-0.00039	-0.00039

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
	0.00039	0.00039	0.00039

SKY130_OSU_SC_15T_HS__DFFRx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00355	0.00354	0.01065	1.04590	1.04503
sky130_osu_sc_15T_hs__dffr_l	0.00355	0.00354	0.01065	0.67743	0.67981

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffr_1	0.00000	0.14198	0.22482
sky130_osu_sc_15T_hs__dffr_l	0.00000	0.10186	0.18469

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)	0.50933	1.80263	15.36790
	QN->Q (FR)	0.04678	1.02008	13.45580
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RR)	0.50853	2.00080	15.50980
	QN->Q (FR)	0.05457	1.10489	13.09020

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)	0.46152	1.82740	16.65420
	QN->Q (RF)	0.03017	0.67797	9.03328
	RN->Q (FF)	0.33258	1.84404	18.28030
sky130_osu_sc_15T_hs__dffr_l	CK->Q (RF)	0.47819	2.06987	16.83250
	QN->Q (RF)	0.03479	0.72927	8.87465
	RN->Q (FF)	0.35042	2.08709	18.44850

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)	0.41031	1.12536	7.89069
	RN->QN (FR)	0.28111	1.14267	9.51108
sky130_osu_sc_15T_hs__dffr_l	CK->QN (RR)	0.41469	1.22543	7.94846
	RN->QN (FR)	0.28613	1.24299	9.55605

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)**	0.43330	0.96044	4.91111
sky130_osu_sc_15T_hs__dffr_l	**CK->QN (RF)**	0.41922	0.99199	4.92725

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)	-0.08773	-0.11569	-0.57743
	setup	CK (R)	0.40029	0.41567	1.69440
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.09065	-0.11713	-0.57737
	setup	CK (R)	0.39810	0.41187	1.69910

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)	-0.19120	-0.51195	-4.97289
	setup	CK (R)	0.23355	0.52865	5.03473
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.19390	-0.51374	-4.97328
	setup	CK (R)	0.22944	0.52856	5.03643

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)	-0.08773	-0.11569	-0.57743
	setup	CK (R)	0.40029	0.41567	1.69440
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.09065	-0.11713	-0.57737
	setup	CK (R)	0.39810	0.41187	1.69910

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)	-0.19120	-0.51195	-4.97289
	setup	CK (R)	0.23355	0.52865	5.03473
sky130_osu_sc_15T_hs__dffr_l	hold	CK (R)	-0.19390	-0.51374	-4.97328
	setup	CK (R)	0.22944	0.52856	5.03643

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)	0.34711	0.36402	1.57955
	removal	CK (R)	-0.07780	-0.09281	-0.17624
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.34701	0.36369	1.58103
	removal	CK (R)	-0.07778	-0.09281	-0.17624

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)	0.34711	0.36402	1.57955
	removal	CK (R)	-0.07780	-0.09281	-0.17624
sky130_osu_sc_15T_hs__dffr_l	recovery	CK (R)	0.34701	0.36369	1.58103
	removal	CK (R)	-0.07778	-0.09281	-0.17624

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 ()	0.20605	0.48950	13.33370
	min_pulse_width	RN ()	0.20605	0.48950	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	RN ()	0.20237	0.48950	13.33370
	min_pulse_width	RN ()	0.20237	0.48950	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 ()	0.23918	0.48950	13.33370
	min_pulse_width	CK ()	0.25391	0.48950	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.21709	0.48950	13.33370
	min_pulse_width	CK ()	0.24654	0.48950	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 ()	0.49865	0.57980	13.33370
	min_pulse_width	CK ()	0.19501	0.48950	13.33370
sky130_osu_sc_15T_hs__dffr_l	min_pulse_width	CK ()	0.49645	0.57980	13.33370
	min_pulse_width	CK ()	0.19501	0.48950	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	0.00579	0.00481	0.00000
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00509	0.00433	0.00175

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	0.00637	0.00561	0.00000
	RN	-0.00077	-0.03635	-0.47654
	RN	0.01432	0.01362	0.00742
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00565	0.00512	0.00275
	RN	-0.00077	-0.02801	-0.30865
	RN	0.01360	0.01312	0.01071

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	0.00637	0.00562	0.00000
	RN	-0.00077	-0.03633	-0.47614
	RN	0.01432	0.01362	0.00744
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00565	0.00512	0.00272
	RN	-0.00077	-0.02807	-0.30974
	RN	0.01360	0.01312	0.01066

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	0.00575	0.00477	0.00000
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00505	0.00431	0.00170

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	-0.00156	-0.00180	-0.00182
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00661	0.00626	0.00655
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00299	0.00268	0.00305
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00156	-0.00180	-0.00182
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00661	0.00626	0.00655
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00299	0.00268	0.00305

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	0.00180	0.00182	0.00182
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01086	0.01070	0.01093
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00495	0.00483	0.00514
sky130_osu_sc_15T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00180	0.00182	0.00182
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01086	0.01070	0.01093
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00495	0.00483	0.00514

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)	0.00227	0.00188	0.00306
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00610	0.00556	0.00662
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)	0.00227	0.00189	0.00306
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00610	0.00556	0.00662

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)	0.00519	0.00496	0.00650
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01106	0.01069	0.01197
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)	0.00519	0.00496	0.00650
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01106	0.01068	0.01197

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)	-0.00028	-0.00072	0.00031
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00300	0.00223	0.00314
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00054	-0.00101	0.00009
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00028	-0.00072	0.00031
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00300	0.00223	0.00314
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00054	-0.00101	0.00009

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)	0.00844	0.00816	0.00964
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01722	0.01661	0.01764
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01323	0.01292	0.01411
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01714	0.01657	0.01956
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00919	0.00893	0.01037
sky130_osu_sc_15T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00844	0.00816	0.00964
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01722	0.01661	0.01764
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01323	0.01291	0.01411
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01715	0.01657	0.01956
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00919	0.00895	0.01037

SKY130_OSU_SC_15T_HS__DFFSRx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00350	0.00355	0.00785	0.01089	1.13025	1.12782
sky130_osu_sc_15T_hs__dffsr_l	0.00350	0.00355	0.00784	0.01090	0.67667	0.68093

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__dffsr_1	0.00000	0.17438	0.23054
sky130_osu_sc_15T_hs__dffsr_l	0.00000	0.13426	0.19041

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)	0.48389	1.79686	16.09510
	QN->Q (FR)	0.04135	0.95963	12.93500
	RN->Q (RR)	0.38851	1.71203	16.13920
	SN->Q (FR)	0.36497	1.82933	18.39820
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RR)	0.49815	1.99583	15.57300
	QN->Q (FR)	0.05459	1.10290	13.06470
	RN->Q (RR)	0.40329	1.91214	15.61240
	SN->Q (FR)	0.37910	2.02959	17.84210

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)	0.51186	1.88295	17.17900
	QN->Q (RF)	0.02984	0.69603	9.40922
	RN->Q (FF)	0.34913	1.86641	18.85690
sky130_osu_sc_15T_hs__dffsr_l	CK->Q (RF)	0.53744	2.13433	16.88540
	QN->Q (RF)	0.03474	0.72843	8.86400
	RN->Q (FF)	0.37451	2.11753	18.55280

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)	0.46092	1.16965	7.96426
	RN->QN (FR)	0.29902	1.15324	9.63862
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RR)	0.47243	1.29155	8.03384
	RN->QN (FR)	0.30995	1.27449	9.69543

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)	0.41562	0.95885	5.30634
	RN->QN (RF)	0.32042	0.87546	5.34880
	SN->QN (FF)	0.29708	0.99255	7.60426
sky130_osu_sc_15T_hs__dffsr_l	CK->QN (RF)	0.41293	0.99094	5.02082
	RN->QN (RF)	0.31794	0.90782	5.05938
	SN->QN (FF)	0.29432	1.02518	7.28421

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)	-0.09346	-0.12198	-0.66721
	setup	CK (R)	0.36384	0.37416	1.71392
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.09738	-0.12364	-0.66844
	setup	CK (R)	0.36097	0.37243	1.70922

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)	-0.21779	-0.53491	-5.16139
	setup	CK (R)	0.26619	0.55239	5.21173
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.21874	-0.53682	-5.15996
	setup	CK (R)	0.26709	0.55239	5.21141

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)	-0.09346	-0.12198	-0.66721
	setup	CK (R)	0.36384	0.37416	1.71392
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.09738	-0.12364	-0.66844
	setup	CK (R)	0.36097	0.37243	1.70922

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)	-0.21779	-0.53491	-5.16139
	setup	CK (R)	0.26619	0.55239	5.21173
sky130_osu_sc_15T_hs__dffsr_l	hold	CK (R)	-0.21874	-0.53682	-5.15996
	setup	CK (R)	0.26709	0.55239	5.21141

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)	0.27918	0.29311	1.46149
	removal	CK (R)	-0.03610	-0.04366	-0.11282
	hold	SN (R)	-0.29132	-0.51806	-3.39235
	setup	SN (R)	0.31862	0.56549	5.84984
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.27754	0.29055	1.45853
	removal	CK (R)	-0.03394	-0.04366	-0.10986
	hold	SN (R)	-0.28584	-0.51067	-3.30239
	setup	SN (R)	0.32116	0.55618	5.75314

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)	0.27918	0.29311	1.46149
	removal	CK (R)	-0.03610	-0.04366	-0.11282
	hold	SN (R)	-0.29132	-0.51806	-3.39235
	hold	SN (R)	-0.29416	-0.52053	-3.40875
	setup	SN (R)	0.31862	0.56308	5.69231
	setup	SN (R)	0.31719	0.56549	5.84984
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.27754	0.29055	1.45853
	removal	CK (R)	-0.03394	-0.04366	-0.10986
	hold	SN (R)	-0.29037	-0.51067	-3.30239
	hold	SN (R)	-0.28584	-0.51190	-3.32660
	setup	SN (R)	0.32116	0.55066	5.56008
	setup	SN (R)	0.30071	0.55618	5.75314

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 ()	0.23697	0.50932	13.33370
	min_pulse_width	RN ()	0.24464	0.50932	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	RN ()	0.23598	0.50712	13.33370
	min_pulse_width	RN ()	0.23598	0.50712	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)	0.05977	0.09197	2.97610
	removal	CK (R)	-0.01860	-0.06221	-0.54222
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.05737	0.09141	2.82570
	removal	CK (R)	-0.01860	-0.06221	-0.54222

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)	0.05977	0.09197	2.97610
	removal	CK (R)	-0.01860	-0.06221	-0.54222
sky130_osu_sc_15T_hs__dffsr_l	recovery	CK (R)	0.05737	0.09141	2.82570
	removal	CK (R)	-0.01860	-0.06221	-0.54222

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 ()	0.29219	0.59301	13.33370
	min_pulse_width	SN ()	0.29550	0.59522	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	SN ()	0.29135	0.58200	13.33370
	min_pulse_width	SN ()	0.28017	0.58641	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 ()	0.22078	0.48950	13.33370
	min_pulse_width	CK ()	0.26495	0.48950	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.20973	0.48950	13.33370
	min_pulse_width	CK ()	0.26127	0.48950	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 ()	0.46233	0.54456	13.33370
	min_pulse_width	CK ()	0.23550	0.48950	13.33370
sky130_osu_sc_15T_hs__dffsr_l	min_pulse_width	CK ()	0.46048	0.54236	13.33370
	min_pulse_width	CK ()	0.23182	0.48950	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	0.00708	0.00607	-0.00212
	RN	0.01305	0.01221	0.00215
	SN	-0.00077	-0.03808	-0.51497
	SN	0.01427	0.01347	0.00412
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00645	0.00574	0.00332
	RN	0.01241	0.01188	0.00846
	SN	-0.00077	-0.02799	-0.30831
	SN	0.01363	0.01314	0.00954

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	0.00746	0.00700	0.00341
	RN	-0.00077	-0.03808	-0.51497
	RN	0.01499	0.01447	0.01082
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00681	0.00633	0.00400
	RN	-0.00077	-0.02799	-0.30831
	RN	0.01431	0.01379	0.01140

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	0.00746	0.00700	0.00343
	RN	-0.00077	-0.03803	-0.51386
	RN	0.01498	0.01447	0.01086
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00681	0.00634	0.00397
	RN	-0.00077	-0.02810	-0.31025
	RN	0.01431	0.01379	0.01139

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	0.00704	0.00603	-0.00217
	RN	0.01301	0.01217	0.00316
	SN	-0.00077	-0.03803	-0.51383
	SN	0.01423	0.01343	0.00409
sky130_osu_sc_15T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00641	0.00570	0.00314
	RN	0.01236	0.01183	0.00855
	SN	-0.00077	-0.02810	-0.31023
	SN	0.01359	0.01309	0.00943

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	-0.00177	-0.00180	-0.00181
	(!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)	0.00844	0.00811	0.00843
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00340	0.00310	0.00343
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00338	0.00308	0.00343
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00342	0.00312	0.00346
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00177	-0.00181	-0.00181
	(!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)	0.00844	0.00811	0.00843
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00340	0.00310	0.00343
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00338	0.00308	0.00343
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00342	0.00312	0.00346

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	0.00184	0.00183	0.00181
	(!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)	0.01266	0.01250	0.01259
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00535	0.00525	0.00558
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00539	0.00527	0.00557
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00532	0.00522	0.00553
sky130_osu_sc_15T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00184	0.00183	0.00181
	(!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)	0.01265	0.01249	0.01259
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00535	0.00525	0.00557
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00538	0.00527	0.00557
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00531	0.00521	0.00553

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)	0.00223	0.00186	0.00289
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00747	0.00694	0.00784
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)	0.00223	0.00186	0.00289
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00747	0.00694	0.00784

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)	0.00566	0.00546	0.00705
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01177	0.01134	0.01263
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)	0.00565	0.00545	0.00704
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01176	0.01133	0.01262

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)	-0.00417	-0.00421	-0.00422
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00426	-0.00453	-0.00453
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00415	-0.00430	-0.00429
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00281	0.00245	0.00296
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)	-0.00418	-0.00421	-0.00422
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00425	-0.00451	-0.00451
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00415	-0.00430	-0.00428
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00281	0.00246	0.00297

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)	0.00421	0.00424	0.00423
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00452	0.00455	0.00453
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00429	0.00432	0.00430
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00882	0.00862	0.00883
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)	0.00421	0.00424	0.00423
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00450	0.00453	0.00452
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00428	0.00431	0.00429
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00881	0.00861	0.00883

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)	-0.00030	-0.00072	0.00031
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00354	0.00282	0.00375
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00348	0.00277	0.00369
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00042	-0.00090	0.00020
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00271	0.00185	0.00414
sky130_osu_sc_15T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00030	-0.00072	0.00031
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00354	0.00281	0.00374
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00347	0.00276	0.00368
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00042	-0.00090	0.00020
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00271	0.00185	0.00414

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)	0.01918	0.01859	0.01958
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00847	0.00818	0.00968
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01349	0.01320	0.01443
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01354	0.01323	0.01444
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01889	0.01826	0.02107
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00911	0.00885	0.01029
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01098	0.01050	0.01357
sky130_osu_sc_15T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01918	0.01859	0.01963
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00847	0.00818	0.00968
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01349	0.01320	0.01443
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01354	0.01323	0.01444
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01889	0.01826	0.02106
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00911	0.00885	0.01029
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01097	0.01049	0.01356

SKY130_OSU_SC_15T_HS__DFFSx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00353	0.00624	0.01067	1.04776	1.04367
sky130_osu_sc_15T_hs__dffs_l	0.00353	0.00623	0.01067	0.68506	0.68671

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dffs_1	0.00000	0.12476	0.17946
sky130_osu_sc_15T_hs__dffs_l	0.00000	0.08463	0.13933

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)	0.35897	1.63064	15.20850
	QN->Q (FR)	0.04685	1.01729	13.41580
	SN->Q (FR)	0.28442	1.73954	17.46010
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RR)	0.36889	1.85380	15.51480
	QN->Q (FR)	0.05459	1.10547	13.13830
	SN->Q (FR)	0.29237	1.95796	17.71770

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)	0.52424	1.89522	16.71080
	QN->Q (RF)	0.03002	0.67489	9.01600
sky130_osu_sc_15T_hs__dffs_l	CK->Q (RF)	0.53757	2.14194	17.04890
	QN->Q (RF)	0.03467	0.72998	8.90568

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)	0.47010	1.19309	7.92834
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RR)	0.47134	1.29234	8.06611

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)	0.29236	0.79323	4.75107
	SN->QN (FF)	0.21677	0.90333	7.00455
sky130_osu_sc_15T_hs__dffs_l	CK->QN (RF)	0.28872	0.84225	4.82715
	SN->QN (FF)	0.21120	0.94874	7.02926

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)	-0.06534	-0.09586	-0.53260
	setup	CK (R)	0.25392	0.27714	1.65367
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.06634	-0.09474	-0.53295
	setup	CK (R)	0.25304	0.27816	1.65758

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)	-0.19966	-0.51561	-5.01924
	setup	CK (R)	0.26652	0.53849	5.06959
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.19843	-0.51511	-5.01934
	setup	CK (R)	0.26525	0.53849	5.06941

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)	-0.06534	-0.09586	-0.53260
	setup	CK (R)	0.25392	0.27714	1.65367
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.06634	-0.09474	-0.53295
	setup	CK (R)	0.25304	0.27816	1.65758

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)	-0.19966	-0.51561	-5.01924
	setup	CK (R)	0.26652	0.53849	5.06959
sky130_osu_sc_15T_hs__dffs_l	hold	CK (R)	-0.19843	-0.51511	-5.01934
	setup	CK (R)	0.26525	0.53849	5.06941

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)	0.08358	0.12030	2.35577
	removal	CK (R)	-0.03193	-0.08296	-0.76543
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.08334	0.12311	2.14436
	removal	CK (R)	-0.03193	-0.08296	-0.76543

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)	0.08358	0.12030	2.35577
	removal	CK (R)	-0.03193	-0.08296	-0.76543
sky130_osu_sc_15T_hs__dffs_l	recovery	CK (R)	0.08334	0.12311	2.14436
	removal	CK (R)	-0.03193	-0.08296	-0.76543

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 ()	0.19816	0.57980	13.33370
	min_pulse_width	SN ()	0.20255	0.57980	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	SN ()	0.19536	0.56438	13.33370
	min_pulse_width	SN ()	0.19248	0.56879	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 ()	0.15083	0.48950	13.33370
	min_pulse_width	CK ()	0.26863	0.48950	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.13979	0.48950	13.33370
	min_pulse_width	CK ()	0.25759	0.48950	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 ()	0.35330	0.48950	13.33370
	min_pulse_width	CK ()	0.23918	0.48950	13.33370
sky130_osu_sc_15T_hs__dffs_l	min_pulse_width	CK ()	0.35330	0.48950	13.33370
	min_pulse_width	CK ()	0.23550	0.48950	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	0.00582	0.00481	0.00000
	SN	-0.00077	-0.03639	-0.47739
	SN	0.01216	0.01127	0.00330
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00511	0.00434	0.00187
	SN	-0.00077	-0.02820	-0.31213
	SN	0.01144	0.01082	0.00764

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	0.00633	0.00562	0.00000
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00562	0.00513	0.00278

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	0.00633	0.00562	0.00000
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00562	0.00513	0.00278

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	0.00578	0.00479	0.00000
	SN	-0.00077	-0.03630	-0.47548
	SN	0.01212	0.01124	0.00332
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00507	0.00432	0.00175
	SN	-0.00077	-0.02824	-0.31286
	SN	0.01140	0.01078	0.00756

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	-0.00180	-0.00184	-0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00636	0.00599	0.00623
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00293	0.00261	0.00297
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00180	-0.00184	-0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00635	0.00599	0.00623
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00293	0.00261	0.00297

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	0.00187	0.00186	0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01072	0.01054	0.01074
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00506	0.00494	0.00529
sky130_osu_sc_15T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00187	0.00186	0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01072	0.01054	0.01074
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00506	0.00494	0.00529

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)	-0.00304	-0.00307	-0.00307
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00236	0.00205	0.00244
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)	-0.00304	-0.00307	-0.00307
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00236	0.00205	0.00245

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)	0.00308	0.00309	0.00308
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00620	0.00593	0.00648
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)	0.00308	0.00309	0.00307
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00619	0.00593	0.00647

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)	-0.00031	-0.00074	0.00029
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00051	-0.00098	0.00012
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00222	0.00137	0.00373
sky130_osu_sc_15T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00031	-0.00074	0.00029
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00051	-0.00098	0.00012
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00222	0.00137	0.00373

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)	0.01703	0.01643	0.01747
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00845	0.00817	0.00965
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01693	0.01626	0.01923
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00916	0.00891	0.01033
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01064	0.01013	0.01329
sky130_osu_sc_15T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01703	0.01643	0.01747
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00845	0.00817	0.00965
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01693	0.01626	0.01923
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00916	0.00891	0.01033
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01064	0.01016	0.01329

SKY130_OSU_SC_15T_HS__DFFx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00369	0.01060	1.13440	1.13787
sky130_osu_sc_15T_hs__dff_l	0.00369	0.01060	0.63633	0.63611

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__dff_1	0.00000	0.15832	0.19097
sky130_osu_sc_15T_hs__dff_l	0.00000	0.11933	0.15197

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)	0.29324	1.57801	15.85300
	QN->Q (FR)	0.04109	0.95915	12.92930
sky130_osu_sc_15T_hs__dff_l	CK->Q (RR)	0.30520	1.61928	13.18690
	QN->Q (FR)	0.06234	1.16764	13.56770

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)	0.42697	1.79018	17.09890
	QN->Q (RF)	0.02974	0.69505	9.40947
sky130_osu_sc_15T_hs__dff_l	CK->Q (RF)	0.45828	1.95260	15.34650
	QN->Q (RF)	0.02994	0.63504	7.77459

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)	0.37827	1.07851	7.90154
sky130_osu_sc_15T_hs__dff_l	CK->QN (RR)	0.39962	1.22604	7.91469

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)	0.23385	0.74339	5.06695
sky130_osu_sc_15T_hs__dff_l	CK->QN (RF)	0.22896	0.68526	3.62569

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)	-0.06094	-0.09216	-0.56085
	setup	CK (R)	0.19103	0.21863	1.67838
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.06437	-0.09469	-0.56476
	setup	CK (R)	0.18968	0.21654	1.67809

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)	-0.18103	-0.51470	-5.03818
	setup	CK (R)	0.22058	0.53503	5.09712
sky130_osu_sc_15T_hs__dff_l	hold	CK (R)	-0.18246	-0.51443	-5.04012
	setup	CK (R)	0.22000	0.53503	5.09500

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 ()	0.12507	0.48950	13.33370
	min_pulse_width	CK ()	0.23550	0.48950	13.33370
sky130_osu_sc_15T_hs__dff_l	min_pulse_width	CK ()	0.12138	0.48950	13.33370
	min_pulse_width	CK ()	0.22814	0.48950	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 ()**	0.29072	0.48950	13.33370
	min_pulse_width	**CK ()**	0.17660	0.48950	13.33370
sky130_osu_sc_15T_hs__dff_l	**min_pulse_width**	**CK ()**	0.29072	0.48950	13.33370
	min_pulse_width	**CK ()**	0.17660	0.48950	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	0.00618	0.00503	-0.00251
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00568	0.00479	0.00175

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	0.00647	0.00599	0.00251
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00593	0.00532	0.00161

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	0.00647	0.00599	0.00249
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00594	0.00532	0.00164

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	0.00614	0.00499	-0.00249
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00563	0.00474	0.00158

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	-0.00155	-0.00180	-0.00181
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00613	0.00579	0.00604
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00155	-0.00180	-0.00181
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00613	0.00579	0.00605

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	0.00180	0.00181	0.00181
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01119	0.01097	0.01117
sky130_osu_sc_15T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00180	0.00181	0.00181
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01119	0.01097	0.01117

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)	-0.00031	-0.00073	0.00030
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00050	-0.00097	0.00013
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00031	-0.00073	0.00030
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00050	-0.00097	0.00013

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)	0.00840	0.00812	0.00961
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01681	0.01620	0.01731
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01725	0.01660	0.01957
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00910	0.00885	0.01028
sky130_osu_sc_15T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00840	0.00813	0.00961
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01681	0.01621	0.01732
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01726	0.01660	0.01957
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00910	0.00885	0.01028

SKY130_OSU_SC_15T_HS__INVx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00358	1.07939
sky130_osu_sc_15T_hs__inv_10	0.03269	10.14419
sky130_osu_sc_15T_hs__inv_2	0.00674	2.15640
sky130_osu_sc_15T_hs__inv_3	0.01002	3.11160
sky130_osu_sc_15T_hs__inv_4	0.01322	4.18854
sky130_osu_sc_15T_hs__inv_6	0.01980	6.28502
sky130_osu_sc_15T_hs__inv_8	0.02623	8.27911
sky130_osu_sc_15T_hs__inv_l	0.00281	0.62600

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__inv_1	0.00000	0.02402	0.04326
sky130_osu_sc_15T_hs__inv_10	0.00000	0.24021	0.43262
sky130_osu_sc_15T_hs__inv_2	0.00000	0.04804	0.08652
sky130_osu_sc_15T_hs__inv_3	0.00000	0.07206	0.12979
sky130_osu_sc_15T_hs__inv_4	0.00000	0.09608	0.17305
sky130_osu_sc_15T_hs__inv_6	0.00000	0.14413	0.25957
sky130_osu_sc_15T_hs__inv_8	0.00000	0.19217	0.34609
sky130_osu_sc_15T_hs__inv_l	0.00000	0.00453	0.00693

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)**	0.03985	0.90098	12.06020
sky130_osu_sc_15T_hs__inv_10	**A->Y (FR)**	0.05036	0.62223	12.09420
sky130_osu_sc_15T_hs__inv_2	**A->Y (FR)**	0.03075	0.77842	12.04150
sky130_osu_sc_15T_hs__inv_3	**A->Y (FR)**	0.03340	0.72630	12.02710
sky130_osu_sc_15T_hs__inv_4	**A->Y (FR)**	0.03346	0.69272	12.02130
sky130_osu_sc_15T_hs__inv_6	**A->Y (FR)**	0.03643	0.65462	12.11780
sky130_osu_sc_15T_hs__inv_8	**A->Y (FR)**	0.04320	0.63300	12.10350
sky130_osu_sc_15T_hs__inv_l	**A->Y (FR)**	0.05546	1.04197	12.16030

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)**	0.02702	0.62538	8.39003
sky130_osu_sc_15T_hs__inv_10	**A->Y (RF)**	0.03593	0.42847	8.42401
sky130_osu_sc_15T_hs__inv_2	**A->Y (RF)**	0.02169	0.54833	8.41162
sky130_osu_sc_15T_hs__inv_3	**A->Y (RF)**	0.02327	0.51631	8.45041
sky130_osu_sc_15T_hs__inv_4	**A->Y (RF)**	0.02267	0.49053	8.44707
sky130_osu_sc_15T_hs__inv_6	**A->Y (RF)**	0.02646	0.46094	8.50896
sky130_osu_sc_15T_hs__inv_8	**A->Y (RF)**	0.03154	0.44087	8.49277
sky130_osu_sc_15T_hs__inv_l	**A->Y (RF)**	0.02755	0.58659	7.12043

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	0.00291	0.00288	0.00310
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02454	0.02520	0.02749
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00513	0.00516	0.00564
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00788	0.00741	0.00862
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01012	0.01025	0.01116
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01499	0.01487	0.01650
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01975	0.01946	0.02211
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00226	0.00222	0.00233

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	-0.00050	-0.00054	-0.00048
sky130_osu_sc_15T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	-0.00944	-0.00911	-0.00739
sky130_osu_sc_15T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00173	-0.00172	-0.00155
sky130_osu_sc_15T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00226	-0.00227	-0.00195
sky130_osu_sc_15T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00357	-0.00348	-0.00303
sky130_osu_sc_15T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00541	-0.00533	-0.00451
sky130_osu_sc_15T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	-0.00738	-0.00721	-0.00593
sky130_osu_sc_15T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00031	-0.00035	-0.00033

SKY130_OSU_SC_15T_HS__MUX2

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.08410	0.08395	0.00733	0.07882

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_hs__mux2_1	0.00000	0.04811	0.04811

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)	-	0.02053	0.33933	3.00565
	A1->Y (RR)	-	0.02372	0.34196	3.01031
	S0->Y (RR)	(!A0 * A1)	0.06447	0.32924	0.98864
	S0->Y (FR)	(A0 * !A1)	0.04837	0.47674	3.39186

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)	-	0.02127	0.28018	2.36402
	A1->Y (FF)	-	0.01905	0.27735	2.35006
	S0->Y (FF)	(!A0 * A1)	0.09079	0.45676	2.52237
	S0->Y (RF)	(A0 * !A1)	0.02999	0.31118	1.90352

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	-	-0.00308	-0.00309	-0.00309
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00216	-0.00217	-0.00217
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00362	0.00346	0.00520
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00198	-0.00239	-0.00104

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	-	0.00308	0.00309	0.00310
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00216	0.00217	0.00217
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00071	0.00031	0.00173
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00785	0.00767	0.00927

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)	-0.00081	-0.00081	-0.00081

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)	0.00081	0.00081	0.00081

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)	-0.00096	-0.00096	-0.00096

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)	0.00096	0.00096	0.00096

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)	-0.00065	-0.00105	0.00035
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00063	-0.00105	0.00035

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)	0.00594	0.00579	0.00740
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00553	0.00541	0.00710

SKY130_OSU_SC_15T_HS__NAND2x

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00358	0.00357	1.07707
sky130_osu_sc_15T_hs__nand2_l	0.00281	0.00282	0.62257

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nand2_1	0.00000	0.02395	0.08652
sky130_osu_sc_15T_hs__nand2_l	0.00000	0.00456	0.01386

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)	0.04159	0.90704	12.10060
	B->Y (FR)	0.04782	0.90484	11.95110
sky130_osu_sc_15T_hs__nand2_l	A->Y (FR)	0.05720	1.04537	12.15500
	B->Y (FR)	0.06770	1.05435	12.13890

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)	0.04147	0.80890	10.68170
	B->Y (RF)	0.04663	0.79715	10.39180
sky130_osu_sc_15T_hs__nand2_l	A->Y (RF)	0.04228	0.75477	8.82474
	B->Y (RF)	0.04723	0.73301	8.39716

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	0.00308	0.00289	0.00322
	B	0.00000	0.00000	0.00000
	B	0.00376	0.00371	0.00391
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00237	0.00233	0.00243
	B	0.00000	0.00000	0.00000
	B	0.00295	0.00289	0.00300

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	-0.00029	-0.00035	-0.00030
	B	0.00000	0.00000	0.00000
	B	-0.00027	-0.00032	-0.00031
sky130_osu_sc_15T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00020	-0.00024	-0.00022
	B	0.00000	0.00000	0.00000
	B	-0.00018	-0.00023	-0.00022

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)	-0.00206	-0.00207	-0.00208
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00144	-0.00145	-0.00146

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)	0.00208	0.00213	0.00209
sky130_osu_sc_15T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00146	0.00147	0.00147

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)	-0.00193	-0.00194	-0.00193
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00134	-0.00135	-0.00134

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)	0.00197	0.00195	0.00194
sky130_osu_sc_15T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00137	0.00136	0.00135

SKY130_OSU_SC_15T_HS__NOR2x

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00355	0.00384	0.52048
sky130_osu_sc_15T_hs__nor2_l	0.00272	0.00304	0.32320

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__nor2_1	0.00000	0.01875	0.04326
sky130_osu_sc_15T_hs__nor2_l	0.00000	0.00384	0.00693

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)	0.09704	1.14650	12.17850
	B->Y (FR)	0.07690	1.09718	11.91270
sky130_osu_sc_15T_hs__nor2_l	A->Y (FR)	0.12343	1.30628	12.12500
	B->Y (FR)	0.10590	1.26753	12.01240

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)	0.03462	0.52297	5.93938
	B->Y (RF)	0.02842	0.51194	5.92085
sky130_osu_sc_15T_hs__nor2_l	A->Y (RF)	0.03269	0.50089	5.23890
	B->Y (RF)	0.02883	0.49297	5.22365

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	0.00395	0.00391	0.00393
	B	0.00000	0.00000	0.00000
	B	0.00313	0.00305	0.00321
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00291	0.00287	0.00287
	B	0.00000	0.00000	0.00000
	B	0.00242	0.00234	0.00245

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	0.00051	0.00036	0.00040
	B	0.00000	0.00000	0.00000
	B	-0.00041	-0.00043	-0.00039
sky130_osu_sc_15T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00032	0.00022	0.00024
	B	0.00000	0.00000	0.00000
	B	-0.00023	-0.00025	-0.00025

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)	-0.00156	-0.00181	-0.00182
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00107	-0.00121	-0.00121

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)	0.00181	0.00183	0.00182
sky130_osu_sc_15T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00120	0.00122	0.00121

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)	-0.00100	-0.00100	-0.00100
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00066	-0.00067	-0.00065

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)	0.00107	0.00107	0.00103
sky130_osu_sc_15T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00069	0.00069	0.00067

SKY130_OSU_SC_15T_HS__OAI21

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00360	0.00367	0.00304	0.51891

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai21_l	0.00000	0.01365	0.05019

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)	0.10588	1.14204	12.07500
	A1->Y (FR)	0.13133	1.19684	12.34740
	B0->Y (FR)	0.06686	0.95347	10.69550

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)	0.05577	0.64319	6.98179
	A1->Y (RF)	0.06532	0.64081	6.87919
	B0->Y (RF)	0.04484	0.66090	7.49645

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	0.00417	0.00409	0.00423
	A1	0.00000	0.00000	0.00000
	A1	0.00502	0.00496	0.00494
	B0	0.00342	0.00333	0.00340

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	0.00021	0.00016	0.00016
	A1	0.00000	0.00000	0.00000
	A1	0.00115	0.00099	0.00099
	B0	0.00156	0.00149	0.00151

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)	-0.00100	-0.00103	-0.00101
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00180	-0.00183	-0.00183
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00187	-0.00188	-0.00188

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)	0.00107	0.00109	0.00103
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00182	0.00183	0.00183
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00188	0.00191	0.00188

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)	-0.00152	-0.00177	-0.00178
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00177	-0.00182	-0.00181
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00184	-0.00186	-0.00185

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)	0.00177	0.00178	0.00178
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00181	0.00182	0.00181
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00186	0.00188	0.00185

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)	-0.00146	-0.00147	-0.00150

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)	0.00150	0.00151	0.00151

SKY130_OSU_SC_15T_HS__OAI22

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00346	0.00369	0.00380	0.00370	0.52826

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__oai22_l	0.00000	0.02784	0.08652

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)	0.14024	1.19967	12.34110
	A1->Y (FR)	0.11883	1.14808	12.07540
	B0->Y (FR)	0.08522	1.11396	12.04890
	B1->Y (FR)	0.10828	1.16615	12.31610

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)	0.08818	0.68932	7.11808
	A1->Y (RF)	0.07220	0.66814	7.07127
	B0->Y (RF)	0.06146	0.68465	7.58733
	B1->Y (RF)	0.07808	0.70814	7.66323

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	0.00641	0.00636	0.00637
	A1	0.00553	0.00544	0.00558
	B0	0.00417	0.00409	0.00425
	B1	0.00508	0.00503	0.00503

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_hs__oai22_l	A0	0.00178	0.00164	0.00160
	A1	0.00092	0.00086	0.00082
	B0	0.00092	0.00086	0.00086
	B1	0.00180	0.00165	0.00165

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)	-0.00156	-0.00181	-0.00182
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00156	-0.00181	-0.00182
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00178	-0.00183	-0.00182
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00186	-0.00186	-0.00185

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)	0.00181	0.00183	0.00182
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00181	0.00183	0.00182
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00181	0.00183	0.00182
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00187	0.00187	0.00186

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)	-0.00100	-0.00099	-0.00100
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00099	-0.00099	-0.00100
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00177	-0.00180	-0.00180
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00184	-0.00185	-0.00184

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)	0.00106	0.00106	0.00102
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00106	0.00106	0.00102
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00179	0.00180	0.00180
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00184	0.00185	0.00185

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)	-0.00098	-0.00099	-0.00099
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00098	-0.00099	-0.00099
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00197	-0.00200	-0.00200
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00199	-0.00198	-0.00204

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)	0.00105	0.00106	0.00101
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00105	0.00106	0.00101
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00200	0.00200	0.00200
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00204	0.00206	0.00205

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)	-0.00153	-0.00177	-0.00179
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00153	-0.00177	-0.00179
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00201	-0.00206	-0.00205
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00203	-0.00204	-0.00209

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)	0.00178	0.00180	0.00179
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00178	0.00179	0.00179
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00205	0.00207	0.00205
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00208	0.00210	0.00209

SKY130_OSU_SC_15T_HS__OR2x

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00391	0.00367	1.10262
sky130_osu_sc_15T_hs__or2_2	0.00391	0.00367	2.18591
sky130_osu_sc_15T_hs__or2_4	0.00391	0.00367	4.25388
sky130_osu_sc_15T_hs__or2_8	0.00390	0.00368	8.21503
sky130_osu_sc_15T_hs__or2_l	0.00312	0.00287	0.63303

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__or2_1	0.00000	0.03316	0.05282
sky130_osu_sc_15T_hs__or2_2	0.00000	0.04756	0.09608
sky130_osu_sc_15T_hs__or2_4	0.00000	0.07636	0.18261
sky130_osu_sc_15T_hs__or2_8	0.00000	0.13396	0.35566
sky130_osu_sc_15T_hs__or2_l	0.00000	0.00716	0.01117

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)	0.09274	0.79287	7.55209
	B->Y (RR)	0.08310	0.76283	7.38980
sky130_osu_sc_15T_hs__or2_2	A->Y (RR)	0.10111	0.71014	7.72738
	B->Y (RR)	0.09102	0.68625	7.59538
sky130_osu_sc_15T_hs__or2_4	A->Y (RR)	0.13298	0.69968	8.14697
	B->Y (RR)	0.12264	0.67766	8.04676
sky130_osu_sc_15T_hs__or2_8	A->Y (RR)	0.19430	0.74896	8.69369
	B->Y (RR)	0.18348	0.73435	8.61038
sky130_osu_sc_15T_hs__or2_l	A->Y (RR)	0.10378	0.92231	7.57017
	B->Y (RR)	0.09618	0.89725	7.42680

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)	0.18352	0.84608	7.02871
	B->Y (FF)	0.15480	0.78939	6.54333
sky130_osu_sc_15T_hs__or2_2	A->Y (FF)	0.22551	0.84650	7.39422
	B->Y (FF)	0.19687	0.79876	6.91983
sky130_osu_sc_15T_hs__or2_4	A->Y (FF)	0.32550	0.93692	7.98262
	B->Y (FF)	0.29687	0.88463	7.55012
sky130_osu_sc_15T_hs__or2_8	A->Y (FF)	0.52450	1.14972	8.68601
	B->Y (FF)	0.49576	1.09345	8.33360
sky130_osu_sc_15T_hs__or2_l	A->Y (FF)	0.22392	0.84615	5.87795
	B->Y (FF)	0.19124	0.79956	5.47516

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	0.00327	0.00287	0.00365
	B	0.00000	0.00000	0.00000
	B	0.00237	0.00207	0.00324
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00545	0.00523	0.00607
	B	0.00000	0.00000	0.00000
	B	0.00452	0.00473	0.00571
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01023	0.01036	0.01114
	B	0.00000	0.00000	0.00000
	B	0.00930	0.00966	0.01086
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01975	0.02048	0.02157
	B	0.00000	0.00000	0.00000
	B	0.01874	0.01993	0.02127
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00243	0.00213	0.00258
	B	0.00000	0.00000	0.00000
	B	0.00186	0.00163	0.00224

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	0.00668	0.00660	0.00688
	B	0.00000	0.00000	0.00000
	B	0.00564	0.00564	0.00721
sky130_osu_sc_15T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00806	0.00833	0.00857
	B	0.00000	0.00000	0.00000
	B	0.00703	0.00734	0.00879
sky130_osu_sc_15T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01160	0.01253	0.01288
	B	0.00000	0.00000	0.00000
	B	0.01056	0.01143	0.01290
sky130_osu_sc_15T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01894	0.02051	0.02151
	B	0.00000	0.00000	0.00000
	B	0.01813	0.01941	0.02135
sky130_osu_sc_15T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00520	0.00503	0.00521
	B	0.00000	0.00000	0.00000
	B	0.00447	0.00440	0.00527

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)	-0.00158	-0.00182	-0.00184
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00158	-0.00182	-0.00184
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00158	-0.00182	-0.00184
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00158	-0.00182	-0.00184
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00108	-0.00122	-0.00123

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)	0.00183	0.00183	0.00184
sky130_osu_sc_15T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00183	0.00183	0.00184
sky130_osu_sc_15T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00183	0.00183	0.00184
sky130_osu_sc_15T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00183	0.00183	0.00184
sky130_osu_sc_15T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00122	0.00123	0.00123

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)	-0.00100	-0.00103	-0.00101
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00100	-0.00103	-0.00101
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00100	-0.00103	-0.00101
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00100	-0.00103	-0.00101
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00067	-0.00068	-0.00067

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)	0.00108	0.00109	0.00103
sky130_osu_sc_15T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00108	0.00109	0.00103
sky130_osu_sc_15T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00108	0.00109	0.00103
sky130_osu_sc_15T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00108	0.00109	0.00103
sky130_osu_sc_15T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00071	0.00072	0.00068

SKY130_OSU_SC_15T_HS__TBUFIx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00382	0.00482	0.52348
sky130_osu_sc_15T_hs__tbufi_l	0.00304	0.00396	0.32848

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tbufi_1	0.00000	0.02624	0.08653
sky130_osu_sc_15T_hs__tbufi_l	0.00000	0.00549	0.01386

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)	0.07298	1.09211	11.90770
	OE->Y (FR)	0.06213	0.35550	4.01332
	OE->Y (RR)	0.12295	0.97545	7.54841
sky130_osu_sc_15T_hs__tbufi_l	A->Y (FR)	0.10160	1.27319	12.13280
	OE->Y (FR)	0.07576	0.38604	4.01317
	OE->Y (RR)	0.14204	1.14288	7.68489

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)	0.04009	0.63282	7.23363
	OE->Y (FF)	0.06316	0.35879	4.01331
	OE->Y (RF)	0.03831	0.61350	6.88721
sky130_osu_sc_15T_hs__tbufi_l	A->Y (RF)	0.04171	0.61338	6.40954
	OE->Y (FF)	0.07663	0.38811	4.01309
	OE->Y (RF)	0.04005	0.58547	5.97168

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	0.00296	0.00288	0.00305
	OE	0.00000	0.00000	0.00000
	OE	0.00288	0.00250	0.00395
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00228	0.00219	0.00228
	OE	0.00000	0.00000	0.00000
	OE	0.00209	0.00179	0.00260

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	-0.00040	-0.00044	-0.00040
	OE	0.00000	0.00000	0.00000
	OE	0.00209	0.00170	0.00320
sky130_osu_sc_15T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00025	-0.00025
	OE	0.00000	0.00000	0.00000
	OE	0.00141	0.00111	0.00193

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)	-0.00158	-0.00160	-0.00159
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00146	-0.00147	-0.00146
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00114	-0.00114	-0.00114
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00106	-0.00107	-0.00105

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)	0.00158	0.00160	0.00159
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00150	0.00151	0.00149
sky130_osu_sc_15T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00114	0.00114	0.00114
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00108	0.00108	0.00106

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)	0.00121	0.00083	0.00234
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00109	0.00075	0.00220
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00080	0.00053	0.00132
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00071	0.00042	0.00123

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)	0.00352	0.00320	0.00489
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00357	0.00326	0.00496
sky130_osu_sc_15T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00279	0.00253	0.00348
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00285	0.00259	0.00354

SKY130_OSU_SC_15T_HS__TNBUFIx

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00381	0.00590	0.52349
sky130_osu_sc_15T_hs__tnbufi_l	0.00303	0.00438	0.32704

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__tnbufi_1	0.00000	0.03907	0.04804
sky130_osu_sc_15T_hs__tnbufi_l	0.00000	0.00709	0.00905

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)	0.07401	1.09214	11.90770
	OE->Y (RR)	0.03159	0.28669	4.01374
	OE->Y (FR)	0.08989	1.13712	12.16820
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (FR)	0.10248	1.27069	12.10080
	OE->Y (RR)	0.03138	0.28667	4.01377
	OE->Y (FR)	0.11397	1.30443	12.21320

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)	0.03932	0.63222	7.23374
	OE->Y (RF)	0.03129	0.28668	4.01383
	OE->Y (FF)	0.07663	0.65798	5.07542
sky130_osu_sc_15T_hs__tnbufi_l	A->Y (RF)	0.04073	0.61214	6.39533
	OE->Y (RF)	0.03111	0.28667	4.01378
	OE->Y (FF)	0.09194	0.66963	4.51289

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	0.00305	0.00298	0.00314
	OE	0.00000	0.00000	0.00000
	OE	0.00716	0.00706	0.00909
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00237	0.00229	0.00238
	OE	0.00000	0.00000	0.00000
	OE	0.00541	0.00529	0.00642

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	-0.00053	-0.00055	-0.00051
	OE	0.00000	0.00000	0.00000
	OE	0.00648	0.00638	0.00824
sky130_osu_sc_15T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00035	-0.00037	-0.00036
	OE	0.00000	0.00000	0.00000
	OE	0.00483	0.00470	0.00575

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)	-0.00135	-0.00136	-0.00135
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00124	-0.00124	-0.00124
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00091	-0.00092	-0.00092
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00084	-0.00085	-0.00084

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)	0.00135	0.00136	0.00135
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00127	0.00128	0.00126
sky130_osu_sc_15T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00091	0.00092	0.00092
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00086	0.00085	0.00084

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)	-0.00204	-0.00256	-0.00101
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00202	-0.00256	-0.00099
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00130	-0.00173	-0.00087
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00129	-0.00169	-0.00087

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)	0.00547	0.00540	0.00734
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00539	0.00531	0.00723
sky130_osu_sc_15T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00411	0.00400	0.00509
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00405	0.00393	0.00502

SKY130_OSU_SC_15T_HS__XNOR2

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00757	0.00665	0.53982

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xnor2_l	0.00000	0.08441	0.13457

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	0.15458	1.03158	7.87813
	A->Y (FR)	!B	0.09387	1.12450	12.10660
	B->Y (RR)	A	0.12338	0.99721	7.79716
	B->Y (FR)	!A	0.11943	1.17499	12.36970

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	0.12962	0.76119	5.55609
	A->Y (RF)	!B	0.05458	0.63236	7.00412
	B->Y (FF)	A	0.11645	0.74591	5.54013
	B->Y (RF)	!A	0.06481	0.64672	7.01934

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	0.00273	0.00228	0.00361
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00712	0.00685	0.00875
	B	A	0.00000	0.00000	0.00000
	B	A	0.00111	0.00080	0.00226
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00759	0.00739	0.00923

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	0.00911	0.00872	0.01029
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00211	0.00167	0.00307
	B	A	0.00000	0.00000	0.00000
	B	A	0.00810	0.00802	0.00974
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00290	0.00240	0.00380

SKY130_OSU_SC_15T_HS__XOR2

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00759	0.00670	0.51701

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_hs__xor2_1	0.00000	0.08441	0.12823

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	0.14950	1.00463	7.60166
	A->Y (FR)	B	0.11548	1.15822	12.15250
	B->Y (RR)	!A	0.12894	0.99248	7.59647
	B->Y (FR)	A	0.12265	1.16740	12.15710

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	0.12181	0.74525	5.42802
	A->Y (RF)	B	0.05477	0.65359	7.21455
	B->Y (FF)	!A	0.11477	0.73848	5.41184
	B->Y (RF)	A	0.06311	0.63966	6.87069

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	0.00835	0.00810	0.00994
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00145	0.00076	0.00212
	B	A	0.00000	0.00000	0.00000
	B	A	0.00841	0.00823	0.01006
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00102	0.00067	0.00212

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	0.00203	0.00145	0.00283
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00925	0.00907	0.01071
	B	A	0.00000	0.00000	0.00000
	B	A	0.00204	0.00151	0.00289
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00826	0.00820	0.00992

SKY130_OSU_SC_15T_HS_x

sky130_osu_sc_15T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.24599
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	84186.80000	168374.00000
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
	-0.00162	0.01543	0.22884

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
	1.46593	1.38650	0.29515