sky130_osu_sc_15T_ls_tt_1P62_25C.ccs Library

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

SKY130_OSU_SC_15T_LS__ADDFx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__addf_1	39.07200
sky130_osu_sc_15T_ls__addf_l	39.07200

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_15T_ls__addf_1	0.01537	0.01537	0.01189	1.35675	0.62036	1.29945
sky130_osu_sc_15T_ls__addf_l	0.01536	0.01537	0.01186	0.81638	0.62054	0.83184

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00121	0.00133
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00245	0.00343

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.18679	1.91434	24.67310
	B->CO (RR)	0.16865	1.84299	23.89660
	CI->CO (RR)	0.17756	1.93242	25.10400
	CON->CO (FR)	0.03741	0.90416	12.41670
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.19360	1.77177	19.14640
	B->CO (RR)	0.18547	1.72448	18.82930
	CI->CO (RR)	0.18442	1.79260	19.62630
	CON->CO (FR)	0.04818	1.01814	12.37940

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.30163	2.64769	33.51310
	B->CO (FF)	0.27343	2.54301	32.33830
	CI->CO (FF)	0.26746	2.61070	33.60710
	CON->CO (RF)	0.02607	0.62027	8.51114
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.29062	2.20039	23.23710
	B->CO (FF)	0.26342	2.09863	22.55270
	CI->CO (FF)	0.25578	2.16319	23.35550
	CON->CO (RF)	0.02790	0.60736	7.53412

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.22992	1.25315	12.12830
	B->CON (FR)	0.20446	1.18140	11.82650
	CI->CON (FR)	0.19536	1.21678	12.26000
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.21755	1.24099	12.11850
	B->CON (FR)	0.19284	1.16987	11.81740
	CI->CON (FR)	0.18300	1.20454	12.25030

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.10336	0.66045	6.74347
	B->CON (RF)	0.09886	0.66015	6.92718
	CI->CON (RF)	0.09416	0.68280	7.24794
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.09922	0.65635	6.74001
	B->CON (RF)	0.09498	0.65636	6.92380
	CI->CON (RF)	0.09001	0.67875	7.24445

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	0.43062	2.56082	27.15570
	B->S (-R)	0.43244	2.53790	26.64550
	CI->S (-R)	0.39366	2.51809	27.24050
	CON->S (RR)	0.10692	0.80955	7.68490
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	0.41419	2.33263	21.84420
	B->S (-R)	0.41597	2.32109	21.58930
	CI->S (-R)	0.37674	2.29003	21.93730
	CON->S (RR)	0.11054	0.89295	7.55227

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-F)	0.31809	1.69961	17.03130
	B->S (-F)	0.33205	1.65818	16.64890
	CI->S (-F)	0.30834	1.71292	17.46040
	CON->S (FF)	0.13743	0.79000	6.76780
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.29507	1.48769	13.21710
	B->S (-F)	0.29397	1.43783	13.13420
	CI->S (-F)	0.28531	1.50521	13.68560
	CON->S (FF)	0.12801	0.77295	6.09946

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00309	0.00293	0.00346
	B	0.00389	0.00387	0.00451
	CI	0.00401	0.00413	0.00495
sky130_osu_sc_15T_ls__addf_l	A	0.00242	0.00219	0.00245
	B	0.00322	0.00309	0.00342
	CI	0.00334	0.00336	0.00384

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01097	0.01100	0.01245
	B	0.01078	0.01097	0.01251
	CI	0.00947	0.00981	0.01135
sky130_osu_sc_15T_ls__addf_l	A	0.01032	0.01031	0.01102
	B	0.01013	0.01025	0.01100
	CI	0.00881	0.00909	0.00990

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01096	0.01096	0.01144
	B	0.01076	0.01090	0.01138
	CI	0.00946	0.00973	0.01026
sky130_osu_sc_15T_ls__addf_l	A	0.01032	0.01031	0.01076
	B	0.01012	0.01022	0.01070
	CI	0.00881	0.00906	0.00959

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00306	0.00290	0.00309
	B	0.00386	0.00380	0.00396
	CI	0.00400	0.00409	0.00440
sky130_osu_sc_15T_ls__addf_l	A	0.00239	0.00216	0.00232
	B	0.00319	0.00306	0.00322
	CI	0.00333	0.00335	0.00366

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01097	0.01099	0.01236
	B	0.01077	0.01096	0.01241
	CI	0.00947	0.00979	0.01129
sky130_osu_sc_15T_ls__addf_l	A	0.01033	0.01031	0.01106
	B	0.01013	0.01025	0.01104
	CI	0.00882	0.00909	0.00998

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.02280	0.02301	0.02329
	B	0.02041	0.01996	0.02185
	CI	0.01855	0.01852	0.01911
sky130_osu_sc_15T_ls__addf_l	A	0.02186	0.02181	0.02221
	B	0.01949	0.01889	0.02092
	CI	0.01764	0.01752	0.01810

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__addh_1	23.19900
sky130_osu_sc_15T_ls__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_ls__addh_1	0.00757	0.00833	1.31302	0.66336	1.35860
sky130_osu_sc_15T_ls__addh_l	0.00757	0.00833	0.85054	0.66301	0.85435

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00103	0.00115
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00254	0.00323

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CO (RR)	0.12982	0.82508	7.51994
	B->CO (RR)	0.13374	0.82548	7.61631
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.13532	0.91941	7.56610
	B->CO (RR)	0.13929	0.92167	7.66988

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CO (FF)	0.11790	0.75726	6.74860
	B->CO (FF)	0.12531	0.77233	6.81731
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.11131	0.71100	5.64980
	B->CO (FF)	0.11844	0.72651	5.72366

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CON (RR)	B	0.18218	0.69118	4.03359
	A->CON (FR)	!B	0.12922	1.12883	12.17160
	B->CON (RR)	A	0.18612	0.69080	4.13016
	B->CON (FR)	!A	0.15598	1.15968	12.11050
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.16757	0.66948	3.95330
	A->CON (FR)	!B	0.11750	1.11659	12.15540
	B->CON (RR)	A	0.17152	0.67082	4.05737
	B->CON (FR)	!A	0.14430	1.14737	12.09440

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CON (FF)	B	0.17086	0.81585	6.01237
	A->CON (RF)	!B	0.06209	0.64864	7.34658
	B->CON (FF)	A	0.17105	0.84251	6.27139
	B->CON (RF)	!A	0.07428	0.64856	7.14049
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.15901	0.79507	5.91090
	A->CON (RF)	!B	0.05816	0.64448	7.33960
	B->CON (FF)	A	0.15916	0.82248	6.17304
	B->CON (RF)	!A	0.07043	0.64445	7.13393

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (RR)	!B	0.13461	1.85006	24.71380
	A->S (FR)	B	0.24406	1.99727	23.07860
	B->S (RR)	!A	0.14656	1.81188	23.90800
	B->S (FR)	A	0.24527	2.06359	23.94760
	CON->S (FR)	-	0.04014	0.91907	12.63370
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.13706	1.72019	19.73490
	A->S (FR)	B	0.23891	1.85471	18.07100
	B->S (RR)	!A	0.14939	1.69393	19.20540
	B->S (FR)	A	0.23976	1.91042	18.67110
	CON->S (FR)	-	0.04818	1.02333	12.57810

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (FF)	!B	0.18914	2.39336	31.77380
	A->S (RF)	B	0.23021	1.54665	16.75530
	B->S (FF)	!A	0.21589	2.42692	31.74850
	B->S (RF)	A	0.23415	1.54596	16.85270
	CON->S (RF)	-	0.02465	0.60883	8.37749
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.17755	2.01775	22.99090
	A->S (RF)	B	0.21584	1.33035	11.66500
	B->S (FF)	!A	0.20449	2.05033	22.94360
	B->S (RF)	A	0.21983	1.33142	11.76060
	CON->S (RF)	-	0.02643	0.60819	7.62603

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00492	0.00468	0.00486
	B	0.00000	0.00000	0.00000
	B	0.00447	0.00421	0.00430
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00427	0.00399	0.00473
	B	0.00000	0.00000	0.00000
	B	0.00383	0.00351	0.00376

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00747	0.00715	0.00747
	B	0.00000	0.00000	0.00000
	B	0.00776	0.00779	0.00814
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00683	0.00650	0.00688
	B	0.00000	0.00000	0.00000
	B	0.00713	0.00710	0.00752

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00492	0.00468	0.00504
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00656	0.00655	0.00670
	B	A	0.00000	0.00000	0.00000
	B	A	0.00447	0.00421	0.00436
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00731	0.00728	0.00731
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00427	0.00398	0.00446
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00611	0.00608	0.00622
	B	A	0.00000	0.00000	0.00000
	B	A	0.00382	0.00351	0.00381
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00687	0.00681	0.00683

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00747	0.00719	0.00775
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00107	0.00105	0.00093
	B	A	0.00000	0.00000	0.00000
	B	A	0.00776	0.00778	0.00824
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00180	0.00168	0.00157
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00684	0.00652	0.00709
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00049	0.00045	0.00036
	B	A	0.00000	0.00000	0.00000
	B	A	0.00714	0.00709	0.00763
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00121	0.00108	0.00097

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00747	0.00717	0.00768
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00108	0.00110	0.00111
	B	A	0.00000	0.00000	0.00000
	B	A	0.00777	0.00779	0.00840
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00181	0.00172	0.00171
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00684	0.00652	0.00710
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00049	0.00047	0.00050
	B	A	0.00000	0.00000	0.00000
	B	A	0.00714	0.00710	0.00775
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00122	0.00110	0.00104

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00492	0.00468	0.00495
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00656	0.00660	0.00677
	B	A	0.00000	0.00000	0.00000
	B	A	0.00447	0.00420	0.00424
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00732	0.00734	0.00739
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00427	0.00398	0.00457
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00612	0.00610	0.00624
	B	A	0.00000	0.00000	0.00000
	B	A	0.00383	0.00351	0.00386
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00687	0.00683	0.00686

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__and2_1	10.37850
sky130_osu_sc_15T_ls__and2_2	12.82050
sky130_osu_sc_15T_ls__and2_4	17.70450
sky130_osu_sc_15T_ls__and2_6	22.58850
sky130_osu_sc_15T_ls__and2_8	27.47250
sky130_osu_sc_15T_ls__and2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__and2_1	0.00406	0.00416	1.33816
sky130_osu_sc_15T_ls__and2_2	0.00406	0.00416	2.62304
sky130_osu_sc_15T_ls__and2_4	0.00406	0.00417	5.09857
sky130_osu_sc_15T_ls__and2_6	0.00409	0.00416	7.50337
sky130_osu_sc_15T_ls__and2_8	0.00407	0.00417	9.77862
sky130_osu_sc_15T_ls__and2_l	0.00309	0.00320	0.81611

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00045	0.00066
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00068	0.00086
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00112	0.00125
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00157	0.00164
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00202	0.00207
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00196	0.00307

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__and2_1	A->Y (RR)	0.09929	0.75515	7.26380
	B->Y (RR)	0.10485	0.76405	7.37666
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.11355	0.68962	7.44449
	B->Y (RR)	0.11906	0.69192	7.53892
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.15628	0.70610	7.95057
	B->Y (RR)	0.16186	0.69746	8.01532
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.19789	0.74665	8.27264
	B->Y (RR)	0.20345	0.73130	8.31126
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.23894	0.79055	8.56682
	B->Y (RR)	0.24427	0.77465	8.58707
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.11204	0.85927	7.10306
	B->Y (RR)	0.11785	0.86738	7.20646

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__and2_1	A->Y (FF)	0.08946	0.68400	6.31655
	B->Y (FF)	0.09549	0.70219	6.43381
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.10612	0.66979	6.55589
	B->Y (FF)	0.11238	0.68392	6.65049
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.15079	0.70959	6.99587
	B->Y (FF)	0.15663	0.71907	7.08495
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.19754	0.75645	7.31271
	B->Y (FF)	0.20263	0.76510	7.39044
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.24132	0.80341	7.53272
	B->Y (FF)	0.24605	0.80947	7.58930
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.10238	0.71669	5.84287
	B->Y (FF)	0.11098	0.73796	5.95526

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00376	0.00328	0.00575
	B	0.00000	0.00000	0.00000
	B	0.00383	0.00329	0.00460
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00720	0.00701	0.00920
	B	0.00000	0.00000	0.00000
	B	0.00727	0.00706	0.00819
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01474	0.01516	0.01759
	B	0.00000	0.00000	0.00000
	B	0.01483	0.01526	0.01678
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02228	0.02312	0.02544
	B	0.00000	0.00000	0.00000
	B	0.02240	0.02335	0.02466
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02980	0.03093	0.03382
	B	0.00000	0.00000	0.00000
	B	0.02989	0.03135	0.03313
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00271	0.00236	0.00436
	B	0.00000	0.00000	0.00000
	B	0.00278	0.00235	0.00355

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00913	0.00903	0.01148
	B	0.00000	0.00000	0.00000
	B	0.01031	0.01015	0.01234
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01153	0.01197	0.01428
	B	0.00000	0.00000	0.00000
	B	0.01273	0.01303	0.01515
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01737	0.01885	0.02129
	B	0.00000	0.00000	0.00000
	B	0.01857	0.01980	0.02202
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02335	0.02575	0.02852
	B	0.00000	0.00000	0.00000
	B	0.02461	0.02659	0.02908
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02912	0.03238	0.03561
	B	0.00000	0.00000	0.00000
	B	0.03032	0.03307	0.03589
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00695	0.00681	0.00860
	B	0.00000	0.00000	0.00000
	B	0.00779	0.00759	0.00920

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00330	-0.00332	-0.00333
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00330	-0.00333	-0.00333
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00330	-0.00333	-0.00333
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00333	-0.00335	-0.00336
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00330	-0.00332	-0.00333
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00235	-0.00237	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00333	0.00333	0.00334
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00333	0.00335	0.00334
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00333	0.00333	0.00334
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00335	0.00343	0.00337
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00333	0.00340	0.00334
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00238	0.00239	0.00238

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00313	-0.00315	-0.00314
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00313	-0.00315	-0.00314
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00313	-0.00316	-0.00314
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00313	-0.00316	-0.00314
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00313	-0.00316	-0.00314
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00225	-0.00225	-0.00225

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00315	0.00320	0.00315
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00316	0.00315	0.00315
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00316	0.00320	0.00315
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00316	0.00320	0.00315
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00316	0.00320	0.00315
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00226	0.00229	0.00225

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__aoi21_l	0.00381	0.00398	0.00388	0.61432

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00030	0.00048

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi21_l	A0->Y (FR)	0.12113	1.16053	12.14950
	A1->Y (FR)	0.10163	1.10053	11.76230
	B0->Y (FR)	0.09056	1.12495	12.28540

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi21_l	A0->Y (RF)	0.05545	0.59494	6.48449
	A1->Y (RF)	0.05033	0.60969	6.84417
	B0->Y (RF)	0.03298	0.56338	6.52680

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00789	0.00781	0.00783
	A1	0.00000	0.00000	0.00000
	A1	0.00664	0.00653	0.00654
	B0	0.00624	0.00608	0.00632

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00150	0.00123	0.00122
	A1	0.00000	0.00000	0.00000
	A1	0.00154	0.00123	0.00132
	B0	-0.00071	-0.00079	-0.00067

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00272	-0.00286	-0.00285
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00291	-0.00293	-0.00291
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00291	-0.00292	-0.00291

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00284	0.00287	0.00285
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00291	0.00295	0.00292
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00293	0.00295	0.00292

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00268	-0.00282	-0.00280
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00286	-0.00287	-0.00286
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00309	-0.00313	-0.00313

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00280	0.00282	0.00280
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00286	0.00288	0.00287
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00312	0.00315	0.00314

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00137	-0.00137	-0.00137

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00152	0.00152	0.00141

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_l	0.00380	0.00396	0.00412	0.00392	0.61667

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00034	0.00047

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (FR)	0.14952	1.18151	12.06460
	A1->Y (FR)	0.13319	1.15310	11.95830
	B0->Y (FR)	0.09357	1.10418	12.05870
	B1->Y (FR)	0.11015	1.13463	12.20590

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (RF)	0.07244	0.61427	6.51908
	A1->Y (RF)	0.06725	0.62944	6.87988
	B0->Y (RF)	0.03921	0.59599	6.84367
	B1->Y (RF)	0.04430	0.58037	6.48391

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00960	0.00950	0.00948
	A1	0.00848	0.00832	0.00831
	B0	0.00671	0.00647	0.00672
	B1	0.00787	0.00771	0.00794

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00316	0.00289	0.00285
	A1	0.00318	0.00289	0.00294
	B0	-0.00039	-0.00049	-0.00038
	B1	-0.00034	-0.00046	-0.00043

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00274	-0.00284	-0.00285
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00291	-0.00293	-0.00291
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00291	-0.00293	-0.00291
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00291	-0.00293	-0.00291

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00284	0.00284	0.00285
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00291	0.00294	0.00292
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00293	0.00295	0.00292
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00293	0.00295	0.00292

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00269	-0.00279	-0.00280
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00286	-0.00287	-0.00286
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00309	-0.00312	-0.00312
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00309	-0.00312	-0.00312

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00279	0.00279	0.00280
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00286	0.00288	0.00287
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00311	0.00314	0.00313
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00311	0.00314	0.00313

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00137	-0.00138	-0.00138
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00137	-0.00139	-0.00138
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00321	-0.00322	-0.00324
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00321	-0.00322	-0.00324

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00159	0.00159	0.00144
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00138	0.00139	0.00138
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00323	0.00326	0.00324
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00323	0.00326	0.00324

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00138	-0.00142	-0.00139
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00138	-0.00139	-0.00139
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00296	-0.00299	-0.00297
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00296	-0.00297	-0.00297

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00160	0.00160	0.00145
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00139	0.00139	0.00139
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00298	0.00299	0.00298
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00298	0.00299	0.00298

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__buf_1	7.93650
sky130_osu_sc_15T_ls__buf_2	10.37850
sky130_osu_sc_15T_ls__buf_4	15.26250
sky130_osu_sc_15T_ls__buf_6	20.14650
sky130_osu_sc_15T_ls__buf_8	25.03050
sky130_osu_sc_15T_ls__buf_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__buf_1	0.00416	1.31257
sky130_osu_sc_15T_ls__buf_2	0.00420	2.62123
sky130_osu_sc_15T_ls__buf_4	0.00419	5.06302
sky130_osu_sc_15T_ls__buf_6	0.00092	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00419	9.86390
sky130_osu_sc_15T_ls__buf_l	0.00323	0.81850

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00043	0.00043
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00064	0.00066
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00107	0.00113
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00193	0.00206
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00167	0.00167

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__buf_1	**A->Y (RR)**	0.07442	0.71742	7.14763
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.08385	0.64394	7.37571
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.11324	0.63921	7.75664
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.17029	0.69838	8.36266
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.08594	0.81759	7.00085

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__buf_1	**A->Y (FF)**	0.08469	0.67107	6.20081
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.10299	0.67445	6.72870
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.14827	0.71495	7.23415
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.23920	0.80878	7.86379
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.09834	0.70826	5.80275

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00351	0.00295	0.00509
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00694	0.00659	0.00853
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01454	0.01478	0.01717
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02954	0.03071	0.04308
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00262	0.00217	0.00402

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00886	0.00867	0.01108
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01131	0.01157	0.01371
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01721	0.01841	0.02068
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02910	0.03175	0.03475
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00679	0.00659	0.00833

Passive power(pJ) for A rising :

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

Passive power(pJ) for A falling :

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

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__dffr_1	53.11350
sky130_osu_sc_15T_ls__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_ls__dffr_1	0.00392	0.00392	0.01165	1.23767	1.23771
sky130_osu_sc_15T_ls__dffr_l	0.00392	0.00392	0.01164	0.82630	0.81746

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00326	0.00427
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00450	0.00551

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RR)	0.45367	1.67761	14.85010
	QN->Q (FR)	0.04591	1.02038	13.71140
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.43825	1.77153	14.16700
	QN->Q (FR)	0.05252	1.10031	13.37660

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RF)	0.40410	1.69578	16.05770
	QN->Q (RF)	0.02927	0.67165	9.06109
	RN->Q (FF)	0.29152	1.74334	18.07790
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.41375	1.85260	15.57450
	QN->Q (RF)	0.02986	0.66094	8.25271
	RN->Q (FF)	0.30227	1.89923	17.58450

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->QN (RR)	0.35887	1.03925	7.56037
	RN->QN (FR)	0.24604	1.08760	9.57718
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.36348	1.13461	7.60574
	RN->QN (FR)	0.25161	1.18223	9.61253

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	**CK->QN (RF)**	0.38386	0.86886	4.45155
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.36001	0.84653	3.94190

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.08670	-0.11072	-0.45975
	setup	CK (R)	0.35585	0.37644	1.66445
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08538	-0.11027	-0.45919
	setup	CK (R)	0.35588	0.37846	1.67654

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.17115	-0.48555	-4.70187
	setup	CK (R)	0.20099	0.49937	4.77489
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.17034	-0.48451	-4.70043
	setup	CK (R)	0.20099	0.49937	4.77495

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.08670	-0.11072	-0.45975
	setup	CK (R)	0.35585	0.37644	1.66445
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08538	-0.11027	-0.45919
	setup	CK (R)	0.35588	0.37846	1.67654

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.17115	-0.48555	-4.70187
	setup	CK (R)	0.20099	0.49937	4.77489
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.17034	-0.48451	-4.70043
	setup	CK (R)	0.20099	0.49937	4.77495

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.30967	0.33123	1.60290
	removal	CK (R)	-0.06937	-0.07911	-0.15221
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.31042	0.33431	1.59236
	removal	CK (R)	-0.06993	-0.07898	-0.15208

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.30967	0.33123	1.60290
	removal	CK (R)	-0.06937	-0.07911	-0.15221
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.31042	0.33431	1.59236
	removal	CK (R)	-0.06993	-0.07898	-0.15208

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	RN ()	0.17574	0.49561	13.33370
	min_pulse_width	RN ()	0.17202	0.49561	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.17202	0.49561	13.33370
	min_pulse_width	RN ()	0.17202	0.49561	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	CK ()	0.20922	0.49561	13.33370
	min_pulse_width	CK ()	0.21294	0.49561	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.19434	0.49561	13.33370
	min_pulse_width	CK ()	0.20550	0.49561	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	CK ()	0.44771	0.54399	13.33370
	min_pulse_width	CK ()	0.16459	0.49561	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.44771	0.54399	13.33370
	min_pulse_width	CK ()	0.16459	0.49561	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00871	0.00681	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00765	0.00614	-0.00098

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01013	0.00865	0.00000
	RN	-0.00119	-0.05980	-0.81203
	RN	0.02308	0.02171	0.00802
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00904	0.00807	0.00251
	RN	-0.00119	-0.04692	-0.54214
	RN	0.02199	0.02108	0.01539

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01013	0.00864	0.00000
	RN	-0.00119	-0.05980	-0.81206
	RN	0.02309	0.02171	0.00810
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00905	0.00806	0.00274
	RN	-0.00119	-0.04662	-0.53633
	RN	0.02199	0.02109	0.01543

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00868	0.00679	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00762	0.00612	-0.00111

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00256	-0.00284	-0.00283
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01058	0.00997	0.01085
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00456	0.00401	0.00498
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00256	-0.00284	-0.00283
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01058	0.00997	0.01085
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00456	0.00401	0.00498

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00281	0.00284	0.00283
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01740	0.01711	0.01766
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00831	0.00808	0.00882
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00281	0.00284	0.00283
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01740	0.01711	0.01767
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00831	0.00808	0.00882

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00332	0.00272	0.00479
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00969	0.00883	0.01076
sky130_osu_sc_15T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00332	0.00272	0.00479
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00969	0.00883	0.01076

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00831	0.00795	0.01038
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01732	0.01668	0.01885
sky130_osu_sc_15T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00830	0.00795	0.01038
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01732	0.01668	0.01885

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00058	-0.00123	0.00068
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00527	0.00396	0.00566
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00090	-0.00165	0.00040
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00058	-0.00123	0.00068
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00528	0.00396	0.00566
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00090	-0.00165	0.00040

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01287	0.01244	0.01481
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02735	0.02641	0.02782
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02077	0.02020	0.02187
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02682	0.02588	0.03047
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01445	0.01405	0.01623
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01287	0.01244	0.01481
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02734	0.02641	0.02782
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02076	0.02020	0.02187
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02683	0.02588	0.03047
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01445	0.01405	0.01623

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__dffsr_1	57.99750
sky130_osu_sc_15T_ls__dffsr_l	57.99750

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_15T_ls__dffsr_1	0.00387	0.00393	0.00862	0.01184	1.33370	1.34930
sky130_osu_sc_15T_ls__dffsr_l	0.00387	0.00393	0.00860	0.01184	0.82565	0.82370

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00203	0.00251
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00328	0.00375

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RR)	0.43319	1.67028	15.47590
	QN->Q (FR)	0.04062	0.95684	13.06240
	RN->Q (RR)	0.34900	1.60043	15.54380
	SN->Q (FR)	0.32812	1.72930	17.97910
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.43196	1.77092	14.20980
	QN->Q (FR)	0.05262	1.09834	13.32850
	RN->Q (RR)	0.34844	1.70114	14.27070
	SN->Q (FR)	0.32591	1.82699	16.67010

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RF)	0.46233	1.75497	16.51140
	QN->Q (RF)	0.02897	0.68604	9.43617
	RN->Q (FF)	0.30598	1.76012	18.56890
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.47886	1.92310	15.63620
	QN->Q (RF)	0.02980	0.66011	8.24314
	RN->Q (FF)	0.32289	1.92800	17.68340

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RR)	0.41721	1.09294	7.69319
	RN->QN (FR)	0.26134	1.09875	9.74514
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.42753	1.20821	7.73955
	RN->QN (FR)	0.27184	1.21498	9.78222

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RF)	0.37066	0.87349	4.86787
	RN->QN (RF)	0.28684	0.80368	4.93528
	SN->QN (FF)	0.26480	0.93083	7.37243
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.35792	0.84967	4.02812
	RN->QN (RF)	0.27454	0.78095	4.09445
	SN->QN (FF)	0.25241	0.90671	6.49552

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.08789	-0.11695	-0.53912
	setup	CK (R)	0.32772	0.34520	1.68435
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.08997	-0.11895	-0.53759
	setup	CK (R)	0.32724	0.34984	1.68827

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.19606	-0.51089	-4.90887
	setup	CK (R)	0.24295	0.52444	4.96033
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.19651	-0.51254	-4.90781
	setup	CK (R)	0.24244	0.52444	4.96078

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.08789	-0.11695	-0.53912
	setup	CK (R)	0.32772	0.34520	1.68435
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.08997	-0.11895	-0.53759
	setup	CK (R)	0.32724	0.34984	1.68827

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.19606	-0.51089	-4.90887
	setup	CK (R)	0.24295	0.52444	4.96033
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.19651	-0.51254	-4.90781
	setup	CK (R)	0.24244	0.52444	4.96078

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.25401	0.27230	1.49391
	removal	CK (R)	-0.03231	-0.03798	-0.09514
	hold	SN (R)	-0.26027	-0.47726	-2.77479
	setup	SN (R)	0.28554	0.52327	5.58811
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.25439	0.27338	1.49759
	removal	CK (R)	-0.03290	-0.03798	-0.09514
	hold	SN (R)	-0.24994	-0.46535	-2.68109
	setup	SN (R)	0.28401	0.50658	5.51225

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.25401	0.27230	1.49391
	removal	CK (R)	-0.03231	-0.03798	-0.09514
	hold	SN (R)	-0.26027	-0.47726	-2.77479
	hold	SN (R)	-0.26185	-0.47964	-2.78426
	setup	SN (R)	0.28554	0.51908	5.37721
	setup	SN (R)	0.28439	0.52327	5.58811
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.25439	0.27338	1.49759
	removal	CK (R)	-0.03290	-0.03798	-0.09514
	hold	SN (R)	-0.25078	-0.46535	-2.68109
	hold	SN (R)	-0.24994	-0.46626	-2.69661
	setup	SN (R)	0.28401	0.50346	5.25545
	setup	SN (R)	0.26860	0.50658	5.51225

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	RN ()	0.19806	0.49561	13.33370
	min_pulse_width	RN ()	0.20550	0.49561	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.20178	0.49561	13.33370
	min_pulse_width	RN ()	0.19806	0.49561	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.05232	0.09208	3.98093
	removal	CK (R)	-0.01741	-0.06560	-0.49143
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.05062	0.09169	3.81913
	removal	CK (R)	-0.02027	-0.06560	-0.49036

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.05232	0.09208	3.98093
	removal	CK (R)	-0.01741	-0.06560	-0.49143
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.05062	0.09169	3.81913
	removal	CK (R)	-0.02027	-0.06560	-0.49036

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	SN ()	0.26017	0.55059	13.33370
	min_pulse_width	SN ()	0.26116	0.55279	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.26022	0.53299	13.33370
	min_pulse_width	SN ()	0.24715	0.53519	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	CK ()	0.19434	0.49561	13.33370
	min_pulse_width	CK ()	0.23525	0.49561	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.18318	0.49561	13.33370
	min_pulse_width	CK ()	0.23153	0.49561	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	CK ()	0.42032	0.51760	13.33370
	min_pulse_width	CK ()	0.20922	0.49561	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.42032	0.51760	13.33370
	min_pulse_width	CK ()	0.20550	0.49561	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01089	0.00890	-0.00272
	RN	0.02024	0.01856	-0.00094
	SN	-0.00119	-0.06254	-0.87504
	SN	0.02236	0.02069	0.00027
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00994	0.00848	0.00137
	RN	0.01928	0.01812	0.00953
	SN	-0.00119	-0.04690	-0.54171
	SN	0.02139	0.02027	0.01104

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01165	0.01074	0.00272
	RN	-0.00119	-0.06254	-0.87504
	RN	0.02400	0.02303	0.01489
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01065	0.00974	0.00432
	RN	-0.00119	-0.04690	-0.54171
	RN	0.02298	0.02204	0.01645

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01165	0.01074	0.00272
	RN	-0.00119	-0.06298	-0.88528
	RN	0.02401	0.02303	0.01471
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01065	0.00975	0.00439
	RN	-0.00119	-0.04683	-0.54043
	RN	0.02298	0.02204	0.01644

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01086	0.00886	-0.00272
	RN	0.02022	0.01851	-0.00115
	SN	-0.00119	-0.06298	-0.88521
	SN	0.02233	0.02065	0.00068
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00990	0.00844	0.00120
	RN	0.01925	0.01809	0.00945
	SN	-0.00119	-0.04683	-0.54039
	SN	0.02136	0.02024	0.01102

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00273	-0.00284	-0.00283
	(!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)	0.01371	0.01315	0.01400
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00519	0.00467	0.00559
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00517	0.00465	0.00558
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00524	0.00471	0.00564
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00273	-0.00284	-0.00283
	(!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)	0.01372	0.01315	0.01400
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00519	0.00467	0.00559
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00517	0.00465	0.00558
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00524	0.00471	0.00564

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00284	0.00284	0.00283
	(!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)	0.01994	0.01963	0.01995
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00893	0.00873	0.00942
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00894	0.00875	0.00942
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00888	0.00868	0.00937
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00284	0.00284	0.00283
	(!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)	0.01993	0.01962	0.02001
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00892	0.00872	0.00941
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00894	0.00874	0.00941
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00887	0.00867	0.00936

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00293	0.00238	0.00428
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01176	0.01096	0.01264
sky130_osu_sc_15T_ls__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00293	0.00238	0.00428
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01177	0.01093	0.01265

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00908	0.00872	0.01121
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01849	0.01775	0.01985
sky130_osu_sc_15T_ls__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00906	0.00871	0.01120
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01848	0.01774	0.01984

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00653	-0.00661	-0.00661
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00685	-0.00698	-0.00696
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00655	-0.00665	-0.00663
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00407	0.00350	0.00469
sky130_osu_sc_15T_ls__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00653	-0.00661	-0.00661
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00683	-0.00696	-0.00694
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00655	-0.00664	-0.00662
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00408	0.00348	0.00470

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00661	0.00665	0.00663
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00694	0.00698	0.00696
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00659	0.00666	0.00663
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01422	0.01383	0.01441
sky130_osu_sc_15T_ls__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00661	0.00665	0.00663
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00693	0.00696	0.00694
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00659	0.00665	0.00663
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01421	0.01382	0.01440

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00058	-0.00123	0.00067
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00606	0.00481	0.00650
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00600	0.00476	0.00644
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00073	-0.00145	0.00057
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00392	0.00249	0.00664
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00058	-0.00123	0.00067
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00605	0.00480	0.00649
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00599	0.00475	0.00643
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00073	-0.00145	0.00057
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00392	0.00249	0.00664

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_15T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03061	0.02968	0.03114
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01292	0.01250	0.01486
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02117	0.02065	0.02237
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02126	0.02073	0.02244
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02929	0.02823	0.03265
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01433	0.01392	0.01611
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01728	0.01643	0.02119
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03061	0.02969	0.03113
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01292	0.01250	0.01486
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02117	0.02065	0.02237
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02126	0.02073	0.02244
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02928	0.02822	0.03264
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01433	0.01392	0.01611
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01727	0.01642	0.02119

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__dffs_1	48.22950
sky130_osu_sc_15T_ls__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_ls__dffs_1	0.00390	0.00690	0.01163	1.23925	1.24601
sky130_osu_sc_15T_ls__dffs_l	0.00390	0.00690	0.01163	0.81730	0.82087

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00336	0.00688
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00460	0.00812

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RR)	0.32982	1.53197	14.70180
	QN->Q (FR)	0.04601	1.01821	13.66310
	SN->Q (FR)	0.26669	1.67604	17.33360
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.32591	1.63476	13.87000
	QN->Q (FR)	0.05255	1.09281	13.24740
	SN->Q (FR)	0.26203	1.77440	16.44420

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RF)	0.44813	1.74266	16.07880
	QN->Q (RF)	0.02911	0.66910	9.03727
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.45514	1.88710	15.42450
	QN->Q (RF)	0.02974	0.65645	8.18926

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RR)	0.40121	1.08871	7.62934
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.40356	1.17986	7.66132

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RF)	0.26804	0.73033	4.34170
	SN->QN (FF)	0.20422	0.87506	6.97353
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.25572	0.72232	3.83355
	SN->QN (FF)	0.19112	0.86259	6.40345

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.06760	-0.09649	-0.43712
	setup	CK (R)	0.23778	0.27620	1.63907
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.06666	-0.09468	-0.43746
	setup	CK (R)	0.24104	0.27300	1.65039

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.17553	-0.48809	-4.72125
	setup	CK (R)	0.22371	0.50482	4.81320
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.17648	-0.49108	-4.72177
	setup	CK (R)	0.22405	0.50476	4.81310

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.06760	-0.09649	-0.43712
	setup	CK (R)	0.23778	0.27620	1.63907
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.06666	-0.09468	-0.43746
	setup	CK (R)	0.24104	0.27300	1.65039

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.17553	-0.48809	-4.72125
	setup	CK (R)	0.22371	0.50482	4.81320
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.17648	-0.49108	-4.72177
	setup	CK (R)	0.22405	0.50476	4.81310

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	recovery	CK (R)	0.05442	0.08616	3.06058
	removal	CK (R)	-0.01911	-0.05346	-0.30045
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.05368	0.08611	2.91472
	removal	CK (R)	-0.01839	-0.05443	-0.30181

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	recovery	CK (R)	0.05442	0.08616	3.06058
	removal	CK (R)	-0.01911	-0.05346	-0.30045
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.05368	0.08611	2.91472
	removal	CK (R)	-0.01839	-0.05443	-0.30181

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	SN ()	0.18892	0.56159	13.33370
	min_pulse_width	SN ()	0.19316	0.56159	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.18478	0.54179	13.33370
	min_pulse_width	SN ()	0.18138	0.54399	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	CK ()	0.13855	0.49561	13.33370
	min_pulse_width	CK ()	0.22409	0.49561	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.13111	0.49561	13.33370
	min_pulse_width	CK ()	0.21666	0.49561	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	CK ()	0.33196	0.49561	13.33370
	min_pulse_width	CK ()	0.19062	0.49561	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.33196	0.49561	13.33370
	min_pulse_width	CK ()	0.19062	0.49561	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00873	0.00676	0.00000
	SN	-0.00119	-0.05984	-0.81307
	SN	0.01898	0.01722	0.00027
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00765	0.00611	-0.00062
	SN	-0.00119	-0.04662	-0.53623
	SN	0.01790	0.01657	0.00866

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01008	0.00867	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00901	0.00807	0.00278

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01008	0.00867	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00901	0.00805	0.00290

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00870	0.00676	0.00000
	SN	-0.00119	-0.06004	-0.81744
	SN	0.01896	0.01719	0.00039
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00762	0.00608	-0.00098
	SN	-0.00119	-0.04674	-0.53853
	SN	0.01786	0.01657	0.00856

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00289	-0.00287
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01027	0.00963	0.01044
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00447	0.00393	0.00488
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00289	-0.00287
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01027	0.00963	0.01044
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00447	0.00393	0.00488

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00288	0.00289	0.00287
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01721	0.01687	0.01740
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00851	0.00829	0.00903
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00288	0.00289	0.00287
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01721	0.01687	0.01740
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00851	0.00829	0.00903

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00477	-0.00481	-0.00480
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00362	0.00312	0.00463
sky130_osu_sc_15T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00477	-0.00481	-0.00480
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00362	0.00312	0.00463

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00481	0.00485	0.00481
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00987	0.00946	0.01087
sky130_osu_sc_15T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00481	0.00485	0.00481
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00987	0.00946	0.01087

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00060	-0.00124	0.00065
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00085	-0.00161	0.00047
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00316	0.00172	0.00601
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00060	-0.00124	0.00065
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00085	-0.00161	0.00047
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00316	0.00172	0.00601

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02711	0.02614	0.02761
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01289	0.01246	0.01480
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02653	0.02541	0.03005
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01440	0.01398	0.01620
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01680	0.01599	0.02084
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02711	0.02614	0.02761
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01289	0.01246	0.01480
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02653	0.02541	0.03005
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01440	0.01394	0.01620
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01680	0.01599	0.02084

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__dff_1	40.29300
sky130_osu_sc_15T_ls__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_ls__dff_1	0.00406	0.01158	1.35931	1.35211
sky130_osu_sc_15T_ls__dff_l	0.00406	0.01157	0.76645	0.76497

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00168	0.00178
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00292	0.00302

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RR)	0.26820	1.49112	15.51190
	QN->Q (FR)	0.04039	0.95970	13.17350
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.27802	1.58182	13.45360
	QN->Q (FR)	0.05833	1.16147	13.83400

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RF)	0.38843	1.68446	16.68910
	QN->Q (RF)	0.02885	0.68908	9.50832
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.41216	1.84967	15.12130
	QN->Q (RF)	0.02984	0.64415	7.94707

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RR)	0.34484	1.01164	7.59810
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.36078	1.14974	7.60893

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RF)	0.21339	0.68512	4.64876
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.20869	0.65909	3.56145

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	hold	CK (R)	-0.06026	-0.08943	-0.45825
	setup	CK (R)	0.17611	0.21613	1.65425
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.05904	-0.09300	-0.45671
	setup	CK (R)	0.17452	0.21435	1.65599

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	hold	CK (R)	-0.16787	-0.49115	-4.78114
	setup	CK (R)	0.20011	0.50911	4.87707
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.16654	-0.49515	-4.78238
	setup	CK (R)	0.20053	0.50911	4.87820

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	min_pulse_width	CK ()	0.11251	0.49561	13.33370
	min_pulse_width	CK ()	0.20922	0.49561	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.10880	0.49561	13.33370
	min_pulse_width	CK ()	0.20178	0.49561	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	**min_pulse_width**	**CK ()**	0.26873	0.49561	13.33370
	min_pulse_width	**CK ()**	0.16087	0.49561	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.26873	0.49561	13.33370
	min_pulse_width	**CK ()**	0.15715	0.49561	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00924	0.00705	-0.00140
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00828	0.00671	0.00053

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01025	0.00930	0.00140
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00925	0.00801	-0.00011

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01025	0.00931	0.00155
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00925	0.00803	-0.00007

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00921	0.00705	-0.00155
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00825	0.00670	0.00034

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00255	-0.00283	-0.00282
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00960	0.00903	0.00991
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00255	-0.00283	-0.00282
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00960	0.00904	0.00991

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00280	0.00285	0.00282
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01782	0.01746	0.01801
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00280	0.00285	0.00282
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01782	0.01746	0.01802

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00060	-0.00125	0.00067
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00084	-0.00157	0.00047
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00060	-0.00125	0.00067
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00084	-0.00152	0.00047

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01281	0.01239	0.01476
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02642	0.02550	0.02709
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02692	0.02581	0.03050
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01431	0.01391	0.01612
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01281	0.01239	0.01476
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02643	0.02550	0.02710
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02693	0.02584	0.03051
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01431	0.01391	0.01612

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__inv_1	5.49450
sky130_osu_sc_15T_ls__inv_10	27.47250
sky130_osu_sc_15T_ls__inv_2	7.93650
sky130_osu_sc_15T_ls__inv_3	10.37850
sky130_osu_sc_15T_ls__inv_4	12.82050
sky130_osu_sc_15T_ls__inv_6	17.70450
sky130_osu_sc_15T_ls__inv_8	22.58850
sky130_osu_sc_15T_ls__inv_l	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__inv_1	0.00397	1.28854
sky130_osu_sc_15T_ls__inv_10	0.03668	12.00384
sky130_osu_sc_15T_ls__inv_2	0.00753	2.59719
sky130_osu_sc_15T_ls__inv_3	0.01120	3.72393
sky130_osu_sc_15T_ls__inv_4	0.01479	5.08392
sky130_osu_sc_15T_ls__inv_6	0.02216	7.50986
sky130_osu_sc_15T_ls__inv_8	0.02942	9.82013
sky130_osu_sc_15T_ls__inv_l	0.00299	0.76201

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00022	0.00024
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00214	0.00233
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00043	0.00047
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00064	0.00070
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00086	0.00093
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00128	0.00140
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00171	0.00187
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00084	0.00139

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__inv_1	**A->Y (FR)**	0.03897	0.90211	12.24150
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.05181	0.62294	12.24590
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.03082	0.77850	12.27320
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.03359	0.72639	12.24140
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.03391	0.69485	12.32460
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.03802	0.65317	12.32190
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.04440	0.63478	12.26290
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.05161	1.03194	12.36280

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__inv_1	**A->Y (RF)**	0.02576	0.60945	8.30594
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.03707	0.41353	8.33982
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.02120	0.53378	8.35873
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02308	0.50341	8.41491
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02294	0.47789	8.46389
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.02768	0.44705	8.47068
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.03231	0.42846	8.42820
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.02738	0.59261	7.26490

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00459	0.00455	0.00483
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03882	0.03986	0.04305
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00812	0.00816	0.00879
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01247	0.01166	0.01348
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01599	0.01623	0.01740
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02366	0.02321	0.02604
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03128	0.03190	0.03458
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00344	0.00336	0.00354

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00084	-0.00089	-0.00077
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01504	-0.01449	-0.01129
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00275	-0.00273	-0.00238
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00365	-0.00357	-0.00303
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00567	-0.00558	-0.00465
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00866	-0.00849	-0.00690
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01185	-0.01150	-0.00913
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00054	-0.00060	-0.00048

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_15T_ls__mux2_1	0.17612	0.17600	0.00812	0.17153

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00060	0.00068

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__mux2_1	A0->Y (RR)	-	0.02007	0.35576	3.53054
	A1->Y (RR)	-	0.02277	0.35815	3.53346
	S0->Y (RR)	(!A0 * A1)	0.06033	0.33497	0.96902
	S0->Y (FR)	(A0 * !A1)	0.04843	0.49732	3.85125

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__mux2_1	A0->Y (FF)	-	0.01988	0.30866	2.87523
	A1->Y (FF)	-	0.01817	0.30633	2.86850
	S0->Y (FF)	(!A0 * A1)	0.08717	0.46932	2.78179
	S0->Y (RF)	(A0 * !A1)	0.02917	0.33547	2.22549

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00469	-0.00469	-0.00470
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00321	-0.00321	-0.00321
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00562	0.00535	0.00809
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00304	-0.00366	-0.00130

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00469	0.00469	0.00470
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00321	0.00321	0.00321
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00097	0.00037	0.00285
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01231	0.01199	0.01447

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00119	-0.00119	-0.00119

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00119	0.00119	0.00119

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00142	-0.00142	-0.00142

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00142	0.00142	0.00142

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00106	-0.00167	0.00078
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00102	-0.00165	0.00075

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00937	0.00909	0.01158
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00855	0.00830	0.01097

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__nand2_1	7.93650
sky130_osu_sc_15T_ls__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nand2_1	0.00398	0.00395	1.27464
sky130_osu_sc_15T_ls__nand2_l	0.00298	0.00298	0.75703

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00023	0.00047
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00085	0.00278

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nand2_1	A->Y (FR)	0.04083	0.90021	12.22560
	B->Y (FR)	0.04815	0.89995	12.06230
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.05351	1.03702	12.35190
	B->Y (FR)	0.06371	1.04457	12.33180

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nand2_1	A->Y (RF)	0.03820	0.76831	10.35500
	B->Y (RF)	0.04345	0.75568	10.04810
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.04080	0.75496	8.96978
	B->Y (RF)	0.04548	0.73772	8.60308

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00489	0.00448	0.00510
	B	0.00000	0.00000	0.00000
	B	0.00613	0.00602	0.00629
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00362	0.00355	0.00370
	B	0.00000	0.00000	0.00000
	B	0.00450	0.00441	0.00457

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00048	-0.00058	-0.00047
	B	0.00000	0.00000	0.00000
	B	-0.00044	-0.00054	-0.00048
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00033	-0.00040	-0.00031
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00039	-0.00034

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00324	-0.00325	-0.00326
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00226	-0.00227	-0.00228

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00325	0.00334	0.00327
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00228	0.00233	0.00228

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00300	-0.00303	-0.00301
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00210	-0.00211	-0.00211

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00303	0.00305	0.00302
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00212	0.00213	0.00211

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__nor2_1	7.93650
sky130_osu_sc_15T_ls__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nor2_1	0.00393	0.00424	0.65827
sky130_osu_sc_15T_ls__nor2_l	0.00288	0.00321	0.40891

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00024	0.00039
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00086	0.00139

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nor2_1	A->Y (FR)	0.08871	1.09669	12.06460
	B->Y (FR)	0.07002	1.07225	12.12560
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.10811	1.24143	11.96580
	B->Y (FR)	0.09168	1.22664	12.16460

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nor2_1	A->Y (RF)	0.03378	0.51531	5.96133
	B->Y (RF)	0.02730	0.50398	5.94226
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.03360	0.50455	5.28289
	B->Y (RF)	0.02877	0.49524	5.26643

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00647	0.00637	0.00644
	B	0.00000	0.00000	0.00000
	B	0.00502	0.00488	0.00515
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00458	0.00450	0.00452
	B	0.00000	0.00000	0.00000
	B	0.00370	0.00358	0.00377

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00062	0.00037	0.00048
	B	0.00000	0.00000	0.00000
	B	-0.00067	-0.00072	-0.00062
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00038	0.00023	0.00038
	B	0.00000	0.00000	0.00000
	B	-0.00040	-0.00043	-0.00032

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00258	-0.00285	-0.00284
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00176	-0.00192	-0.00191

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00283	0.00287	0.00284
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00190	0.00192	0.00191

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00138	-0.00138	-0.00138
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00094	-0.00096	-0.00094

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00146	0.00146	0.00141
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00099	0.00099	0.00096

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__oai21_l	0.00397	0.00404	0.00339	0.64543

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00072	0.00163

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai21_l	A0->Y (FR)	0.09823	1.10962	12.18760
	A1->Y (FR)	0.12186	1.14019	12.13690
	B0->Y (FR)	0.06266	0.94734	10.92470

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai21_l	A0->Y (RF)	0.05222	0.62200	6.89149
	A1->Y (RF)	0.06098	0.61730	6.77024
	B0->Y (RF)	0.04112	0.64452	7.47890

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00680	0.00662	0.00686
	A1	0.00000	0.00000	0.00000
	A1	0.00829	0.00815	0.00819
	B0	0.00557	0.00541	0.00551

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00025	0.00015	0.00017
	A1	0.00000	0.00000	0.00000
	A1	0.00155	0.00130	0.00131
	B0	0.00217	0.00205	0.00213

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00139	-0.00142	-0.00139
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00277	-0.00288	-0.00286
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00292	-0.00294	-0.00293

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00147	0.00148	0.00142
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00285	0.00288	0.00286
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00292	0.00295	0.00294

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00251	-0.00279	-0.00278
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00275	-0.00285	-0.00284
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00288	-0.00290	-0.00289

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00276	0.00279	0.00278
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00282	0.00285	0.00284
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00289	0.00295	0.00290

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00232	-0.00234	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00237	0.00239	0.00238

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__oai22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_1	0.00382	0.00407	0.00419	0.00408	0.66566

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00036	0.00047

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai22_l	A0->Y (FR)	0.13328	1.15008	12.20490
	A1->Y (FR)	0.11387	1.12385	12.26520
	B0->Y (FR)	0.07782	1.08640	12.23400
	B1->Y (FR)	0.09886	1.11320	12.17790

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai22_l	A0->Y (RF)	0.08498	0.67049	7.08536
	A1->Y (RF)	0.06919	0.64938	7.03218
	B0->Y (RF)	0.05849	0.66959	7.62329
	B1->Y (RF)	0.07499	0.69532	7.71045

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.01075	0.01064	0.01065
	A1	0.00922	0.00903	0.00925
	B0	0.00682	0.00667	0.00690
	B1	0.00841	0.00829	0.00831

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00247	0.00223	0.00222
	A1	0.00129	0.00116	0.00113
	B0	0.00128	0.00117	0.00121
	B1	0.00249	0.00224	0.00230

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00256	-0.00285	-0.00284
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00256	-0.00285	-0.00284
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00274	-0.00285	-0.00284
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00289	-0.00292	-0.00290

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00283	0.00287	0.00284
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00283	0.00287	0.00284
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00283	0.00288	0.00284
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00290	0.00292	0.00291

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00137	-0.00137	-0.00137
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00137	-0.00137	-0.00137
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00272	-0.00282	-0.00281
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00287	-0.00289	-0.00288

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00144	0.00145	0.00140
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00145	0.00145	0.00140
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00280	0.00282	0.00281
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00287	0.00290	0.00289

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00136	-0.00137	-0.00136
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00135	-0.00137	-0.00136
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00306	-0.00317	-0.00315
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00313	-0.00316	-0.00321

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00143	0.00144	0.00139
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00143	0.00145	0.00139
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00315	0.00317	0.00315
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00321	0.00323	0.00322

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00253	-0.00279	-0.00279
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00253	-0.00279	-0.00279
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00312	-0.00324	-0.00323
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00320	-0.00322	-0.00327

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00278	0.00282	0.00279
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00278	0.00279	0.00279
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00322	0.00327	0.00323
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00327	0.00329	0.00329

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__or2_1	10.37850
sky130_osu_sc_15T_ls__or2_2	12.82050
sky130_osu_sc_15T_ls__or2_4	17.70450
sky130_osu_sc_15T_ls__or2_8	27.47250
sky130_osu_sc_15T_ls__or2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__or2_1	0.00429	0.00407	1.30704
sky130_osu_sc_15T_ls__or2_2	0.00429	0.00407	2.59762
sky130_osu_sc_15T_ls__or2_4	0.00429	0.00407	5.01988
sky130_osu_sc_15T_ls__or2_8	0.00428	0.00407	9.73551
sky130_osu_sc_15T_ls__or2_l	0.00328	0.00304	0.75547

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00044	0.00062
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00064	0.00086
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00105	0.00132
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00187	0.00226
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00142	0.00195

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (RR)	0.08776	0.75662	7.29225
	B->Y (RR)	0.07882	0.72573	7.14105
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.09577	0.67483	7.46215
	B->Y (RR)	0.08624	0.64920	7.34413
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.12545	0.66628	7.83549
	B->Y (RR)	0.11573	0.64497	7.74311
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.18226	0.71794	8.42420
	B->Y (RR)	0.17260	0.70229	8.34461
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.09849	0.86713	7.09626
	B->Y (RR)	0.09027	0.84041	6.96065

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (FF)	0.16474	0.79555	6.82589
	B->Y (FF)	0.13897	0.75875	6.55245
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.20229	0.79645	7.16280
	B->Y (FF)	0.17654	0.76848	6.91445
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.29072	0.87433	7.70528
	B->Y (FF)	0.26503	0.84877	7.49914
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.46634	1.06568	8.36713
	B->Y (FF)	0.44060	1.03620	8.23826
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.19348	0.81014	5.92605
	B->Y (FF)	0.16437	0.78237	5.74985

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00494	0.00426	0.00572
	B	0.00000	0.00000	0.00000
	B	0.00375	0.00328	0.00542
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00844	0.00802	0.00937
	B	0.00000	0.00000	0.00000
	B	0.00718	0.00706	0.00917
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01602	0.01617	0.01816
	B	0.00000	0.00000	0.00000
	B	0.01474	0.01535	0.01804
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03105	0.03224	0.03400
	B	0.00000	0.00000	0.00000
	B	0.02977	0.03167	0.03662
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00359	0.00315	0.00450
	B	0.00000	0.00000	0.00000
	B	0.00279	0.00247	0.00418

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.01075	0.01057	0.01125
	B	0.00000	0.00000	0.00000
	B	0.00899	0.00896	0.01134
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01314	0.01353	0.01414
	B	0.00000	0.00000	0.00000
	B	0.01141	0.01185	0.01407
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01897	0.02032	0.02110
	B	0.00000	0.00000	0.00000
	B	0.01721	0.01851	0.02083
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03119	0.03338	0.03515
	B	0.00000	0.00000	0.00000
	B	0.02925	0.03153	0.03475
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00796	0.00766	0.00834
	B	0.00000	0.00000	0.00000
	B	0.00675	0.00664	0.00837

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00260	-0.00287	-0.00286
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00261	-0.00287	-0.00286
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00261	-0.00287	-0.00286
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00261	-0.00287	-0.00286
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00178	-0.00195	-0.00193

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00285	0.00289	0.00286
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00285	0.00289	0.00286
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00285	0.00289	0.00286
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00285	0.00289	0.00286
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00192	0.00195	0.00193

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00139	-0.00142	-0.00139
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00139	-0.00142	-0.00139
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00139	-0.00142	-0.00139
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00139	-0.00142	-0.00139
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00096	-0.00098	-0.00096

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00148	0.00149	0.00142
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00148	0.00149	0.00142
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00148	0.00149	0.00142
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00148	0.00149	0.00142
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00103	0.00098

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__tbufi_1	10.37850
sky130_osu_sc_15T_ls__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tbufi_1	0.00422	0.00541	0.66265
sky130_osu_sc_15T_ls__tbufi_l	0.00321	0.00415	0.40890

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00031	0.00047
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00097	0.00279

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (FR)	0.06617	1.06757	12.12000
	OE->Y (FR)	0.06261	0.34931	4.73349
	OE->Y (RR)	0.11058	0.90519	7.24052
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.08812	1.22510	12.17030
	OE->Y (FR)	0.07314	0.37168	4.73329
	OE->Y (RR)	0.12732	1.04528	7.11229

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (RF)	0.03691	0.61551	7.21029
	OE->Y (FF)	0.06377	0.35154	4.73345
	OE->Y (RF)	0.03600	0.59515	6.84975
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.04017	0.61115	6.42358
	OE->Y (FF)	0.07382	0.37261	4.73328
	OE->Y (RF)	0.03827	0.58686	6.04474

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00468	0.00456	0.00479
	OE	0.00000	0.00000	0.00000
	OE	0.00467	0.00419	0.00662
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00347	0.00335	0.00351
	OE	0.00000	0.00000	0.00000
	OE	0.00327	0.00286	0.00492

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00067	-0.00072	-0.00063
	OE	0.00000	0.00000	0.00000
	OE	0.00312	0.00255	0.00511
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00043	-0.00033
	OE	0.00000	0.00000	0.00000
	OE	0.00211	0.00169	0.00384

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00228	-0.00230	-0.00229
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00205	-0.00206	-0.00205
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00167	-0.00168	-0.00167
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00152	-0.00152	-0.00151

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00228	0.00230	0.00229
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00210	0.00211	0.00208
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00167	0.00168	0.00167
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00155	0.00155	0.00153

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00180	0.00126	0.00381
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00161	0.00104	0.00361
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00120	0.00080	0.00294
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00105	0.00065	0.00280

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00539	0.00493	0.00760
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00559	0.00512	0.00771
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00415	0.00381	0.00581
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00430	0.00397	0.00590

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__tnbufi_1	10.37850
sky130_osu_sc_15T_ls__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tnbufi_1	0.00421	0.00646	0.66952
sky130_osu_sc_15T_ls__tnbufi_l	0.00320	0.00468	0.40891

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00032	0.00043
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00134	0.00167

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tnbufi_1	A->Y (FR)	0.06693	1.07185	12.19610
	OE->Y (RR)	0.03204	0.34107	4.73397
	OE->Y (FR)	0.08188	1.09249	12.13160
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.08880	1.22495	12.17030
	OE->Y (RR)	0.03164	0.34103	4.73395
	OE->Y (FR)	0.10121	1.23667	11.97120

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tnbufi_1	A->Y (RF)	0.03628	0.61703	7.24923
	OE->Y (RF)	0.03161	0.34105	4.73394
	OE->Y (FF)	0.07279	0.64000	5.28334
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.03937	0.61076	6.42336
	OE->Y (RF)	0.03141	0.34104	4.73391
	OE->Y (FF)	0.08393	0.66139	4.80943

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00482	0.00469	0.00493
	OE	0.00000	0.00000	0.00000
	OE	0.01159	0.01145	0.01454
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00361	0.00348	0.00365
	OE	0.00000	0.00000	0.00000
	OE	0.00836	0.00823	0.01051

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00085	-0.00089	-0.00080
	OE	0.00000	0.00000	0.00000
	OE	0.01022	0.01009	0.01284
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00057	-0.00060	-0.00050
	OE	0.00000	0.00000	0.00000
	OE	0.00733	0.00718	0.00927

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00194	-0.00195	-0.00194
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00173	-0.00174	-0.00173
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00134	-0.00135	-0.00134
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00120	-0.00121	-0.00120

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00194	0.00195	0.00194
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00177	0.00178	0.00175
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00134	0.00135	0.00134
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00123	0.00122	0.00121

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00333	-0.00418	-0.00147
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00319	-0.00399	-0.00142
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00218	-0.00268	-0.00052
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00209	-0.00264	-0.00048

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00873	0.00857	0.01159
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00859	0.00839	0.01141
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00629	0.00616	0.00841
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00620	0.00605	0.00829

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xnor2_l	0.00836	0.00742	0.68036

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00079	0.00090

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xnor2_l	A->Y (RR)	B	0.14086	0.95898	7.53813
	A->Y (FR)	!B	0.08961	1.09991	12.28680
	B->Y (RR)	A	0.11338	0.92974	7.48693
	B->Y (FR)	!A	0.11423	1.12577	12.22120

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xnor2_l	A->Y (FF)	B	0.12244	0.73561	5.66814
	A->Y (RF)	!B	0.05145	0.61257	6.95143
	B->Y (FF)	A	0.10933	0.72191	5.65766
	B->Y (RF)	!A	0.06159	0.62609	6.96333

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00474	0.00404	0.00635
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01158	0.01106	0.01397
	B	A	0.00000	0.00000	0.00000
	B	A	0.00192	0.00144	0.00397
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01251	0.01215	0.01498

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01401	0.01331	0.01570
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00326	0.00255	0.00503
	B	A	0.00000	0.00000	0.00000
	B	A	0.01281	0.01269	0.01533
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00401	0.00324	0.00568

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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_ls__xor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xor2_l	0.00837	0.00747	0.65518

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00079	0.00086

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xor2_l	A->Y (RR)	!B	0.14105	0.94326	7.33576
	A->Y (FR)	B	0.10641	1.10931	12.05610
	B->Y (RR)	!A	0.11892	0.92952	7.33258
	B->Y (FR)	A	0.11689	1.12164	12.05870

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xor2_l	A->Y (FF)	!B	0.11417	0.72220	5.55097
	A->Y (RF)	B	0.05119	0.63475	7.18887
	B->Y (FF)	!A	0.10709	0.71512	5.54243
	B->Y (RF)	A	0.06051	0.62077	6.83150

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01349	0.01312	0.01593
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00265	0.00147	0.00374
	B	A	0.00000	0.00000	0.00000
	B	A	0.01381	0.01348	0.01629
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00175	0.00122	0.00373

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00264	0.00182	0.00425
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01456	0.01433	0.01681
	B	A	0.00000	0.00000	0.00000
	B	A	0.00266	0.00182	0.00428
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01303	0.01298	0.01564

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__ant	5.49450
sky130_osu_sc_15T_ls__tiehi	5.49450
sky130_osu_sc_15T_ls__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_ls__ant	0.28758
sky130_osu_sc_15T_ls__tiehi	0.00000
sky130_osu_sc_15T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__ant	0.00000	135941.00000	271881.00000
sky130_osu_sc_15T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	-0.00227	0.02658	0.38507

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	2.36678	2.23819	0.49157