ADD_LATCH_sky130_rhbd_tt_1P8_25C.ccs Library

Cell Groups
DLATCHN
DLATCH
FA
HA

DLATCHN

ADD_LATCH_sky130_rhbd_tt_1P8_25C.ccs Cell Library: Process , Voltage 1.80, Temp 25.00

Truth Table

INPUT		OUTPUT
D	GATE_N	Q
0	0	0
x	1	1
1	x	1

Footprint

Cell Name	Area
DLATCHN	0.00000

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	GATE_N	Q
DLATCHN	0.02247	0.01029	2.72261

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
DLATCHN	0.00000	22.21230	28.71050

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
DLATCHN	D->Q (RR)	0.20216	0.94945	6.90789
	GATE_N->Q (-R)	0.25368	1.10838	7.91566

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
DLATCHN	D->Q (FF)	0.17381	0.56680	3.31537
	GATE_N->Q (-F)	0.18902	0.61569	3.40652

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
DLATCHN	D	0.00000	0.00000	0.00000
	D	13.54100	13.58150	14.08890
	GATE_N	0.00000	0.00000	0.00000
	GATE_N	13.29190	13.31140	13.53620

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
DLATCHN	D	0.00000	0.00000	0.00000
	D	9.19091	9.23501	9.72951
	GATE_N	0.00000	0.00000	0.00000
	GATE_N	7.78536	7.80395	8.08086

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

Cell Name	When	Power(pJ)		
		first	mid	last
DLATCHN	GATE_N	0.00000	0.00000	0.00000
	GATE_N	16.21960	16.23930	16.46980

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

Cell Name	When	Power(pJ)		
		first	mid	last
DLATCHN	GATE_N	0.00000	0.00000	0.00000
	GATE_N	11.66060	11.68390	11.90740

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

Cell Name	When	Power(pJ)		
		first	mid	last
DLATCHN	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	16.31640	16.33580	16.59250
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	11.95410	11.97370	12.20150

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

Cell Name	When	Power(pJ)		
		first	mid	last
DLATCHN	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	11.76880	11.79230	12.03450
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	8.99152	9.01280	9.24846

DLATCH

ADD_LATCH_sky130_rhbd_tt_1P8_25C.ccs Cell Library:
Process , Voltage 1.80, Temp 25.00

Truth Table

INPUT		OUTPUT
D	GATE	Q
x	0	1
0	1	0
1	1	1

Footprint

Cell Name	Area
DLATCH	0.00000

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	GATE	Q
DLATCH	0.02249	0.02042	2.76142

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
DLATCH	0.00000	18.14480	24.27300

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
DLATCH	D->Q (RR)	0.20152	0.95171	6.96921
	GATE->Q (-R)	0.19911	0.93584	6.88469

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
DLATCH	D->Q (FF)	0.17189	0.56661	3.33990
	GATE->Q (-F)	0.12966	0.46078	2.57505

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
DLATCH	D	0.00000	0.00000	0.00000
	D	14.12490	14.16560	14.68300
	GATE	0.00000	0.00000	0.00000
	GATE	13.88670	13.89940	14.14150

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
DLATCH	D	0.00000	0.00000	0.00000
	D	9.54831	9.59352	10.09280
	GATE	0.00000	0.00000	0.00000
	GATE	8.11744	8.13211	8.40234

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

Cell Name	When	Power(pJ)		
		first	mid	last
DLATCH	!GATE	0.00000	0.00000	0.00000
	!GATE	12.15550	12.17470	12.40560

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

Cell Name	When	Power(pJ)		
		first	mid	last
DLATCH	!GATE	0.00000	0.00000	0.00000
	!GATE	8.01163	8.03378	8.25677

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

Cell Name	When	Power(pJ)		
		first	mid	last
DLATCH	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	12.37180	12.38740	12.60290
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	9.32187	9.33940	9.54952

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

Cell Name	When	Power(pJ)		
		first	mid	last
DLATCH	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	12.18650	12.20890	12.45060
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	8.23623	8.25407	8.47073

FA

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Truth Table

INPUT			OUTPUT	
A	B	CIN	COUT	SUM
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

Footprint

Cell Name	Area
FA	0.00000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	A	B	CIN	COUT	SUM
FA	0.03701	0.03673	0.03414	5.57595	2.42517

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
FA	0.00000	36.98210	51.95560

Delay Information

Delay(ns) to COUT rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
FA	A->COUT (RR)	0.34551	0.90123	6.92441
	B->COUT (RR)	0.37113	0.93231	6.98704
	CIN->COUT (RR)	0.16054	0.73760	6.84209

Delay(ns) to COUT falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
FA	A->COUT (FF)	0.32134	0.85474	5.92974
	B->COUT (FF)	0.33130	0.86811	6.01374
	CIN->COUT (FF)	0.18564	0.72643	5.73829

Delay(ns) to SUM rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
FA	A->SUM (-R)	-	0.27536	1.18167	8.22501
	B->SUM (-R)	-	0.25630	1.15120	7.99956
	CIN->SUM (RR)	(A * B) + (!A * !B)	0.11755	0.82558	6.49586
	CIN->SUM (FR)	(A * !B) + (!A * B)	0.08055	1.07766	9.82387

Delay(ns) to SUM falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
FA	A->SUM (-F)	-	0.25202	0.89014	5.29130
	B->SUM (-F)	-	0.23252	0.86182	5.12537
	CIN->SUM (FF)	(A * B) + (!A * !B)	0.09561	0.61826	4.48592
	CIN->SUM (RF)	(A * !B) + (!A * B)	0.05403	0.77132	6.92686

Power Information

Internal switching power(pJ) to COUT rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
FA	A	17.39830	17.42480	17.76280
	B	17.39780	17.42370	17.76460
	CIN	0.00000	0.00000	0.00000
	CIN	14.34930	14.36800	14.60890

Internal switching power(pJ) to COUT falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
FA	A	5.74875	5.75948	5.87626
	B	5.75238	5.76212	5.87344
	CIN	0.00000	0.00000	0.00000
	CIN	3.75430	3.77723	4.01909

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
FA	A	-	0.00000	0.00000	0.00000
	A	-	26.84950	26.90650	27.54430
	B	-	0.00000	0.00000	0.00000
	B	-	26.84510	26.90430	27.54520
	CIN	(A * B) + (!A * !B)	0.00000	0.00000	0.00000
	CIN	(A * B) + (!A * !B)	27.03940	27.05670	27.28120
	CIN	(A * !B) + (!A * B)	0.00000	0.00000	0.00000
	CIN	(A * !B) + (!A * B)	3.75405	3.77735	4.02747

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
FA	A	-	0.00000	0.00000	0.00000
	A	-	28.07220	28.33940	29.73990
	B	-	0.00000	0.00000	0.00000
	B	-	28.07000	28.27260	29.25170
	CIN	(A * B) + (!A * !B)	0.00000	0.00000	0.00000
	CIN	(A * B) + (!A * !B)	33.67280	33.69390	33.91160
	CIN	(A * !B) + (!A * B)	0.00000	0.00000	0.00000
	CIN	(A * !B) + (!A * B)	14.34900	14.36880	14.61980

HA

ADD_LATCH_sky130_rhbd_tt_1P8_25C.ccs Cell Library: Process , Voltage 1.80, Temp 25.00

Truth Table

INPUT		OUTPUT	
A	B	COUT	SUM
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

Footprint

Cell Name	Area
HA	0.00000

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	A	B	COUT	SUM
HA	0.03316	0.03703	5.98302	2.42848

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
HA	0.00000	17.03700	32.46230

Delay Information

Delay(ns) to COUT rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
HA	A->COUT (RR)	0.08038	0.69211	7.60121
	B->COUT (RR)	0.07533	0.69495	7.63999

Delay(ns) to COUT falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
HA	A->COUT (FF)	0.07430	0.62733	6.17793
	B->COUT (FF)	0.06981	0.60687	6.13044

Delay(ns) to SUM rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
HA	A->SUM (RR)	!B	0.09429	0.79005	6.37051
	A->SUM (FR)	B	0.08801	1.09734	9.92336
	B->SUM (RR)	!A	0.11722	0.80498	6.35602
	B->SUM (FR)	A	0.07815	1.08202	9.87725

Delay(ns) to SUM falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
HA	A->SUM (FF)	!B	0.08761	0.60597	4.57197
	A->SUM (RF)	B	0.05459	0.72456	6.53270
	B->SUM (FF)	!A	0.09652	0.62467	4.52598
	B->SUM (RF)	A	0.04986	0.76077	6.84421

Power Information

Internal switching power(pJ) to COUT rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
HA	A	0.00000	0.00000	0.00000
	A	11.85000	11.87360	12.12870
	B	0.00000	0.00000	0.00000
	B	11.84990	11.87340	12.13490

Internal switching power(pJ) to COUT falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
HA	A	0.00000	0.00000	0.00000
	A	0.86192	0.88775	1.14164
	B	0.00000	0.00000	0.00000
	B	0.85384	0.87753	1.11016

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
HA	A	B	0.00000	0.00000	0.00000
	A	B	0.86236	0.88864	1.15621
	A	!B	0.00000	0.00000	0.00000
	A	!B	3.99838	4.01798	4.25922
	B	A	0.00000	0.00000	0.00000
	B	A	0.85400	0.87755	1.11962
	B	!A	0.00000	0.00000	0.00000
	B	!A	4.01354	4.03192	4.28021

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
HA	A	B	0.00000	0.00000	0.00000
	A	B	11.84970	11.87410	12.14680
	A	!B	0.00000	0.00000	0.00000
	A	!B	9.43806	9.46109	9.69512
	B	A	0.00000	0.00000	0.00000
	B	A	11.84970	11.87610	12.15480
	B	!A	0.00000	0.00000	0.00000
	B	!A	9.44454	9.46542	9.67309