$TMR_RNQ_sky130_rhbd_tt_1P8_25C.ccs\ Library$

Cell Groups
TMRDFFQNX1
TMRDFFQX1
TMRDFFRNQNX1
TMRDFFRNQX1

TMRDFFQNX1

TMR_RNQ_sky130_rhbd_tt_1P8_25C.ccs Cell Library: Process , Voltage 1.80, Temp 25.00

Truth Table

INPUT		OUTPUT
D	CLK	QN
0	R	1
1	R	0
X	x	IQN

Footprint

Cell Name	Area
TMRDFFQNX1	0.00000

Pin Capacitance Information

Call Name	Pin C	ap(pf)	Max Cap(pf)
Cell Name	D	CLK	QN
TMRDFFQNX1	0.03880	0.07289	3.19295

Coll Name	Leakage(nW)			
Cell Name	Min.	Avg	Max.	
TMRDFFQNX1	0.00000	80.34340	116.88600	

Delay Information Delay(ns) to QN rising:

Call Name	oll Nama Timing Ana(Din)		Delay(ns)		
Cell Name	Timing Arc(Dir)	First	Mid	Last	
TMRDFFQNX1	CLK->QN (RR)	0.48866	1.71427	7.70903	

Delay(ns) to QN falling:

Call Name	Timing Ang(Din)	Delay(ns)		
Cell Name	Timing Arc(Dir)	First	Mid	Last
TMRDFFQNX1	CLK->QN (RF)	0.29732	0.72771	2.17277

Constraint Information

Constraints(ns) for D rising:

Cell Name	Timing Chook	ck Ref Pin(trans)	Refere	ence Slew Ra	ate(ns)
	Timing Check		first	mid	last
TMRDFFQNX1	hold	CLK (R)	0.06550	0.10335	0.58620
	setup	CLK (R)	0.13009	0.27656	0.72667

Constraints(ns) for D falling:

Call Name	Timing Cheek Dof Din(trong)		Refere	ence Slew Ra	Rate(ns)	
Cell Name	Timing Check	Ref Pin(trans)	first	mid	last	
TMDDEEONV1	hold	CLK (R)	-0.06961	-0.18819	-0.72288	
TMRDFFQNX1	setup	CLK (R)	0.09354	0.26568	1.33210	

Constraints(ns) for CLK rising (conditional):

Cell Name	Cell Name Timing Check Ref Pin(trans)	When	Refere	nce Slew I	Rate(ns)	
Cell Name	Tilling Check	neck Ref Pin(trans)	vviieii	first	mid	last
TMRDFFQNX1	min_pulse_width	CLK ()	D	0.42480	2.64526	16.50020
	min_pulse_width	CLK ()	!D	0.42480	2.64526	16.50020

$Constraints (ns) \ for \ CLK \ falling \ (conditional):$

Cell Name	Timing Check Dof Div(4vous)	When	Refere	nce Slew I	Rate(ns)	
Cen Name	Timing Check	Ref Pin(trans)	When	first	mid	last
TMRDFFQNX1	min_pulse_width	CLK ()	D	0.42480	2.64526	16.50020
	min_pulse_width	CLK ()	!D	0.42480	2.64526	16.50020

Internal switching power(pJ) to QN rising:

Call Name	T4	Power(pJ)			
Cell Name	Input	first	mid	last	
TMRDFFQNX1	CLK	0.00000	0.00000	0.00000	
	CLK	0.33649	0.44863	1.00868	

Internal switching power(pJ) to QN falling:

Cell Name	T4	Power(pJ)			
	Input	first	mid	last	
TMRDFFQNX1	CLK	0.00000	0.00000	0.00000	
	CLK	0.29883	0.40355	0.93775	

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

Cell Name	***	Power(pJ)			
	When	first	last		
	(CLK * QN)	0.00000	0.00000	0.00000	
	(CLK * QN)	0.06735	0.10383	0.27769	
WADDEEONWA	(CLK * !QN)	0.00000	0.00000	0.00000	
TMRDFFQNX1	(CLK * !QN)	0.13130	0.24309	0.77138	
	!CLK	0.00000	0.00000	0.00000	
	!CLK	0.12223	0.23491	0.75557	

Cell Name	Whom		Power(pJ)	
	When	first mid las		last
	(CLK * QN)	0.00000	0.00000	0.00000
	(CLK * QN)	0.10329	0.14500	0.32220
TMDDEEONV1	(CLK * !QN)	0.00000	0.00000	0.00000
TMRDFFQNX1	(CLK * !QN)	0.11602	0.24577	0.79854
	!CLK	0.00000	0.00000	0.00000
	!CLK	0.18054	0.30474	0.82896

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

Cell Name	W/h or	Power(pJ)			
	When	first	first mid last		
TMRDFFQNX1	(D * !QN)	0.00000	0.00000	0.00000	
	(D * !QN)	0.17745	0.27952	0.80468	
	(!D * QN)	0.00000	0.00000	0.00000	
	(!D * QN)	0.20402	0.29513	0.79790	

Cell Name	When			
	vvnen	first	mid	last
	(D * QN)	0.00000	0.00000	0.00000
	(D * QN)	0.29031	0.40402	0.91706
	(D * !QN)	0.00000	0.00000	0.00000
TMDDEFONV1	(D * !QN)	0.21159	0.32840	0.86208
TMRDFFQNX1	(!D * QN)	0.00000	0.00000	0.00000
	(!D * QN)	0.18593	0.30972	0.82466
	(!D * !QN)	0.00000	0.00000	0.00000
	(!D * !QN)	0.23691	0.36608	0.88418

TMRDFFQX1

TMR_RNQ_sky130_rhbd_tt_1P8_25C.ccs Cell Library: Process , Voltage 1.80, Temp 25.00

Truth Table

INPUT		OUTPUT
D	CLK	Q
0	R	0
1	R	1
X	X	IQ

Footprint

Cell Name	Area
TMRDFFQX1	0.00000

Pin Capacitance Information

Call Nama	Pin C	ap(pf)	Max Cap(pf)	
Cell Name	D	CLK	Q	
TMRDFFQX1	0.03879	0.07298	5.23943	

Call Nama	Leakage(nW)			
Cell Name	Min.	Avg	Max.	
TMRDFFQX1	0.00000	83.30790	123.69400	

Delay Information Delay(ns) to Q rising:

Call Name	Timing Ang(Din)	Delay(ns)			
Cell Name	Timing Arc(Dir)	First	Mid	Last	
TMRDFFQX1	CLK->Q (RR)	0.35534	1.35702	7.12728	

Delay(ns) to Q falling:

Call Name	Timing Ang(Din)		Delay(ns)	
Cell Name	Timing Arc(Dir)	First	Mid	Last
TMRDFFQX1	CLK->Q (RF)	0.50436	1.27214	5.47985

Constraint Information

Constraints(ns) for D rising:

Cell Name Timing Check	Timing Chash	Reference Slew			Rate(ns)	
	Ref Pin(trans)	first	last			
TMDDEEOV1	hold	CLK (R)	0.06620	0.10171	0.57612	
TMRDFFQX1	setup	CLK (R)	0.11694	0.25760	0.71129	

Constraints(ns) for D falling:

Cell Name	Timin a Chaole	Dof Div (two wa)	Reference Slew Rate(ns)			
	Timing Check	Ref Pin(trans)	first	mid	last	
TMRDFFQX1	hold	CLK (R)	-0.07028	-0.18527	-0.71055	
	setup	CLK (R)	0.09189	0.26568	1.33230	

Constraints(ns) for CLK rising (conditional):

Cell Name Timing Check Re		Ref Pin(trans)	When	Reference Slew Rate(ns)			
Cell Name	Tilling Check	Kei Fill(trails)	vviieii	first	mid	last	
TMRDFFQX1	min_pulse_width	CLK ()	D	0.42480	2.64526	16.50020	
	min_pulse_width	CLK ()	!D	0.42480	2.64526	16.50020	

$Constraints (ns) \ for \ CLK \ falling \ (conditional):$

Call Name	Timing Cheek	Ref Pin(trans) When		Reference Slew Rate(ns)		
Cell Name	Timing Check	Rei Pill(trails)	when	first mid		last
TMRDFFQX1	min_pulse_width	CLK ()	D	0.42480	2.64526	16.50020
	min_pulse_width	CLK ()	!D	0.42480	2.64526	16.50020

Internal switching power(pJ) to Q rising:

Call Name	Torrest	Power(pJ)			
Cell Name	Input	first mid	mid	last	
TMRDFFQX1	CLK	0.00000	0.00000	0.00000	
	CLK	0.30874	0.41114	0.95153	

Internal switching power(pJ) to Q falling:

Call Name	T4	Power(pJ)			
Cell Name	Input	first mid		last	
TMRDFFQX1	CLK	0.00000	0.00000	0.00000	
	CLK	0.35448	0.45487	0.97976	

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

Cell Name	W/h ore	Power(pJ)			
	When	first	mid	last	
	(CLK * Q)	0.00000	0.00000	0.00000	
TMRDFFQX1	(CLK * Q)	0.12927	0.24061	0.76739	
	(CLK * !Q)	0.00000	0.00000	0.00000	
	(CLK * !Q)	0.07177	0.10820	0.28196	
	!CLK	0.00000	0.00000	0.00000	
	!CLK	0.12591	0.23896	0.76100	

Cell Name	Whom			
	When	first	mid	last
	(CLK * Q)	0.00000	0.00000	0.00000
	(CLK * Q)	0.11606	0.24573	0.79802
TWO DEED VA	(CLK * !Q)	0.00000	0.00000	0.00000
TMRDFFQX1	(CLK * !Q)	0.10708	0.14868	0.32585
	!CLK	0.00000	0.00000	0.00000
	!CLK	0.18423	0.30862	0.83408

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

Cell Name	Where		Power(pJ)		
	When	first	mid	last	
TMRDFFQX1	(D * Q)	0.00000	0.00000	0.00000	
	(D * Q)	0.17608	0.27771	0.80081	
	(!D * !Q)	0.00000	0.00000	0.00000	
	(!D * !Q)	0.21094	0.30215	0.80475	

Cell Name	When		Power(pJ)	
Cen Name	when	first	mid	last
	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.21168	0.32843	0.86185
	(D * !Q)	0.00000	0.00000	0.00000
TMDDEFOV1	(D * !Q)	0.29298	0.40651	0.91916
TMRDFFQX1	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.23652	0.36541	0.88275
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.18876	0.31272	0.82685

TMRDFFRNQNX1

TMR_RNQ_sky130_rhbd_tt_1P8_25C.ccs Cell Library: Process , Voltage 1.80, Temp 25.00

Truth Table

	INP	UT	OUTPUT
D	RN	CLK	QN
x	X	x	-

Footprint

Cell Name	Area
TMRDFFRNQNX1	0.00000

Pin Capacitance Information

Call Nama		Pin Cap(pf)	Max Cap(pf)	
Cell Name	D	RN	CLK	QN
TMRDFFRNQNX1	0.03984	0.08922	0.06777	1.90988

Cell Name	Leakage(nW)				
	Min.	Avg	Max.		
TMRDFFRNQNX1	0.00000	599388.00000	943956.00000		

Delay Information Delay(ns) to QN rising:

Call Name	Timing Aug (Div)	Delay(ns)			
Cell Name	Timing Arc(Dir)	First	Mid	Last	
TMRDFFRNQNX1	CLK->QN (FR)	0.76545	3.32042	13.34460	
	RN->QN (FR)	0.51700	2.05570	8.04629	

Constraint InformationConstraints(ns) for CLK falling (conditional):

Cell Name	Timing Check Ref When	Il Nama Timing Cheek		Refere	nce Slew	Rate(ns)
Cen Name	Tilling Check	Pin(trans)	When	first	mid	last
TMRDFFRNQNX1	min_pulse_width	CLK ()	(!D * RN)	0.48986	2.64526	16.50020

Internal switching power(pJ) to QN rising:

Cell Name	I	Power(pJ)				
Cen Name	Input	first	mid	last		
TMRDFFRNQNX1	CLK	0.00000	0.00000	0.00000		
	CLK	485.38300	484.59400	481.05600		
	RN	0.00000	0.00000	0.00000		
	RN	870.46800	868.43700	864.31100		

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

Call Name	W/h ore		Power(pJ)			
Cell Name	When	first	mid	last		
TMRDFFRNQNX1	(CLK * RN * !QN)	0.00000	0.00000	0.00000		
	(CLK * RN * !QN)	401.74400	400.88700	397.68400		
	(!CLK * RN * QN)	0.00000	0.00000	0.00000		
	(!CLK * RN * QN)	429.32600	429.47200	430.11300		

Call Name	When	Power(pJ)			
Cell Name When	first	mid	last		
TMRDFFRNQNX1	(!CLK * RN * QN)	0.00000	0.00000	0.00000	
	(!CLK * RN * QN)	491.18400	491.17900	491.02400	

TMRDFFRNQX1

TMR_RNQ_sky130_rhbd_tt_1P8_25C.ccs Cell Library: Process , Voltage 1.80, Temp 25.00

Truth Table

	INPUT		OUTPUT	
D	RN	CLK	Q	
X	X	x	-	

Footprint

Cell Name	Area	
TMRDFFRNQX1	0.00000	

Pin Capacitance Information

Call Nama		Pin Cap(pf)	Max Cap(pf)	
Cell Name	D	RN	CLK	Q
TMRDFFRNQX1	0.03983	0.08919	0.06783	7.98023

Call Name	Leakage(nW)				
Cell Name	Min.	Avg	Max.		
TMRDFFRNQX1	0.00000	599844.00000	944539.00000		

Delay Information Delay(ns) to Q falling:

Call Name	Timing Ang(Din)	Delay(ns)			
Cell Name	Timing Arc(Dir)	First	Mid	Last	
TMRDFFRNQX1	CLK->Q (FF)	0.73629	2.79306	13.40750	
	RN->Q (FF)	0.49039	1.60294	8.61854	

Constraint InformationConstraints(ns) for CLK falling (conditional):

Cell Name	Timing Check	Dof Din(tuons)	Whon	Refere	nce Slew	Rate(ns)
Cen Name	Timing Check	Ref Pin(trans)	When	first	mid	last
TMRDFFRNQX1	min_pulse_width	CLK ()	(!D * RN)	0.48335	2.64526	16.50020

Internal switching power(pJ) to Q falling:

Cell Name	Input	Power(pJ)			
		first	mid	last	
TMRDFFRNQX1	CLK	-0.05433	-1.44663	-12.90000	
	CLK	485.52400	484.69200	481.11700	
	RN	-0.05433	-1.44667	-12.90040	
	RN	871.79900	869.70600	865.47300	

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

Cell Name	W/h on	Power(pJ)		
	When	first	mid	last
TMRDFFRNQX1	(CLK * RN * Q)	0.00000	0.00000	0.00000
	(CLK * RN * Q)	402.03800	401.17400	397.96700
	(!CLK * RN * !Q)	0.00000	0.00000	0.00000
	(!CLK * RN * !Q)	430.03800	430.18600	430.82600

Cell Name	Whon	Power(pJ)		
	When	first	mid	last
TMRDFFRNQX1	(!CLK * RN * !Q)	0.00000	0.00000	0.00000
	(!CLK * RN * !Q)	491.26400	491.26500	491.10500