MOD 5 COUNTER

Specification:-

Frequency of operation-250MHz

Counting States:

000

001

010

011

100

Layout:-

Height-1.4um

Length-107um

Setup and holdtime less than 1ps

Max frequency of operation:-

JK Flipflop- 4GHz

Counter-2GHz

DRC errors:-

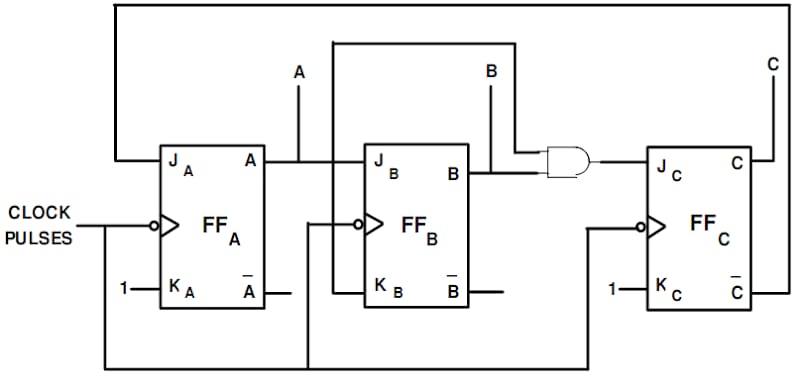
2 Density errors not addressed. All errors checked except this.

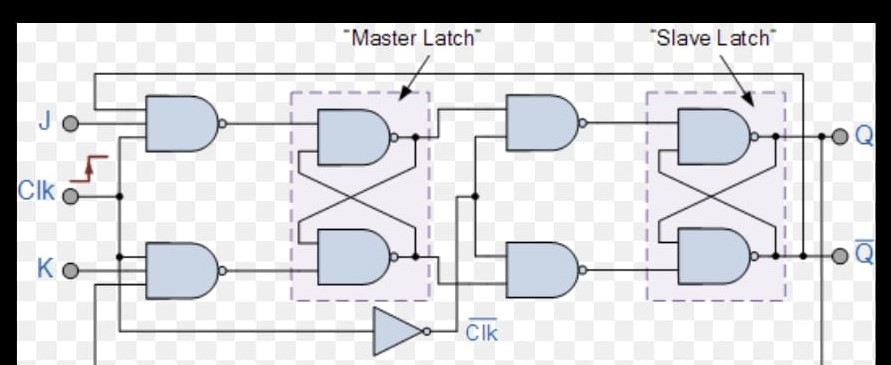
LVS errors:

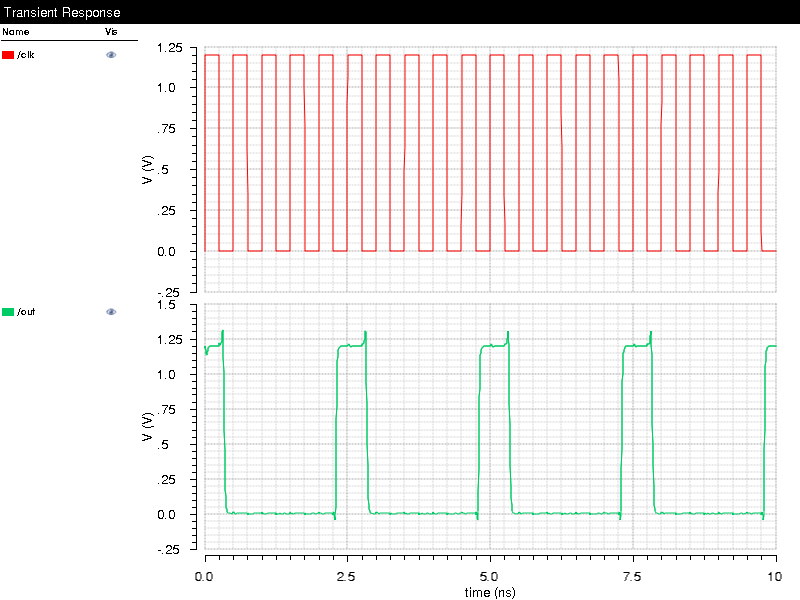
All errors checked

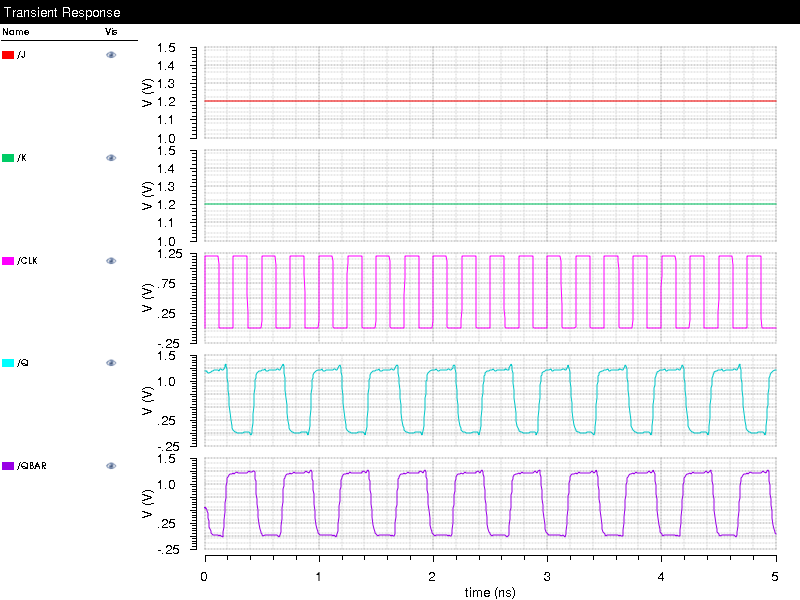
PEX errors:-

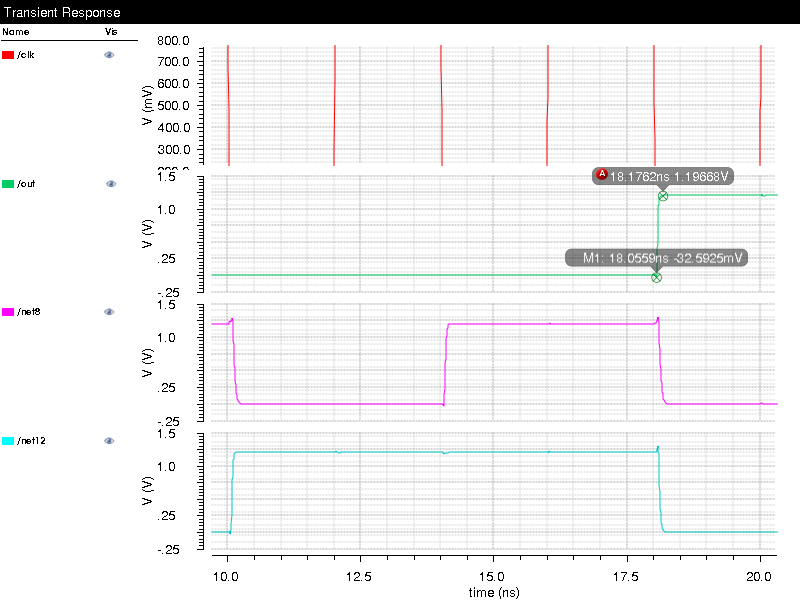
All errors checked.





 counter at 2Ghz



JKJJ

For A

Rise time:50.77E-12{Expression:-riseTime(v("/A" ?result "tran") 0 nil 1.2 nil 10 90 nil "time" )}

Fall time:50.77E-12{Expression:-fallTime(v("/A" ?result "tran") 0 nil 1.2 nil 10 90 nil "time" )}

For B

Rise time:39.34E-12{Expression:-riseTime(v("/B" ?result "tran") 0 nil 1.2 nil 10 90 nil "time" )}

Fall time:39.34E-12{Expression:-fallTime(v("/B" ?result "tran") 0 nil 1.2 nil 10 90 nil "time" )}

For C

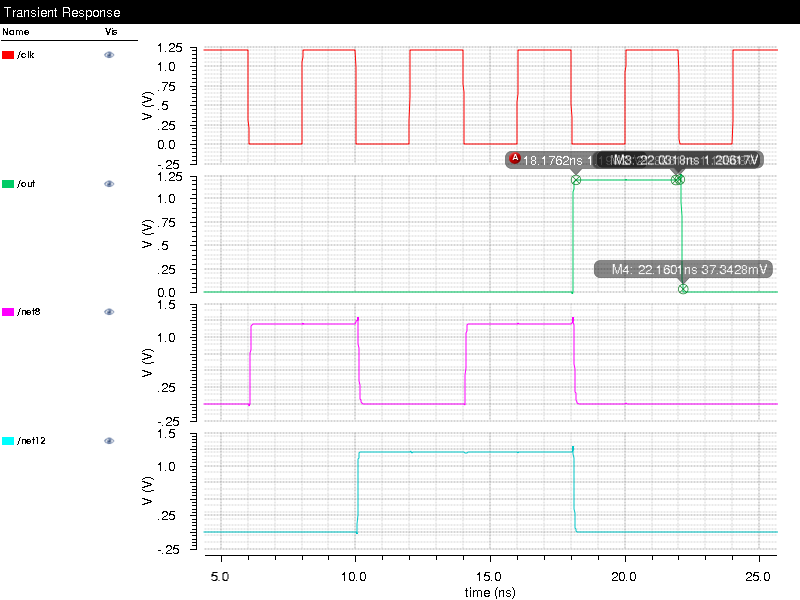
Rise time:28.67E-12{Expression:-riseTime(v("/C" ?result "tran") 0 nil 1.2 nil 10 90 nil "time" )}

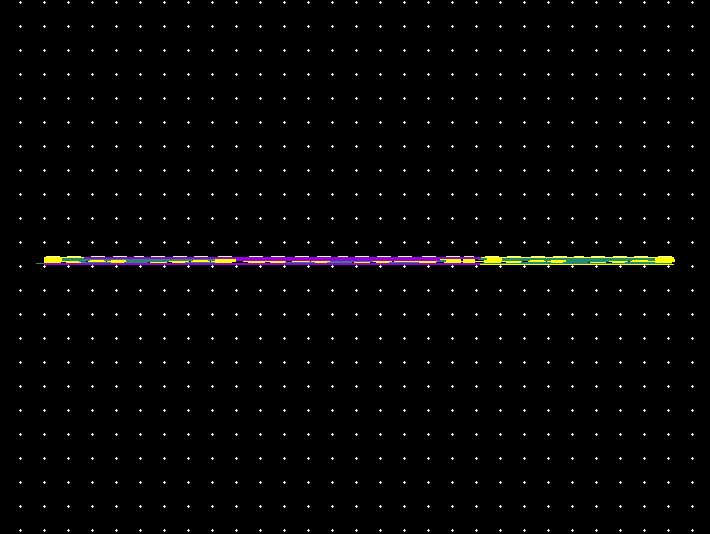
Fall time:28.67E-12{Expression:-fallTime(v("/C" ?result "tran") 0 nil 1.2 nil 10 90 nil "time" )}

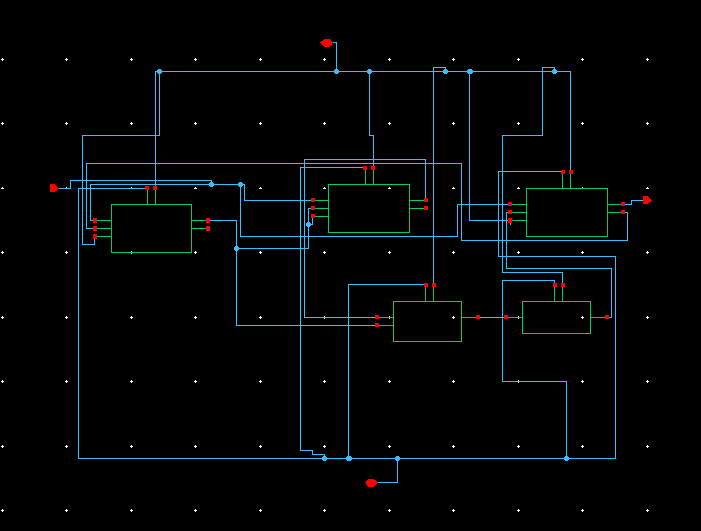
Delay time (From clk to output A):32.79E-12{delay(?wf1 v("/clk\_n" ?result "tran"), ?value1 0.6, ?edge1 "falling", ?nth1 1, ?td1 0.0, ?wf2 v("/A" ?result "tran"), ?value2 0.6, ?edge2 "rising", ?nth2 1, ?td2 nil , ?stop nil, ?multiple nil)}

Delay time (From clk to output B):65.47E-12{delay(?wf1 v("/clk\_n" ?result "tran"), ?value1 0.6, ?edge1 "falling", ?nth1 6, ?td1 0.0, ?wf2 v("/B" ?result "tran"), ?value2 0.6, ?edge2 "rising", ?nth2 1, ?td2 nil , ?stop nil, ?multiple nil)}

Delay time (From clk to output C):10.36E-12{delay(?wf1 v("/clk\_n" ?result "tran"), ?value1 0.6, ?edge1 "falling", ?nth1 1, ?td1 0.0, ?wf2 v("/C" ?result "tran"), ?value2 0.6, ?edge2 "rising", ?nth2 1, ?td2 nil , ?stop nil, ?multiple nil)}

JK FLIPFLOP at 4GHz

LAYOUT



SChematic