LAB 5: THE FULL-ADDER

TEAM MEMBERS: GANESH VHATKAR & AMRITHA AJITHKUMAR

Schematic:

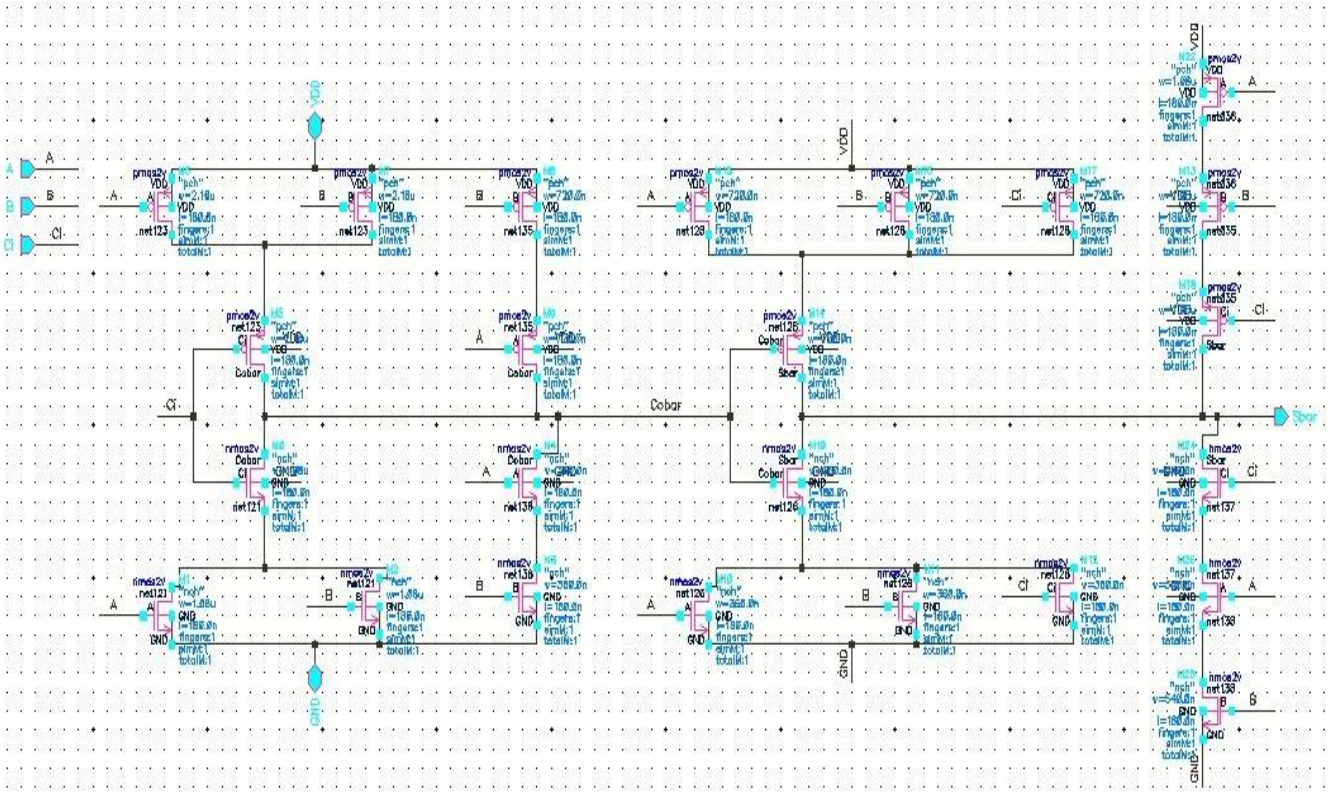

Figure.1

Symbol:

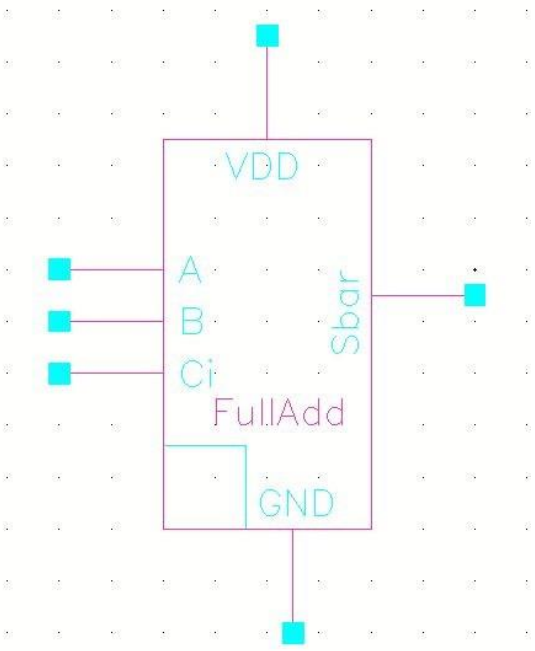

Figure.2

Layout:

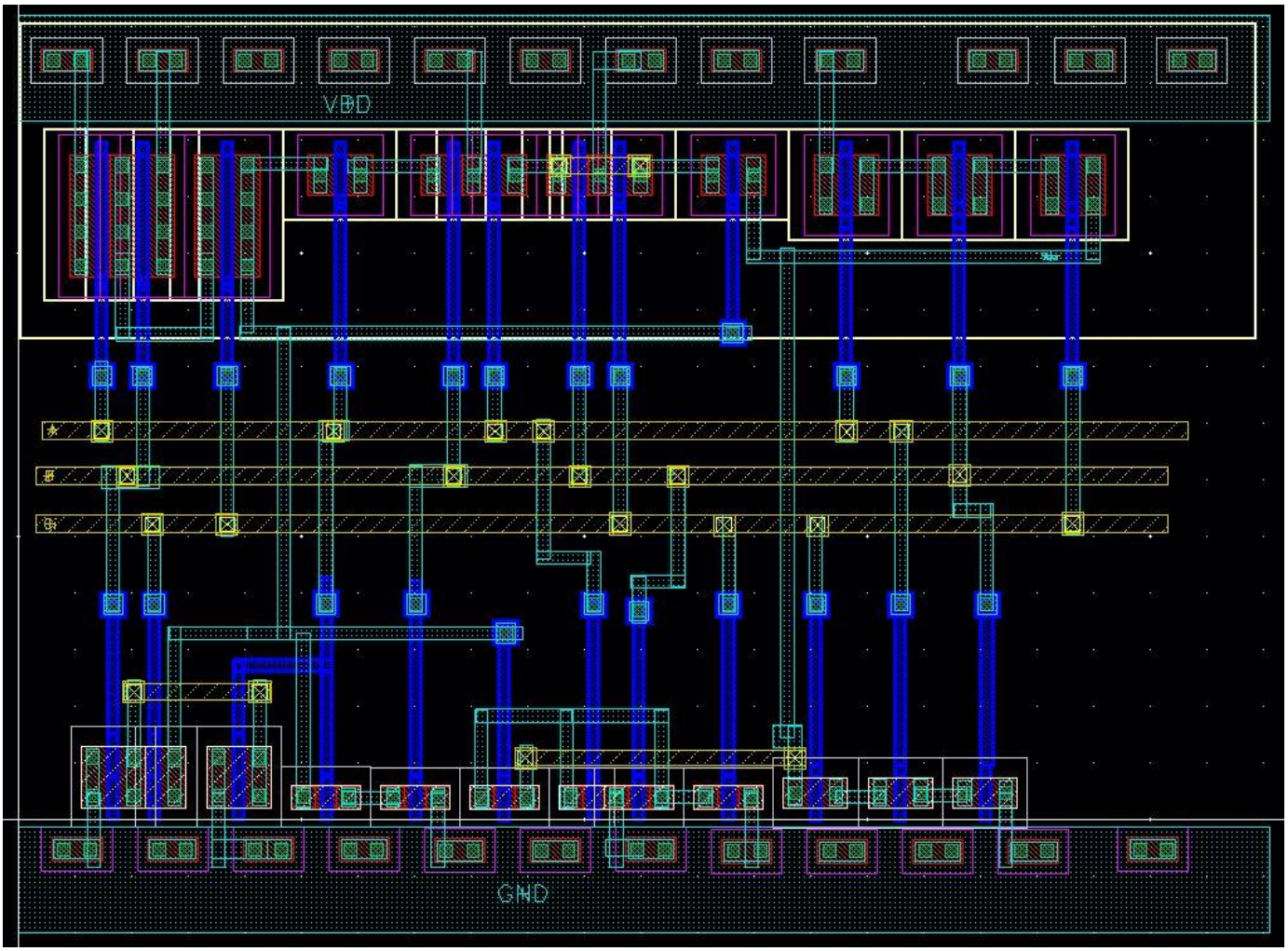

Figure.3

DRC:

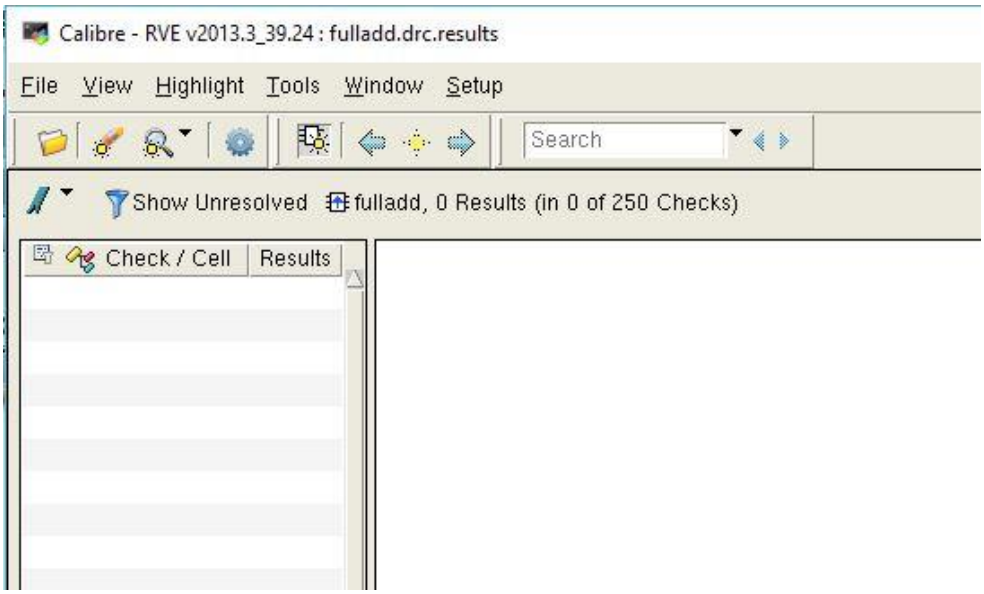

Figure.4

LVS:

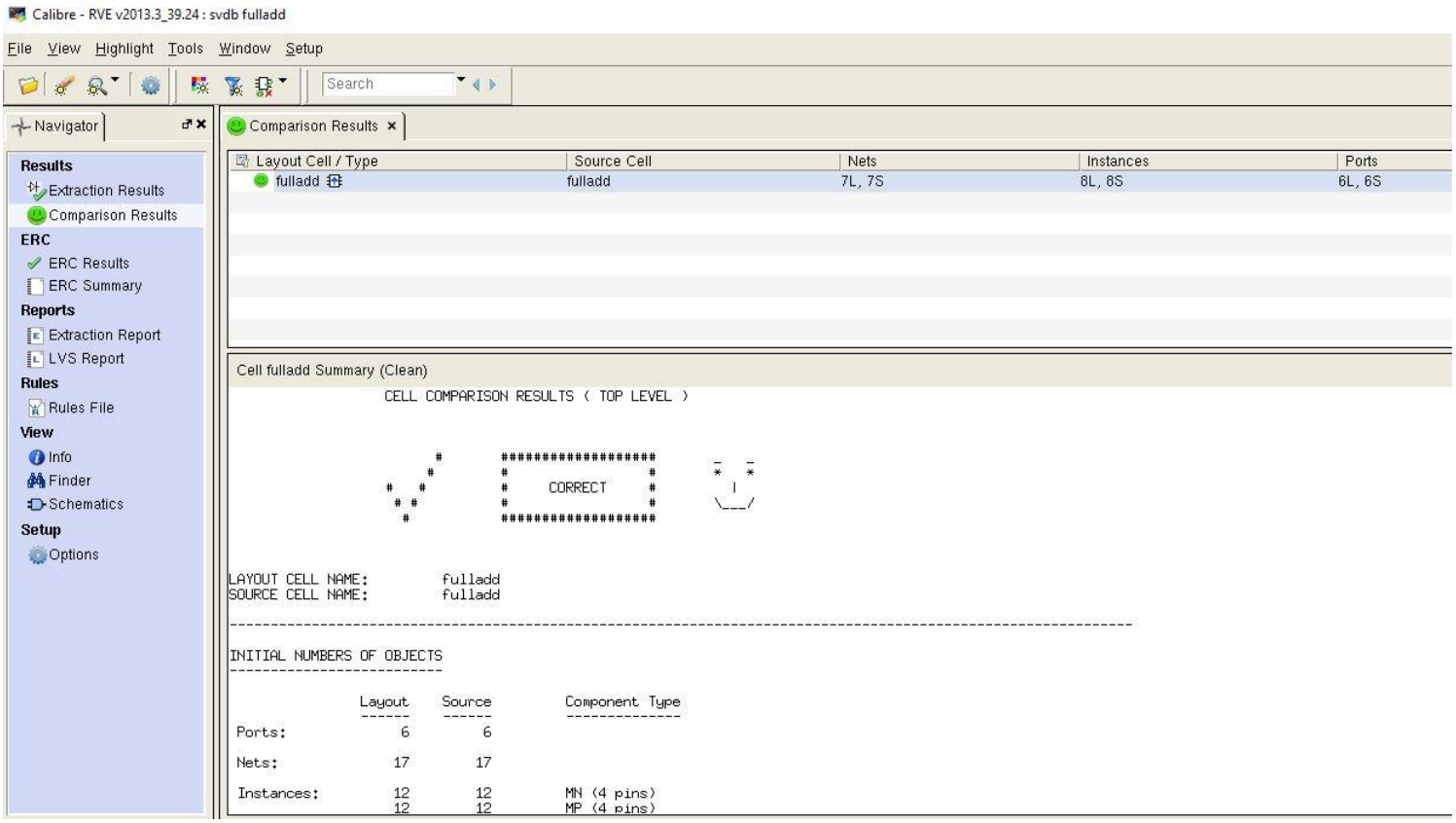

Figure.5

Waveforms:

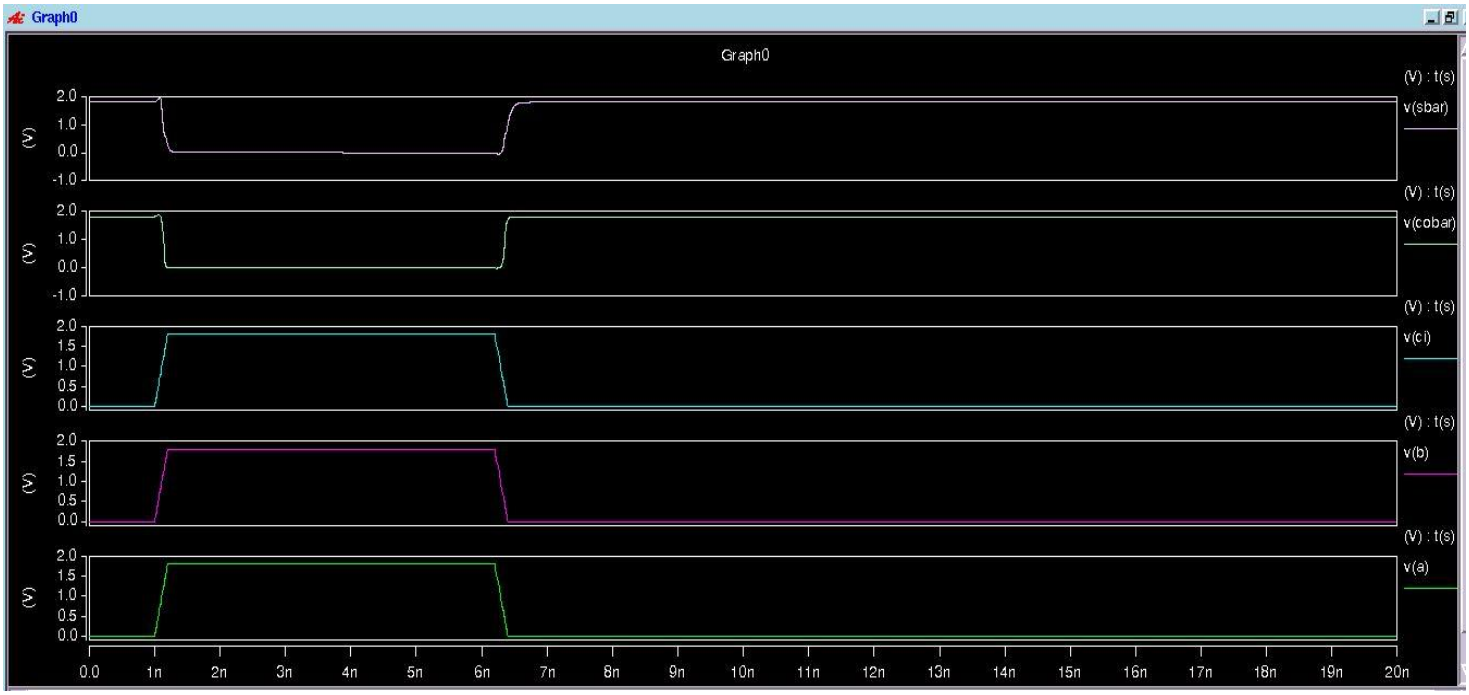

Figure.6

APPENDIX

Schematic Netlist:

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** Generated on: Feb 27 12:10:19 2018
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** Design cell name: fulladd
** Design view name: schematic

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+    PARHIER=LOCAL
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** Cell name: fulladd
** View name: schematic
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ps=3.12e-6 nrd=250e-3 nrs=250e-3 sa=480e-9 sb=480e-9 sca=0 scb=0 scc=0
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ps=3.12e-6 nrd=250e-3 nrs=250e-3 sa=480e-9 sb=480e-9 sca=0 scb=0 scc=0
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ps=1.88e-6 nrd=861.111e-3 nrs=861.111e-3 sa=520e-9 sb=520e-9 sca=0 scb=0 scc=0
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ps=1.88e-6 nrd=861.111e-3 nrs=861.111e-3 sa=520e-9 sb=520e-9 sca=0 scb=0 scc=0
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pd=1.88e-6 ps=1.88e-6 nrd=861.111e-3 nrs=861.111e-3 sa=520e-9 sb=520e-9 sca=0 scb=0 scc=0
m26 net137 a net138 gnd nch l=180e-9 w=540e-9 m=1 nf=1 sd=540e-9 ad=259.2e-15 as=259.2e-15 pd=2.04e-
6 ps=2.04e-6 nrd=500e-3 nrs=500e-3 sa=480e-9 sb=480e-9 sca=0 scb=0 scc=0
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ps=2.04e-6 nrd=500e-3 nrs=500e-3 sa=480e-9 sb=480e-9 sca=0 scb=0 scc=0
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m13 net035 b net036 vdd pch l=180e-9 w=1.08e-6 m=1 nf=1 sd=540e-9 ad=518.4e-15 as=518.4e-15 pd=3.12e-6 ps=3.12e-6 nrd=250e-3 nrs=250e-3 sa=480e-9 sb=480e-9 sca=0 scb=0 scc=0
m14 sbar cobar net128 vdd pch l=180e-9 w=720e-9 m=1 nf=1 sd=540e-9 ad=345.6e-15 as=345.6e-15 pd=2.4e-6 ps=2.4e-6 nrd=375e-3 nrs=375e-3 sa=480e-9 sb=480e-9 sca=0 scb=0 scc=0
m15 net128 a vdd vdd pch l=180e-9 w=720e-9 m=1 nf=1 sd=540e-9 ad=345.6e-15 as=345.6e-15 pd=2.4e-6 ps=2.4e-6 nrd=375e-3 nrs=375e-3 sa=480e-9 sb=480e-9 sca=0 scb=0 scc=0
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m22 net036 a vdd vdd pch l=180e-9 w=1.08e-6 m=1 nf=1 sd=540e-9 ad=518.4e-15 as=518.4e-15 pd=3.12e-6 ps=3.12e-6 nrd=250e-3 nrs=250e-3 sa=480e-9 sb=480e-9 sca=0 scb=0 scc=0

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Layout Netlist:

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* Version "v2013.3_39.24"
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+ PD=1.62e-06 PS=3.12e-06 NRD=0.25 NRS=0.444444 SA=4.8e-07 SB=1.2e-06
+ SCA=0.564889 SCB=9.5469e-08 SCC=6.83289e-15
MM0 COBAR CI NET121 GND nch L=1.8e-07 W=1.08e-06 AD=5.184e-13 AS=2.916e-13
+ PD=3.12e-06 PS=1.62e-06 NRD=0.444444 NRS=0.25 SA=1.2e-06 SB=4.8e-07
+ SCA=0.383417 SCB=1.58865e-10 SCC=1.28361e-20
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+ PD=3.12e-06 PS=3.12e-06 NRD=0.444444 NRS=0.444444 SA=4.8e-07 SB=4.8e-07
+ SCA=0.275342 SCB=5.66293e-11 SCC=7.35032e-21
MM10 NET126 A GND GND nch L=1.8e-07 W=3.6e-07 AD=2.124e-13 AS=1.242e-13
+ PD=1.88e-06 PS=1.04e-06 NRD=1.63889 NRS=0.958333 SA=5.2e-07 SB=1.32e-06
+ SCA=0.291342 SCB=1.64526e-10 SCC=2.20319e-20
MM11 NET126 B GND GND nch L=1.8e-07 W=3.6e-07 AD=2.124e-13 AS=1.242e-13
+ PD=1.88e-06 PS=1.04e-06 NRD=1.63889 NRS=0.958333 SA=1.32e-06 SB=5.2e-07
+ SCA=0.291342 SCB=1.64526e-10 SCC=2.20319e-20
MM24 SBAR CI NET137 GND nch L=1.8e-07 W=5.4e-07 AD=2.592e-13 AS=2.592e-13
+ PD=2.04e-06 PS=2.04e-06 NRD=0.888889 NRS=0.888889 SA=4.8e-07 SB=4.8e-07
+ SCA=0.279896 SCB=1.23935e-10 SCC=1.78753e-20
MM26 NET137 A NET138 GND nch L=1.8e-07 W=5.4e-07 AD=2.592e-13 AS=2.592e-13
+ PD=2.04e-06 PS=2.04e-06 NRD=0.888889 NRS=0.888889 SA=4.8e-07 SB=4.8e-07
+ SCA=0.279896 SCB=1.23935e-10 SCC=1.78753e-20
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+ PD=2.04e-06 PS=2.04e-06 NRD=0.888889 NRS=0.888889 SA=4.8e-07 SB=4.8e-07
+ SCA=0.28143 SCB=1.30005e-10 SCC=1.97113e-20
MM4 COBAR A NET136 GND nch L=1.8e-07 W=3.6e-07 AD=2.124e-13 AS=2.124e-13
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+ SCA=0.290599 SCB=1.56843e-10 SCC=1.99795e-20
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+ SCA=0.291342 SCB=1.64526e-10 SCC=2.20319e-20
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+ PD=1.88e-06 PS=1.88e-06 NRD=1.63889 NRS=1.63889 SA=5.2e-07 SB=5.2e-07
+ SCA=0.29209 SCB=1.72584e-10 SCC=2.4295e-20
MM12 NET126 CI GND GND nch L=1.8e-07 W=3.6e-07 AD=2.124e-13 AS=2.124e-13
+ PD=1.88e-06 PS=1.88e-06 NRD=1.63889 NRS=1.63889 SA=5.2e-07 SB=5.2e-07
+ SCA=0.291342 SCB=1.64526e-10 SCC=2.20319e-20
MM6 NET123 A VDD VDD pch L=1.8e-07 W=2.16e-06 AD=5.832e-13 AS=1.0368e-12
+ PD=2.7e-06 PS=5.28e-06 NRD=0.125 NRS=0.222222 SA=4.8e-07 SB=1.2e-06
+ SCA=0.910772 SCB=2.005e-06 SCC=9.11689e-12
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+ SCA=0.634067 SCB=9.72561e-07 SCC=8.17095e-12
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+ PD=5.28e-06 PS=5.28e-06 NRD=0.222222 NRS=0.222222 SA=4.8e-07 SB=4.8e-07
+ SCA=0.491653 SCB=9.71392e-07 SCC=8.17095e-12
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+ SCA=0.346636 SCB=9.71831e-11 SCC=1.42538e-20
MM13 NET035 B NET036 VDD pch L=1.8e-07 W=1.08e-06 AD=5.184e-13 AS=5.184e-13
+ PD=3.12e-06 PS=3.12e-06 NRD=0.444444 NRS=0.444444 SA=4.8e-07 SB=4.8e-07
+ SCA=0.346636 SCB=9.71831e-11 SCC=1.42538e-20
MM18 SBAR CI NET035 VDD pch L=1.8e-07 W=1.08e-06 AD=5.184e-13 AS=5.184e-13
+ PD=3.12e-06 PS=3.12e-06 NRD=0.444444 NRS=0.444444 SA=4.8e-07 SB=4.8e-07
+ SCA=0.403183 SCB=9.72134e-11 SCC=1.42538e-20
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+ PD=2.4e-06 PS=2.4e-06 NRD=0.666667 NRS=0.666667 SA=4.8e-07 SB=4.8e-07
+ SCA=0.341829 SCB=3.61524e-11 SCC=1.5755e-21
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+ PD=2.4e-06 PS=2.4e-06 NRD=0.666667 NRS=0.666667 SA=4.8e-07 SB=4.8e-07
+ SCA=0.341829 SCB=3.61524e-11 SCC=1.5755e-21
MM15 NET128 A VDD VDD pch L=1.8e-07 W=7.2e-07 AD=3.456e-13 AS=1.944e-13
+ PD=2.4e-06 PS=1.26e-06 NRD=0.666667 NRS=0.375 SA=1.2e-06 SB=4.8e-07
+ SCA=0.341829 SCB=3.61524e-11 SCC=1.5755e-21
MM17 NET128 CI VDD VDD pch L=1.8e-07 W=7.2e-07 AD=3.456e-13 AS=1.944e-13
+ PD=2.4e-06 PS=1.26e-06 NRD=0.666667 NRS=0.375 SA=1.2e-06 SB=4.8e-07
+ SCA=0.341829 SCB=3.61524e-11 SCC=1.5755e-21
MM8 NET135 B VDD VDD pch L=1.8e-07 W=7.2e-07 AD=3.456e-13 AS=1.944e-13
+ PD=2.4e-06 PS=1.26e-06 NRD=0.666667 NRS=0.375 SA=4.8e-07 SB=1.2e-06
+ SCA=0.341829 SCB=3.61524e-11 SCC=1.5755e-21
MM16 NET128 B VDD VDD pch L=1.8e-07 W=7.2e-07 AD=3.456e-13 AS=1.944e-13
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+ SCA=0.341829 SCB=3.61524e-11 SCC=1.5755e-21
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c_32 B GND 3.97142f
c_45 CI GND 3.17827f
c_58 COBAR GND 1.97817f
c_69 GND GND 3.04334f
c_80 VDD GND 3.01922f
c_86 NET123 GND 0.133958f
c_92 NET121 GND 0.18857f
c_99 NET126 GND 0.283621f
c_104 NET136 GND 0.0207707f
c_109 NET135 GND 0.0530946f
c_121 SBAR GND 1.14765f
c_128 NET128 GND 0.0753203f
c_134 NET137 GND 0.0209056f
c_140 NET036 GND 0.0397079f
c_145 NET138 GND 0.0206943f

c_151 NET035 GND 0.0397079f

cc_1 A B 2.17668f
cc_2 A CI 0.202205f
cc_3 A COBAR 0.625496f
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cc_39 CI NET035 0.020962f
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cc_41 COBAR VDD 0.0899352f
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cc_44 COBAR NET126 0.0707549f
cc_45 COBAR NET136 0.0173497f

cc_46 COBAR NET135 0.042511f
cc_47 COBAR SBAR 0.120958f
cc_48 COBAR NET128 0.0137277f
cc_49 GND NET121 0.15918f
cc_50 GND NET126 0.202598f
cc_51 GND NET136 0.100077f
cc_52 GND SBAR 0.0911114f
cc_53 GND NET137 0.0785918f
cc_54 GND NET138 0.103923f
cc_55 VDD NET123 0.372548f
cc_56 VDD NET135 0.119378f
cc_57 VDD SBAR 0.0372323f
cc_58 VDD NET128 0.320076f
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cc_60 VDD NET035 0.0794056f
cc_61 NET126 SBAR 0.284431f
cc_62 SBAR NET128 0.0369699f
cc_63 SBAR NET137 0.0266048f
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