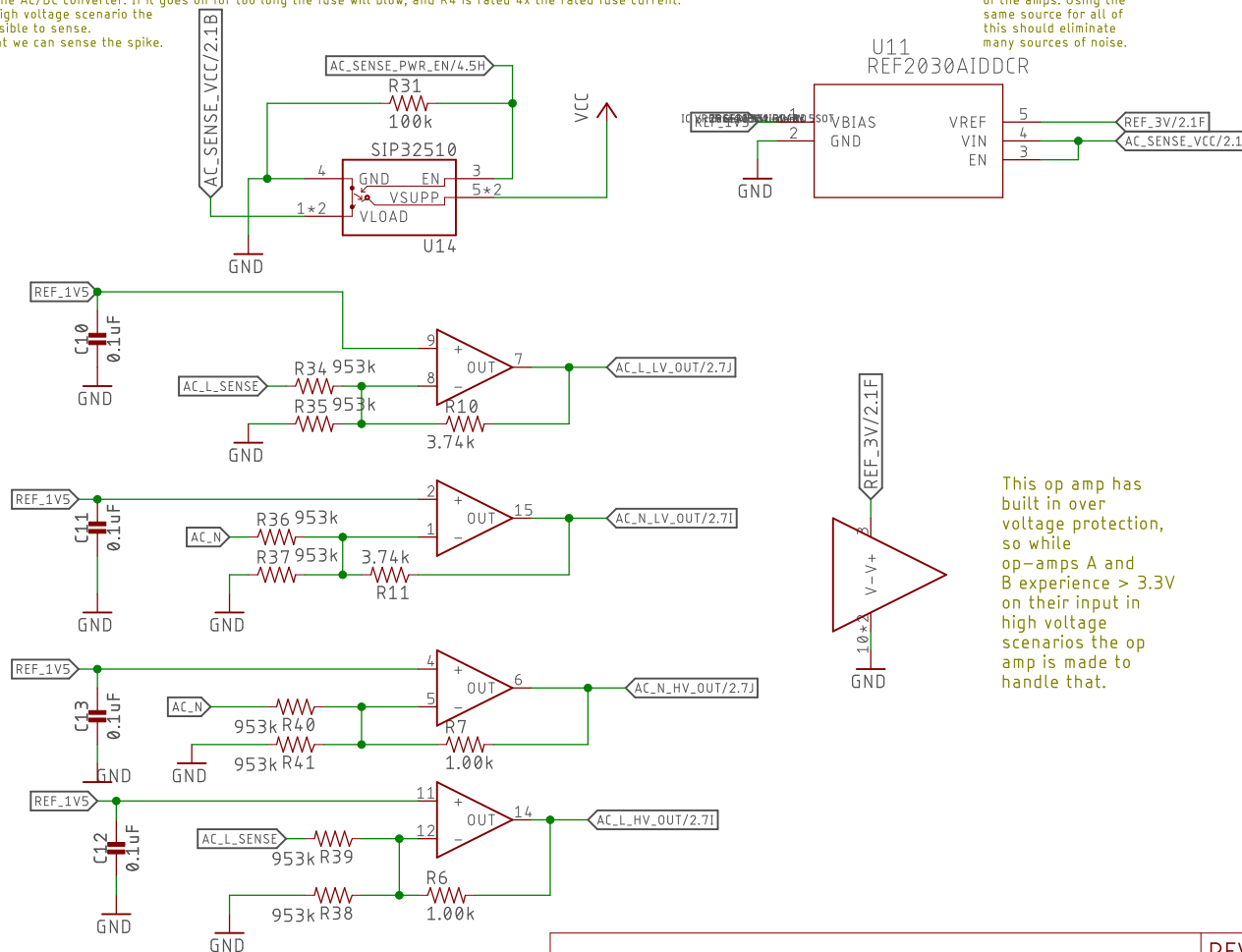
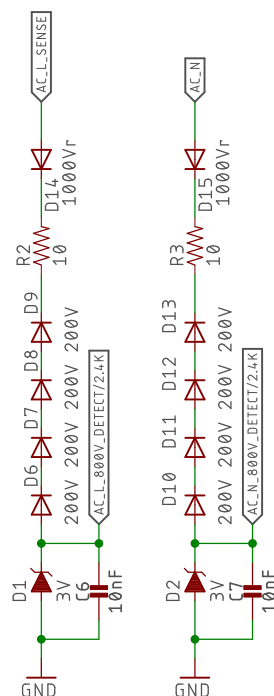


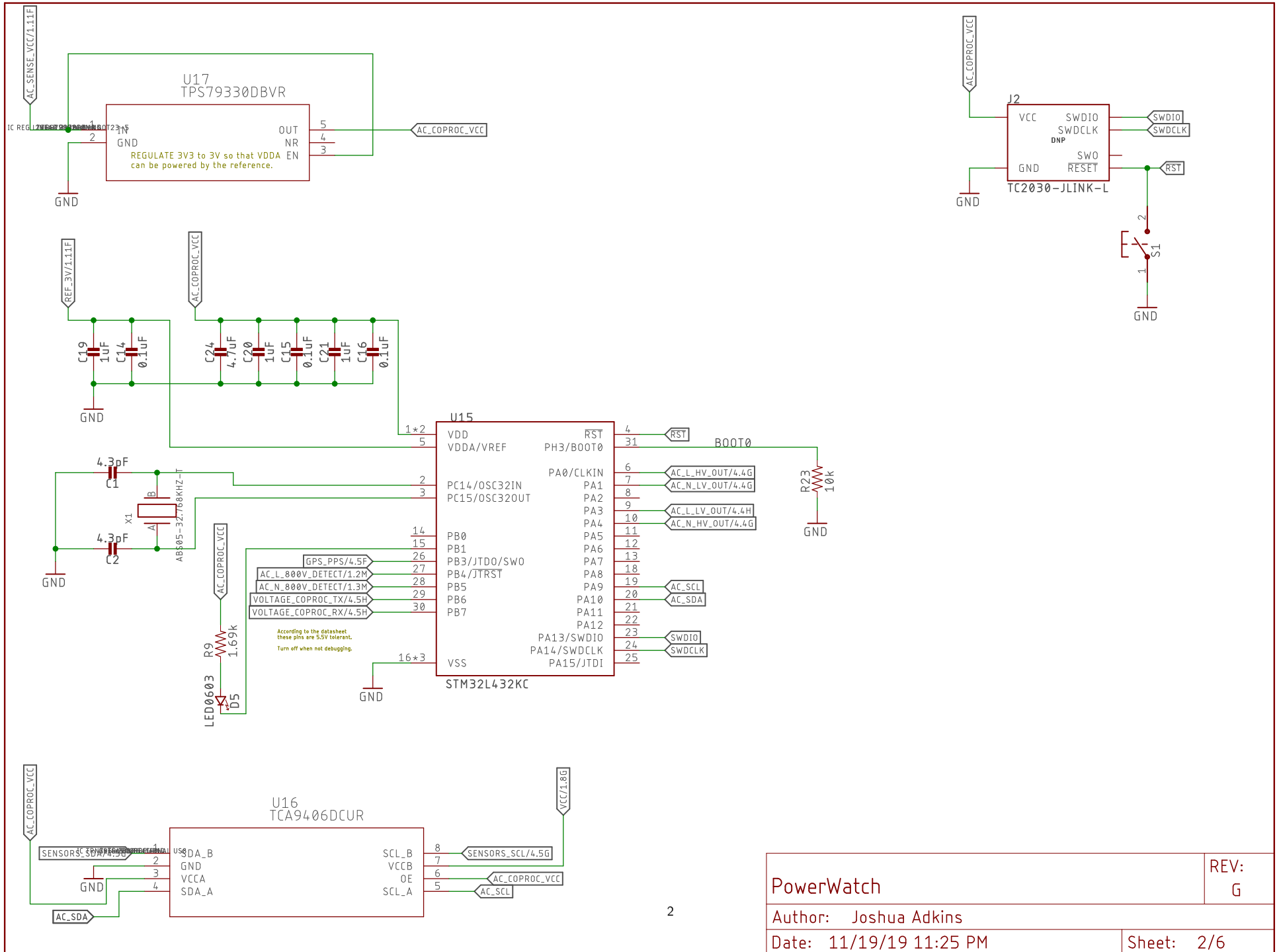
There are two goals of the sensing circuit:  
 1) be able to sense voltages precisely from 0-340vpp and less precisely from 340-1500vpp.  
 2) Protect the AC/DC converter which has a maximum voltage of 280vac rms.

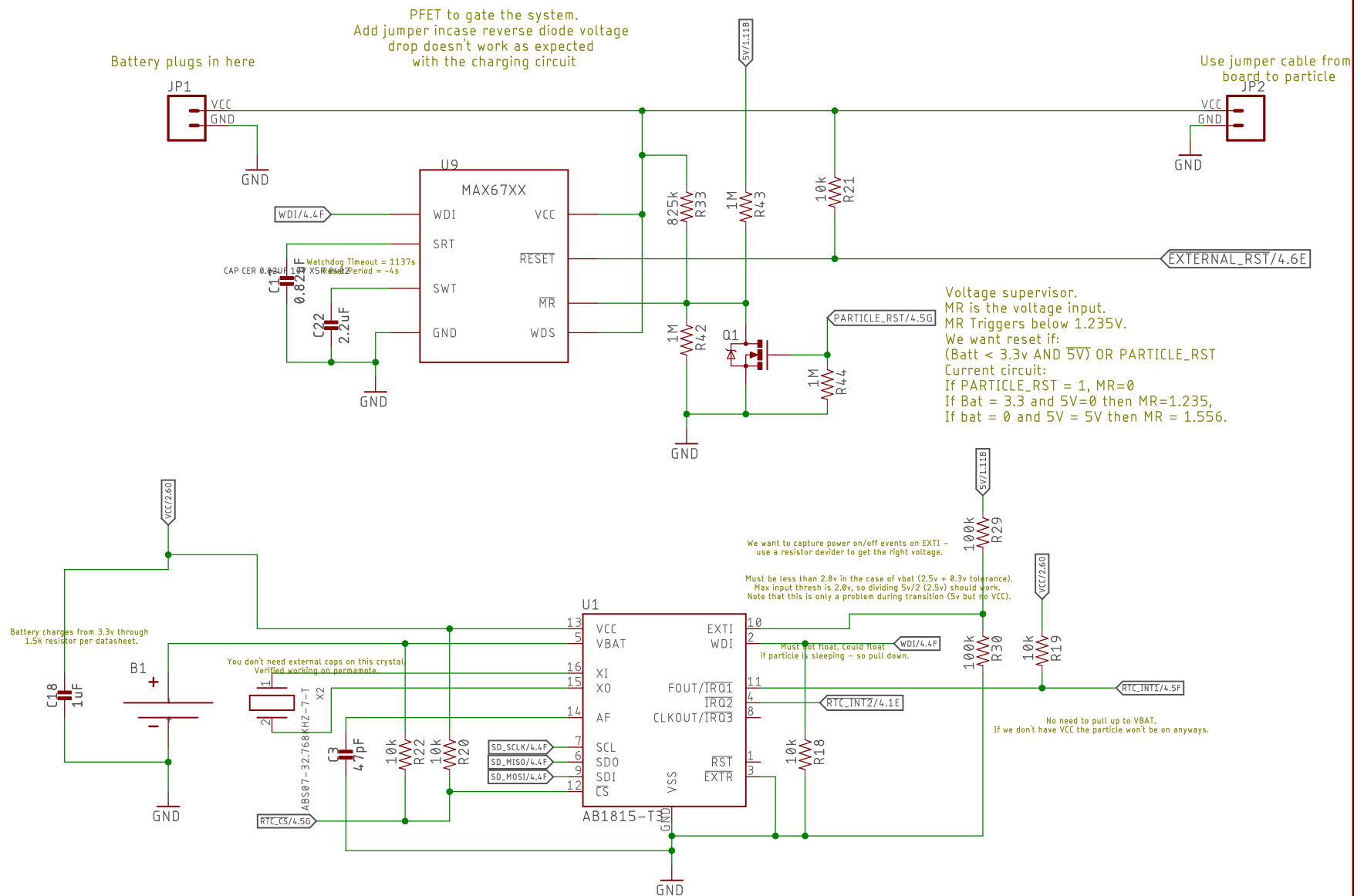
The theory of operation here is that in normal mode the MOV isn't conducting, current through R4 is rather low, and it's power dissipation is also low. In a voltage spike scenario the MOV will conduct, voltage will drop over R4, and protect the AC/DC converter. If it goes on for too long the fuse will blow, and R4 is rated 4x the rated fuse current. R4 is also critical because if there is no impedance between AC\_L\_Sense and AC\_N in a high voltage scenario the MOV will limit the voltage to the clamping voltage of the MOV, which would make it impossible to sense. Having a non-negligible load in line will keep the voltage near the source voltage so that we can sense the spike.

This ref supplies 20ma at low (300mv) drop out. We can use it to supply VDDA of the MCU, the Amps and bias the non-inverting side of the amps. Using the same source for all of this should eliminate many sources of noise.

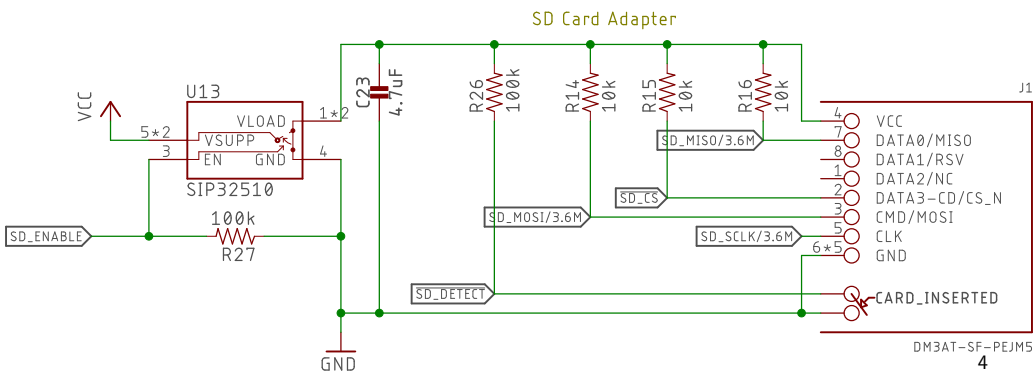
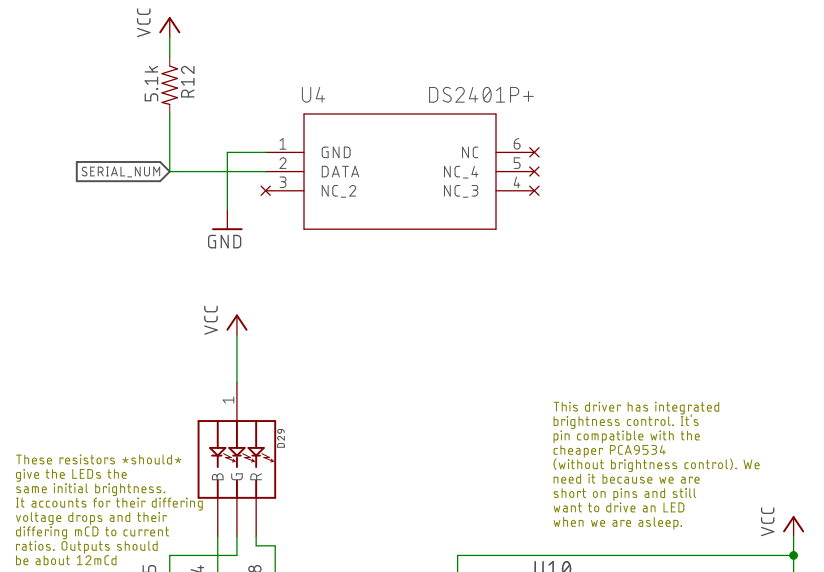
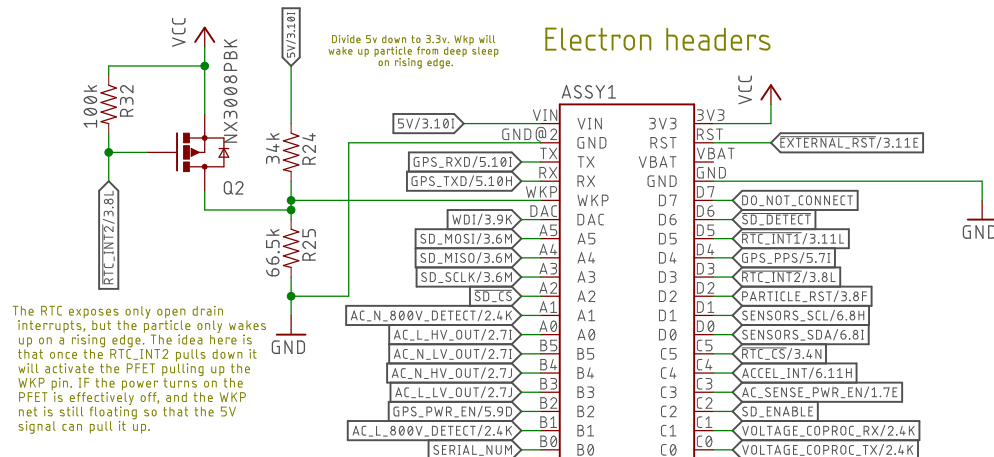


PowerWatch		REV: G
Author: Joshua Adkins		
Date: 11/19/19 11:25 PM		Sheet: 1/6

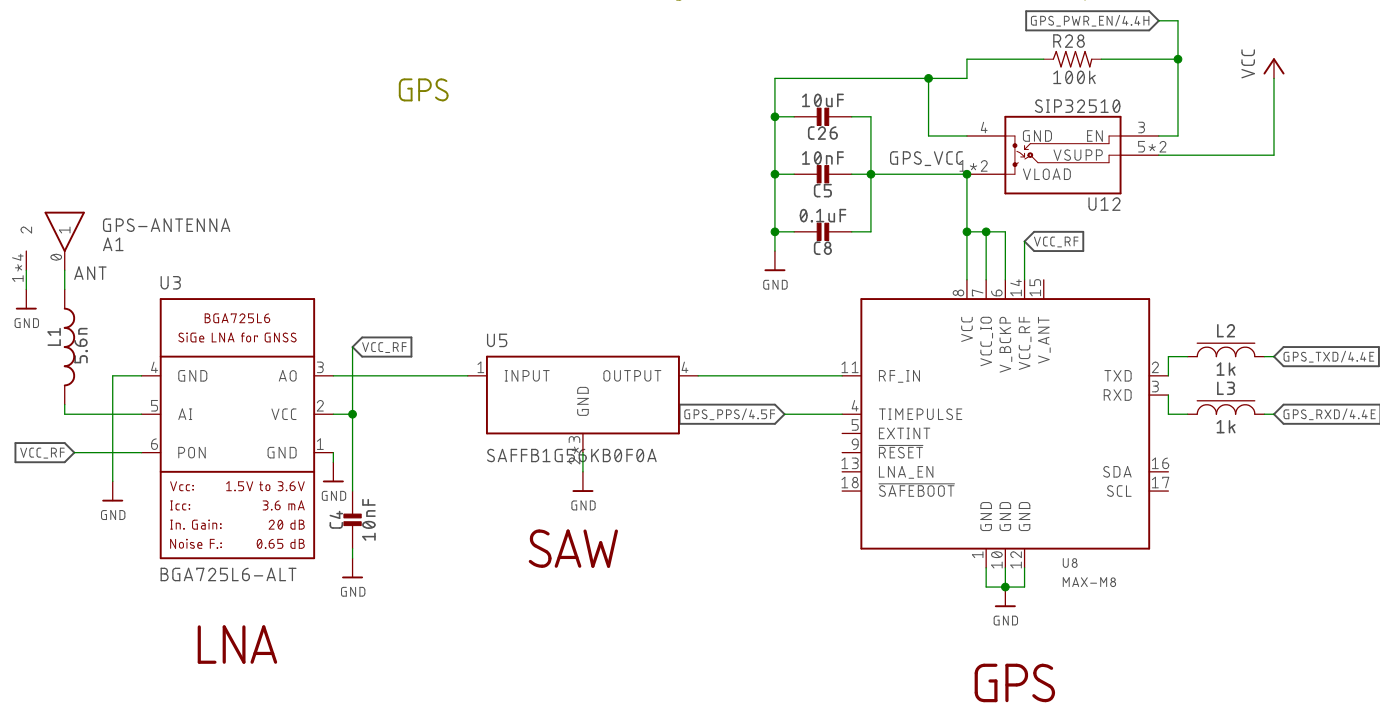




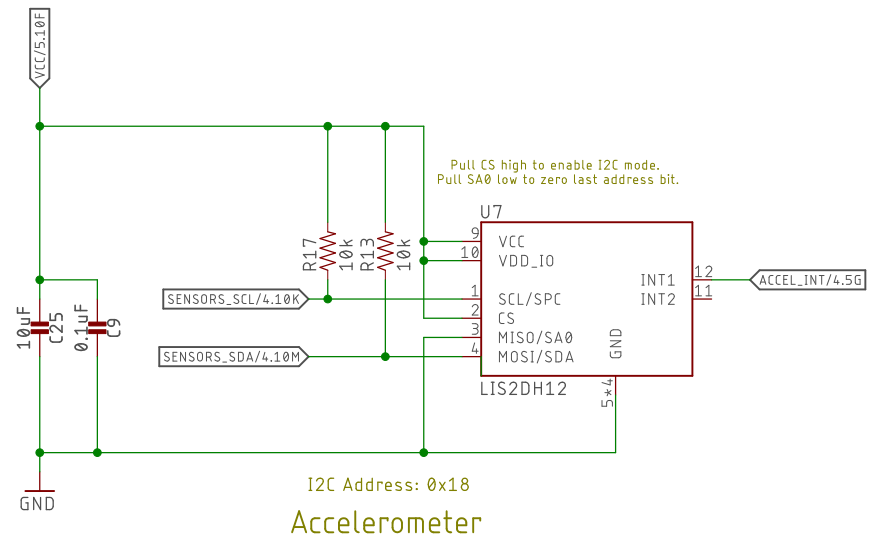
# Headers

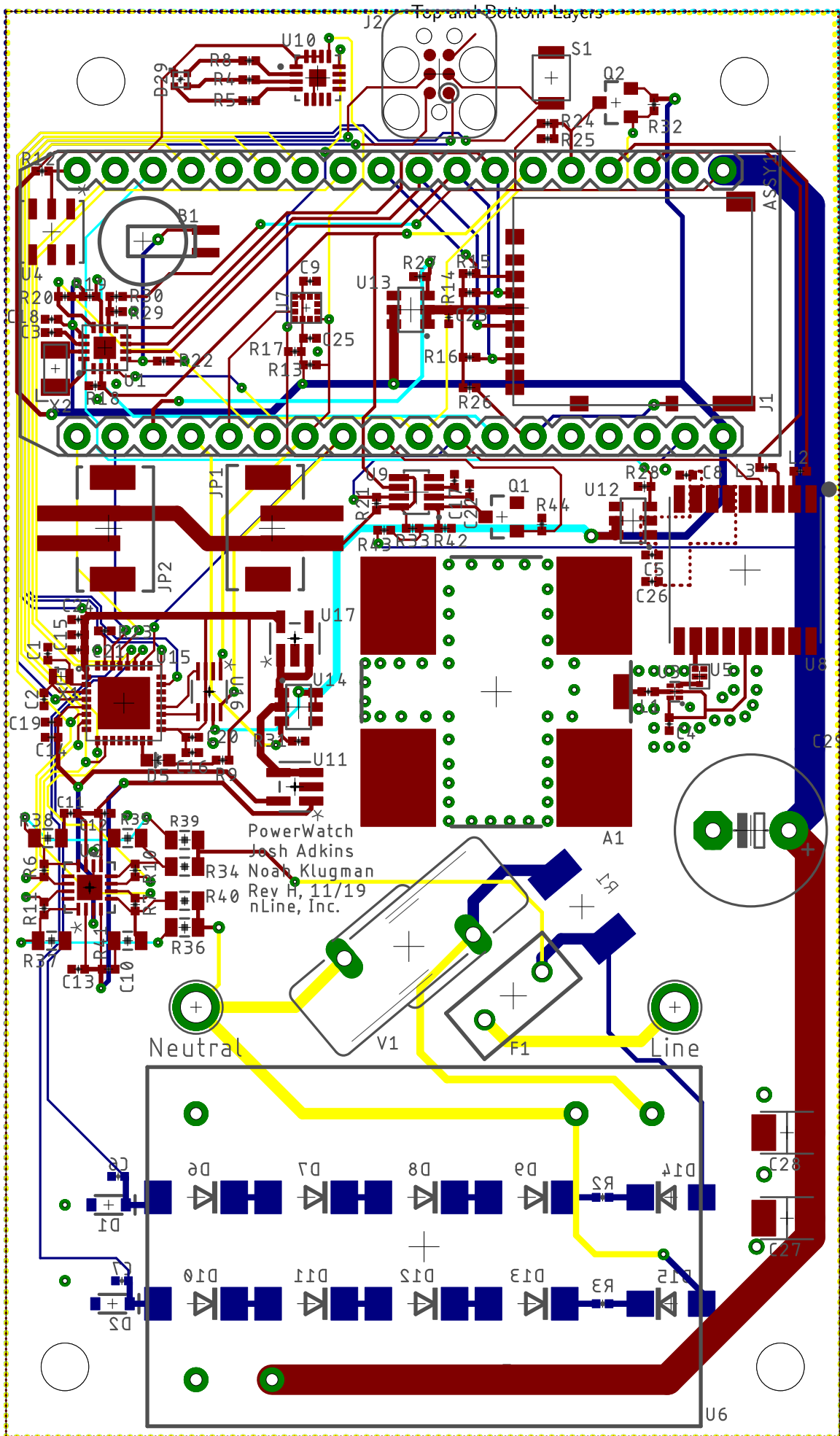


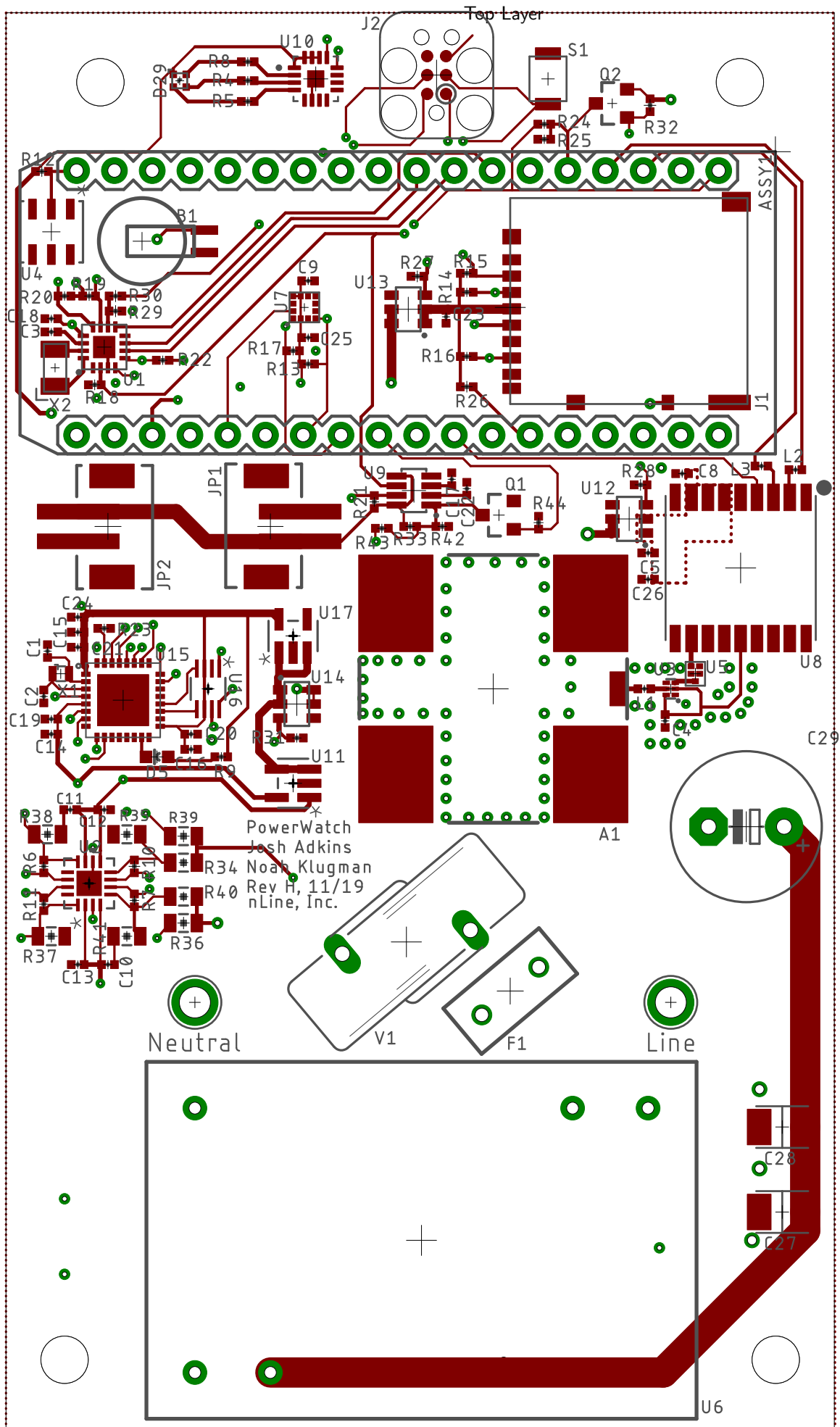
[https://www.u-blox.com/sites/default/files/MAX-8-M8-FW3\\_HardwareIntegrationManual\\_%28UBX-15030059%29.pdf](https://www.u-blox.com/sites/default/files/MAX-8-M8-FW3_HardwareIntegrationManual_%28UBX-15030059%29.pdf)



# Sensors

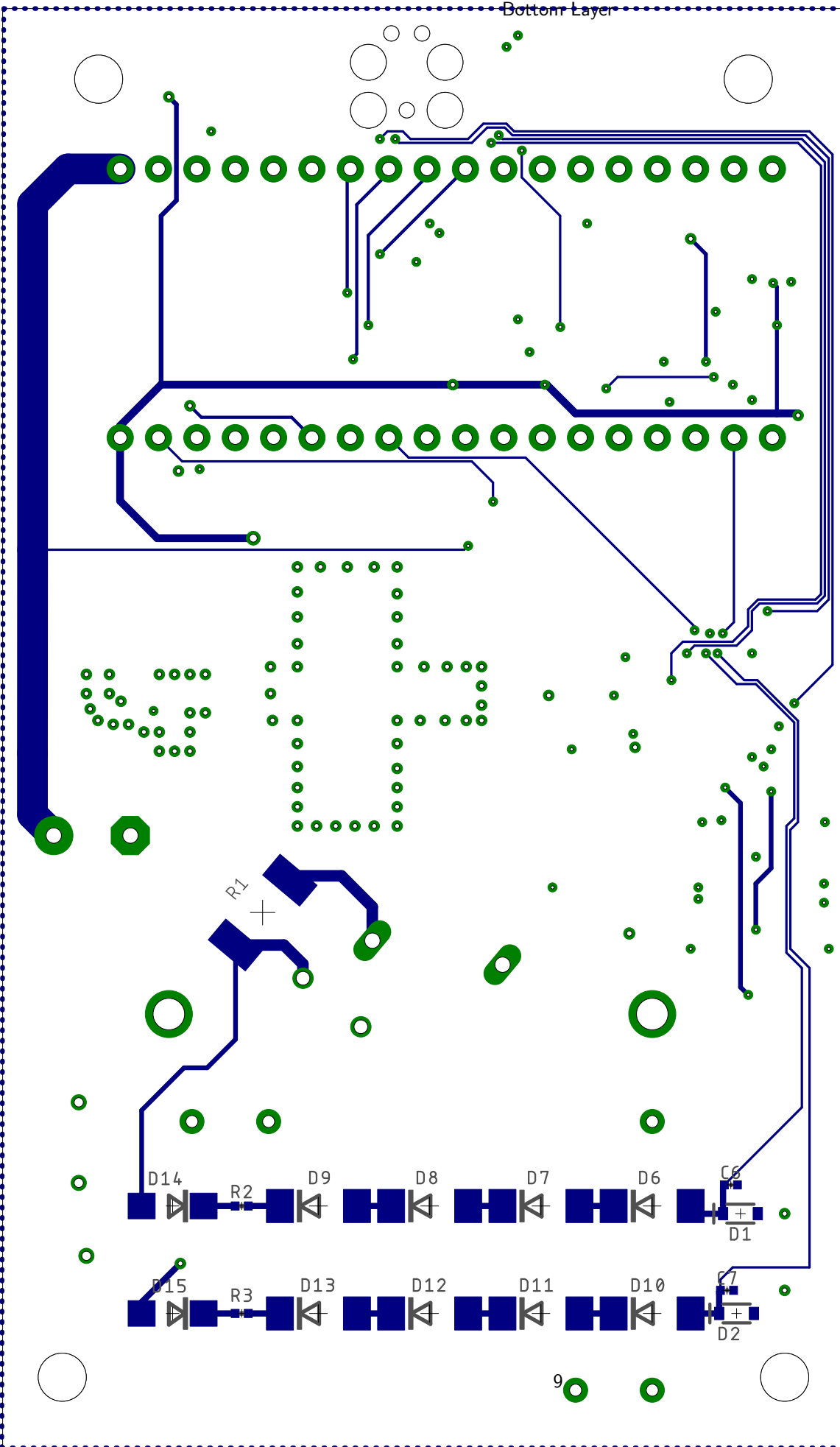




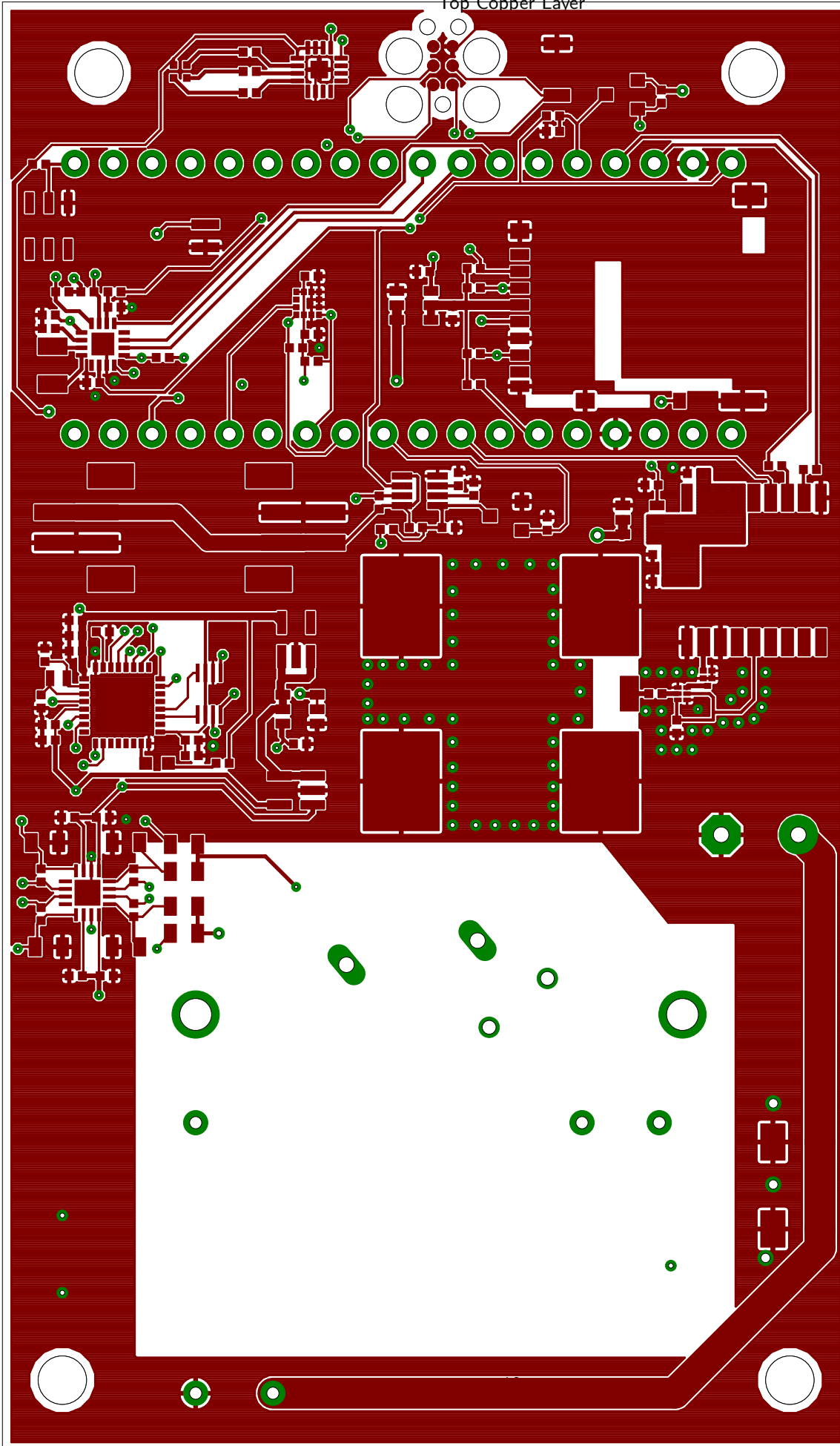


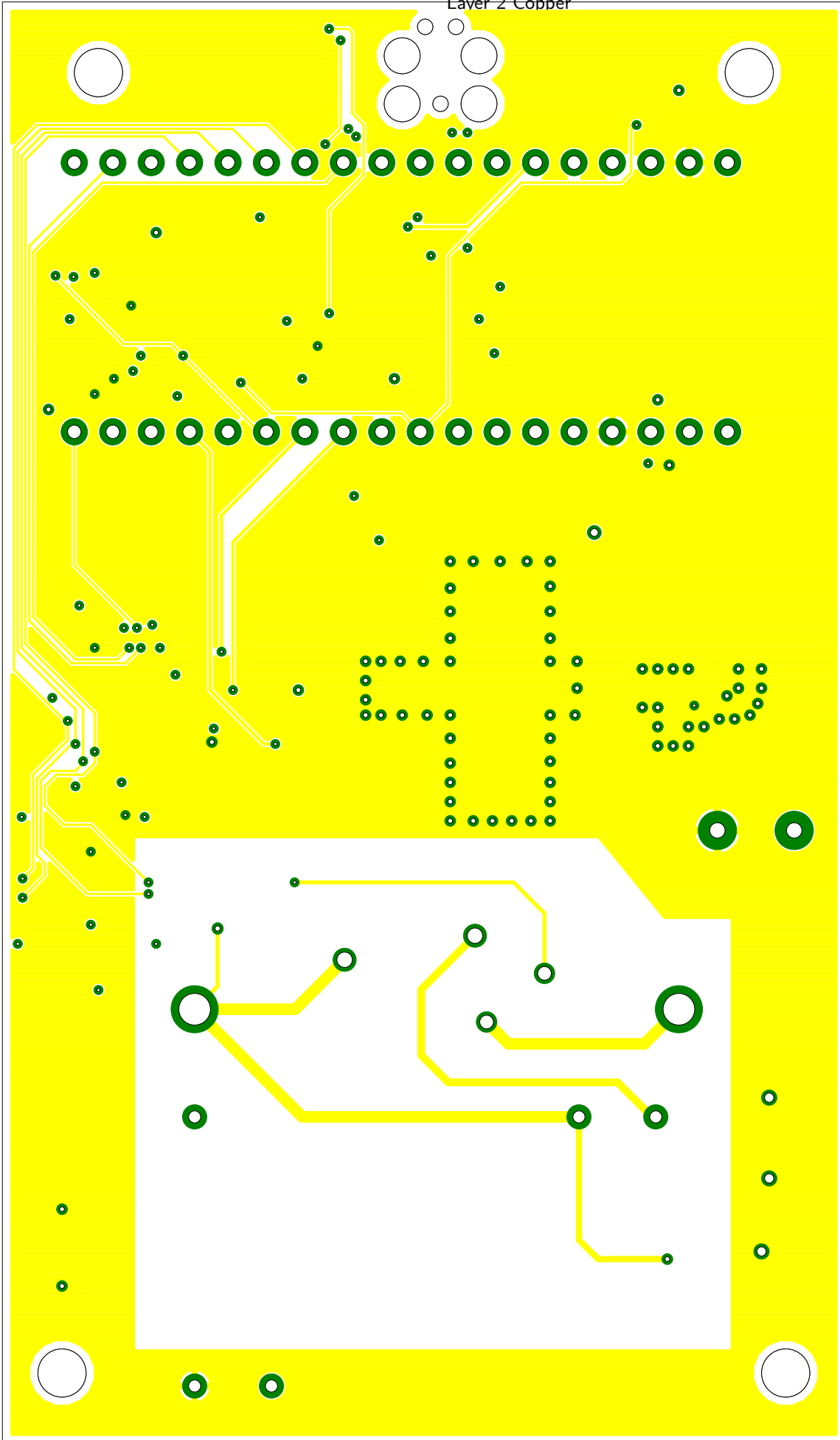


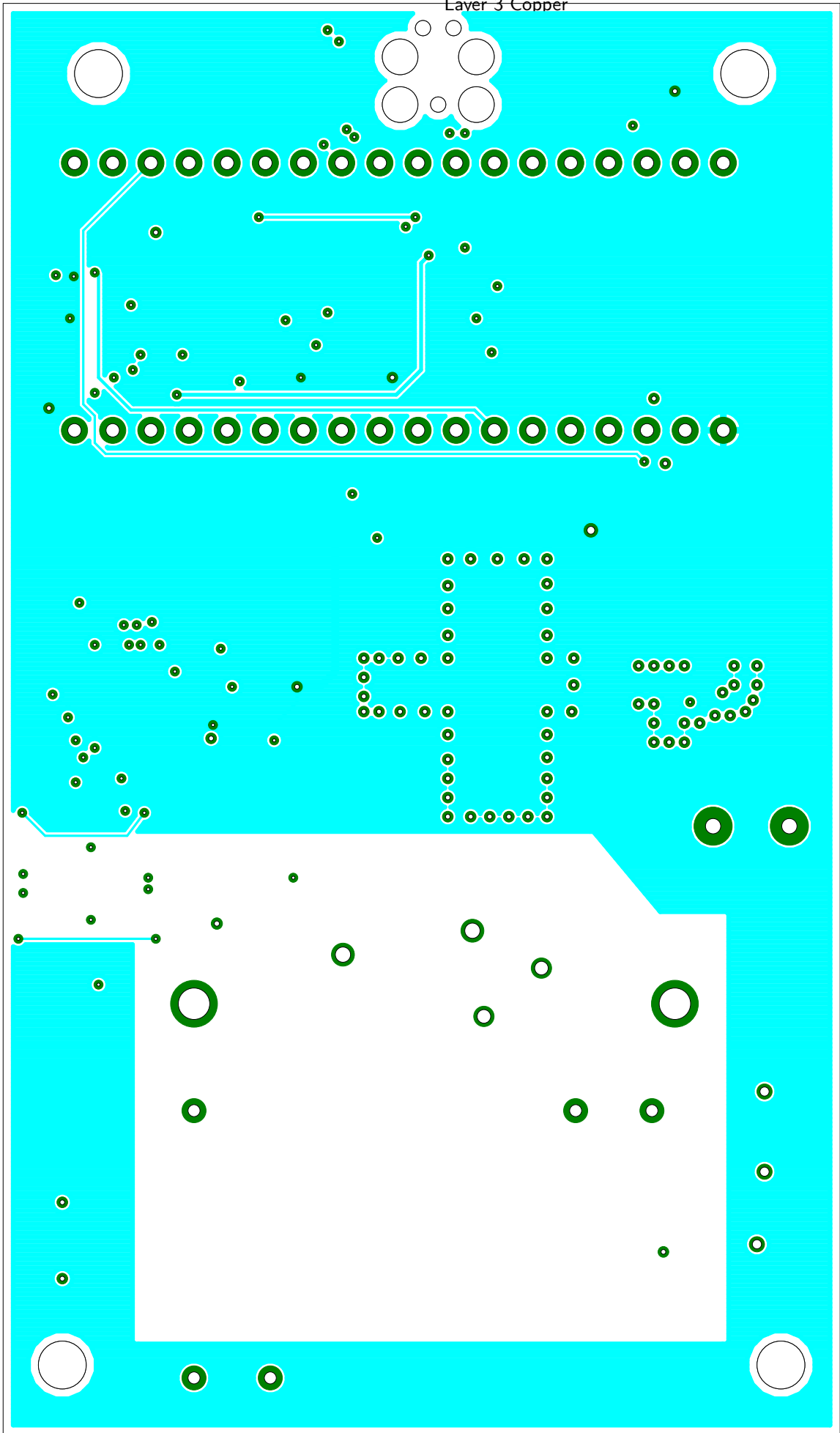
Bottom Layer



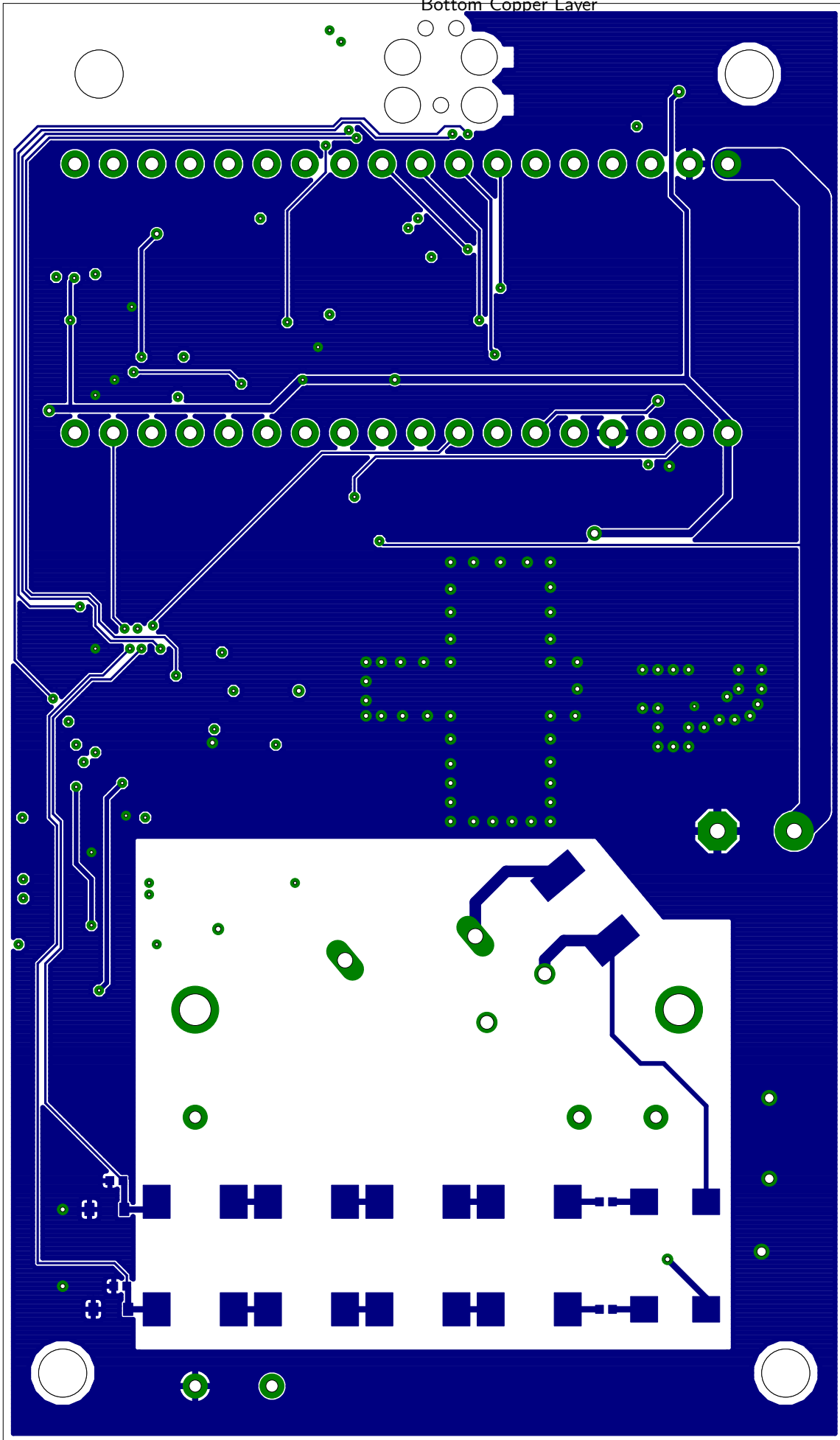
Top Copper Layer



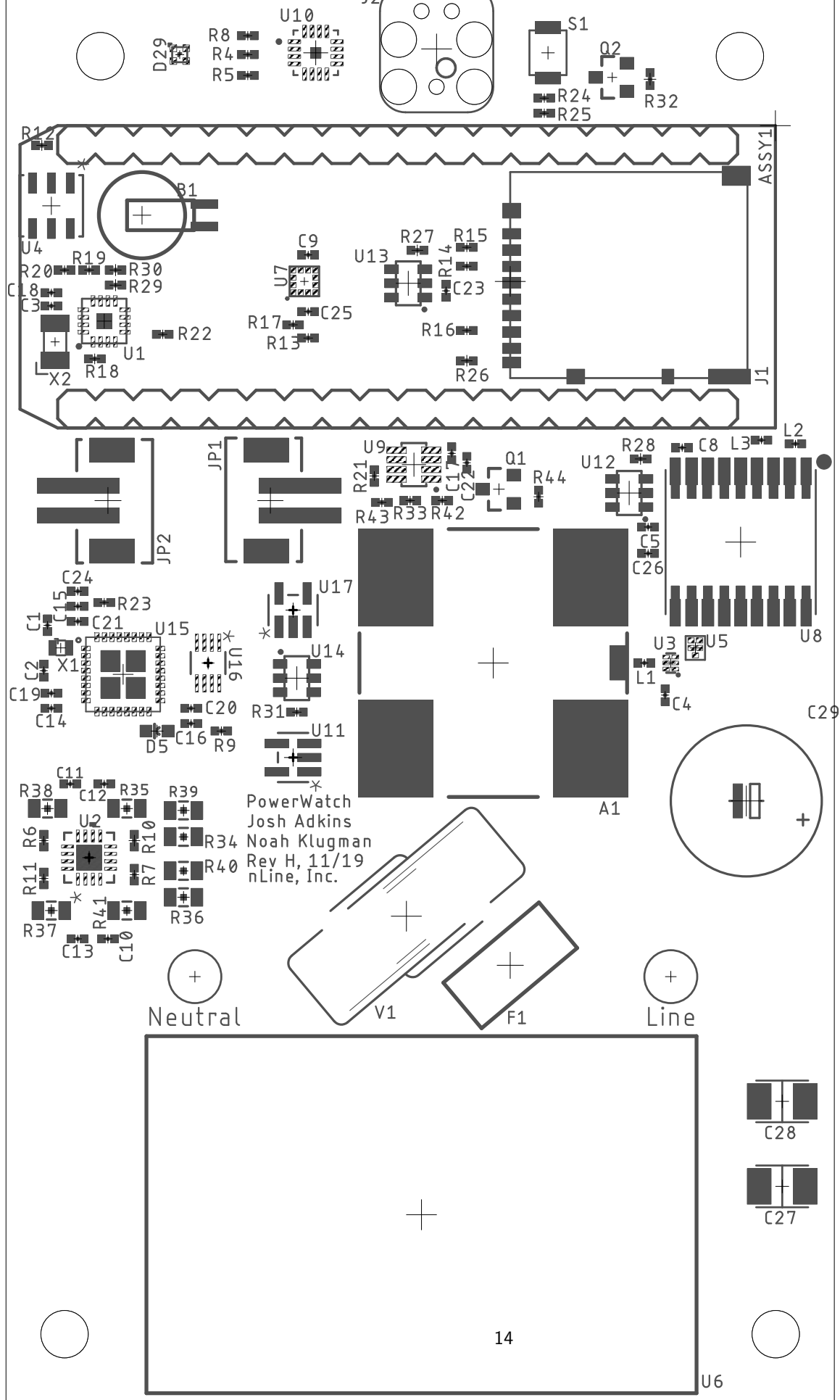


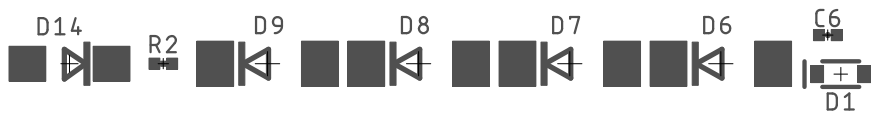
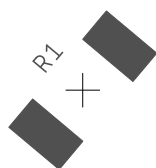
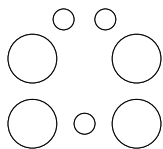


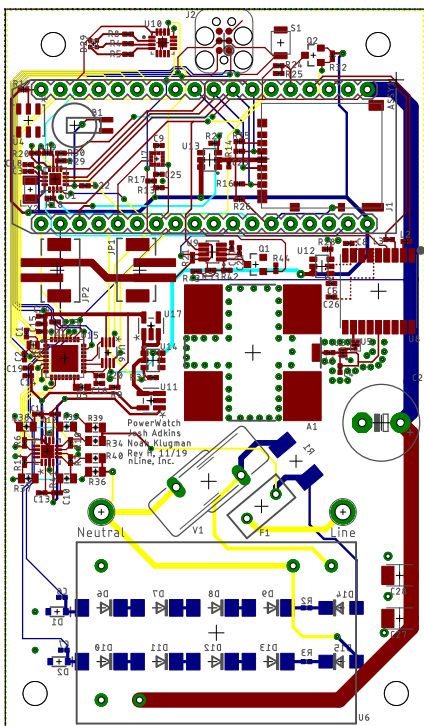
Bottom Copper Layer



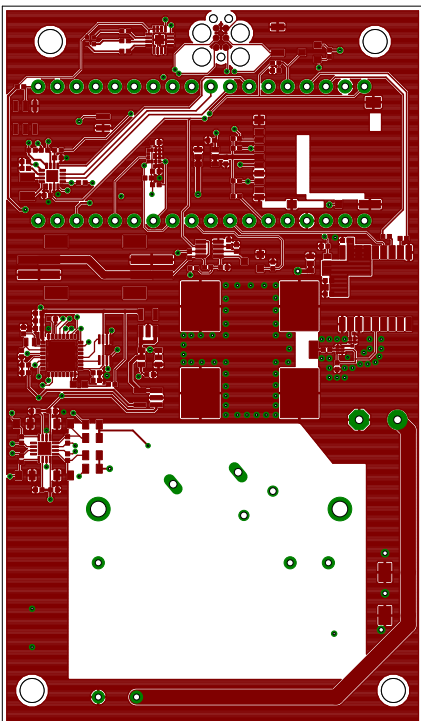
Top Paste Layer with Silkscreen

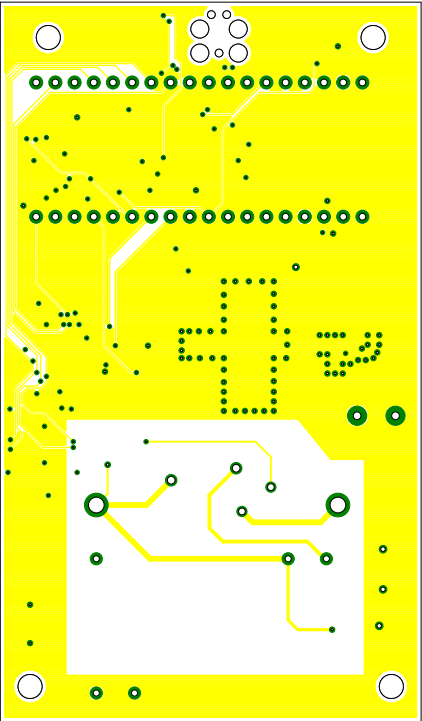


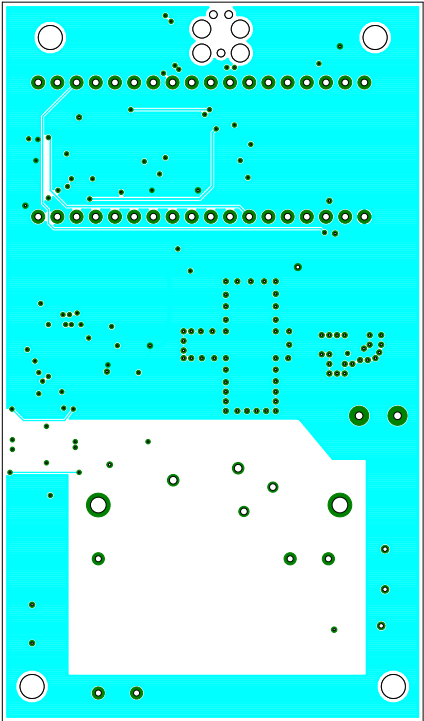












Bottom Copper Layer 1:1 Scale

