

## Regulator Board Fabrication

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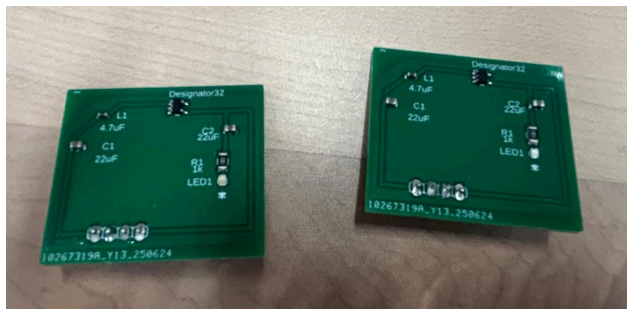
### Design Procedure

My first steps were applying solder paste to the Regulator Boards. I used the stencil as well as masking tape and spare boards to achieve a smooth even application. The spare boards were positioned around the board that I was applying the solder paste to in order to add stability to the stencil so it did not bend when reaching the edges of the board. After this I used the forceps to apply the components to the board.



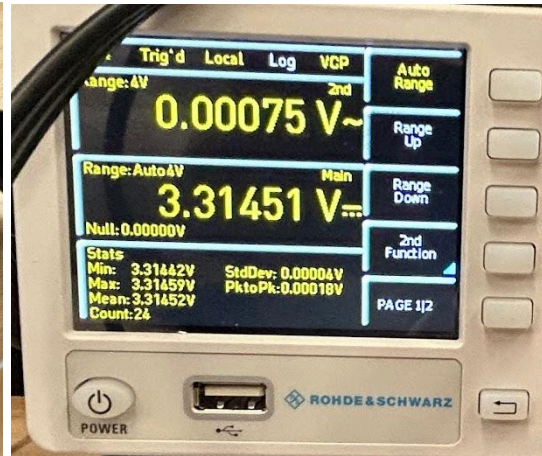
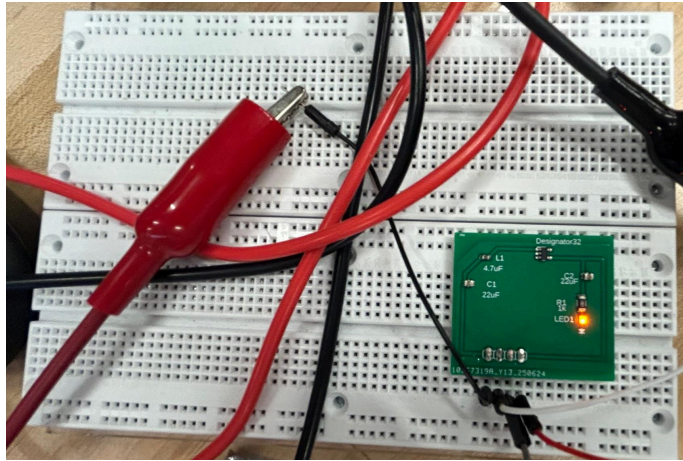
*Regulator Board : With solder paste and components before reflow oven*

For the second regulator board I applied only the solder paste and then brought the board to the Pick-N-Place machine that was available in the Junior Design Lab. The boards were both then brought to the reflow oven and ran through in order to solder the components onto the board. After they came out of the oven, I then hand soldered the male header pins into the though holes for the input, output, and ground pins.

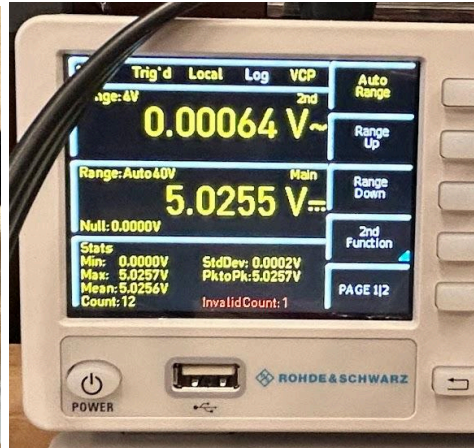
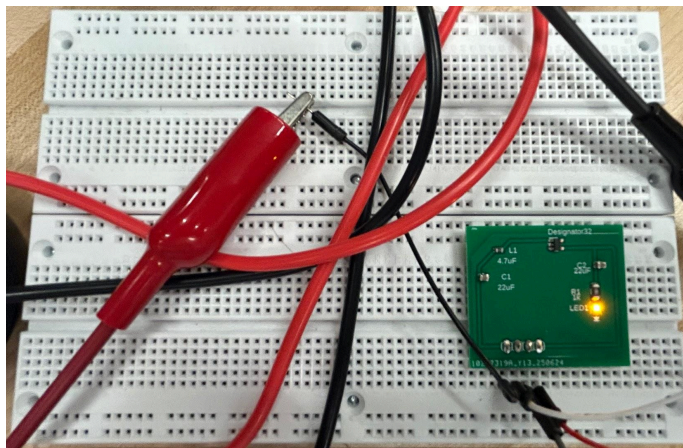


*Regulator Board : With components soldered on through the reflow oven and the header pins hand-soldered*

Now that I had all components soldered to the board, I needed to add the regulator boards. From looks, I could not tell which was which because they are identical in design and the regulator component itself is not branded. To find out which was which I used a power supply unit and a digital multimeter (DMM) to determine the output voltage of each board.



*Regulator Board 3.3V : DMM showing 3.3V output. With this output voltage the output current would be 33mA*



*Regulator Board 5.0V : DMM showing 5.0V output. With this output voltage the output current would be 50mA*

These outputs are as expected, and are necessary for the different components on the main board (LCD, MSP430 chip, ultrasonic sensor).

### **What I Learned**

In this part of the fabrication I learned how the Pick-N-Place machine worked as well as effective ways to use the stencil to apply solder paste (using other boards to stabilize). I also learned about and became comfortable with both surface soldering and through-hole soldering.