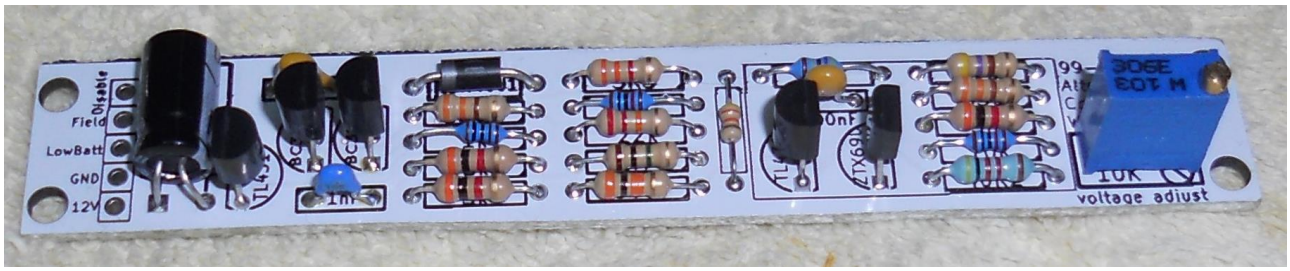
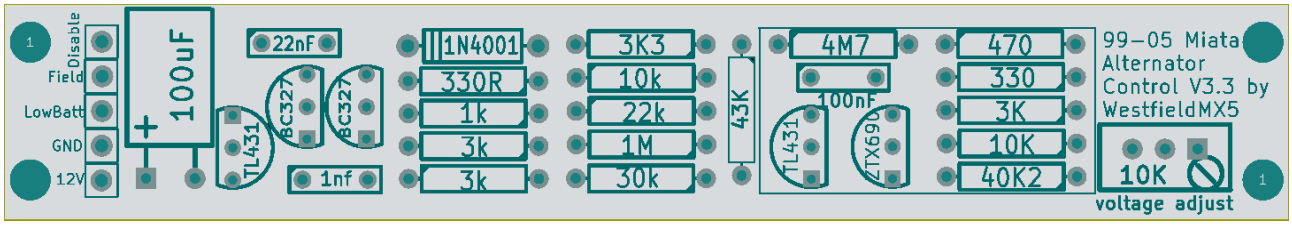
WestfieldMX5 Alternator Circuit





Assembly:
Install all components as indicated on the silk screen of the pcb. If you do not want the low battery warning circuit, then simply leave out the parts in the rectangle.
The resistors and the tiny capacitors are not directional. I suggest using a DVM to measure the resistor values and not to go by the color codes in the image above. A printed image often distorts colors so it's easy to make a mistake. The big capacitor (100µF), diode and the transistors are directional, so make sure to not install them backwards! For the ZTX690 it's a little less pronounced, but it too has one side that is rounded. **Tip for the capacitors**: **1nF = 102, 100nF = 104, 220nF = 224**

Installation:
The board slides into a regular Megasquirt case (MS1, MS2, MS3, MS3+MS3X). If you have a different type of ECU (DIYPNP, MS3 Pro, …), you'll have to get creative but hot glue comes in very handy ☺.

Connections:
The board has 5 connections. All 5 wires can be connected **inside** the Megasquirt.

- **12V**: connect this wire to a raw 12V source inside the ecu. Choose the one you like best:
  - the **non-banded** side of **D3 or D10**
  - the **banded** side of **D11**
  - the **middle** pin of **Q9 or Q12**
  - the **S12** jumper on the board (do **not** use the **S12C** jumper!)
  - pin **28** on the **DB37**

  If your ecu has a oem Mazda type connector (Tyco), there is 12V on:
  - pin **1B (W/R)** on a **99-00 NB**
  - pin **4AF (W/R)** on a **01-05 NBFL**

- **GND**: Connect this to a ground in the proto area or directly to a ground on the DB37 connector.

  If your ecu has a oem Mazda type connector (Tyco), there is a ground on:
  - pin **3A or 3B** for both the **99-00 NB and 01-05 NBFL**

- **Field**: This is the output to the alternator. Bring it out the ECU through an unused pin of the DB37. Connect to:
  - pin **1O** on a **99-00 NB**
  - pin **3M** on a **01-05 NBFL**

- **Disable**: When grounding this pin, the alternator stops charging. I connect this wire to a general purpose output of the Megasquirt and set it to trigger (provide ground) when rpm <600. This way there's no load on the engine while cranking. If this function is not desired, leave disconnected.

- **LowBatt**: This triggers the charge light when voltage goes under ±12.8Volt. Bring it out the ECU through the DB37. If this function is not desired, leave disconnected.
  Connect to:
  - pin **1Q** on a **'99-'00 NB**
  - pin **3U** on a **'01-'05 NBFL**

Adjustment in the car
Start the car whilst keeping a close eye on battery voltage. The trimmer is pre set to about 13V.
Adjust battery voltage to about 14 to 14.4V by turning the trimmer clockwise. It may take several turns.

Adjustment on the bench
You can only test the alternator controller on the bench if you have a variable power supply.
Connect it to +12V and GND of my board.
Then measure the output voltage on the Field pin. It should be around the input voltage.
Now slowly raise the power supply voltage. You'll notice that the Field output follows the input voltage up to the set point of the trimmer. At that point the output will fall to near zero.
The trimmer is pre set to about 13V. Adjust the trimmer so that the set point is around 14 to 14.4V