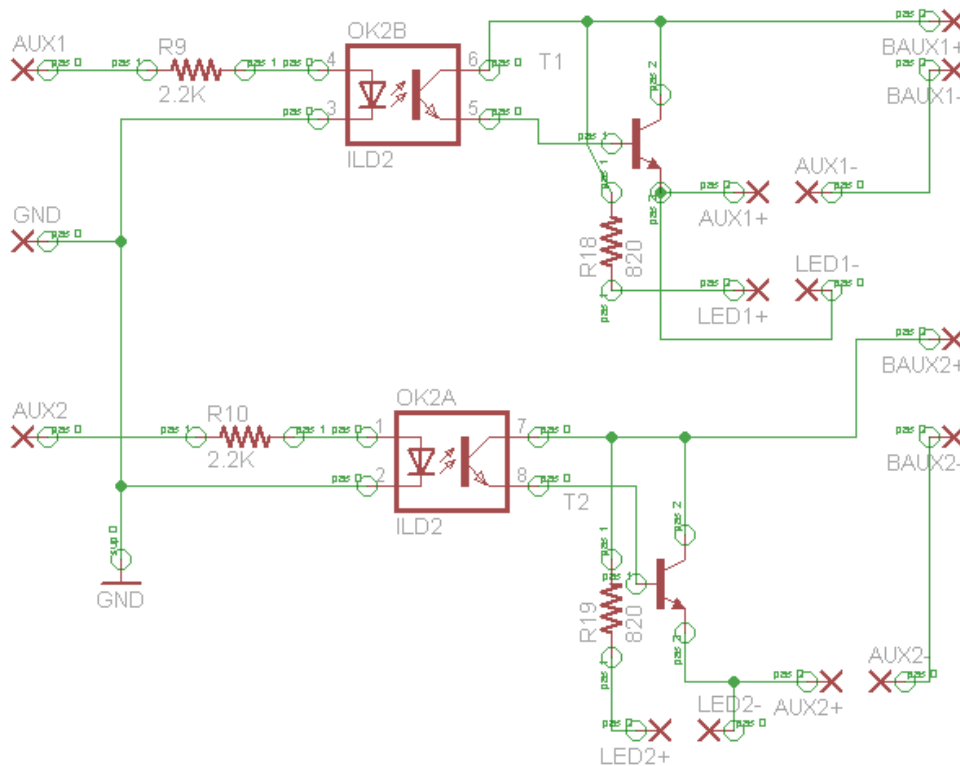


A Simple Driver for the Eggtimer AUX Channels

The three Eggtimer AUX channels are unbuffered logic-level outputs, and are not by themselves suitable for driving a load over +V (the Eggtimer's battery) or above 20 mA (the limit of the processor's drivers). While this is OK for LEDs or other low-current indicators, it won't work if you want to use it to fire an ematch, solenoid, or other high-current load.

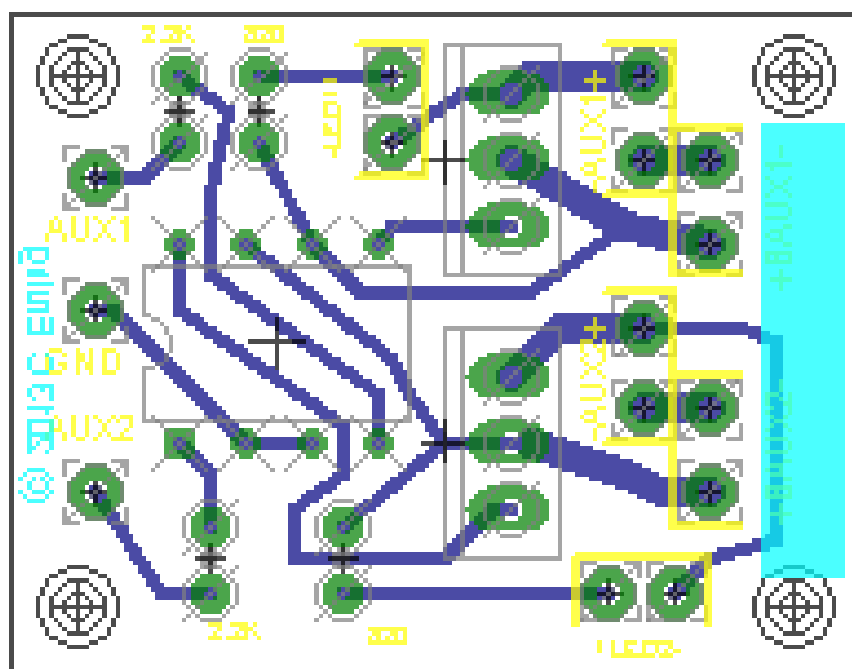
Here is a simple schematic that can be used to drive high-current loads. Basically, there is a MCT2 (or half of a MCT6/ILD2 dual) opto-isolator between the output and a TIP120 darlington power transistor. This is the same circuitry that the high-current outputs of the Eggtimer use, minus the status signals back to the processor. A 820 ohm resistor and an LED can be connected across the collector and emitter leads of the TIP120, this provides a visual continuity check since the igniter completes the path to ground. Because the transistor is completely isolated from the processor, only a very small amount of current is necessary to trigger it, but the internal resistors in the TIP120 transistor clamp the base to ground while the output of the opto-isolator is off, so stray RF/EMI signals are extremely unlikely to cause the TIP120 to turn on.

This schematic covers two channels, but it would be easy to expand it to a third channel if you needed to use all three AUX channels.



The AUXn pads are the inputs and GND is the common ground that is found on the Egg timer board next to the AUX pads. The LEDn connectors are for the status LEDs, the “+” connects to the long lead of the LED. The BAUXn pads are for the channel’s battery (be sure to connect the “+” to positive and the “-“ to negative), and the AUXn outputs are the igniter outputs.

A magnified picture of the board is shown below (the actual board is about 1.00” x 1.28”). All of the traces are on the bottom of the board, only silkscreening is on the top.



We are going to be making these boards available for a couple bucks each, and possibly kits, but if you want to have it made yourself we're providing the Gerber files to you. See the web site www.EggTimerRocketry.com under the Knowledge Base for the zip file. Given the fact that it's a simple board, you may just want to breadboard it; there is nothing critical about the layout.