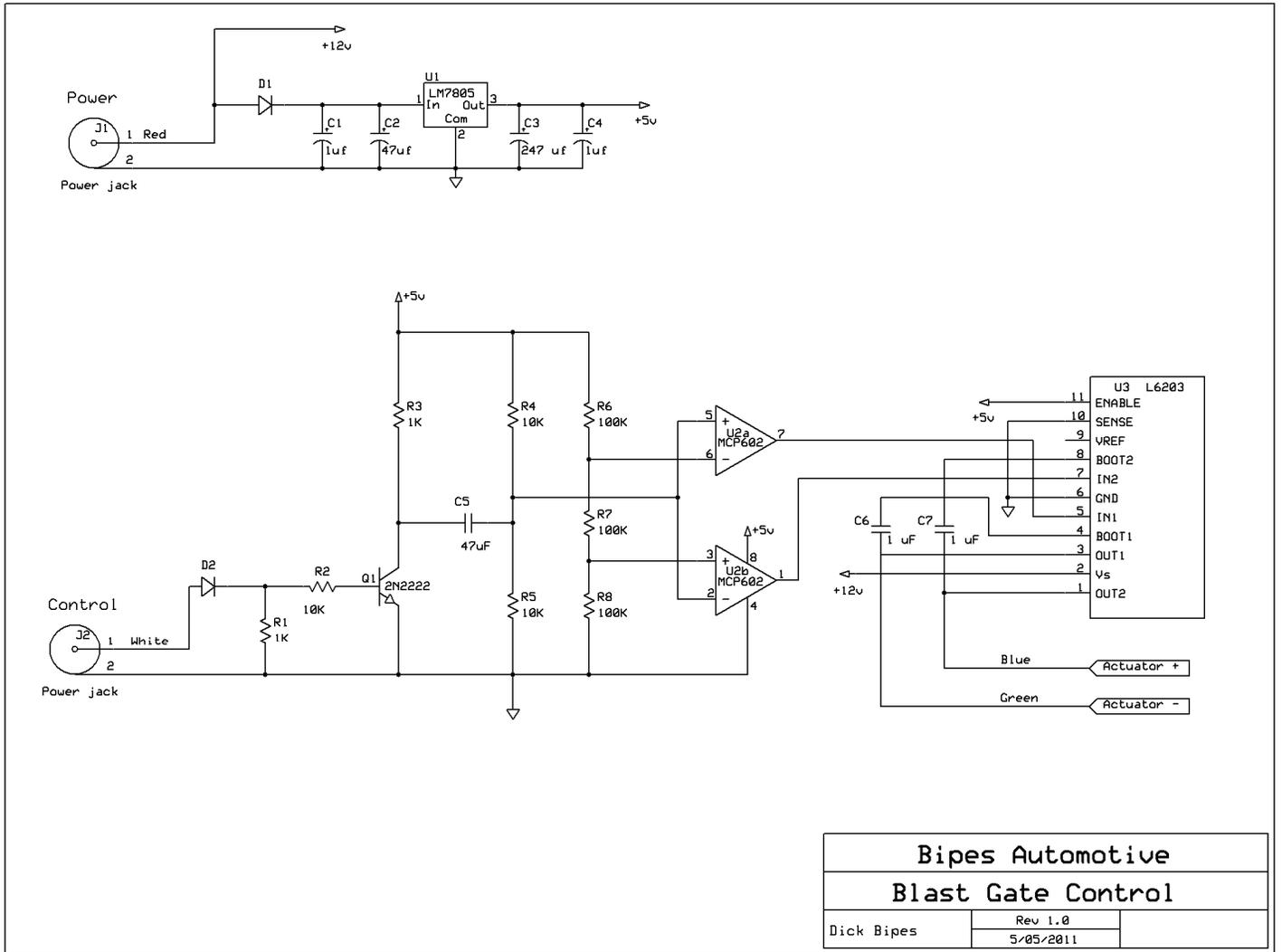


Blast Gate Driver



This Blast Gate Controller is designed to drive a common two-wire automotive power door lock actuator. It is controlled by a DC voltage input. When a DC voltage is applied to the input, the controller will provide 12 volts to the door lock actuator for a second or two. When the control voltage is removed, the controller will apply a reverse voltage for a second or two.

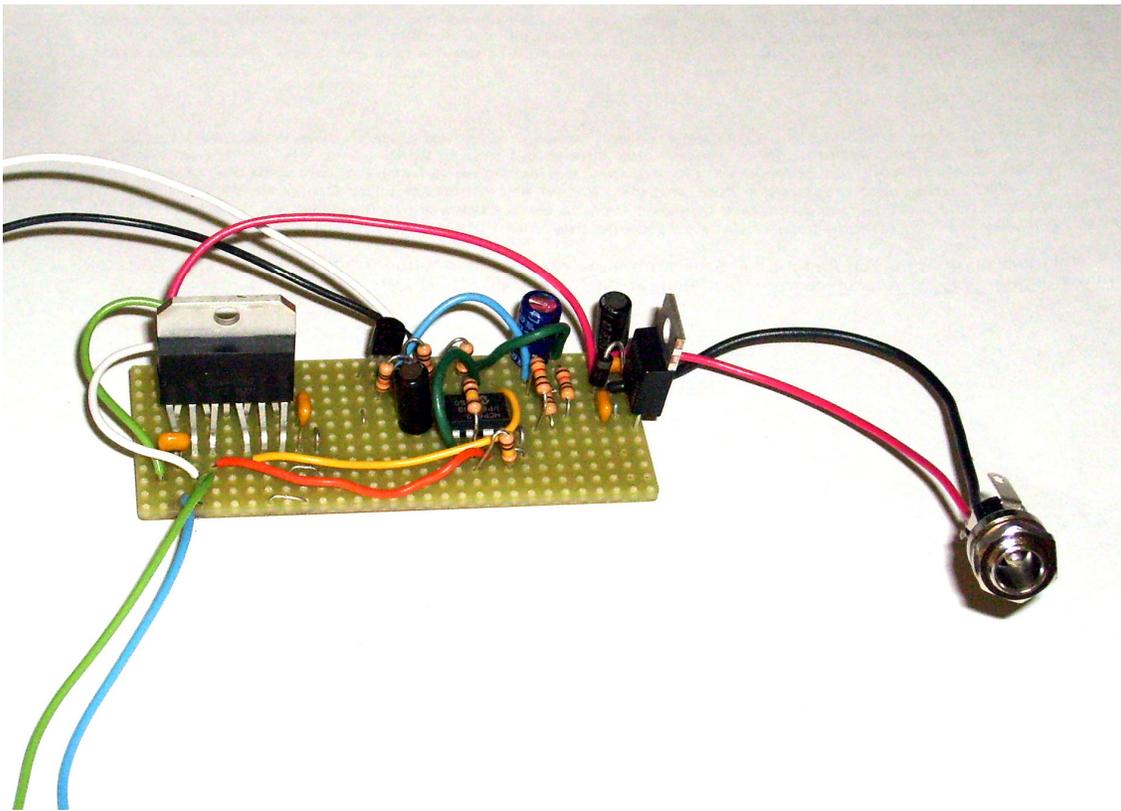
The heart of the blast gate controller is a DMOS full bridge driver IC. The driver has two inputs, IN1 and IN2. When a logic 1 is applied to IN1, the driver turns on the outputs in one polarity. When a logic 1 is applied to IN2, the driver turns on the outputs in the other polarity. With no logic 1 present at either input, the driver is turned off.

IN1 and IN2 are supplied by an op amp pair. The op amps use voltage divider R6/R7/R8 as a reference. Op amp (a) sees about 3.3 volts and op amp (b) sees about 1.6 volts out of this voltage divider. At their other inputs, both op amps see 2.5 volts at quiescence, and under this condition both op amps are off. If the voltage at R4/R5 goes above about 3.3 volts, op amp (a) will turn on. Conversely, if the R4/R5 voltage goes lower than about 1.6 volts, op amp (b) turns on.

Blast Gate Driver

With the circuit is at quiescence, an input of almost any DC voltage will turn on Q1. The voltage at the collector of Q1 falls from 5 volts to zero. This voltage drop transmitted through C5 to the op amps, and op amp (b) turns on, powering the actuator. The voltage then drains off C5 after a second or two, and op amp (b) and the bridge driver turns off. When the input voltage is removed, the collector of Q1 jumps from zero back to 5 volts. Again, C5 transmits this to the op amps, and now op amp (a) turns on, and the bridge driver turns on but with the opposite polarity. As C5 discharges, the driver turns off after a couple of seconds.

The controller is powered by a 12 volt, 1 Amp (or more) wall-mounted power supply capable of powering the automotive door lock actuator being used. For control, I used an X-10 appliance module controlling a 6 volt wall-mount power supply. Almost any DC voltage will work, so this is an opportunity to reuse an old cell phone charger or the like.



I built my controller on a prototyping perf board. The bridge controller IC leads were bent to fit.