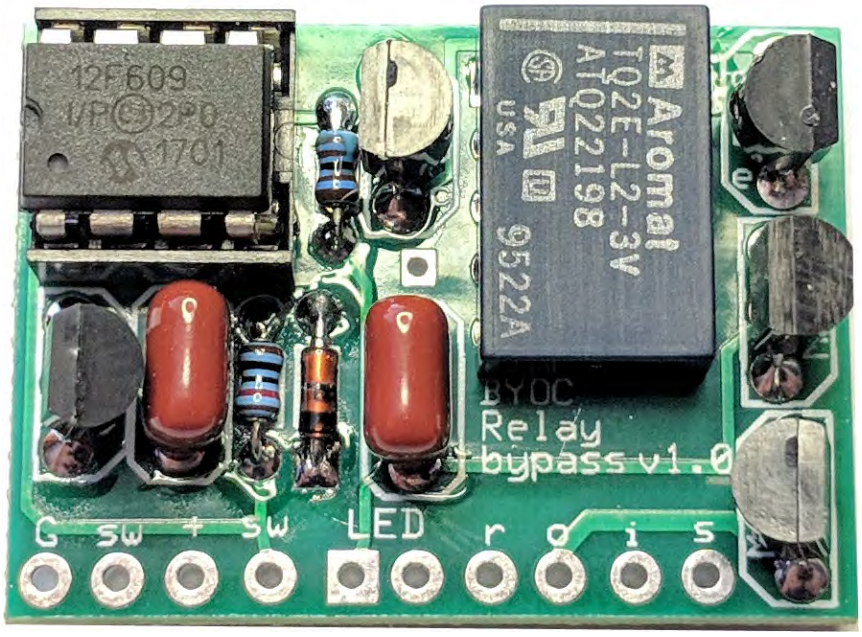
Build Your Own Clone
Relay Bypass Board
Instructions



Parts list for the Relay Bypass Board

Resistors:
1 - 2k2/222 (Red/Red/Black/Brown/Brown)
1 - 10k/103 (Brown/Black/Black/Red/Brown)

Capacitors:
2 - 100n/.1uF/104 Film Capacitors (May say '104' on the body)

Diodes:
1 - 3v Zener Diode (use 4.1v zener if using 5v relay)

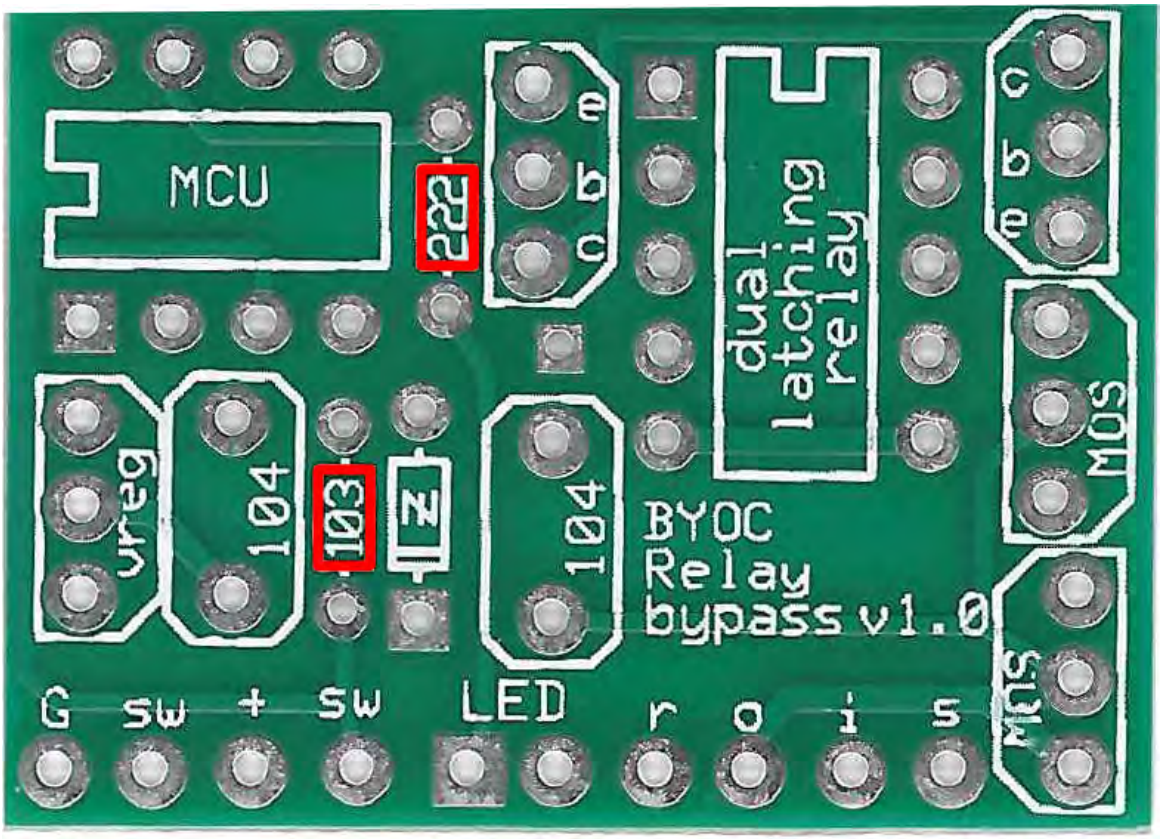
ICs:
1 - 12F609 Programmed MCU
1 - DIP8 IC Socket

Transistors:
2 - 2N3904 (Or Similar NPN Transistors)
2 - BS170
1 - 78L33 3.3V Voltage Regulator (or 78L05 if using 5v relay)

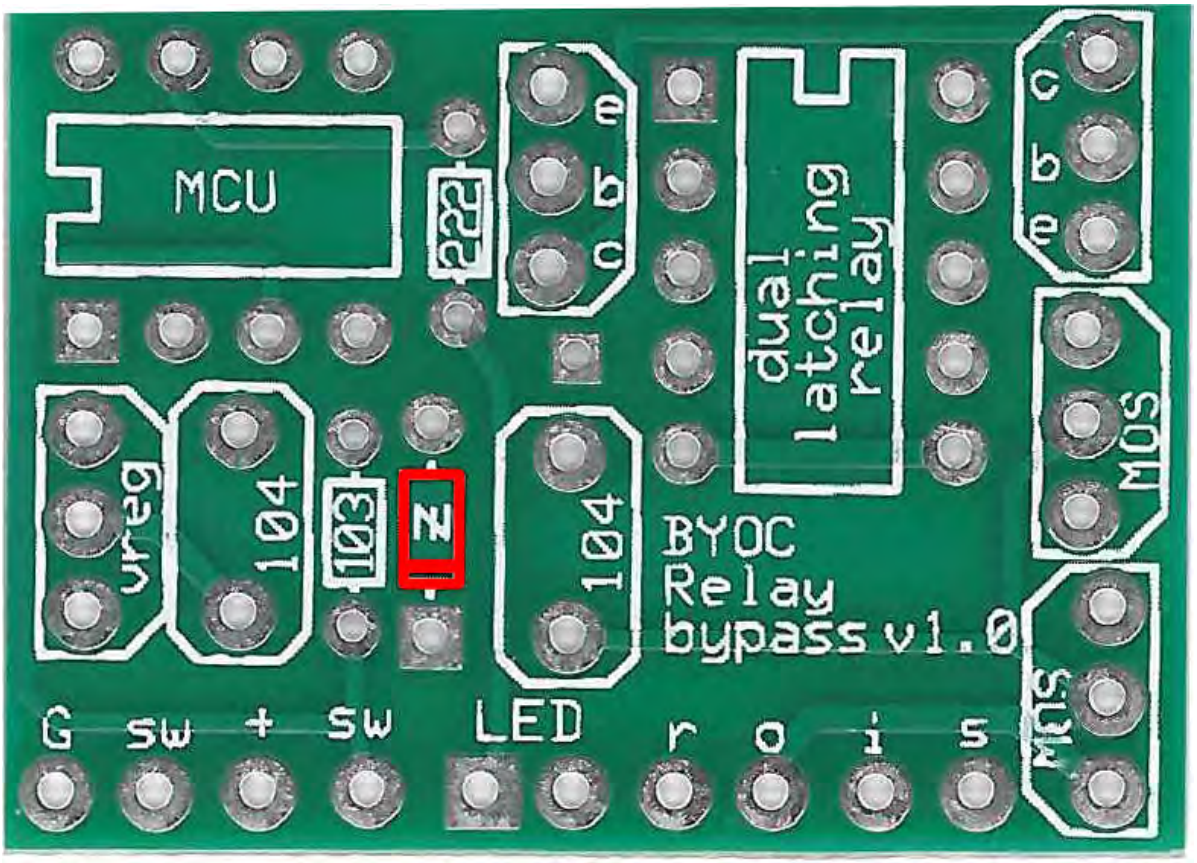
Relays:
1 - Dual Latching Relay 3v or 5v relay

Foot Switch (optional): If you are installing in a BOSS or Ibanez pedal, you do not need a foot switch. You will use the existing tactile switch.

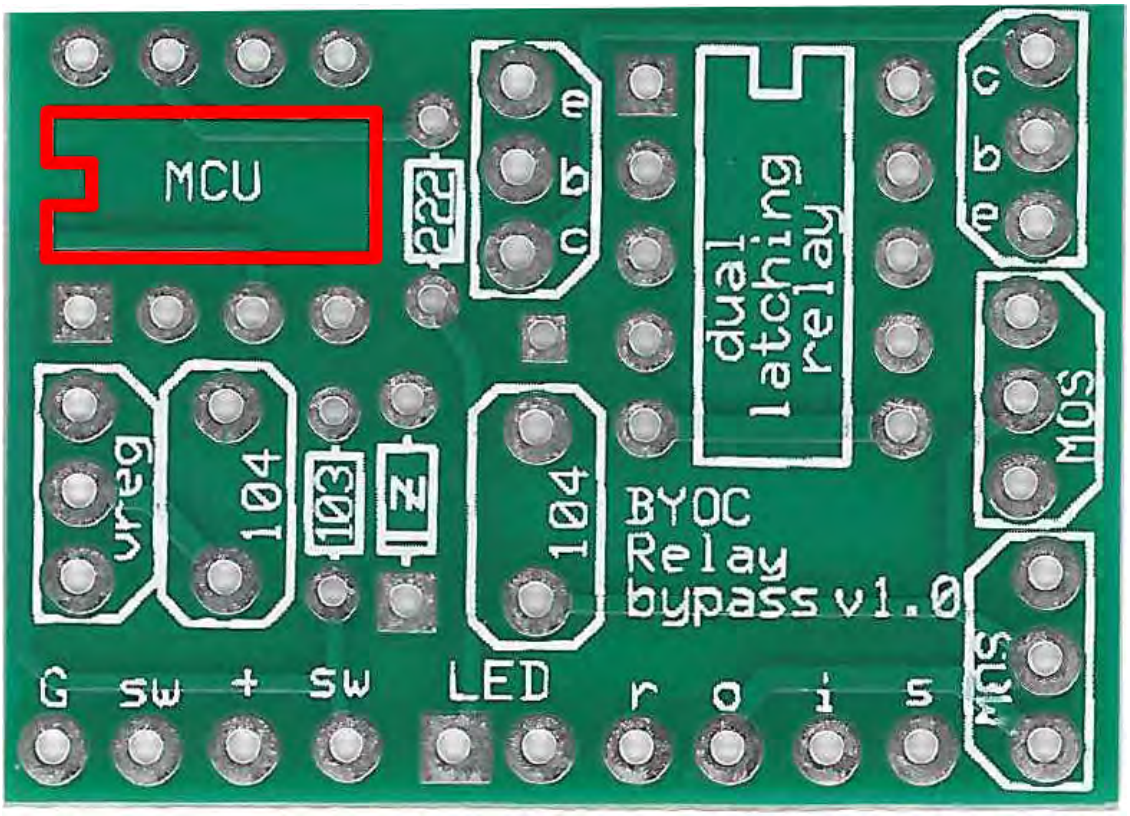
Step 1: Add the resistors. These are not polarized and can go in either direction.



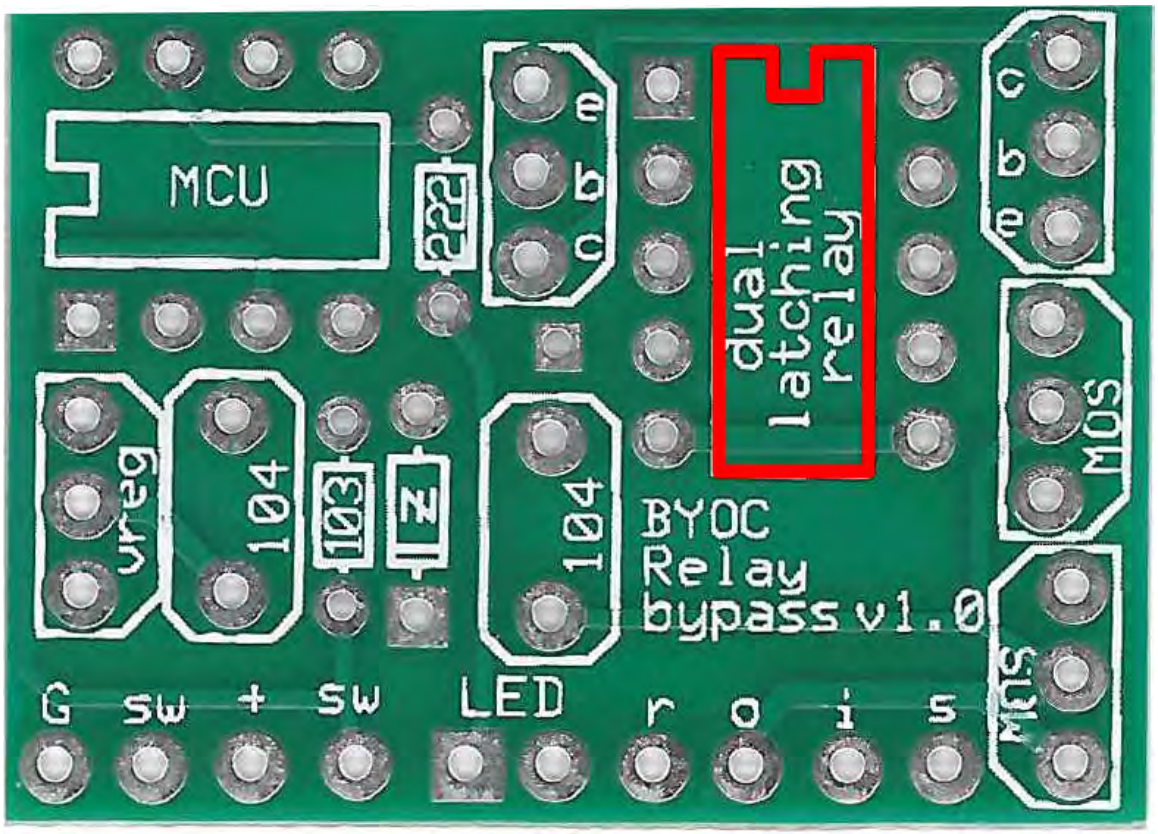
Step 2: Add the Zener Diode. Be sure to match the stripped end of the diode with the stripe on the PCB screenprint.



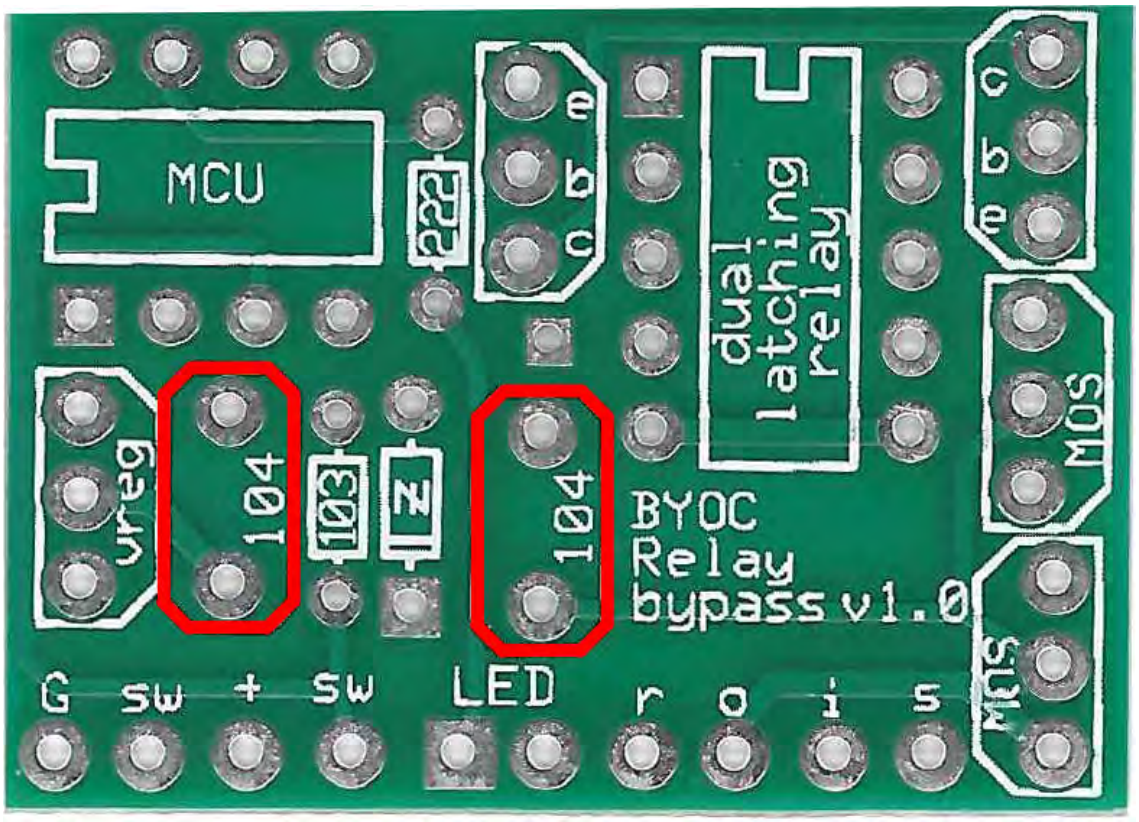
Step 3: Add IC socket. Be sure to match the notch on the board screenprint with the notch on the IC socket



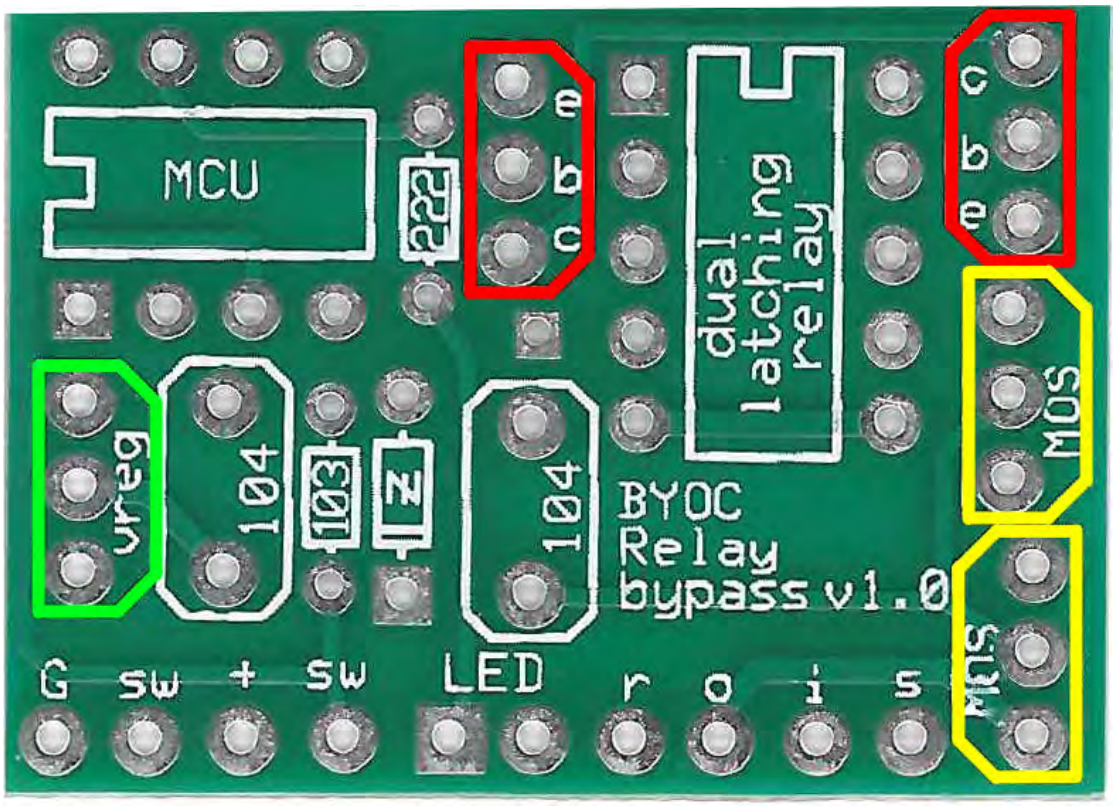
Step 4: Add the Relay. There will be a stripe on one end of the relay to indicate pins 1 and 10. Install it so that the stripe is above the notch on the screenprint.



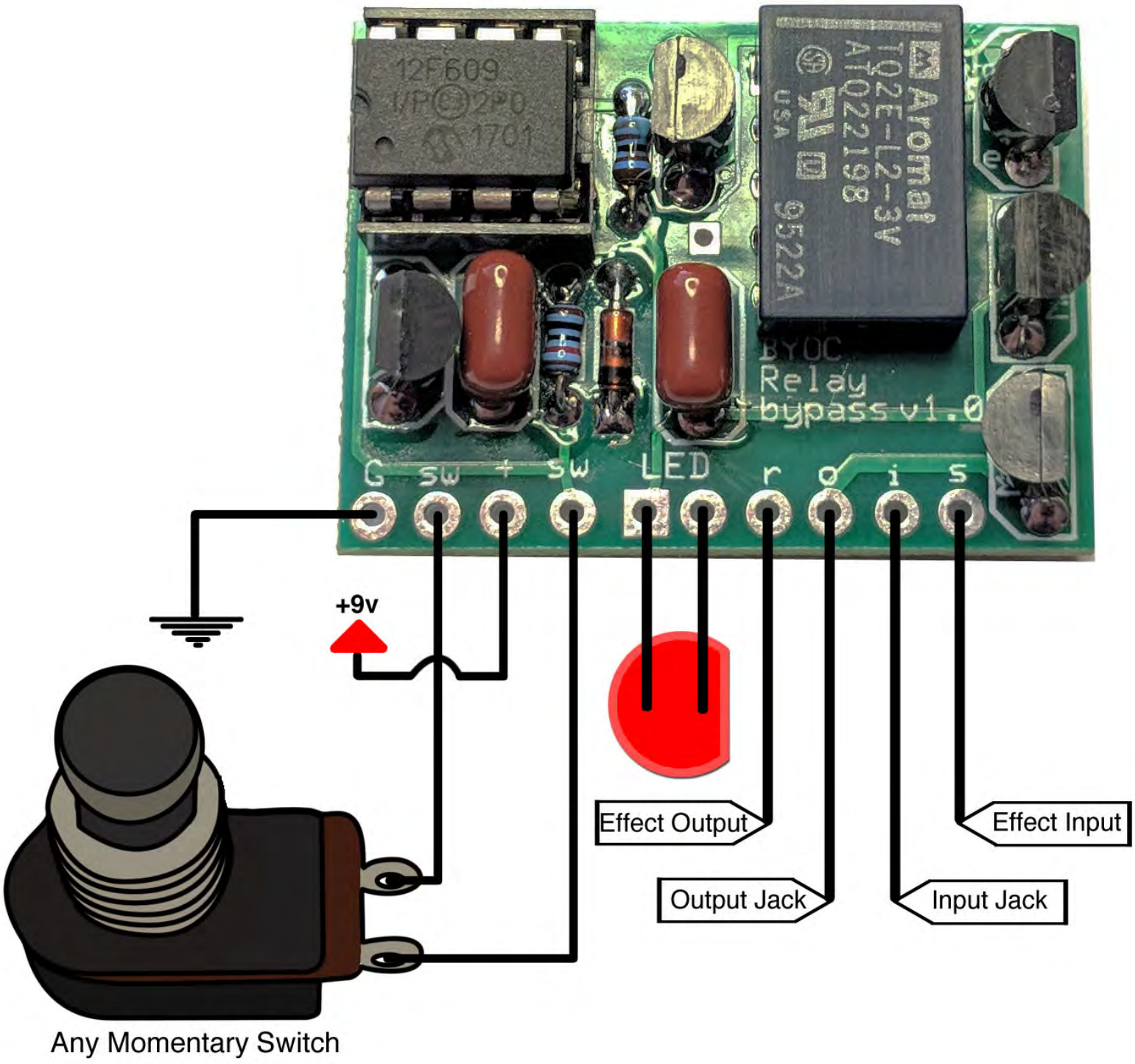
Step 5: Add the film capacitors. These are not polarized, meaning they can go in any direction.



Step 6: Add the transistors. The transistors in **red** are the 2N3904s, the transistors in **yellow** are the BS170s, and the transistor in **green** is the voltage regulator.

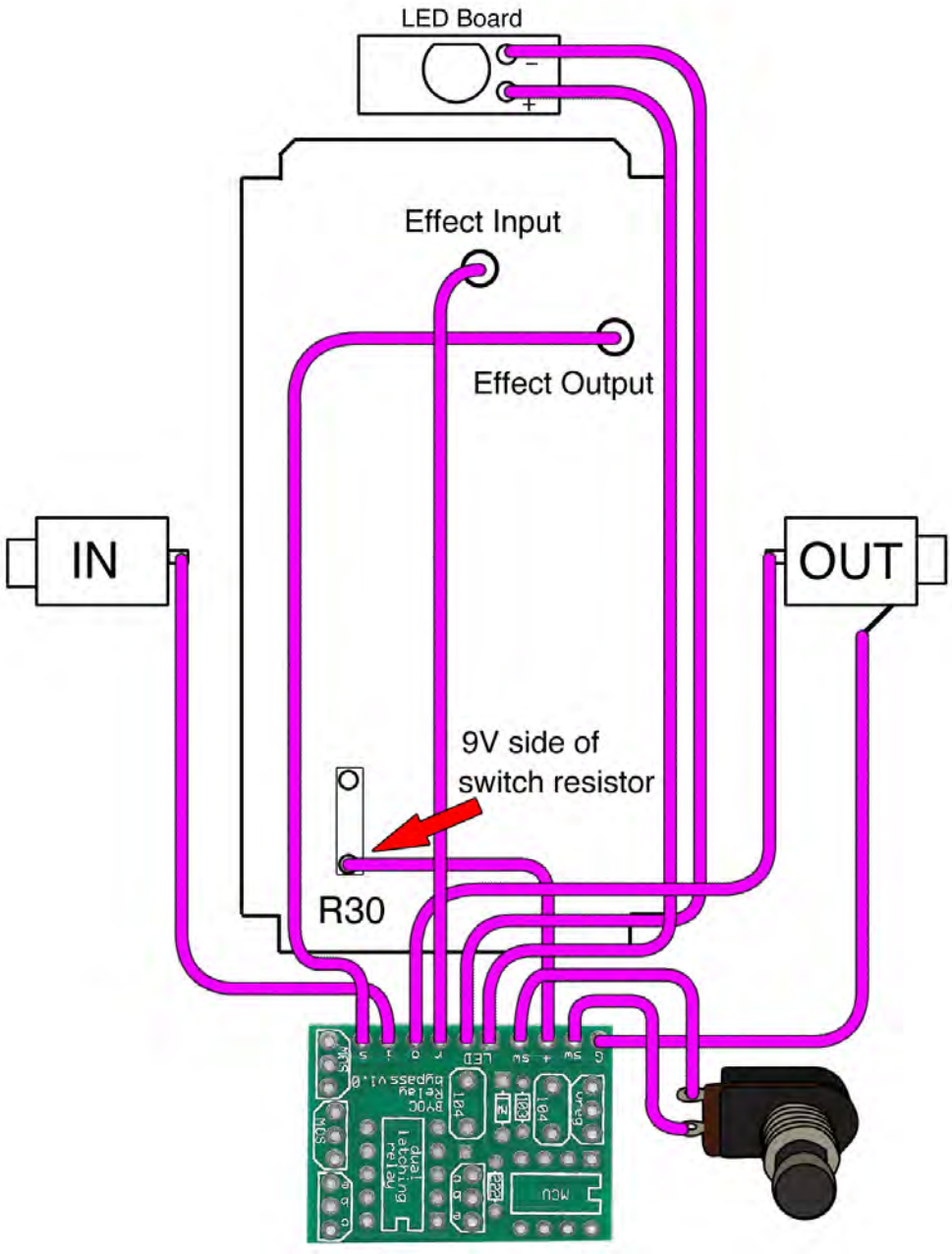


General Wiring Diagram



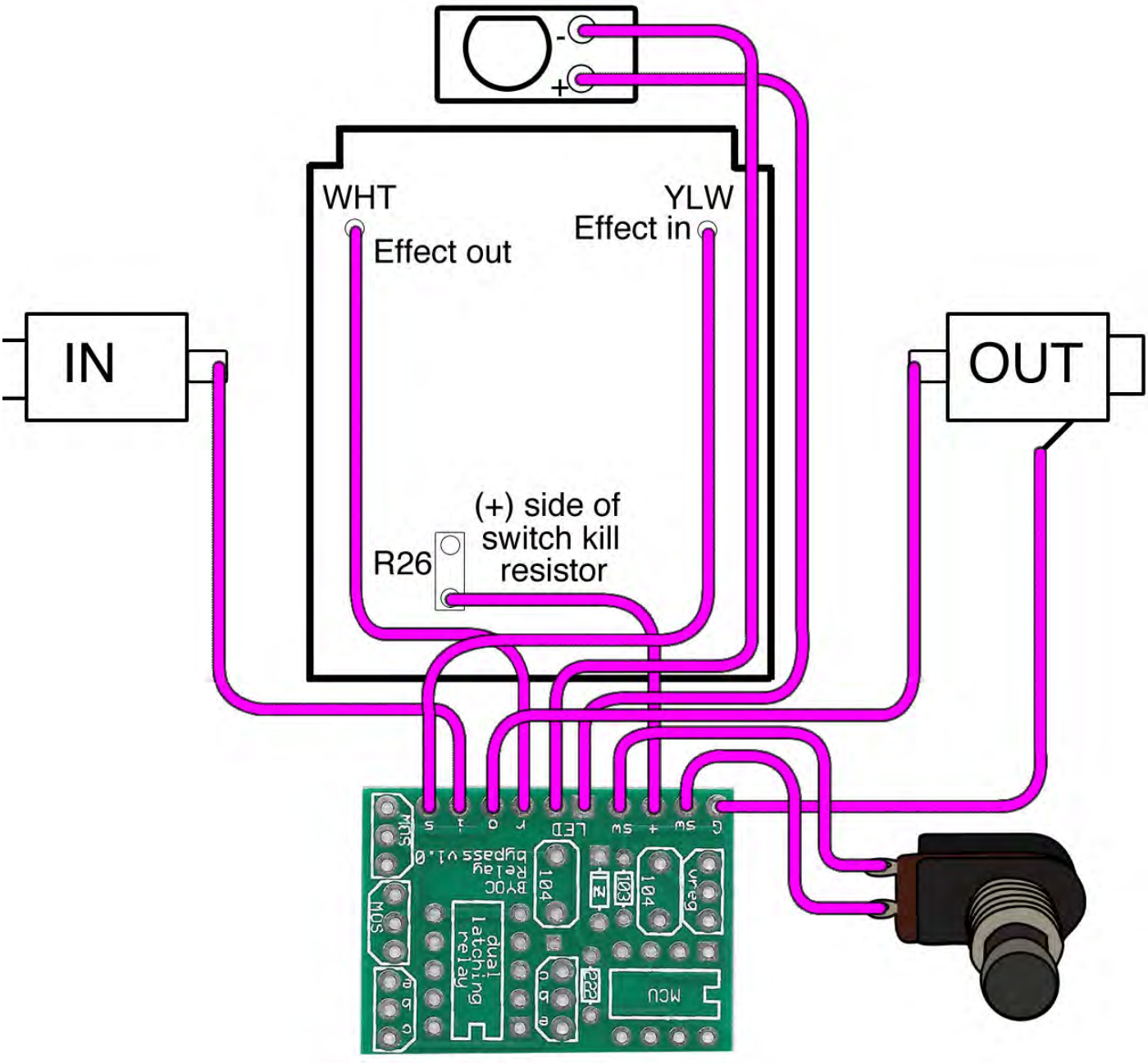
Boss wiring

Note: the wiring diagrams show a SPDT soft-touch foot switch. You will be using the existing tactile switch that came with your pedal. Functionally, they are identical. If you are installing this on a pedal that we do not already provide specific instructions for, you will also need to remove a resistor from the existing flip-flop bypass system. See "Modifying the Flip-Flop" on page 14. Otherwise, download our installation guide that is specific to your pedal.



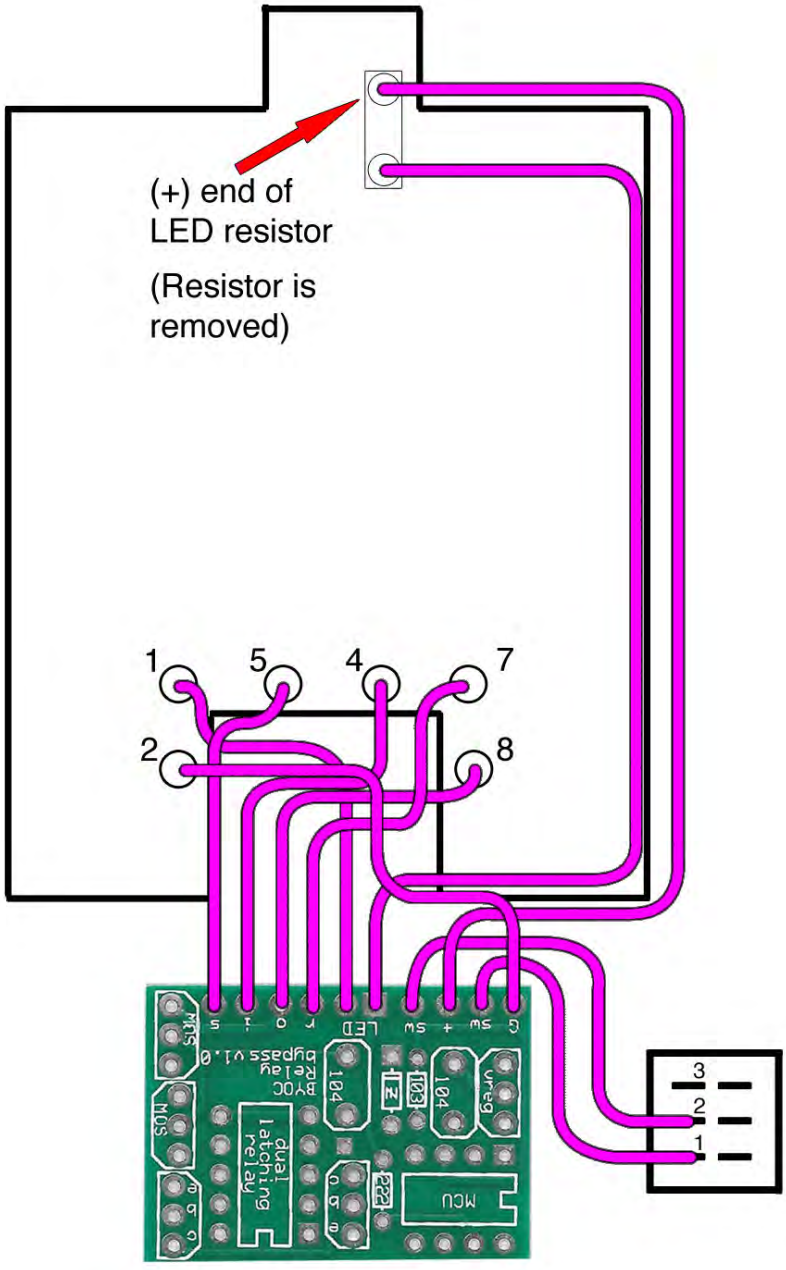
Ibanez Wiring

Note: the wiring diagrams show a SPDT soft-touch foot switch. You will be using the existing tactile switch that came with your pedal. Functionally, they are identical. You will need to remove a resistor from the existing flip-flop circuit. We provide installation instructions that are specific to the TS808, TS9, and OD9. You should download those instructions.

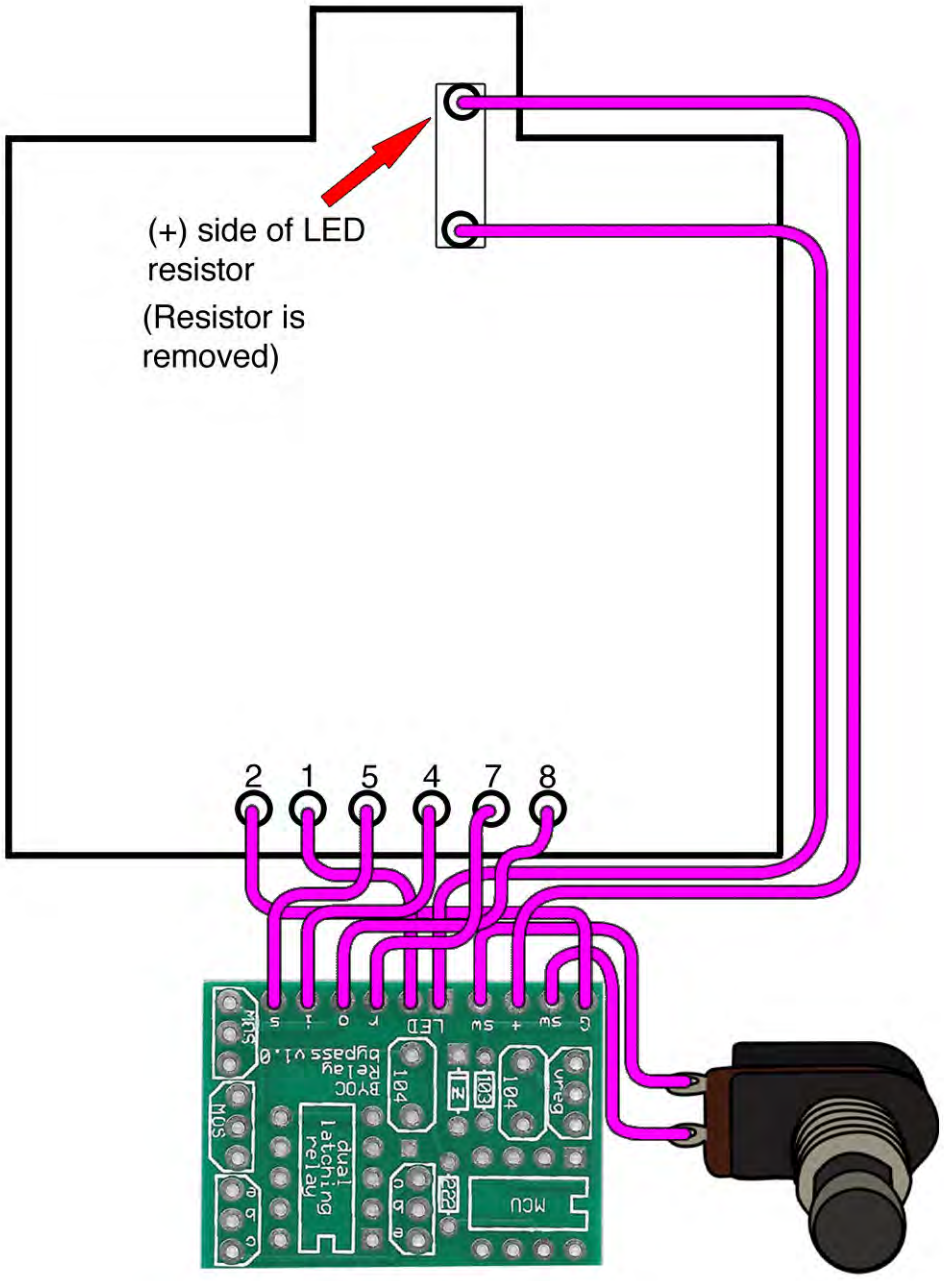


BYOC Wiring 1

You will need to use a DPDT momentary switch if you want to use the Relay Bypass Switch with a BYOC kit that has a PCB that encompasses the foot swtich. The standard "Carling" SPST momentary foot switch will not fit.



BYOC wiring 2

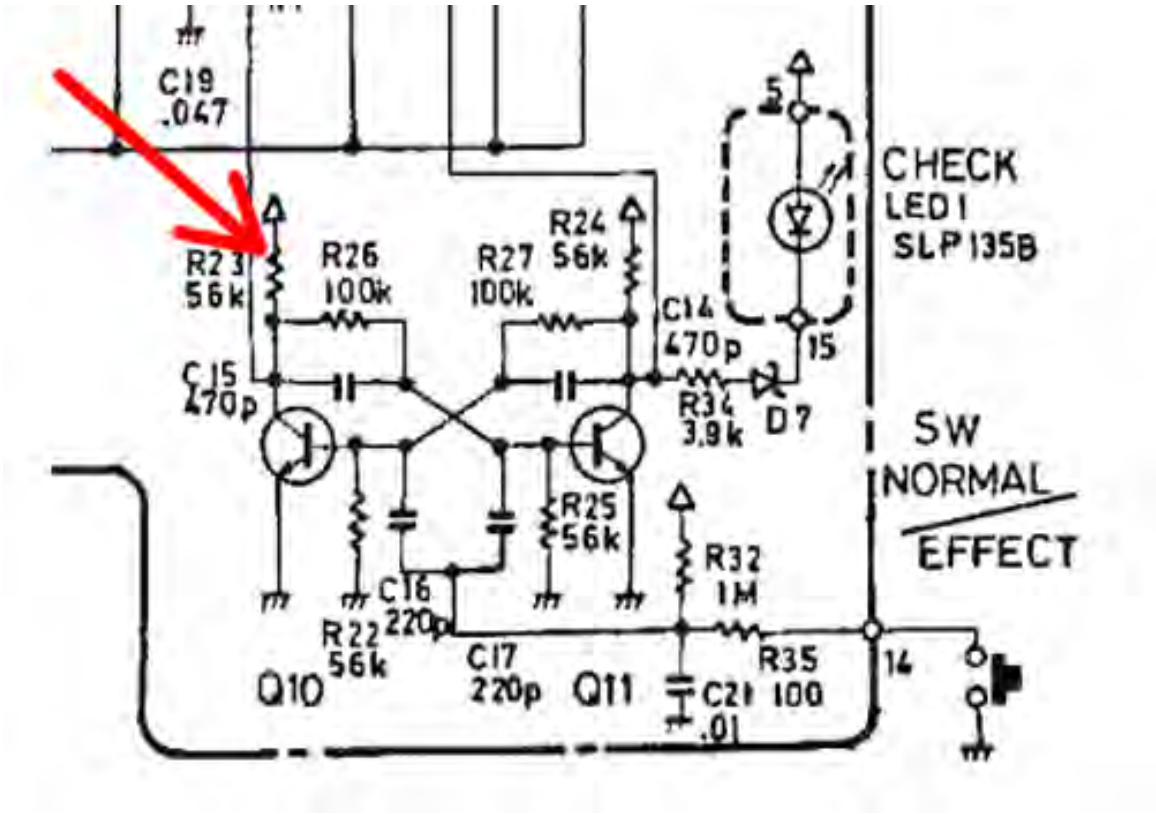


Modifying the Flip-Flop in a BOSS compact pedal

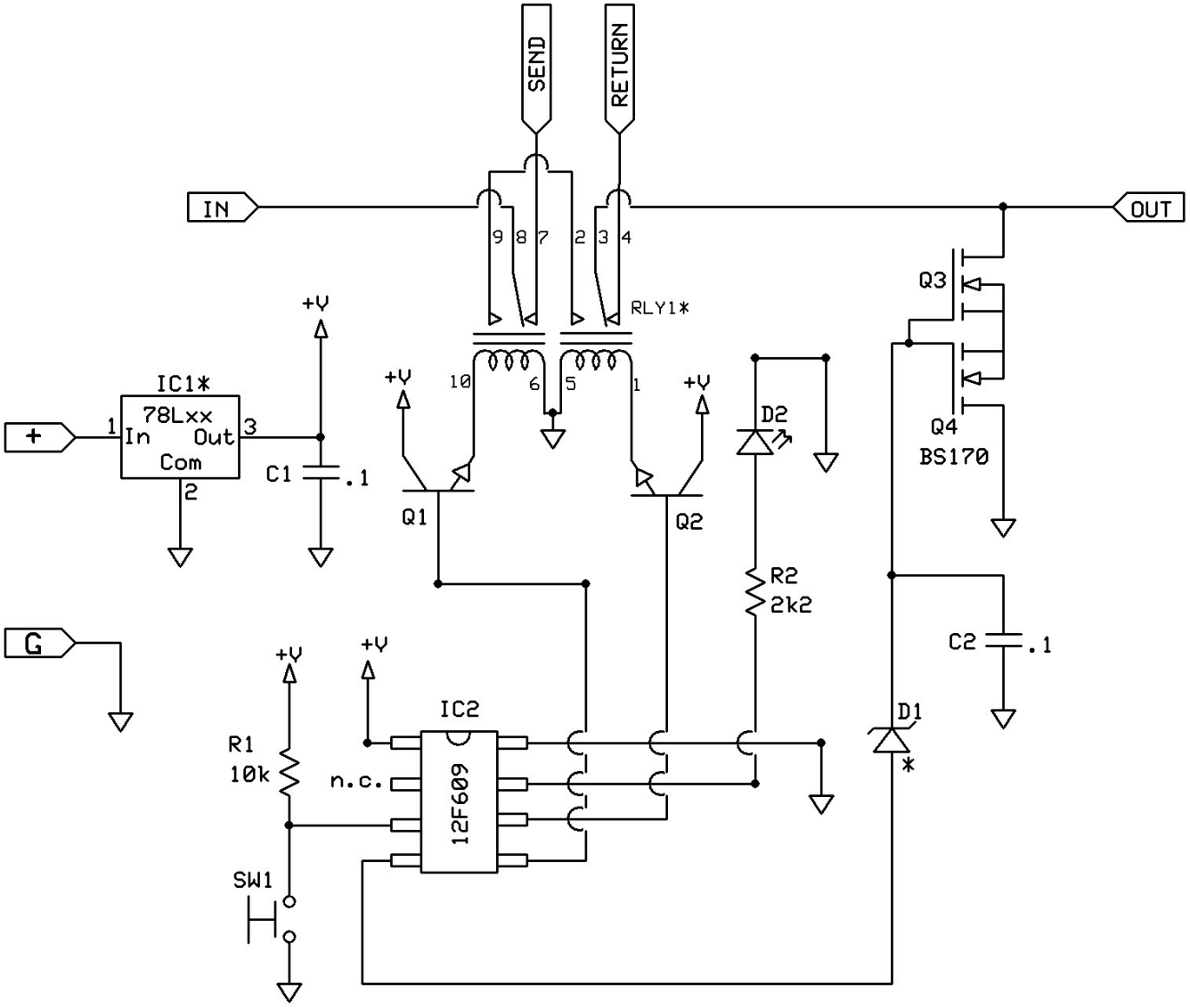
Almost all BOSS compact pedals use the same flip-flop circuit to switch the bypass on and off. Before you can use the Relay Bypass Switch, you need to modify the flip-flop circuit so that it always goes into engaged mode or "on" upon power up (normally, it goes into bypass mode upon power up). Note that you will still be able to turn the pedal on and off with its original switch after this mod, but once you disconnect the tactile switch from the main PCB and connect it to your Relay Bypass Switch, the pedal will essentially be permanently stuck in "on" mode and ready for use with the Relay Bypass Switch.

The modification is very simply. You only need to remove one resistor.

Locating the resistor: In BOSS compact pedals, the resistor's location and designator number will vary from pedal to pedal. For example, it's R30 in the DS-1 and R22 in the DS-1. But it is almost always a 56k resistor.. If you are installing the Relay Bypass Switch in a pedal that we do not offer specific installation instructions for, it is up to you to acquire a factory schematic and locate this resistor. On the next page is a generic schematic of the flip-flop circuit. You should be able to find this same circuit in any BOSS factory schematic.



The red arrow points to the resistor you need to remove to prepare the BOSS flip-flop circuit. This is an excerpt taken from a BOSS CS-1 factory schematic. Here, the resistor designator is R23. In your pedal, the resistor designator may be something else. But it will most likely be a 56k resistor and circuit will be identical.



*78L05; 4.1Vzener; TQ2-L2-5 if using 5 volt
78L33; 3V zener; TQ2-L2-3 if using 3 volt

BuildYourOwnClone		
Relay Bypass Switch		
designed by: K. Vonderhulls	Rev 1.0 5/14/2018	