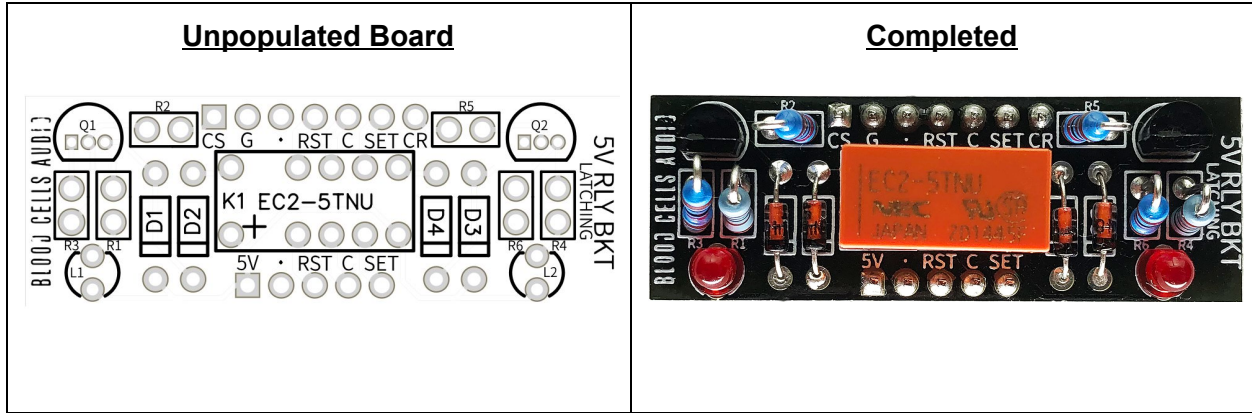


## Assembly Guide

### Relay Breakout Boards *RB5V-L-T* and *RB12V-L-T*

#### Transistor-controlled, Latching



Component	Part# / Value	Qty	Designator
	PCB	1	N/A
	1N4148 Diode	4	D1
	1K Ohm Resistor ( <b>5V Version</b> ) 3.32 K Ohm Resistor ( <b>12V Version</b> )	2	R1, R4
	1.2K Ohm Resistor	2	R2, R5
	10K Ohm Resistor	2	R3, R6
	Red LED	2	L
	2N3904 Transistor	2	Q1
	5V or 12V Relay - latching EC2-5TNU or EC2-12TNU	1	K1
	5-pin and 7-pin Headers	1 ea.	N/A

Before you do anything, please verify that you have all the physical parts listed in the table above. If something is missing, please let us know and we'll get it to you ASAP.

**Additional Requirements:**

- Soldering Iron
- Solder
- Breadboard (optional, but helpful for final step)

When putting together the board, we'll be starting with the shortest components, then adding taller ones as we go. Something that can help as you populate components is to slightly bend the leads under the board - this makes it easier to flip the board over while keeping things in their proper place. When soldering, be sure the iron is hot enough, and as a general rule, spend as little time heating the component as possible.

There are lots of soldering tutorials out there on YouTube if needed.

1. We'll start with the Diodes. Populate all 4 diodes on the board, making sure that the black band on the diodes is facing the same direction as the line on the silk screen. Very critical as diodes are polarized components - direction matters! Flip the board over and solder, then clip the leads.
2. Populate the 2N3904 transistors. The flat side of the transistor must match the Q1 and Q2 silkscreen. Flip over and solder...note the contacts are pretty close together on the TO-92 transistor package. Use a clean tip, and don't use too much solder.
3. Add the LEDs - the flat side of the LEDs must match that of the silk screen. Ideally you'd want the LEDs to sit perfectly flat on the top of the board. This might require a little more bending of the leads on the bottom to lock it into place for soldering...go ahead and do that now.
4. Next up are the resistors. Because placement is tight, these will need to be mounted standing upright. Bend each resistor as shown:



Populate R1 - R6 onto the board. Compare the color bands of the resistors to the chart above to make sure you're putting the correct value of resistor in the right spot. (R2 and R3 can look very similar depending on how they're oriented - watch out). Also note that these are non-polarized, so feel free to align them in any direction that makes you feel good. Flip over, solder and clip.

5. Add the relay - this will only fit in one direction. Flip over and solder.
6. Let's deal with the headers! These are the parts that will ultimately be inserted into your breadboard, thus *the long pins will be on the bottom of the board*. This is actually much easier if you have a breadboard handy. Insert the longer pins of the 7-pin header into the breadboard. 6 breadboard rows below that, insert the 5-pin header.

Place the board on *top* of the headers, and solder them from the top of the board. *Again, be sure the long pins are at the bottom of the board. You should be soldering the shorter pins from the top of the board.*

