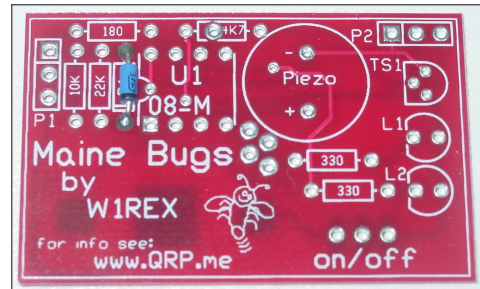
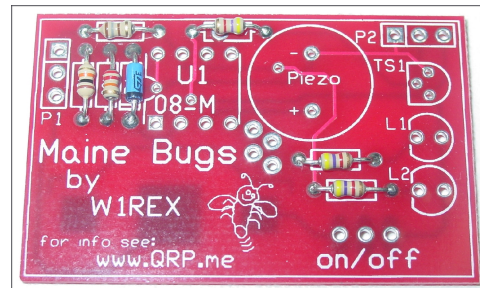


# Maine Bugs 2 Kit

Install your first part at diode D1. Pay attention to the orientation of the diode by aligning the black stripe on the diode with the line on the silkscreen. Solder the leads and clip off the excess.



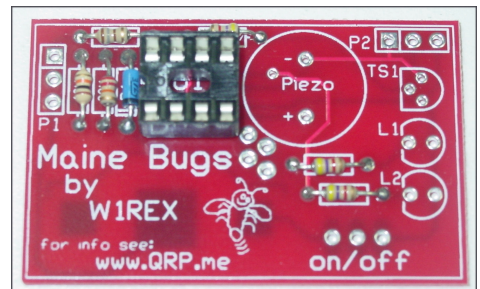
Next install the 6 resistors. Each resistor value is marked on the silkscreen. The two 330 ohm resistors limit the current to the LEDs. They can be replaced by other values based on battery voltage, LED parameters and desired brightness.



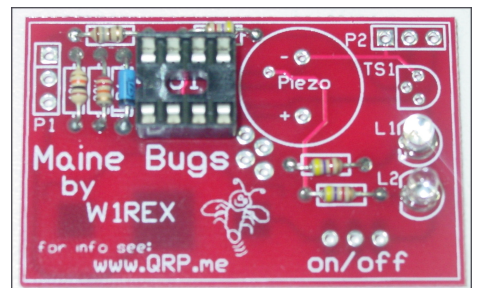
$$R_{LED} = (V_{bat} - V_f_{LED}) / I_f_{LED}$$

The small high output green LEDs used in the Maine Bugs kit have a  $V_f$  (forward Voltage) of 2.55 volts with a corresponding  $I_f$  (forward Current) of 2 mA. When using a 3 volt coin cell, you want to minimize current drain to make the coin cell last. Using the supplied 330 ohm resistors with a 3 volt coin cell results in the two LEDs creating a combined current drain of about 2.5 mA. Using the same 330 ohm resistors and a 4.5 volt (3 batteries in series) supply, the LEDs have a combined current drain of about 6 mA. You can make the LEDs brighter (at the expense of battery life) by decreasing the values of these two resistors. Alternate resistors are supplied: 220 & 100 ohms for 4.5 volts and 470 and 1K ohms for coin cells.

Now solder in the socket for the microprocessor. Pay attention to the little indent on the socket and the corresponding marking on the silk screen marking. Align the two indents. Insert and solder the socket.



The two LEDs are next. There should be a flattened side on the 'rim' of the LED. Insert the LED so that the LED flat aligns with the silk screen flat. Solder and clip off the excess leads. You could also mount the



LEDs in a remote location by soldering wires to the LEDs and then soldering the wires to the circuit board at the LED locations.

Now solder in the 3 small 3 pin 'Molex' type connectors.

The temperature sensor and on/off jumper are next. Align the flat side of the sensor with the flat marking on the silk screen. The temperature sensor can also be mounted remotely using the P2 socket. Attach 3 wires to the sensor and a 3 pin 'Molex' connector to the other end. Now you attach the sensor to the board at P2.

The piezo sounder and coin cell holder can now be installed. The piezo is polarized so match it up to the markings on the board. The coin cell holder is mounted on the back side of the board. You can elect to power the Bug kit using a coin cell mounted in the holder ..... or..... you can remove the coin cell battery and attach wires from a different battery pack across the + and - traces coming out of the coin cell holder. The Maine Bugs kit will run off a 3 volt coin cell or 3 1.5 volt batteries in series. **DO NOT POWER THE MAINE BUGS KIT WITH ANYTHING OVER 5 VOLTS!** Battery voltages over 5 volts can destroy the microprocessor chip. It is best to remove the coin cell and power the kit from a 3AA battery pack or 5 volt supply when on the bench in order to maximize coin cell life.

Insert the microprocessor chip, insert a battery, install the jumper in the ON position and the Maine Bugs chip should start to chirp... count the chirps in 15 seconds and add 39 to determine the temperature. For more information about the Maine Bugs 2 Kit see: [www.QRPme.com](http://www.QRPme.com) Enjoy!

