



# Weevil Eye

## Kit Information & Instructions



The Weevil Eye kit is an introductory electronics kit designed to help the novice electronics enthusiast learn about things like soldering and resistance. The Weevil Eye is designed to look like a little beetle whose eyes glow in accordance with the ambient light level – the less light detected, the brighter the friendly weevil's eyes will glow. There is no programming involved and all soldering is beginner friendly, so this kit is perfect for the embedded electronics novice.

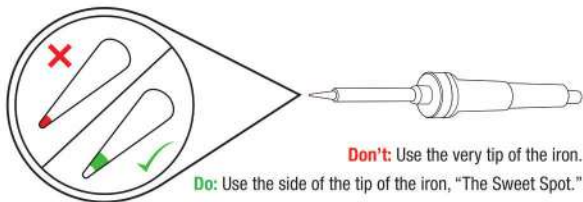
### Kit includes:

- Weevil Eye PCB
- Red Diffused 5mm LEDs (qty 2)
- 47k Ohm Resistor
- 220 Ohm Resistors (qty 2)
- Transistor (2N3904)
- Miniature Photocell
- Coin Cell Battery Holder
- 20mm Coin Cell Battery

### WARNING:

Please wear safety goggles. This kit requires soldering and clipping leads.

## ! SOLDERING TIPS



**Do:** Touch the iron to the component leg and metal ring at the same time.



**Do:** While continuing to hold the iron in contact with the leg and metal ring, feed solder into the joint.



**Don't:** Glob the solder straight onto the iron and try to apply the solder with the iron.



**Do:** Use a sponge to clean your iron whenever black oxidization builds up on the tip.

## ! SOLDERING TIPS



**A** Solder flows around the leg and fills the hole - forming a volcano-shaped mound of solder.



**B** **Error:** Solder balls up on the leg, not connecting the leg to the metal ring.  
**Solution:** Add flux, then touch up with iron.



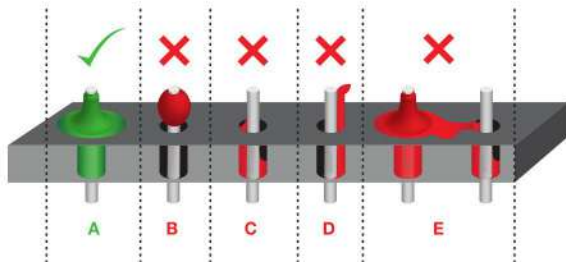
**C** **Error:** Bad Connection (i.e. it doesn't look like a volcano)  
**Solution:** Flux then add solder.



**D** **Error:** Bad Connection...and ugly...oh so ugly.  
**Solution:** Flux then add solder.



**E** **Error:** Too much solder connecting adjacent legs (aka a solder jumper).  
**Solution:** Wick off excess solder.



## QUICKSTART - YOUR FIRST COMPONENT

[STEPS 1 TO 12]

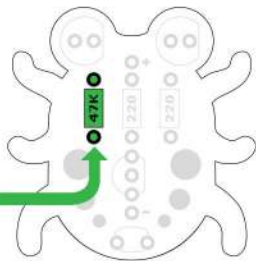
- ① Locate the **47k Resistor**. It will be color-coded with stripes — yellow, purple, then orange.



- ② Bend the legs downward.



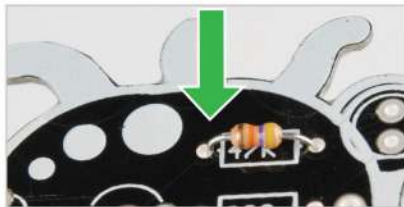
- ③ Locate the **47k Resistor** position on the board.



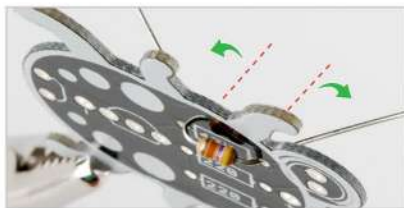
- ④ Insert the resistor into the PCB.



- ⑤ Push the resistor in so it is nearly flush with the board.



- ⑥ Slightly bend the legs outward to hold it in place.



- 7 Flip the board over. Hold the soldering iron's "sweet spot" so it touches both the leg and the metal ring. Hold for two seconds.



- 8 Feed solder into the joint.



- 9 Pull solder away first.



- 10 Your solder joints should look like this - a tiny volcano.



- 11 Solder the next leg into place.



- 12 Clip off the excess.





## CONTINUE WITH THE TOP OF THE BOARD

[ STEPS 13 TO 16 ]



Now that you've successfully soldered in the resistor, use the same method to place and solder the rest of the components.



Steps highlighted with a yellow warning triangle represent a polarized component. Pay special attention to the component's markings indicating how to place it on the board.



**220 Ohm Resistor:** Match the resistors to the correct positions on the board, then solder.

13 220 Ohm Resistor x 2



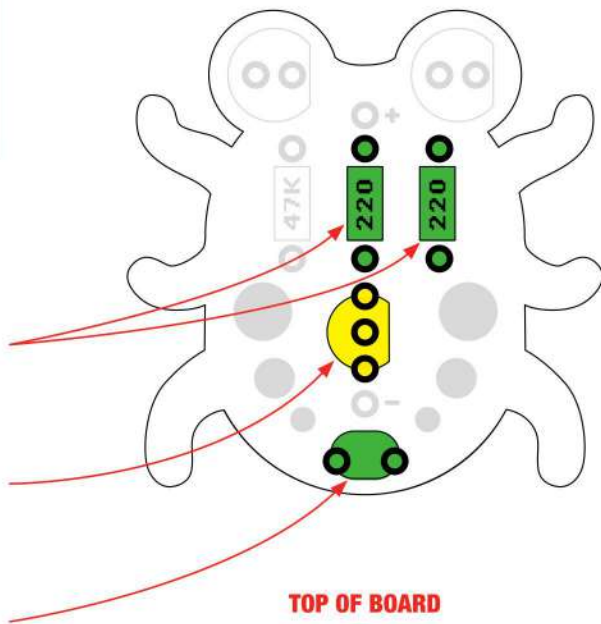
**Transistor (2N3904):** It's the only three-pin device and it's black. Notice the silkscreen (white print on the board) resembles a half circle. Make sure to place the transistor in the holes with regard to the silkscreen. The round side on the board should match the round side of the transistor.

14 Transistor 



**Photocell:** This part fits in the slot marked at the bottom of the board. Orientation for this device doesn't matter.

15 Photocell





CONTINUE ON THE **TOP OF THE BOARD**



Remember highlighted components are polarized.

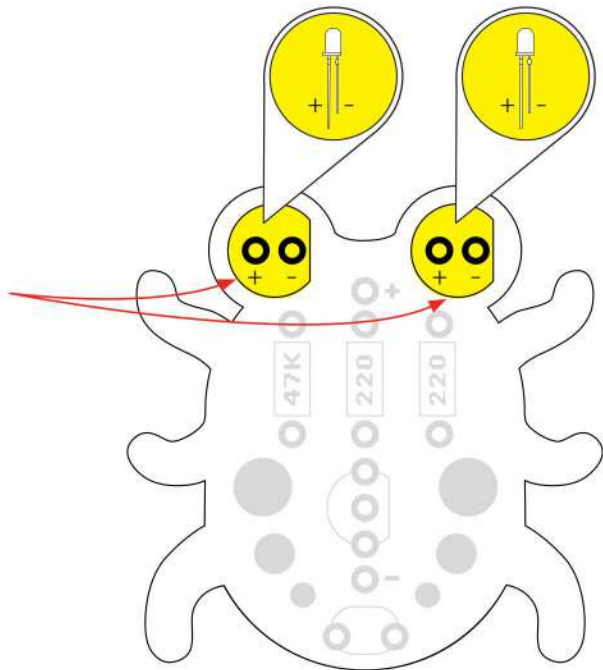


16

LEDs x 2



**LEDs:** Insert the LEDs into the front of the board. Each LED has a short leg and a long leg. The short leg goes into the hole labeled "+." Also make sure it sits flush with the PCB. Then solder into place.



**TOP OF BOARD**



NOW WORK ON THE **BOTTOM OF THE BOARD**

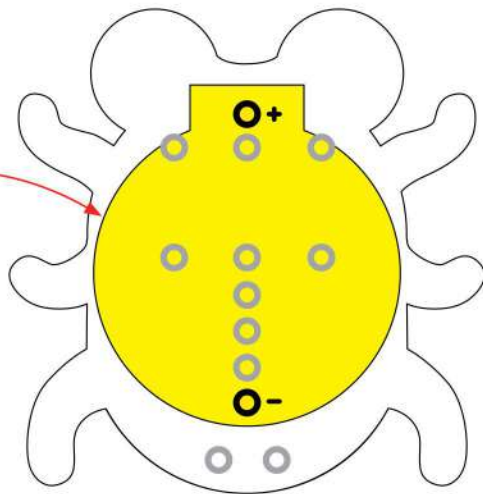


Remember highlighted components are polarized.



**17** Battery Clip

**Battery Clip:** Turn the board over and align the battery clip with the white footprint on the Weevil Eye's back. Make sure the legs stick through the board and that the part is laying flat. Solder the battery clip's legs into place from the top of the board.



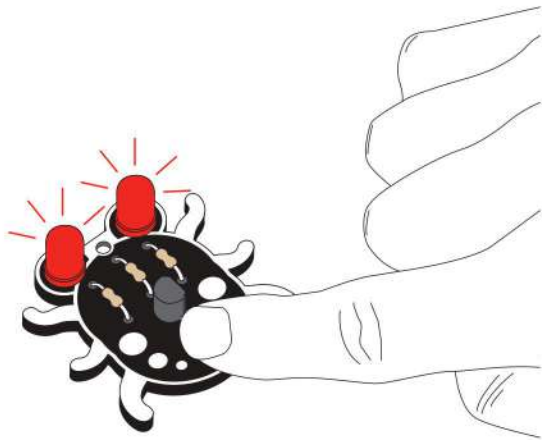
## QUICK TEST INSTRUCTIONS

Once the Weevil Eye is soldered, we can test the board's functionality.

- Put the 20mm coin cell battery into the battery holder, positive side up.
- If it's dark, you should see the LEDs light up. If not, cover the sensor with your finger to test.



- If your Weevil's eyes aren't lighting up, don't worry! Start with some simple troubleshooting. Check your solder joints to make sure your components have a good connection to your board – solder should flow into the board and not ball up around the component's pins. Also check to make sure your transistor and LEDs are correctly oriented!



## Learning More

### **Soldering**

The tip of the iron is normally 700 °F, hot enough to melt metal. It is normal for the handle of the soldering iron to heat up a bit. Hold it like a pencil and move your hand further away from the tip if the heat is uncomfortable. The solder smokes because the rosin inside the solder is burning off - it's not harmful.

### **LEDs**

Light-emitting diodes (LEDs) are like light bulbs, but much smaller and a lot more efficient.

### **Photocell**

A photocell changes resistance depending on the amount of light it is exposed to. These little sensors make great ambient light triggers.