SOLDERING

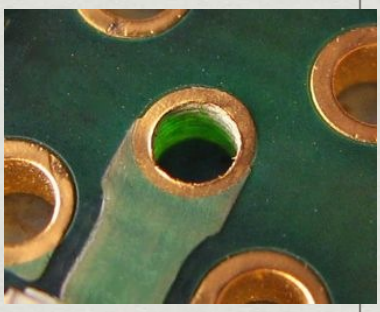
THROUGH-HOLE COMPONENTS

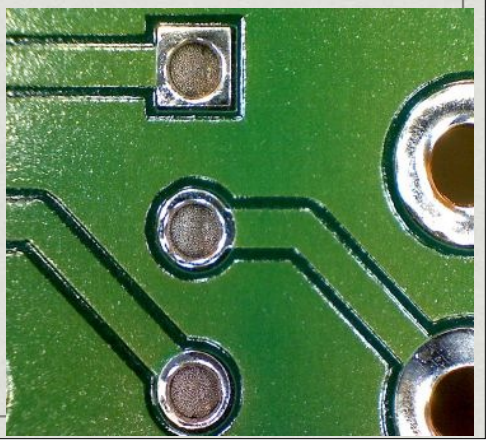
Soldering

- Heat the material to be soldered
  - Let the solder melt/flow around that material
- At the same time… don't heat things too hot or for too long!
  - It takes a little practice to get it just right…

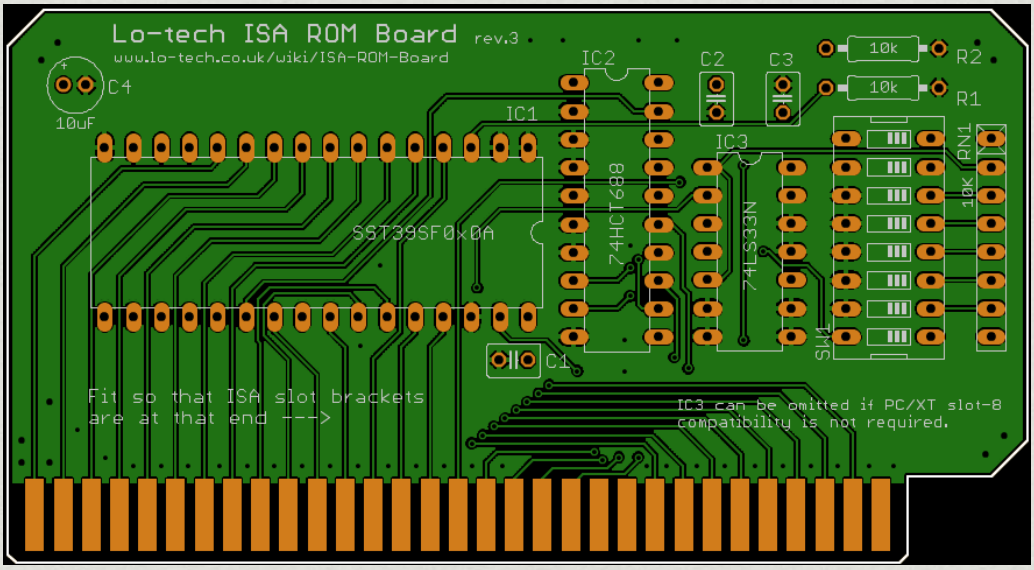
Through-Hole Components

- Components designed to go through a hole… :-)
  - Circuit boards have holes in them with little metal donuts around the holes
  - Those metal donuts connect the hole with wires (traces) on the circuit board
  - Through-hole components have leads that stick through those holes so you can solder them to the donuts.

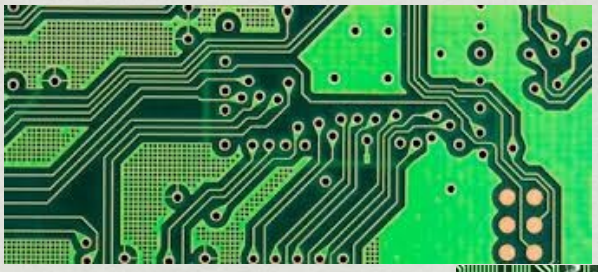


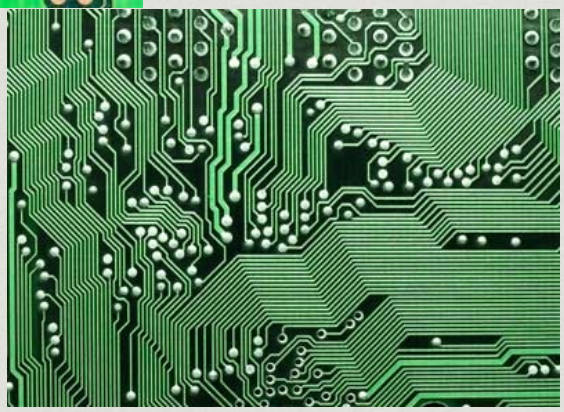


Printed Circuit Board (PCB)

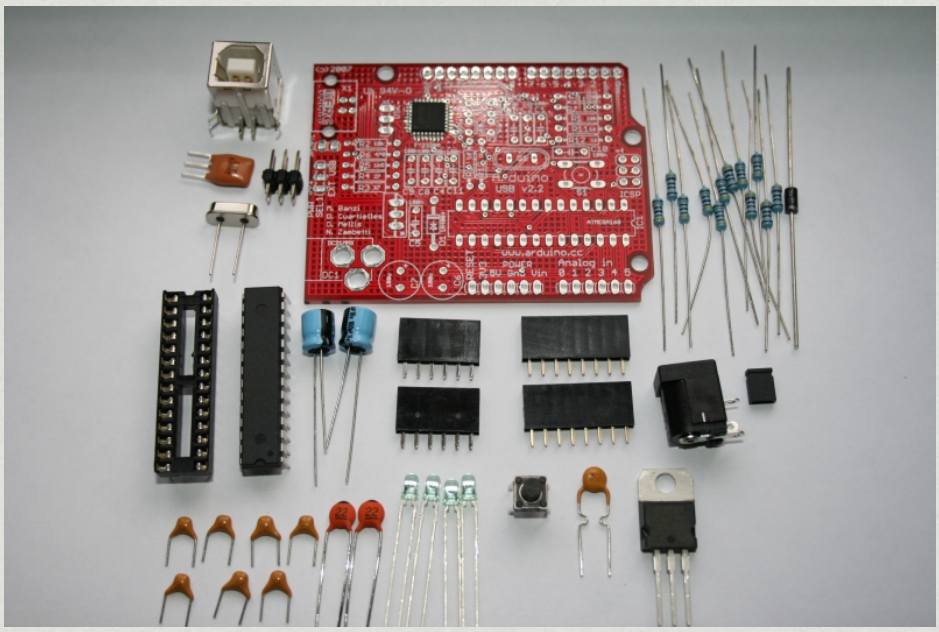


PCBs with holes

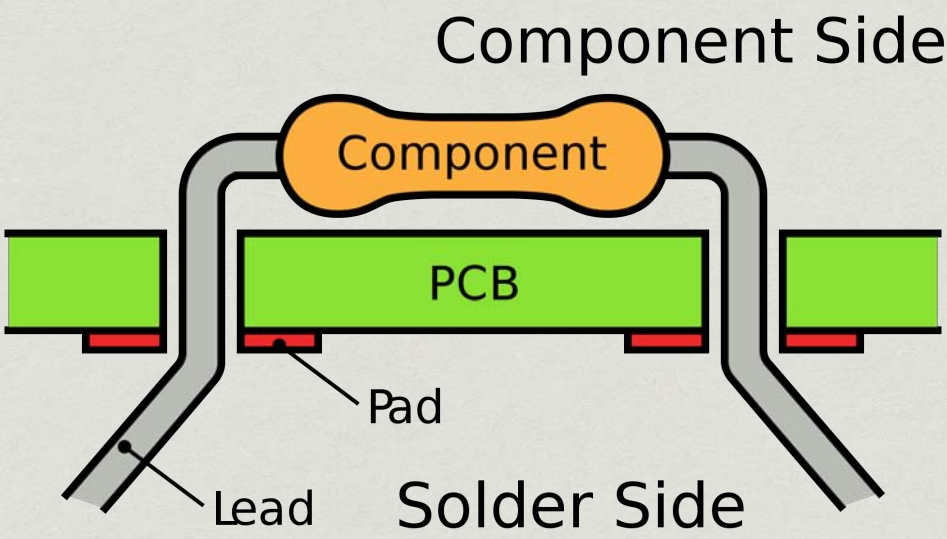




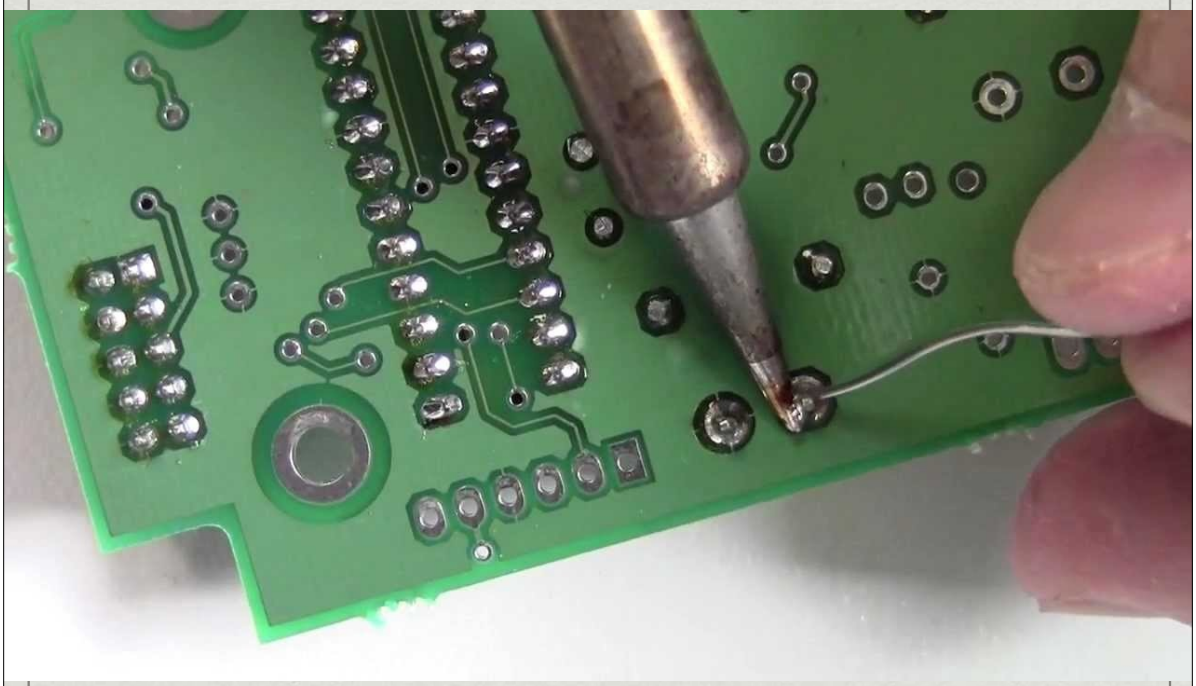
Through-Hole Components



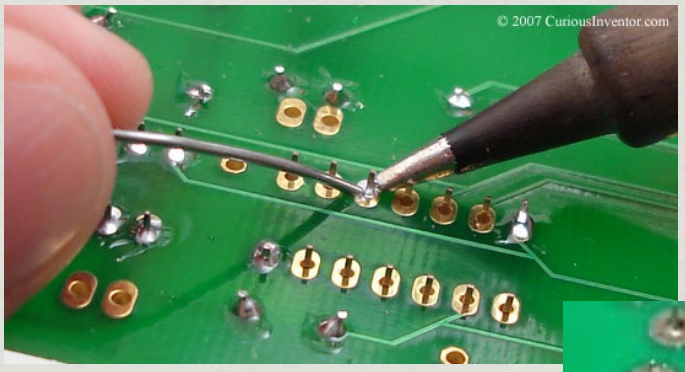
Through-Hole Components

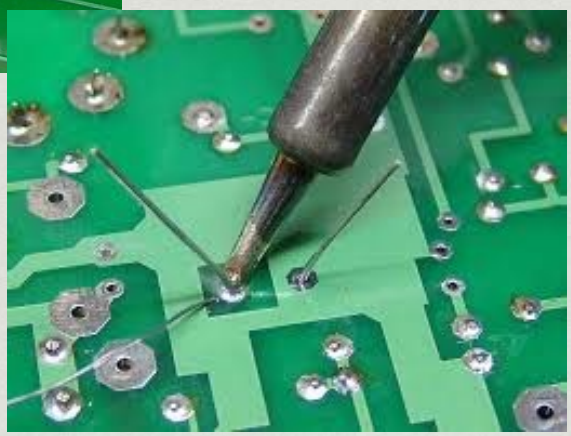


Through-Hole Components

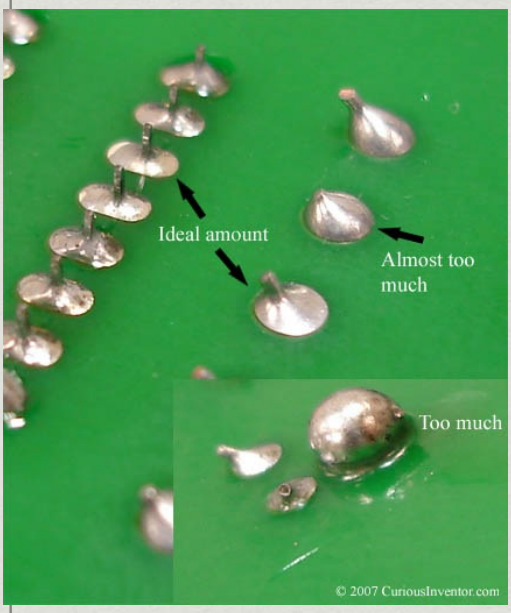


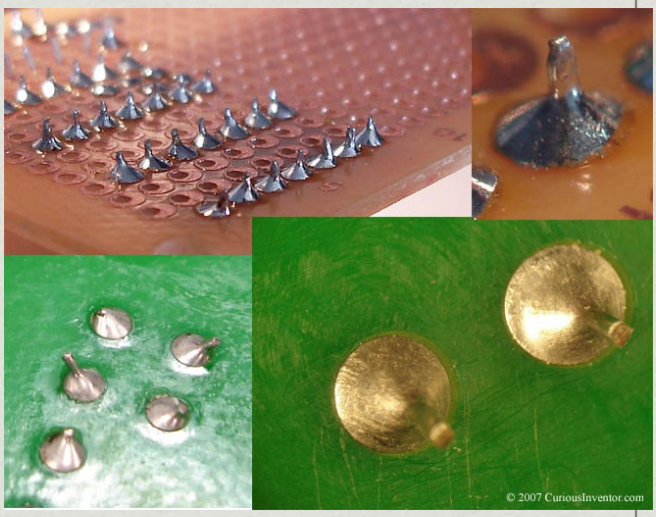
Through-Hole Components





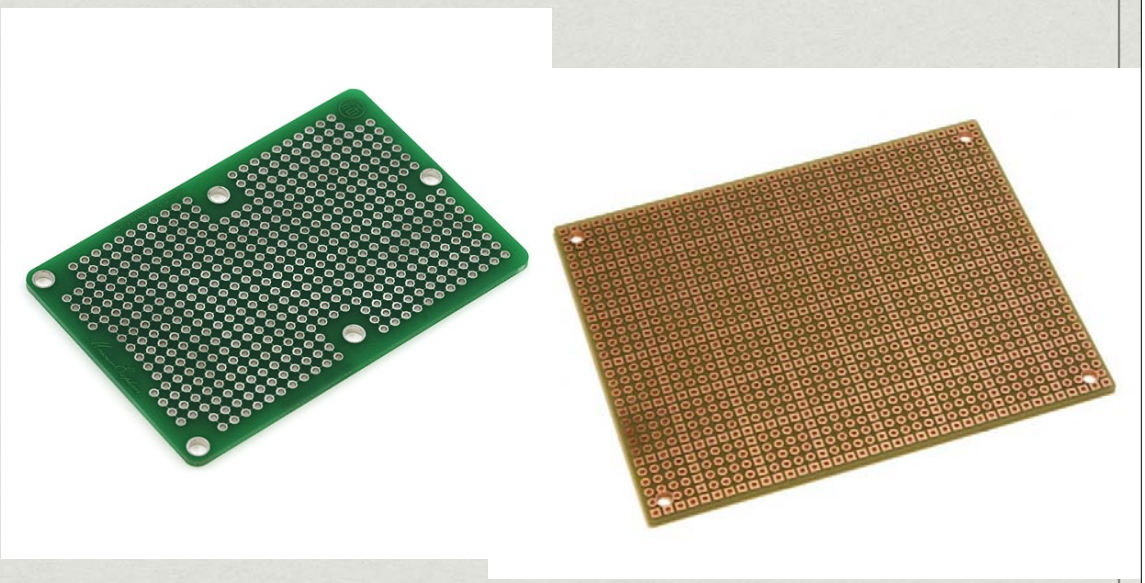
Good through-hole joints



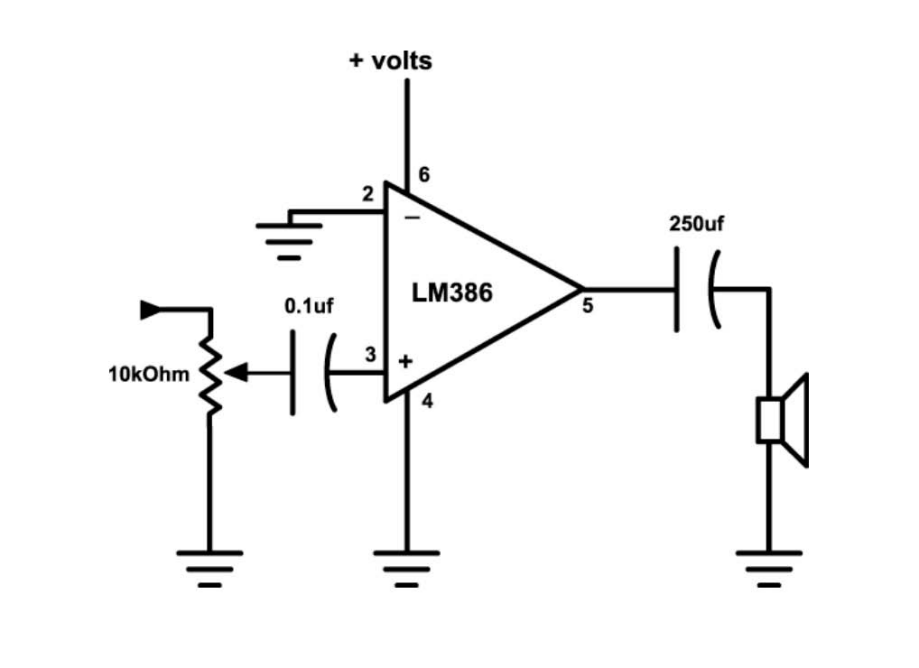


Bad through-hole joints

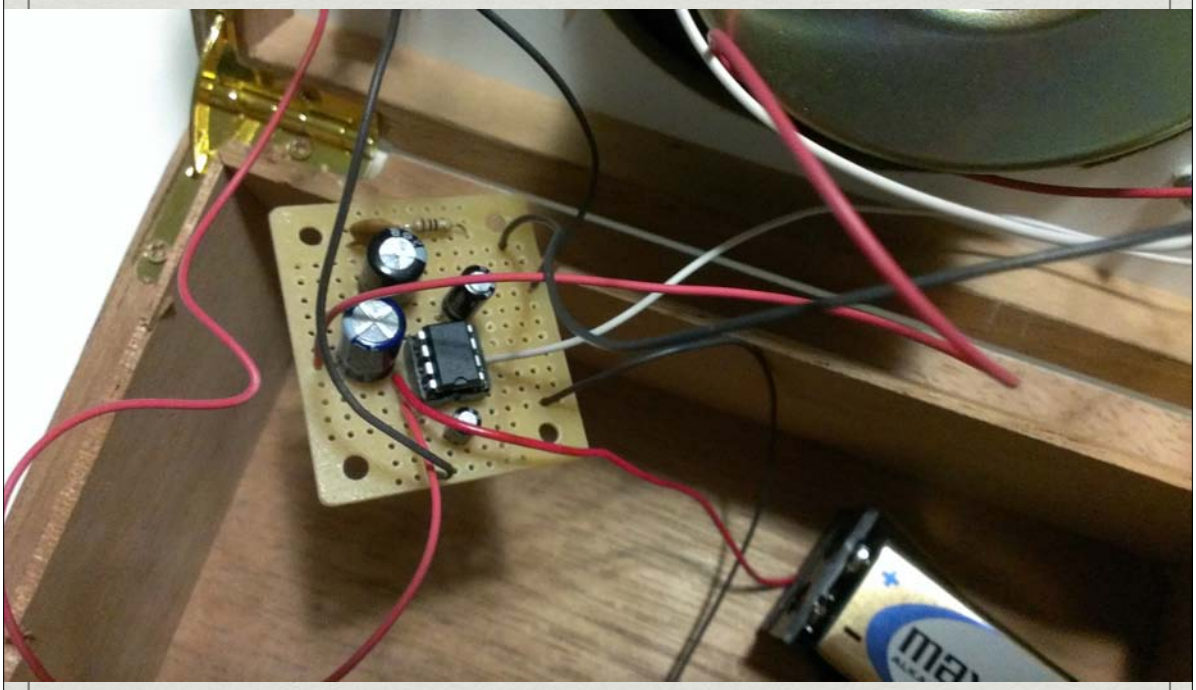
Proto-Board



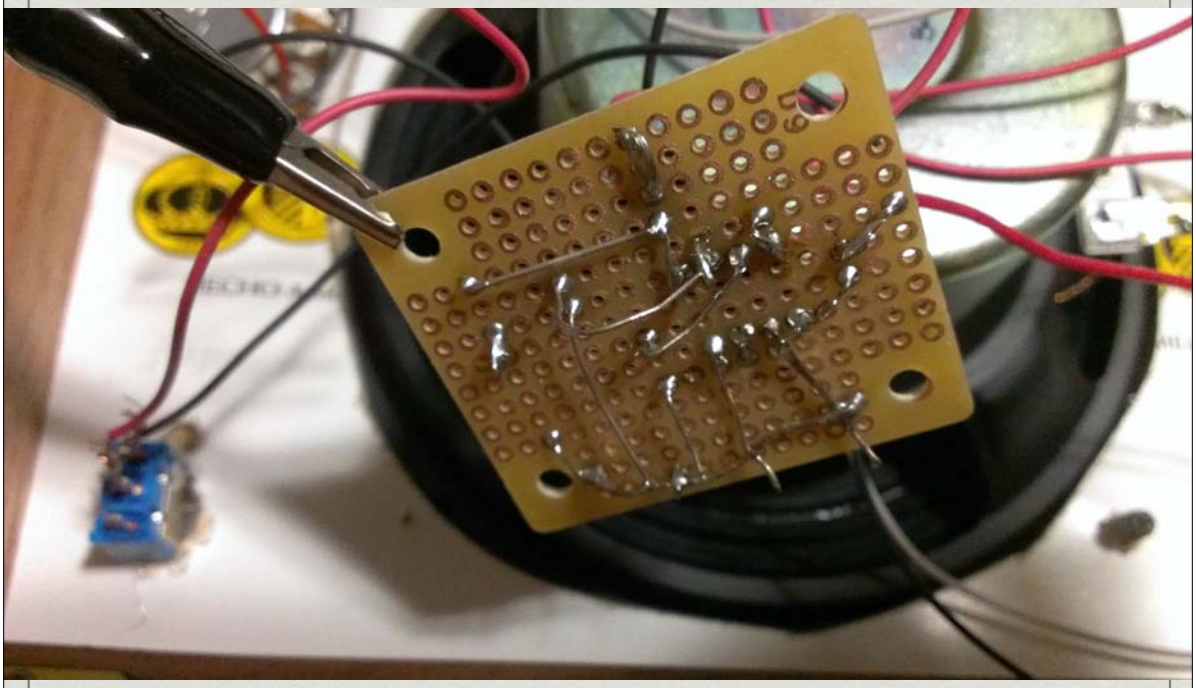
Amplifier schematic



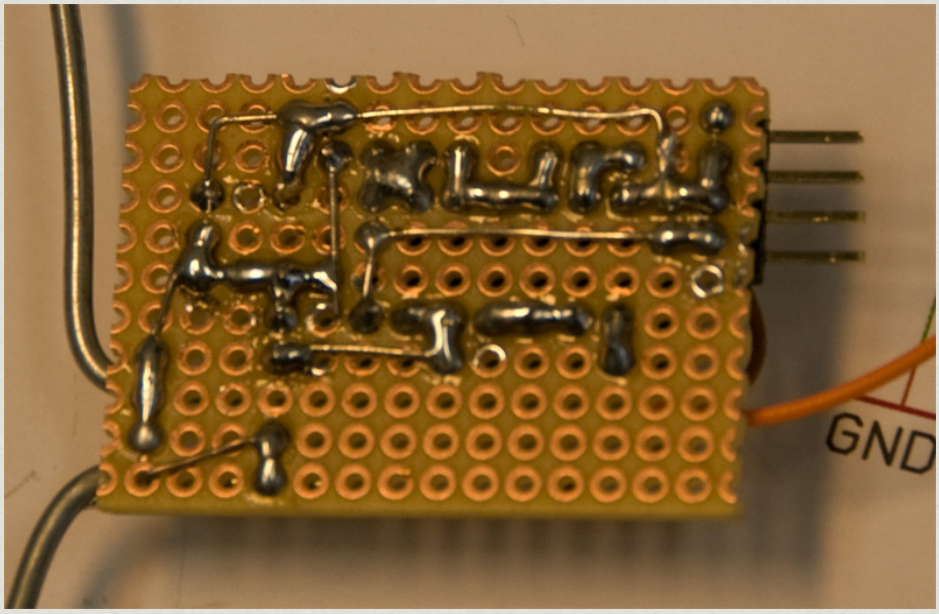
Proto-Board



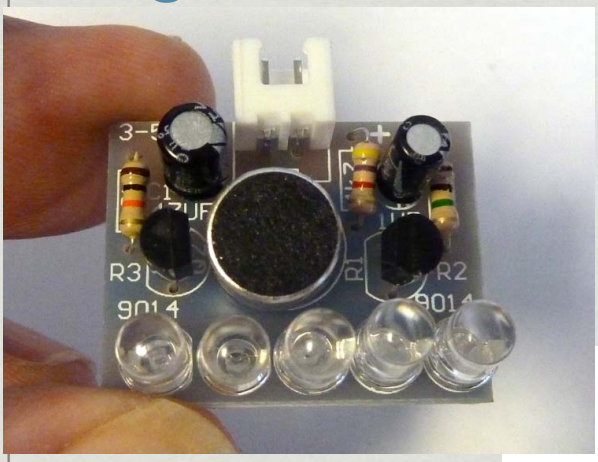
Proto-Board



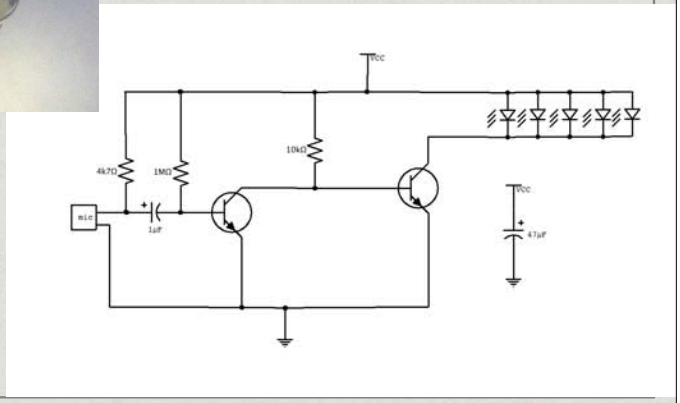
Proto-Board



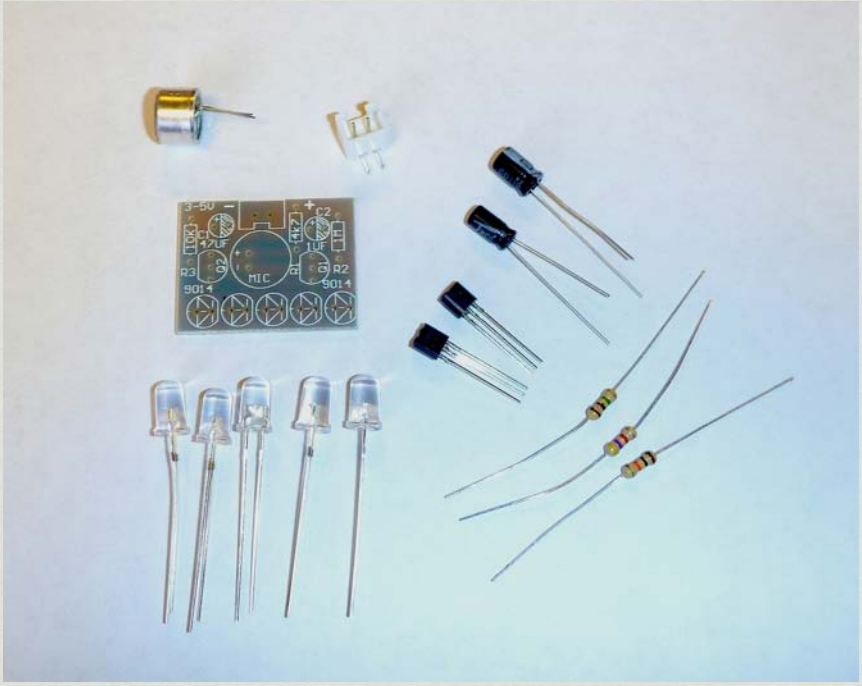
Light Flasher



LEDs will flash when you hold the mic up to noise/music



Light Flasher - kits parts

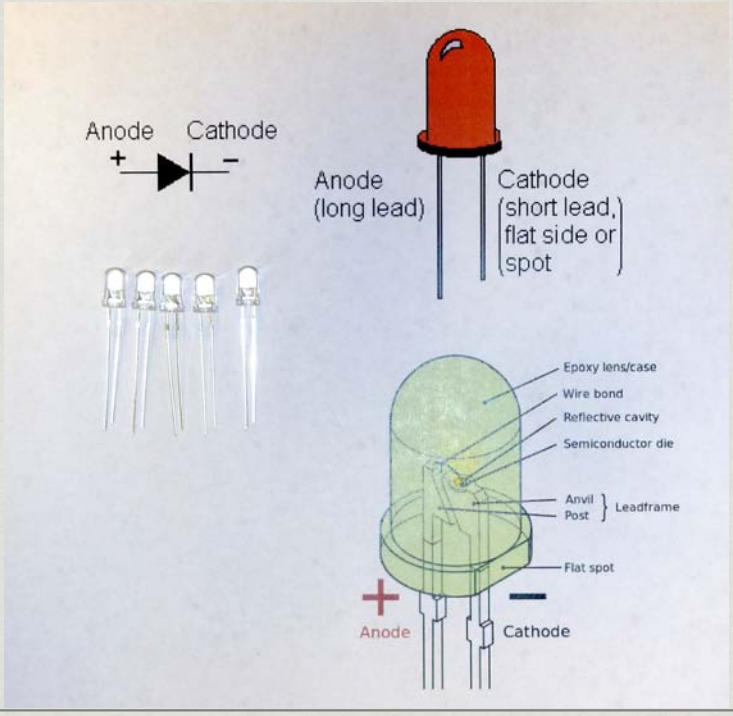


Light Flasher

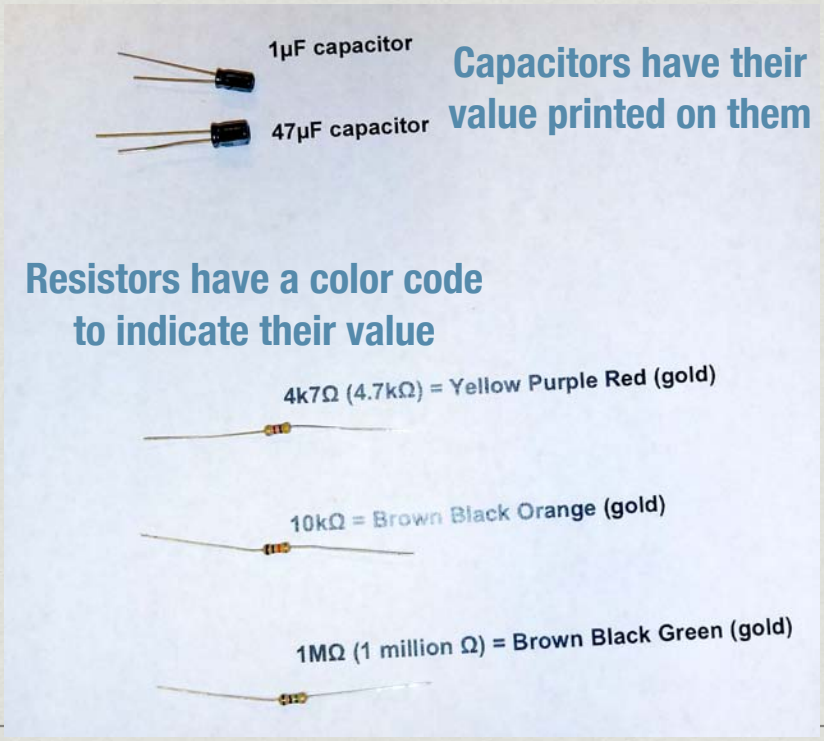
LEDs have a direction.

Anode is connected to the + side of the circuit (battery) and Cathode to the - side.

They light up when current flows from + to -.



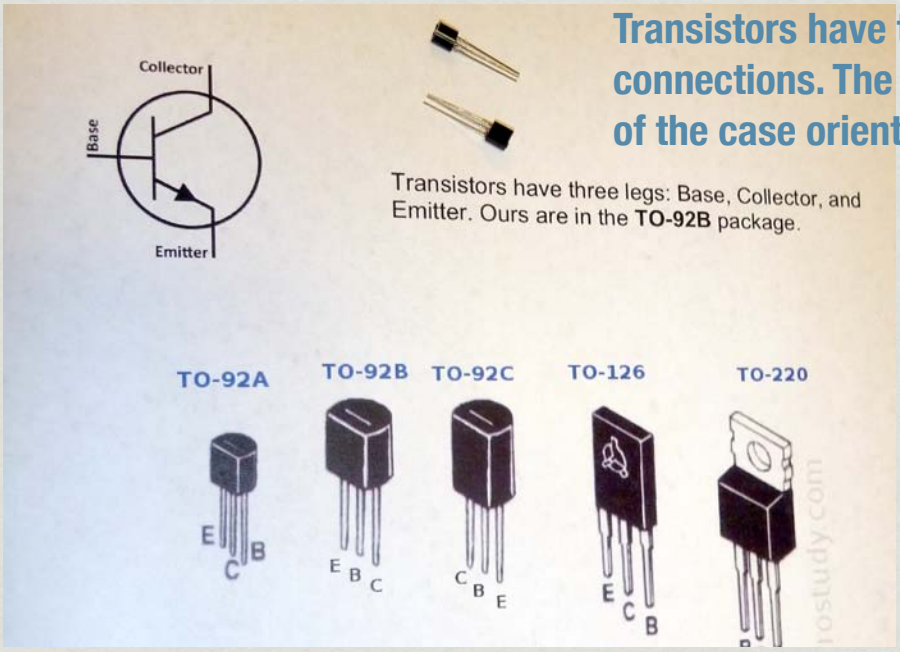
Light Flasher



Capacitors have their value printed on them

Resistors have a color code to indicate their value

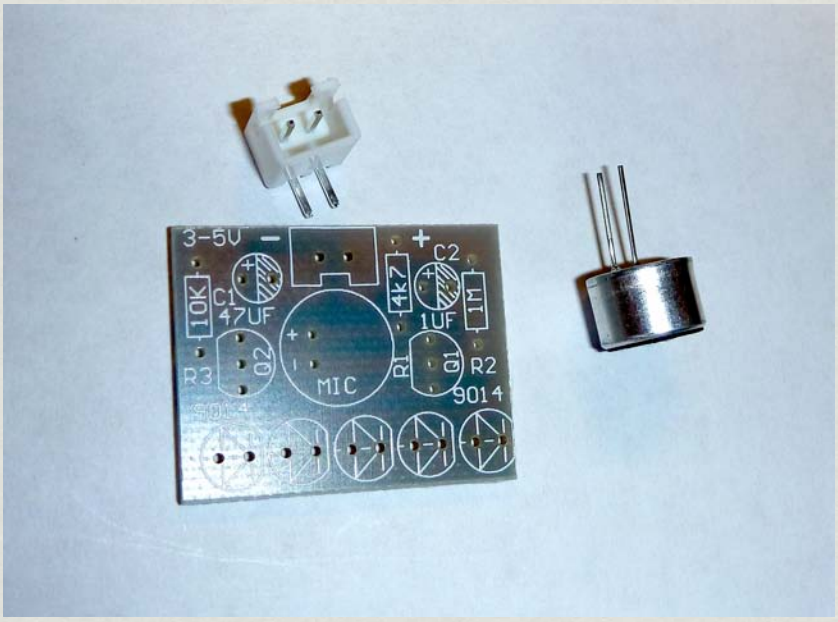
Light Flasher



Transistors have three connections. The flat side of the case orients the device

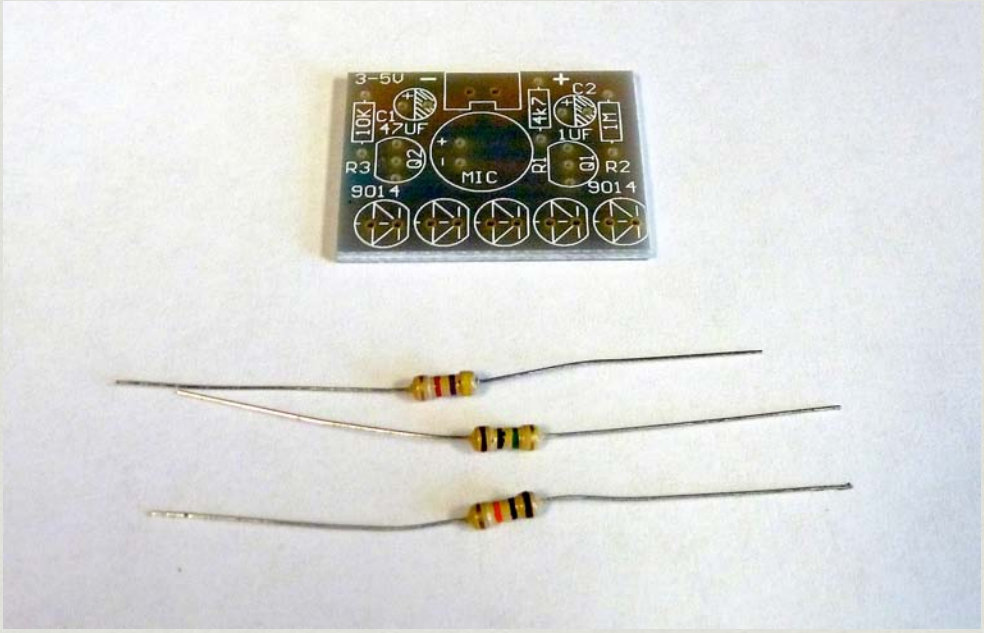
Light Flasher

The battery connector and the mic round out the components

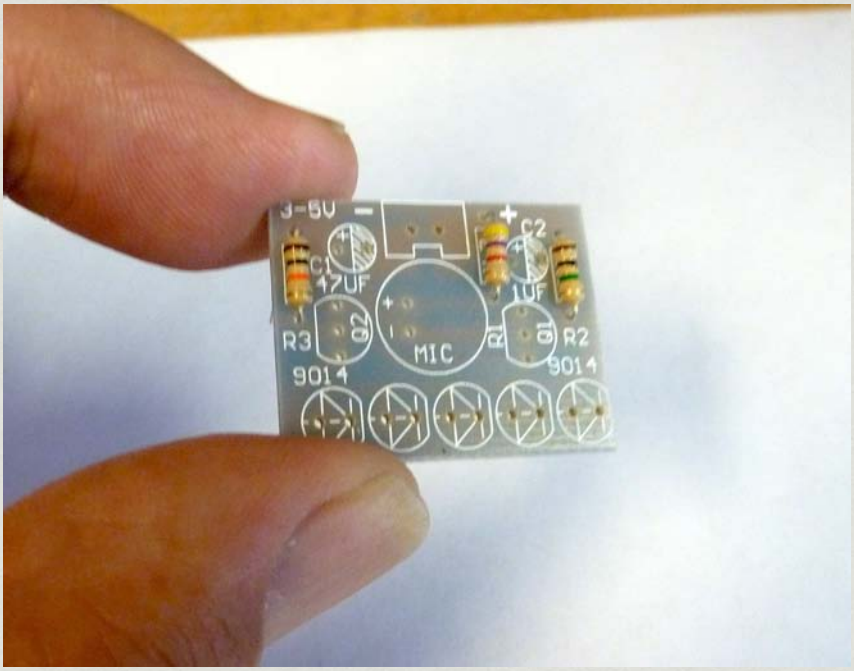


Light Flasher

Start with the resistors. Bend the leads to fit through the holes

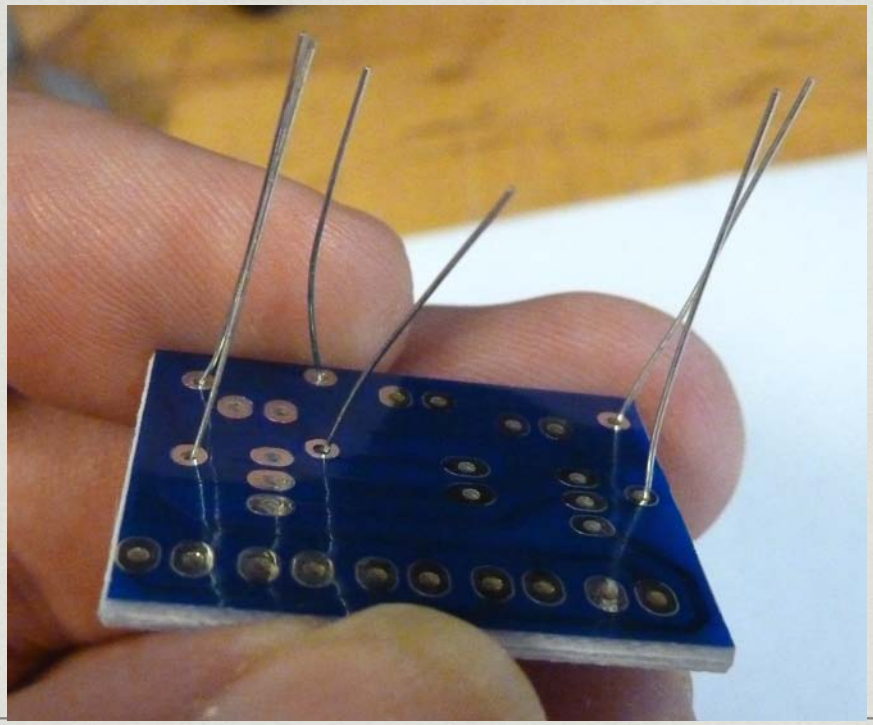


Light Flasher



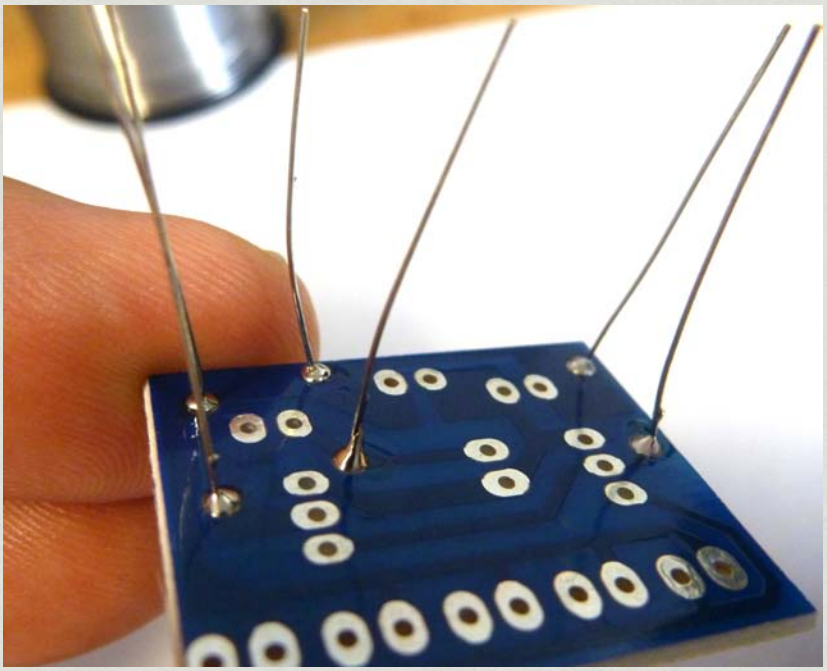
Light Flasher

The leads poke through to the solder side of the board



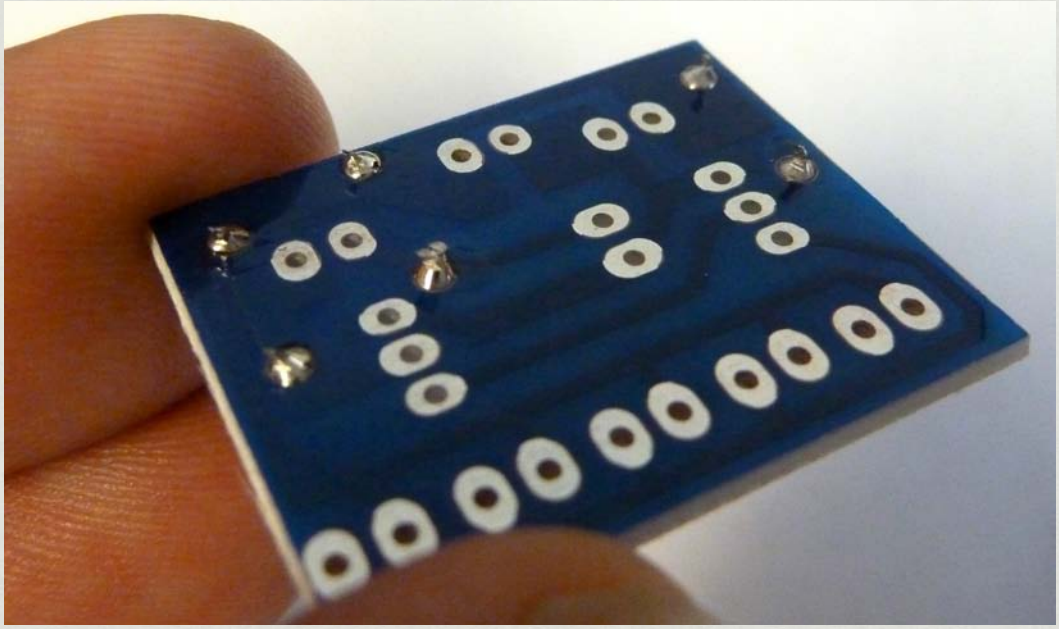
Light Flasher

Solder 'em up



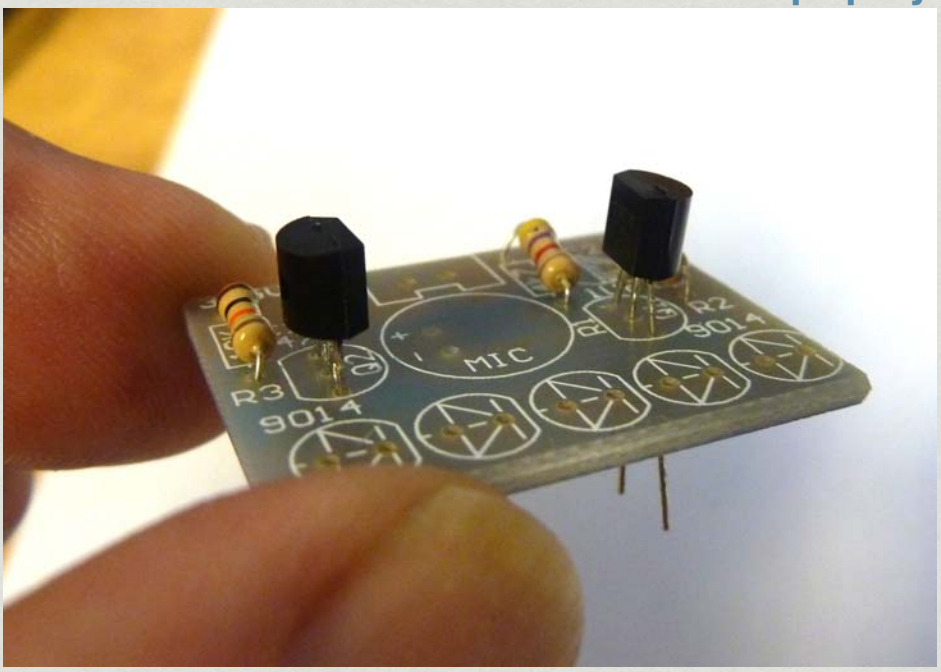
Light Flasher

Then clip the excess leads



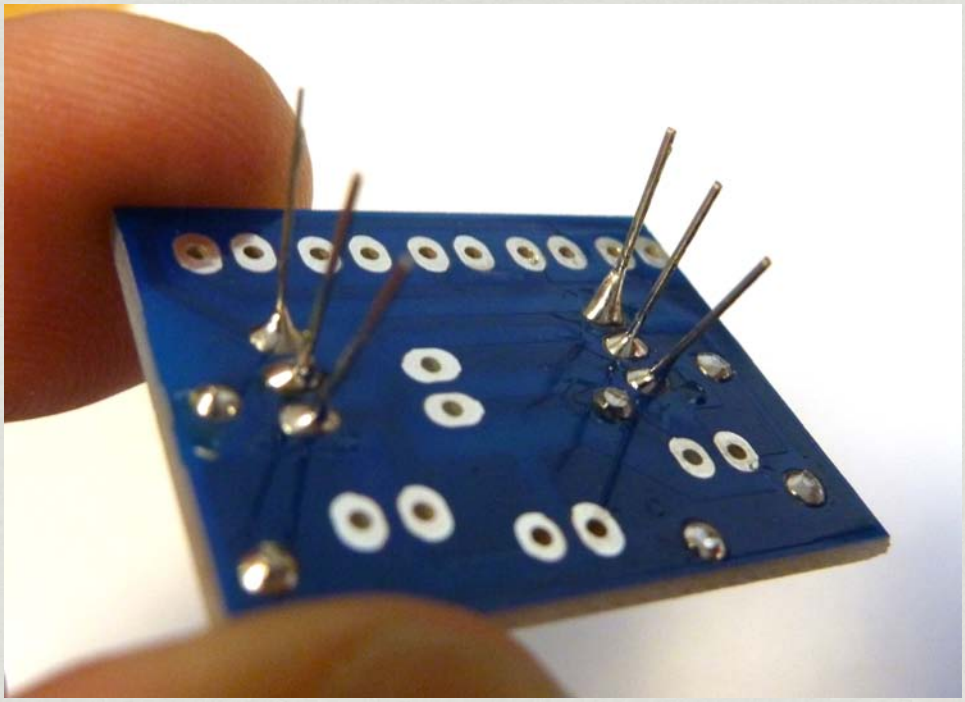
Light Flasher

Now add the transistors. Use the flat side to orient them properly



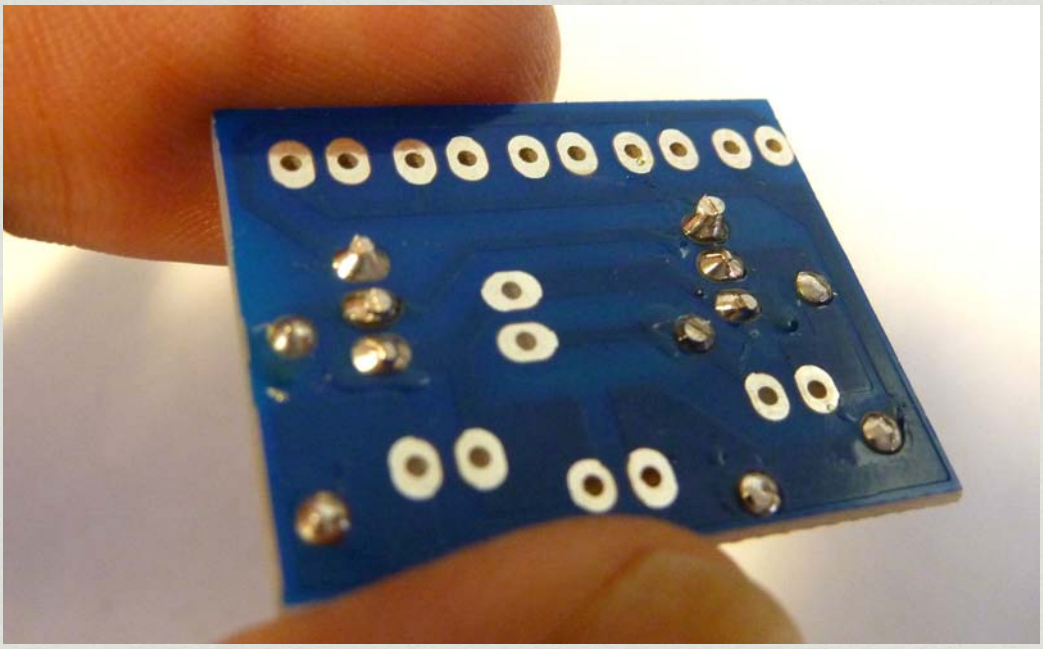
Light Flasher

Apply solder…

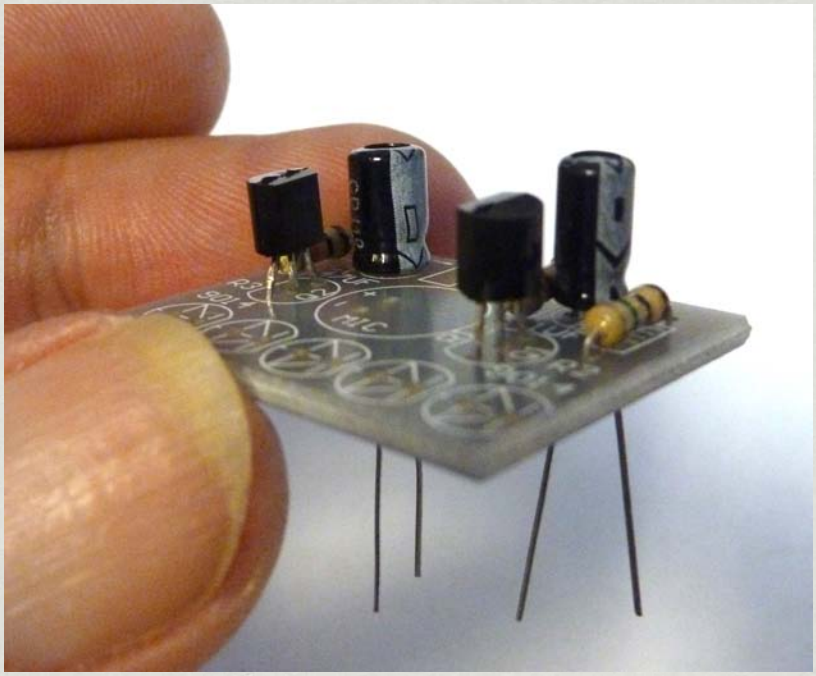


Light Flasher

And clip the leads



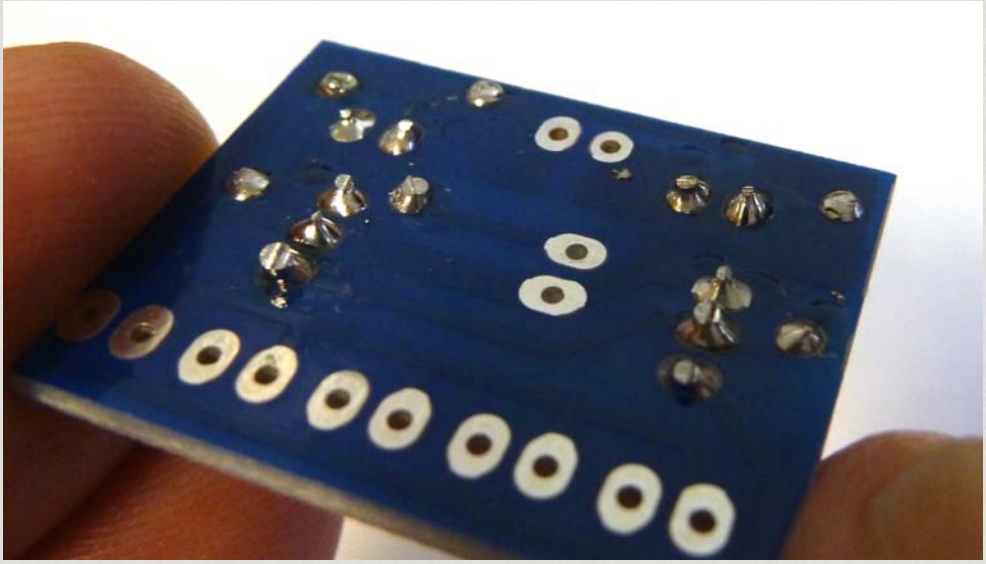
Light Flasher



Now add the capacitors. Note that the white stripe is the - side of these caps. It's important to orient them correctly…

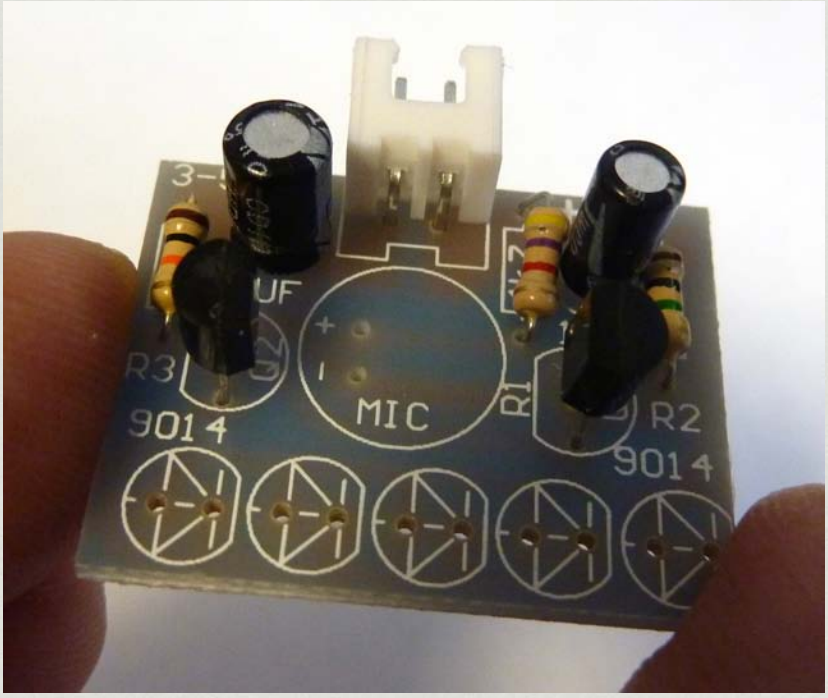
Light Flasher

Solder and clip



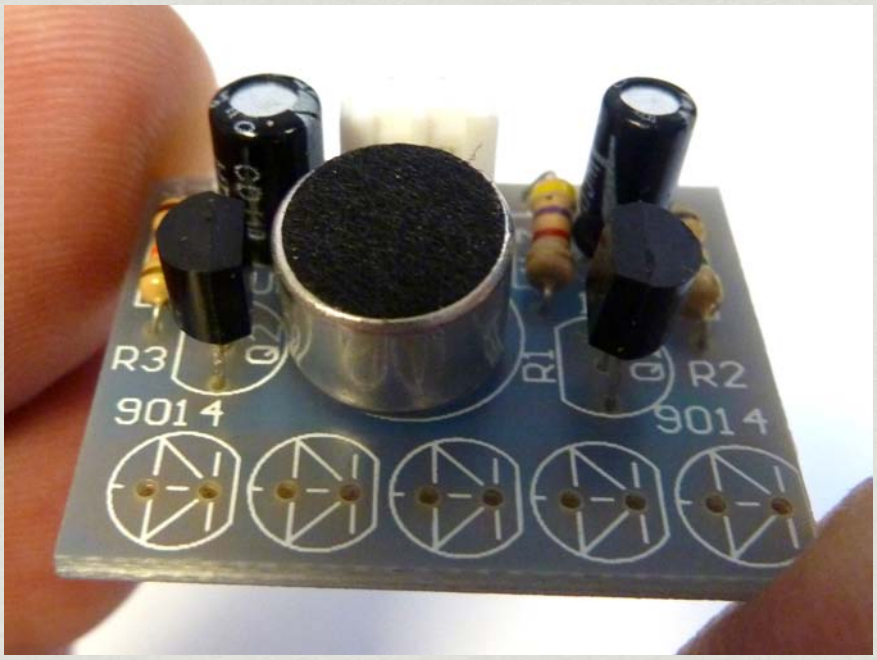
Light Flasher

Solder in the battery wire connector



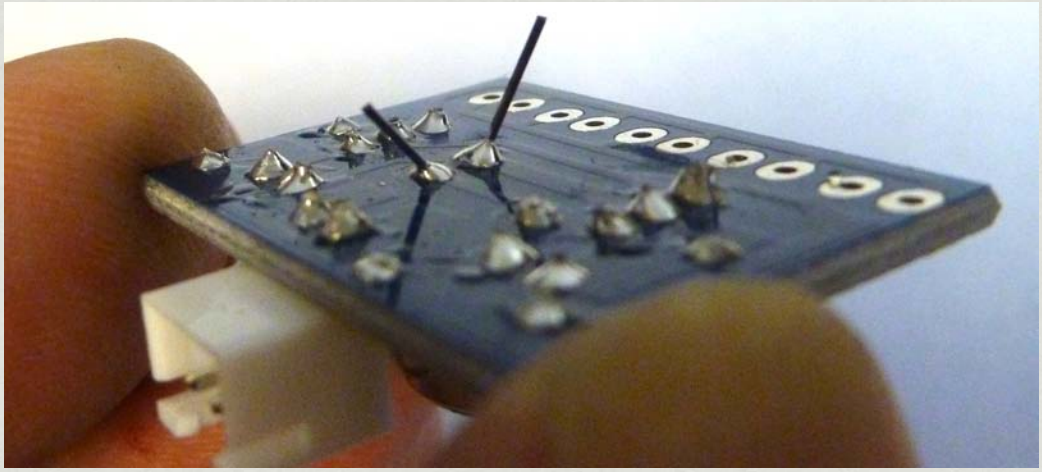
Light Flasher

Now add the mic in the middle

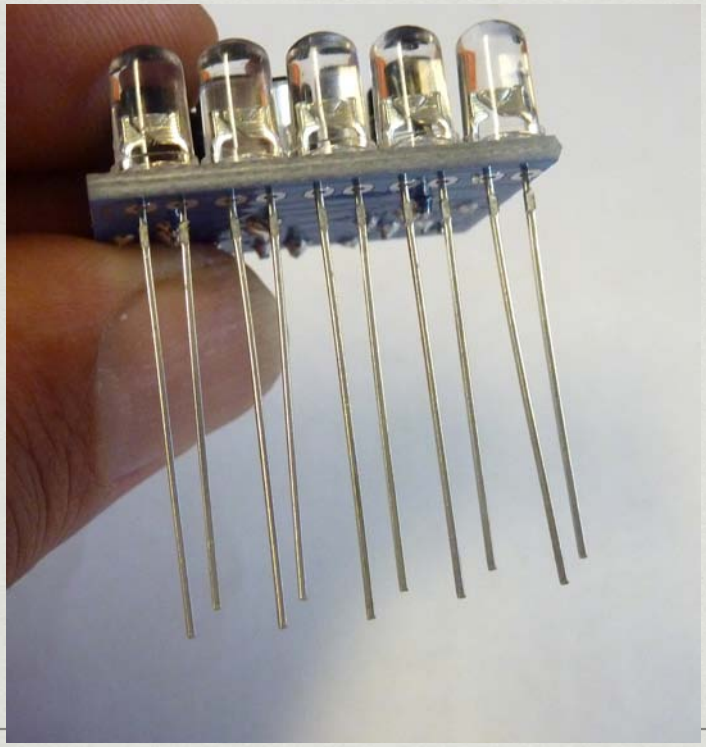


Light Flasher

Note the bent leads to
help hold it in while soldering



Light Flasher



Finally add the
LEDs.

Make sure
to get the direction
correct. Remember
that the Anode (+ input)
is the longer lead.

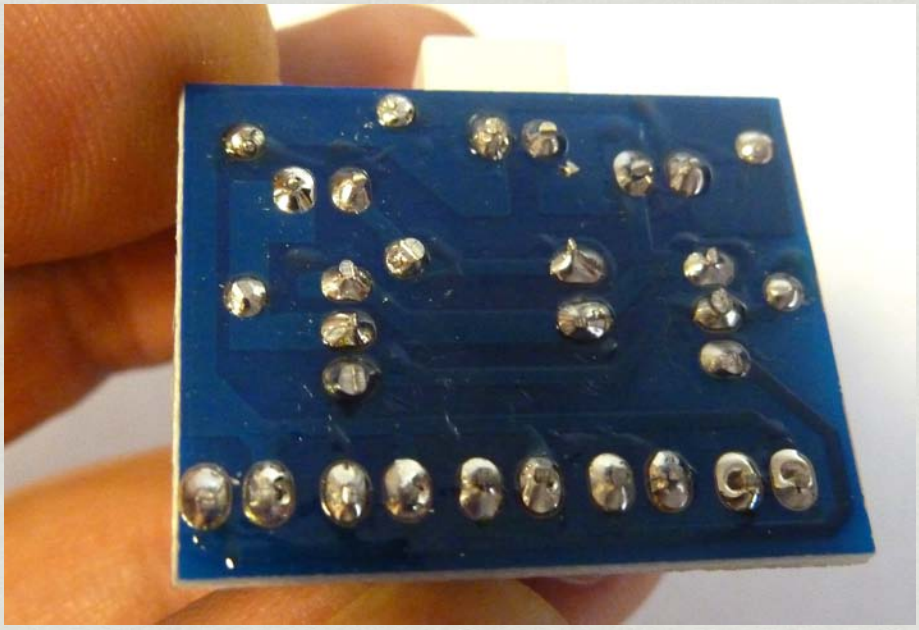
You want current to
flow from + (long) to
- (short).

Light Flasher

Solder…

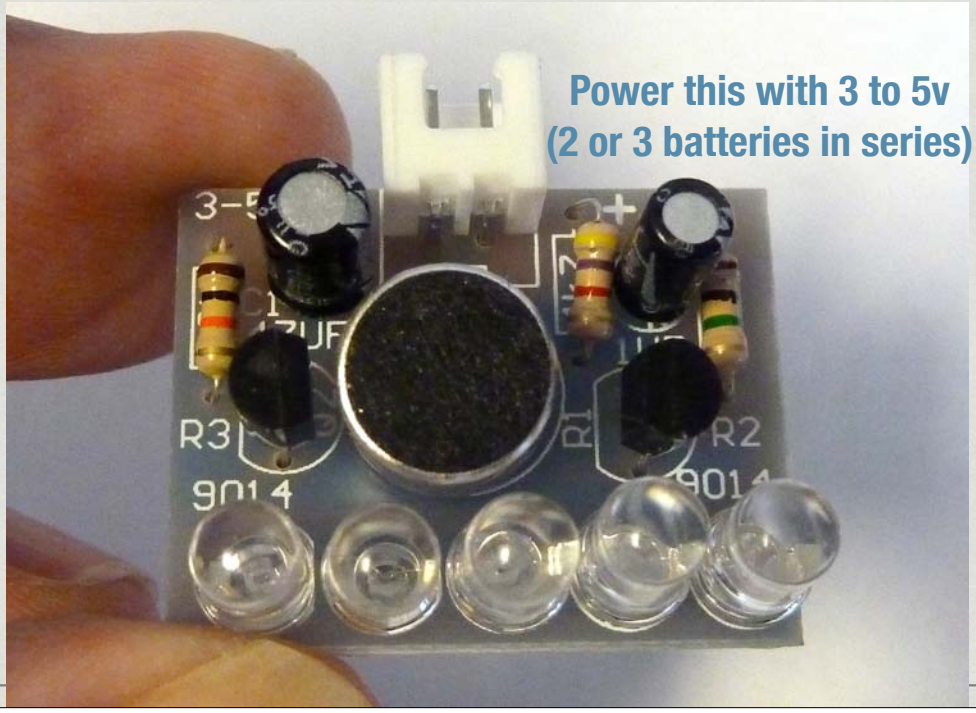
Light Flasher

… and clip. And we're done!



Light Flasher

Hold the mic near sound, and the LEDs will light up in time with the music



Power this with 3 to 5v (2 or 3 batteries in series)