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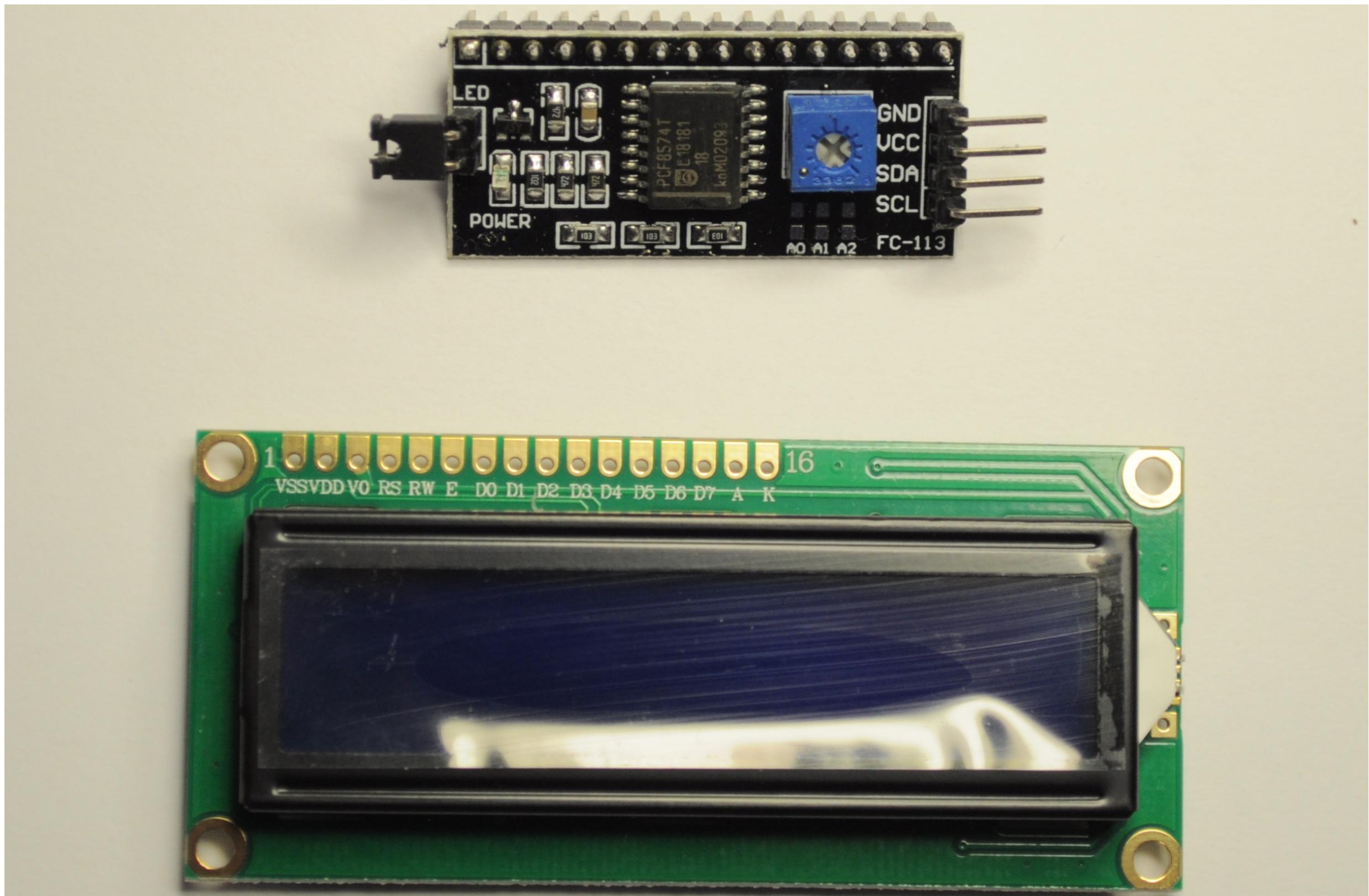
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Thermocycler

Build instructions
based on DS18B20 temperature sensor

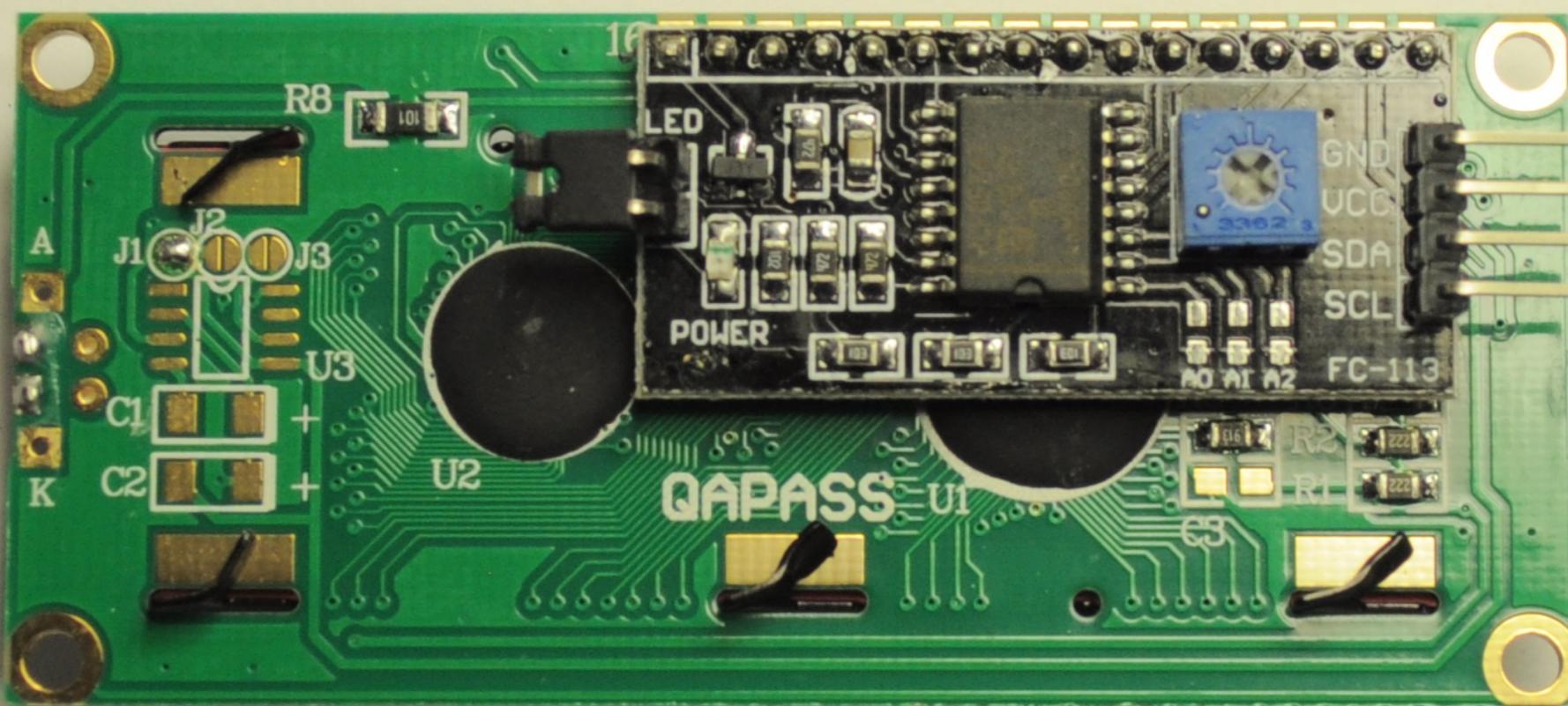


Assembling the LCD



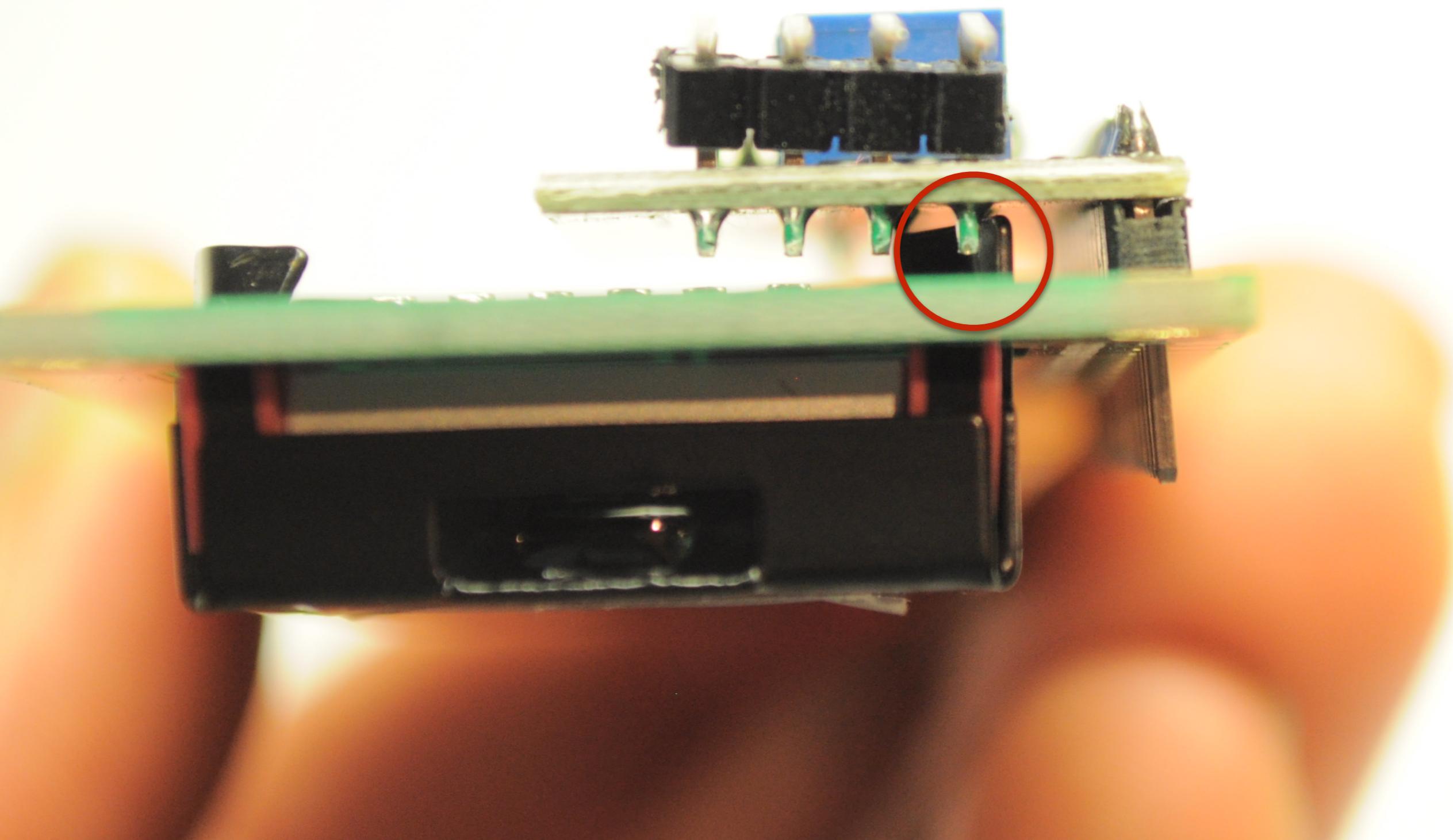


Plug the backpack in the LCD



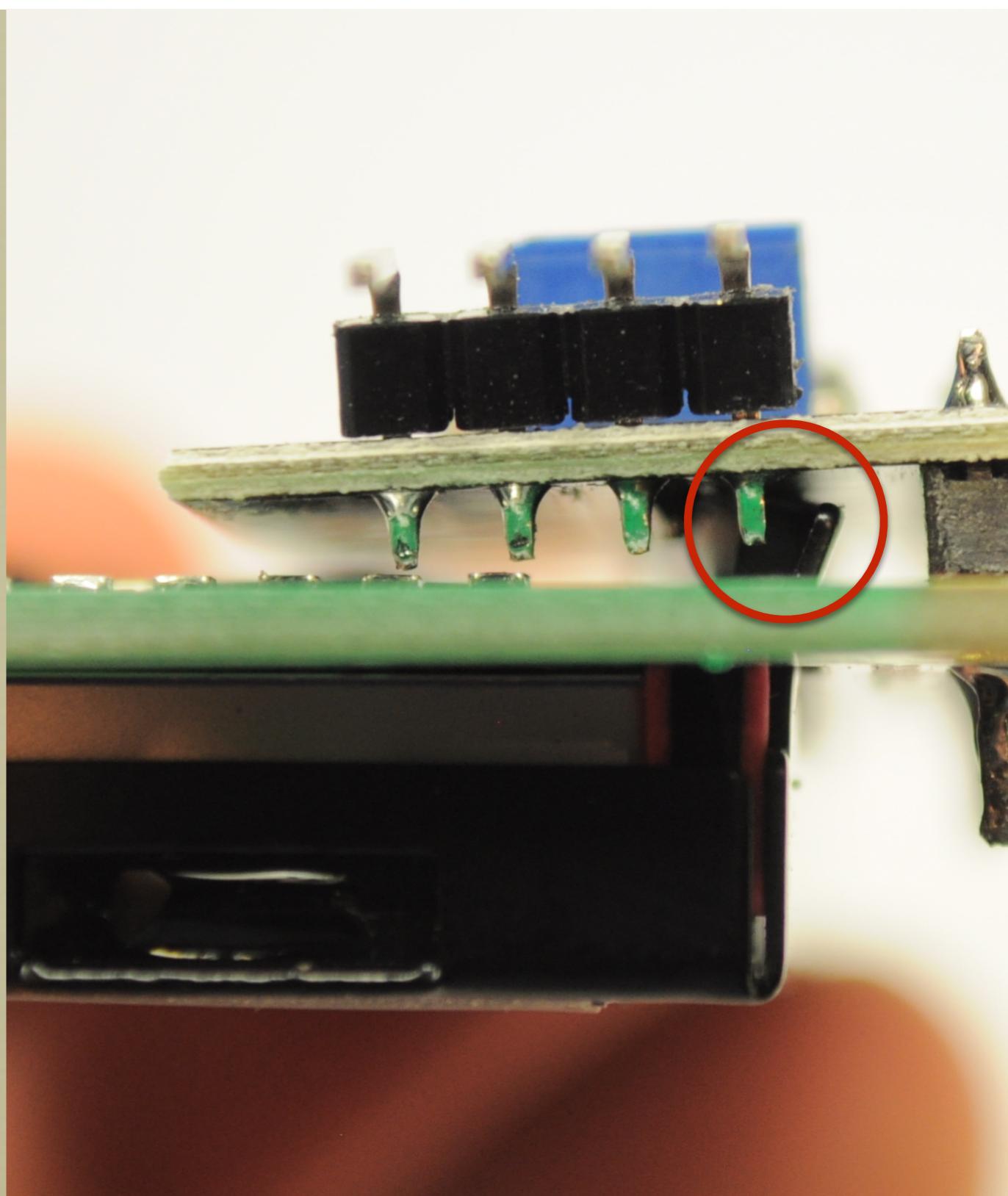
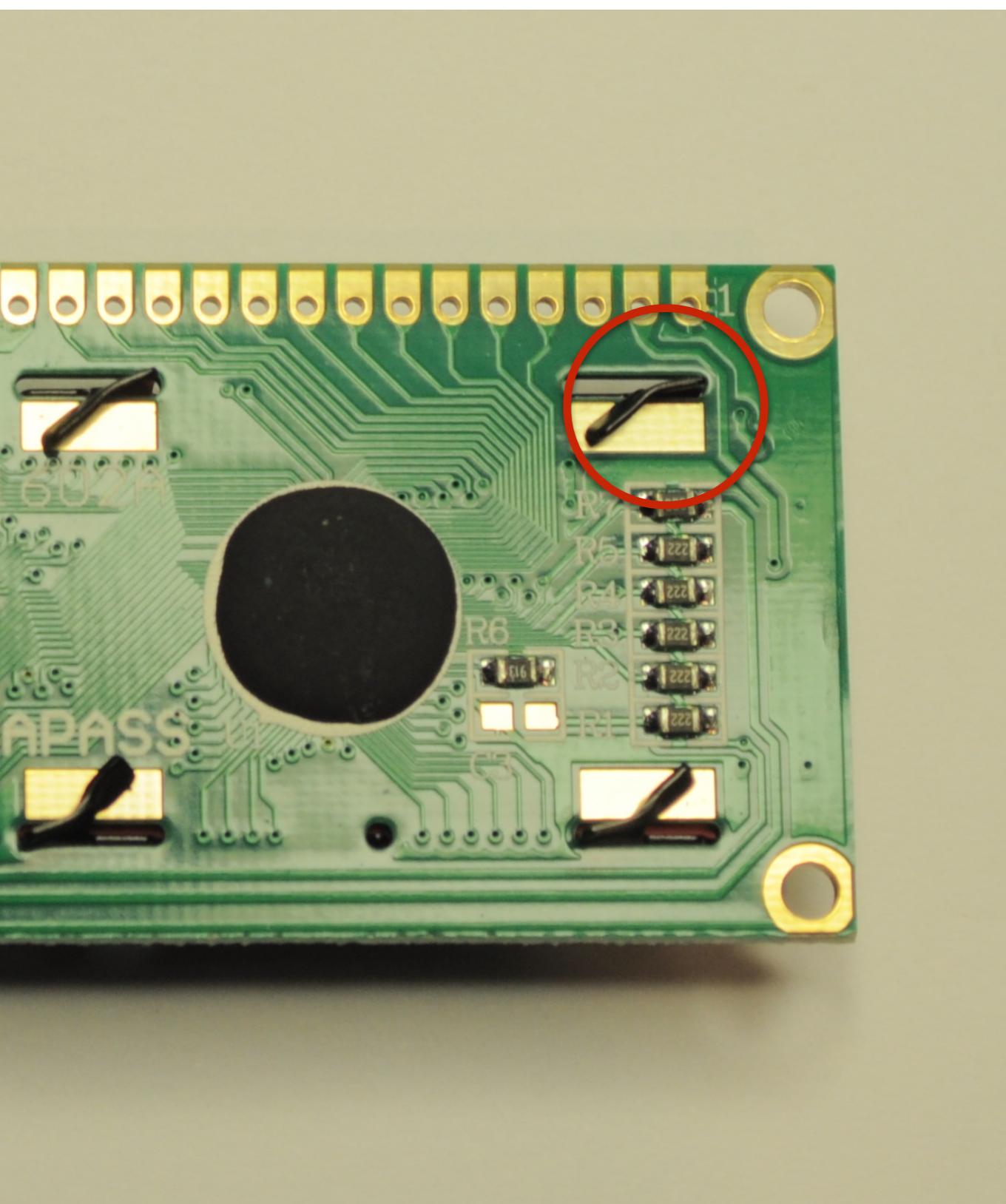


Make sure the pin does not touch back of the LCD



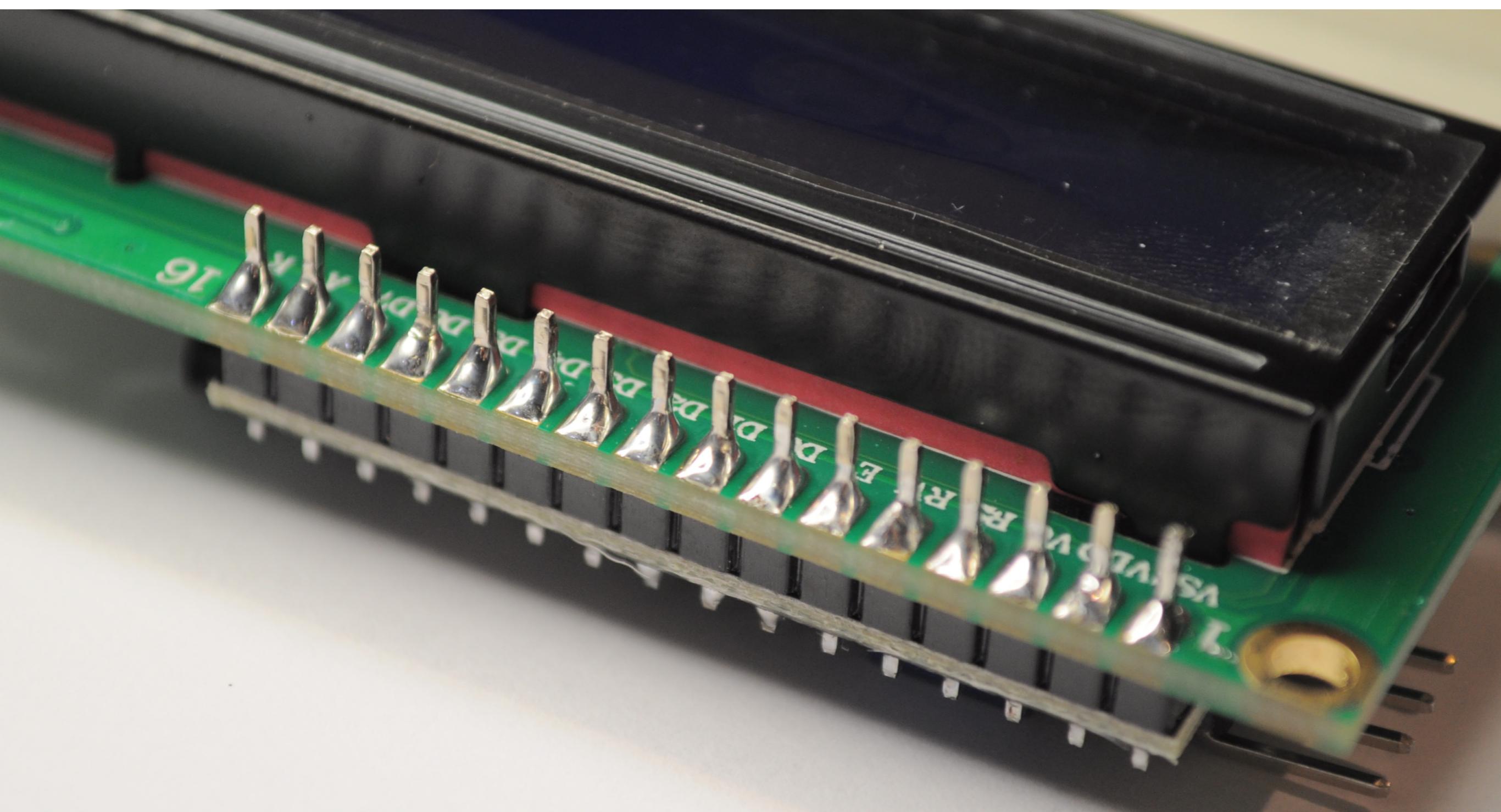


Bend the metal piece



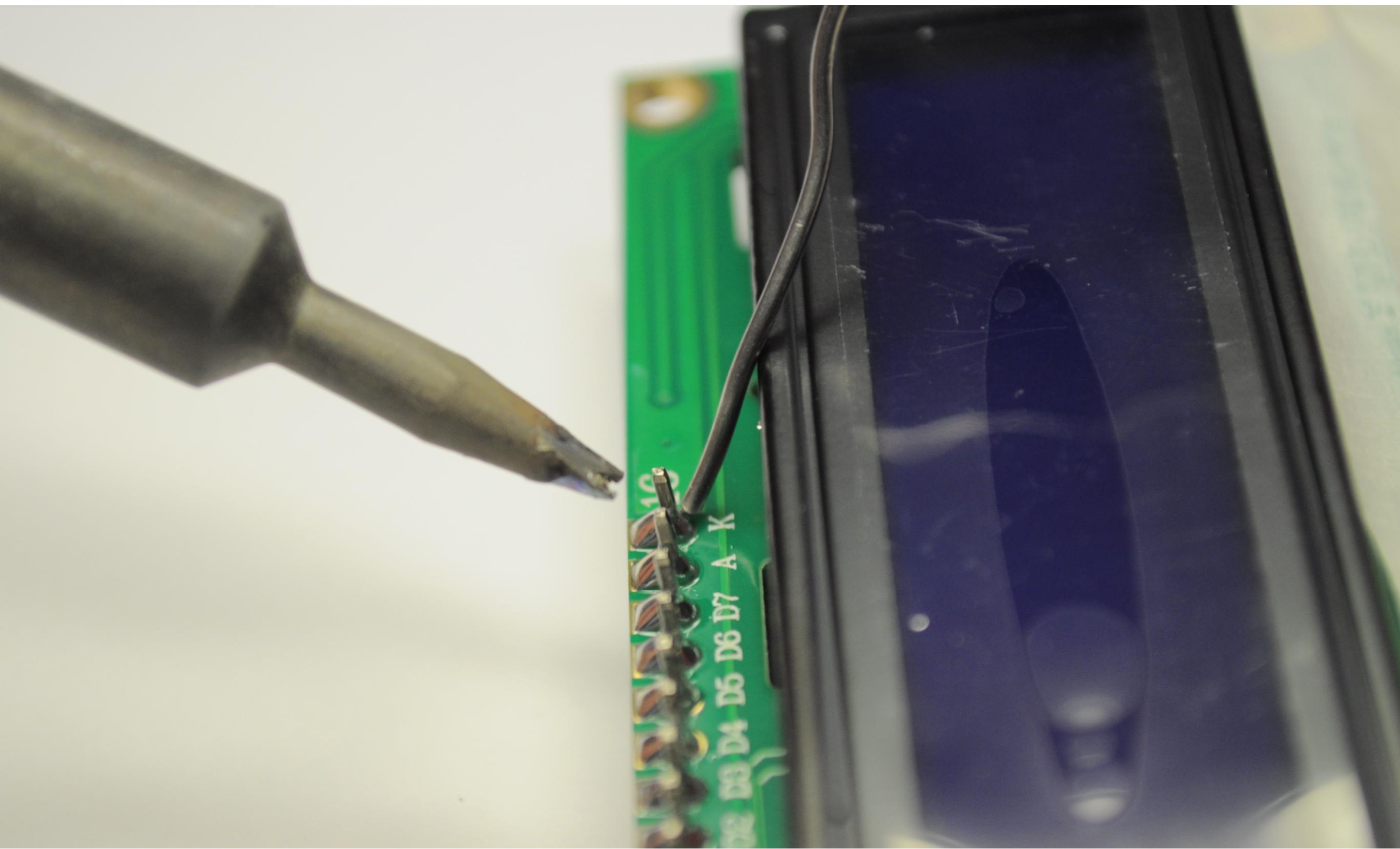


Solder the pins



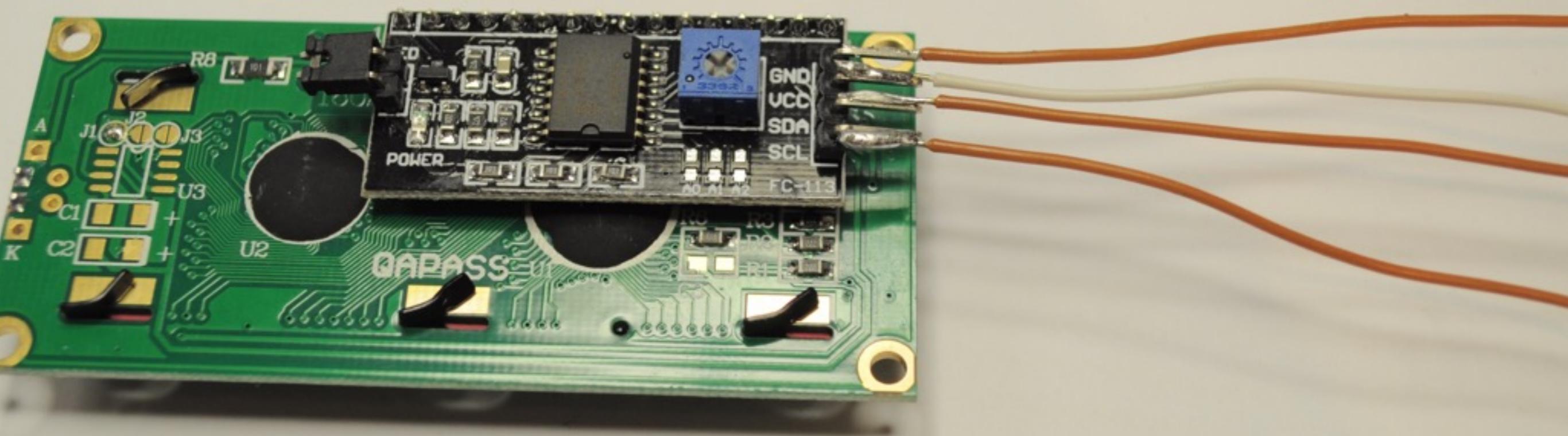


To get perfect cones, solder like this





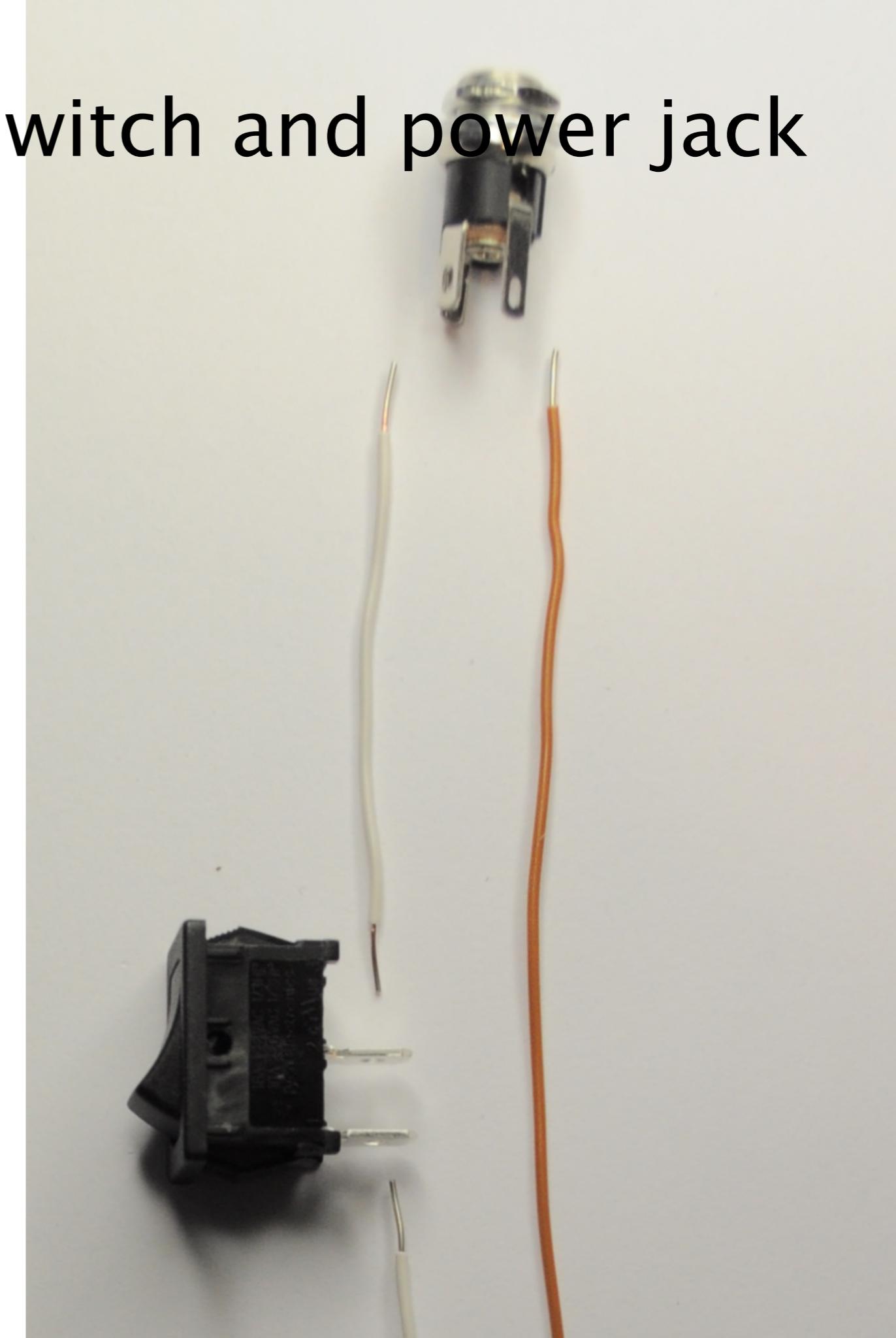
Solder 4 connecting 15 cm wires





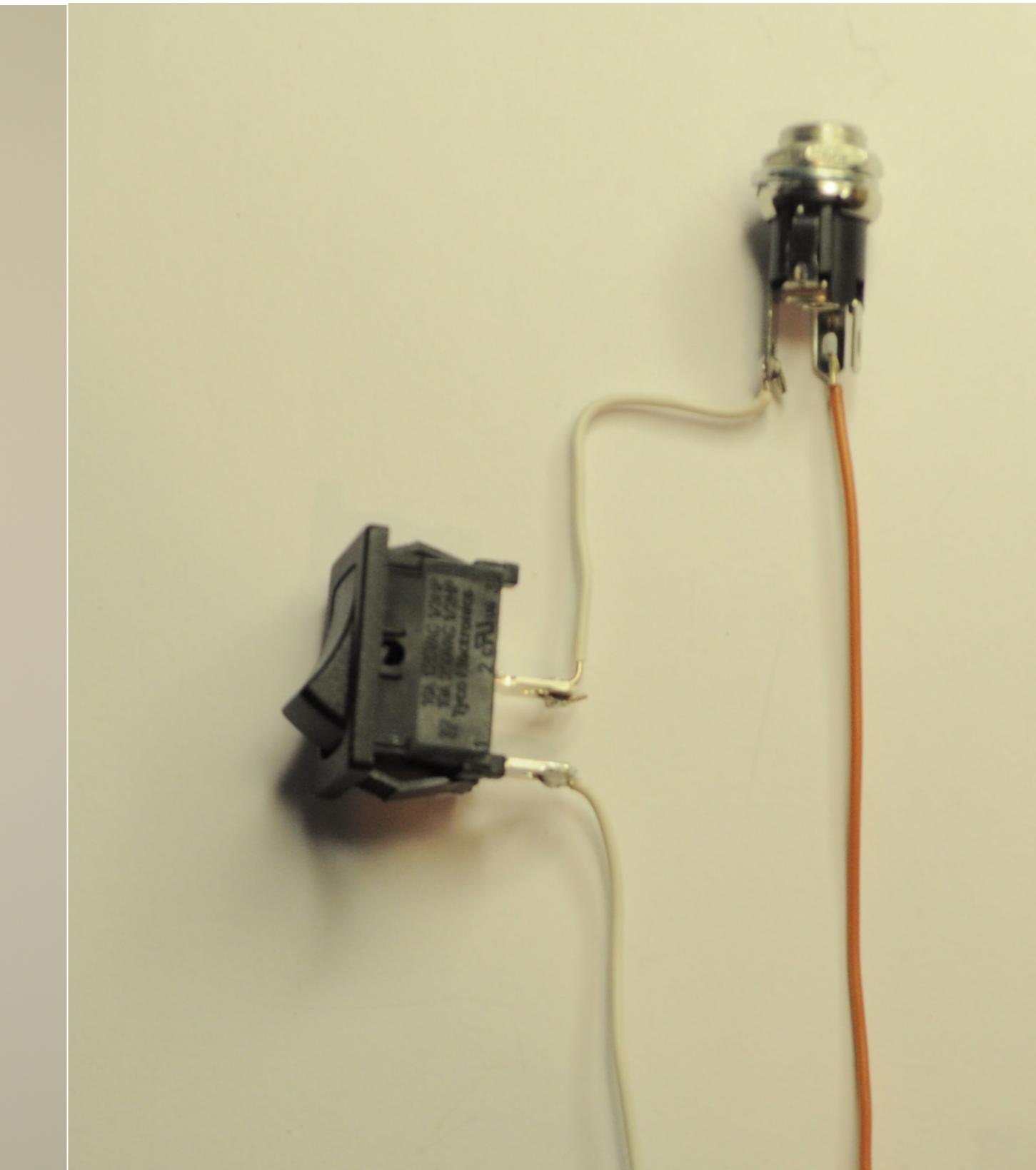
Assembling the switch and power jack

- 1x DC power jack
- 1x rocker switch
- 1x 15 cm wire
- 2x 10 cm wire





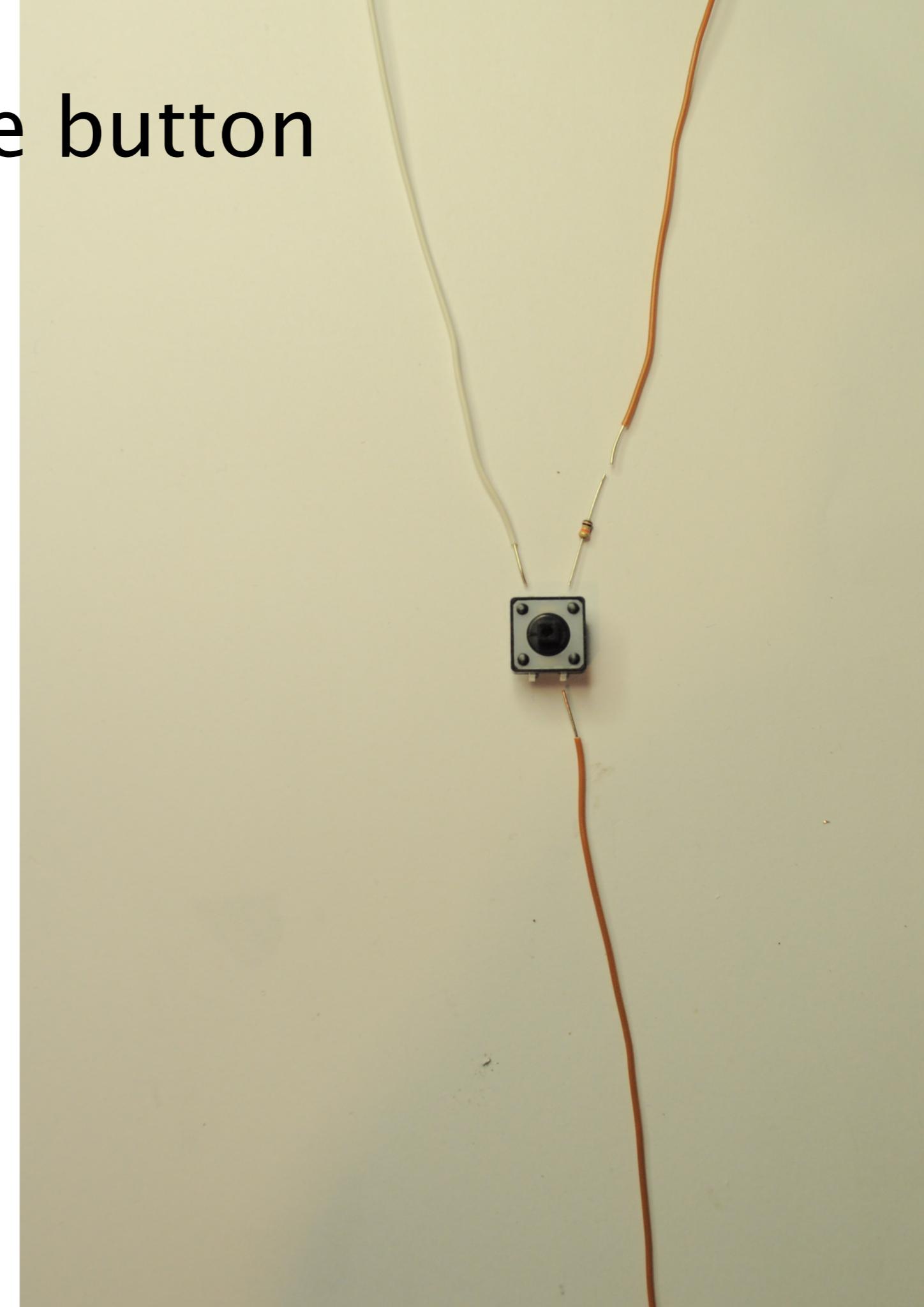
It's easier when you make hooks





Assembling the button

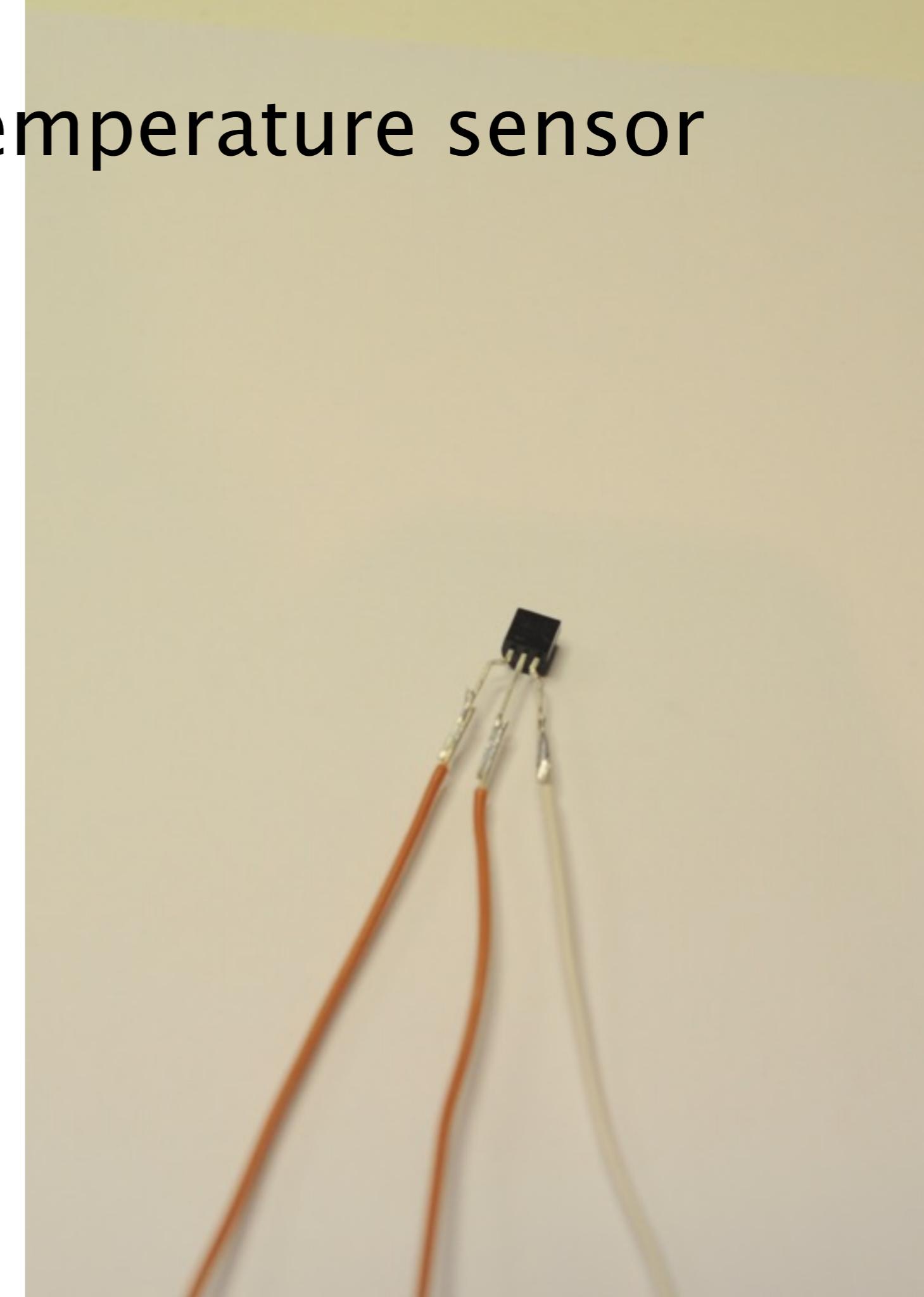
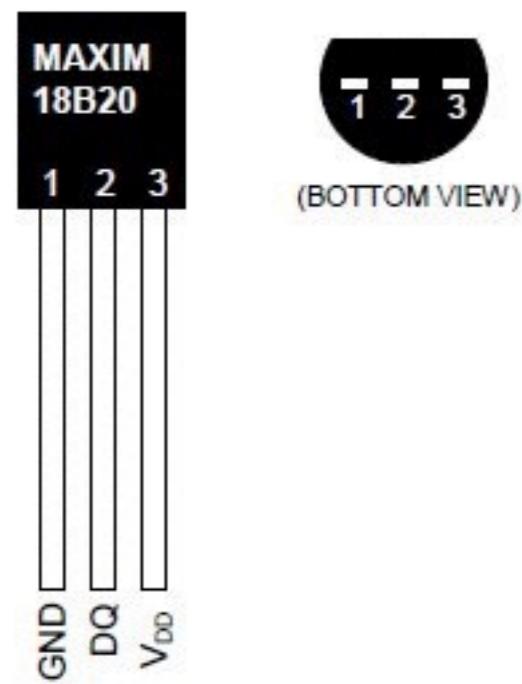
- 1x tactile button
- 1x 10k Ohm resistor
- 3x 15 cm wire





2x DS18B20 temperature sensor

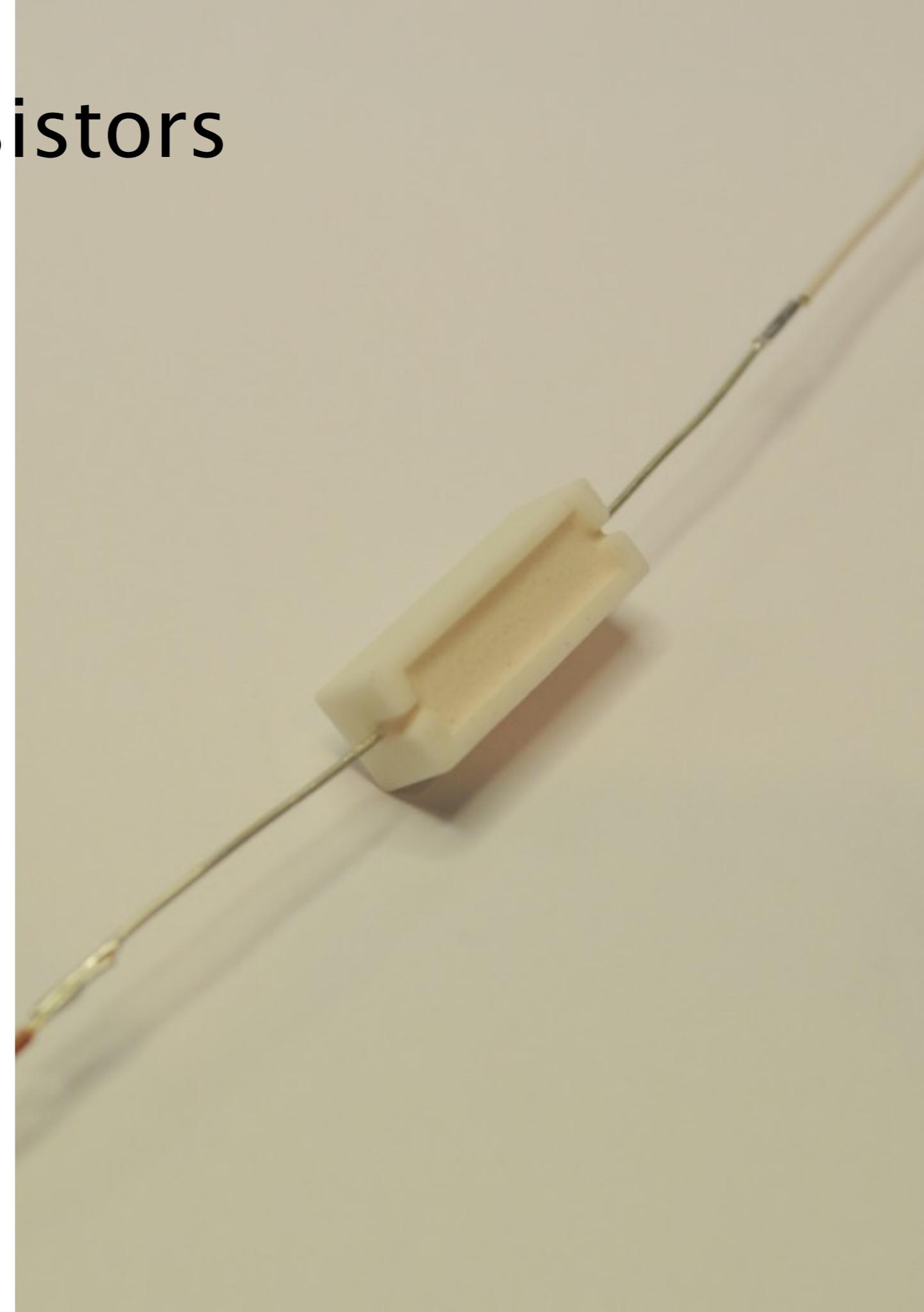
- For each sensor
 - 3x 25 cm wire





2x Ceramic resistors

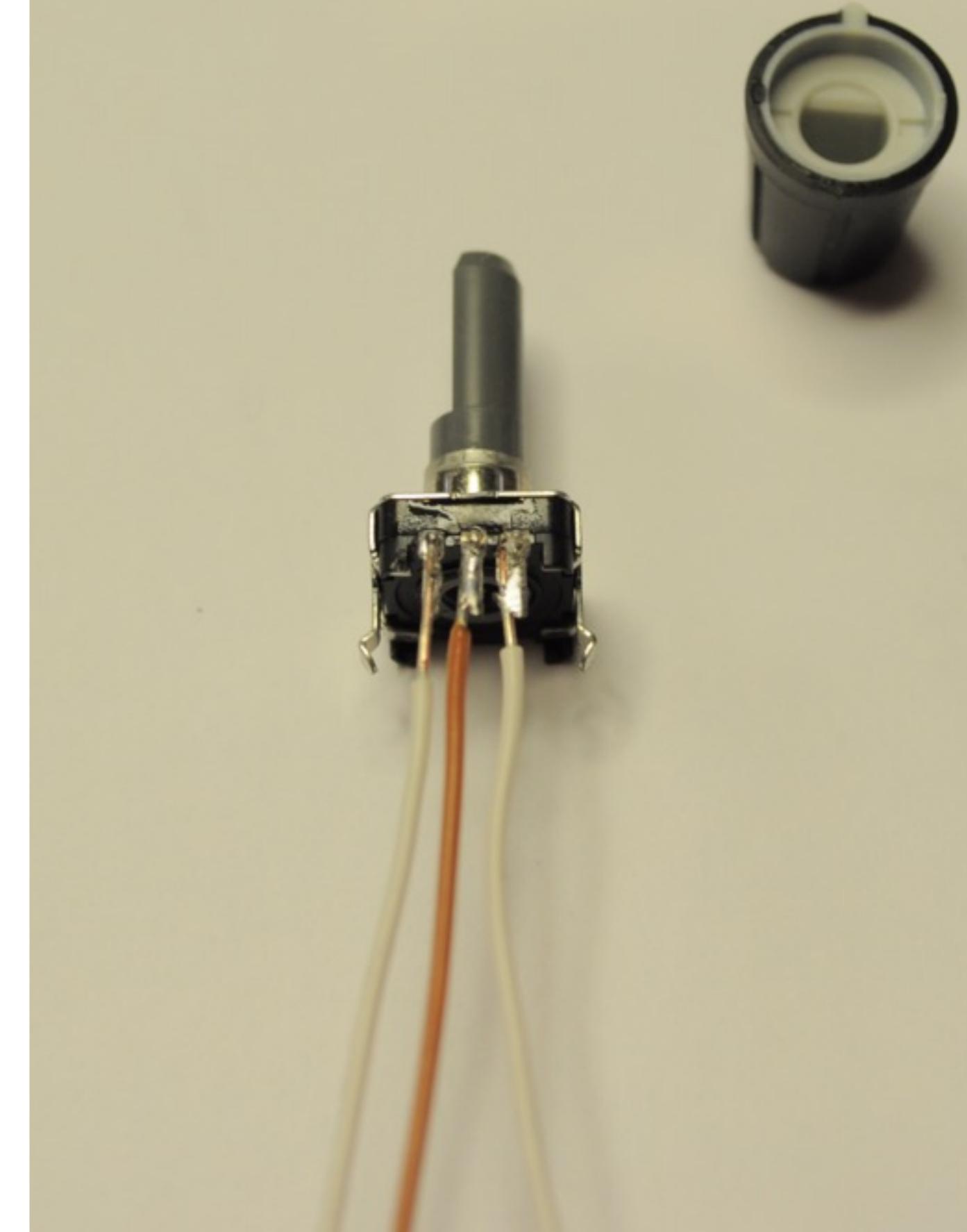
- For each resistor
 - 2x 25 cm wire





Assembling the rotary encoder

- 1x rotary encoder
- 3x 15 cm wire





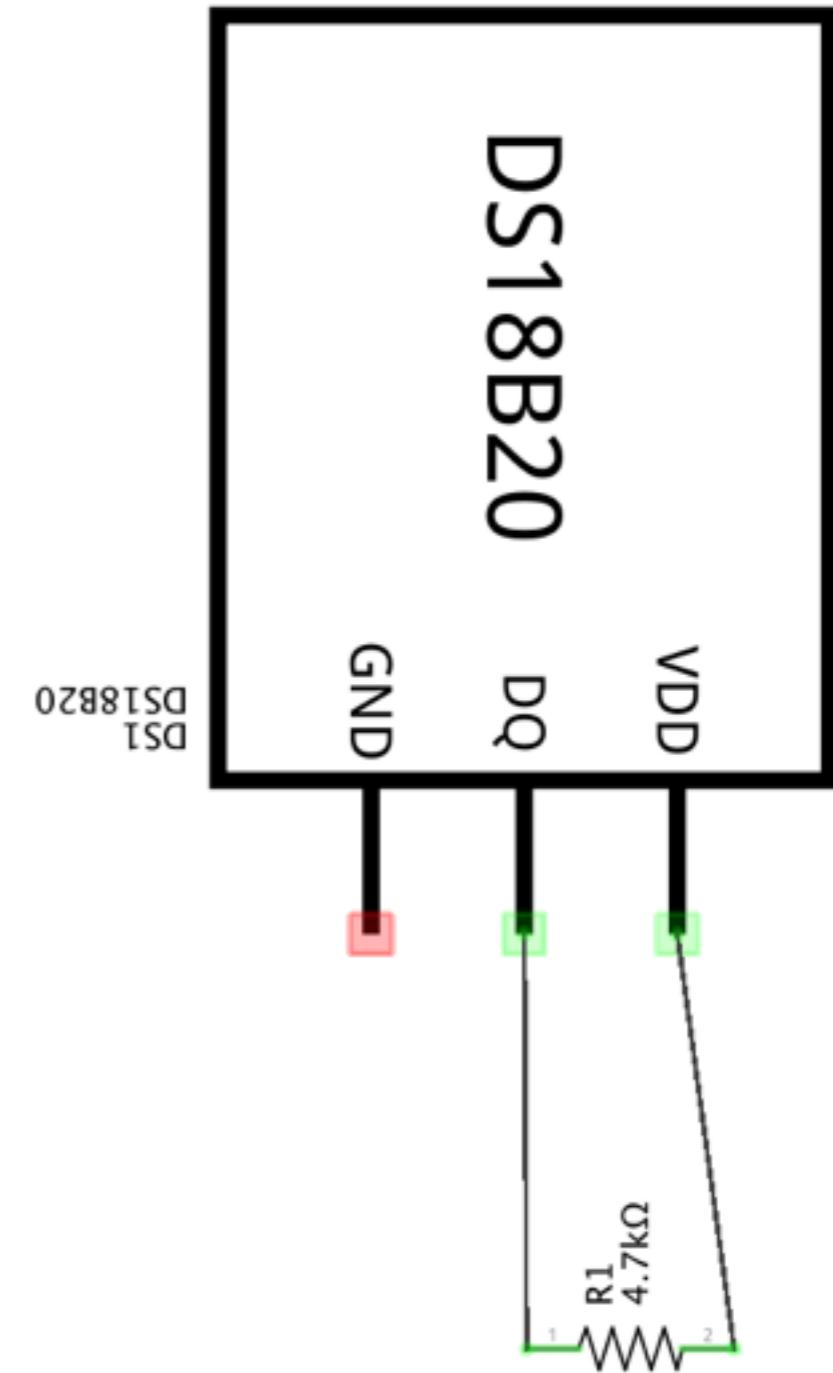
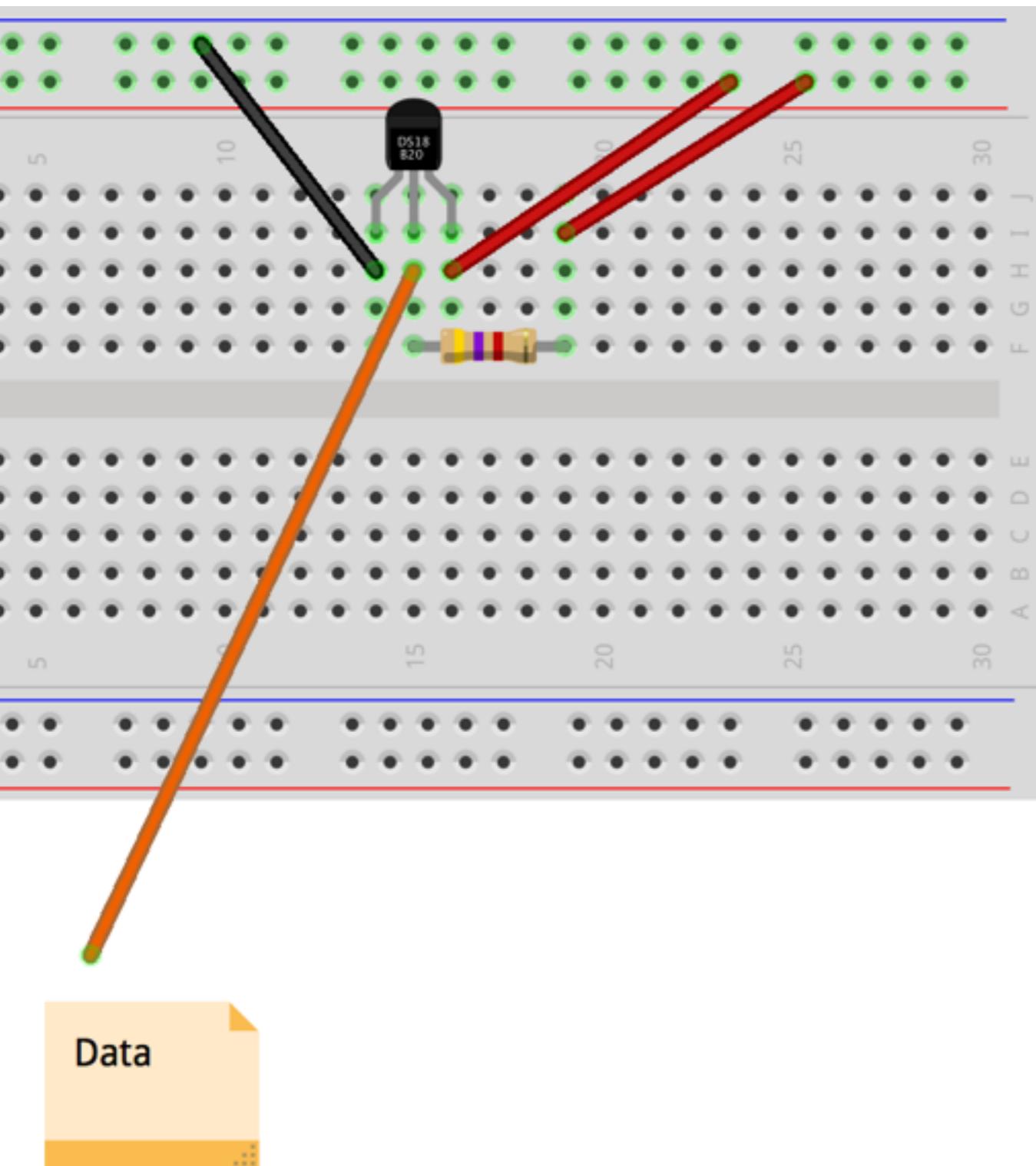
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Connecting the parts



Test the temperature sensor

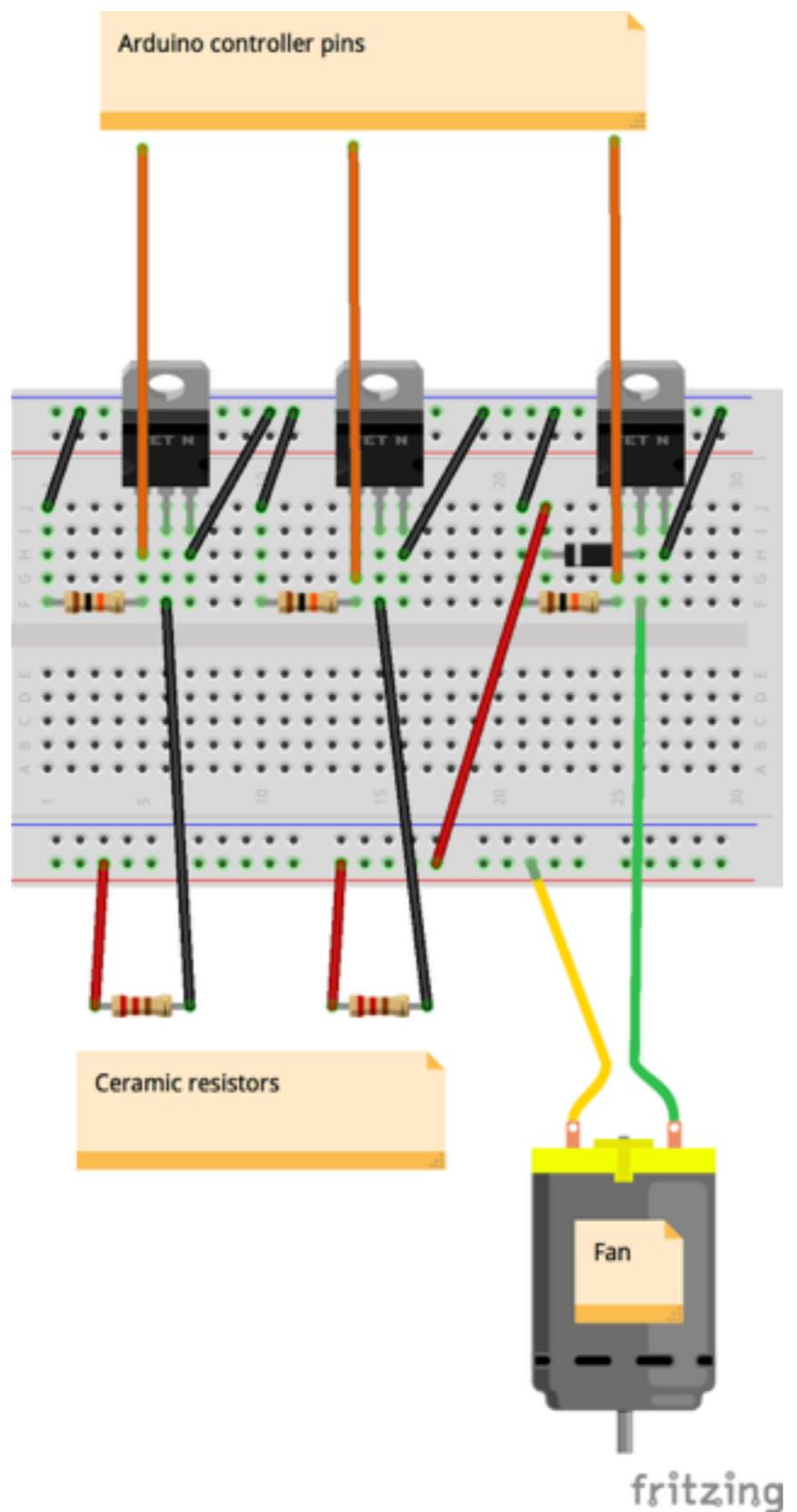


fritzing

fritzing

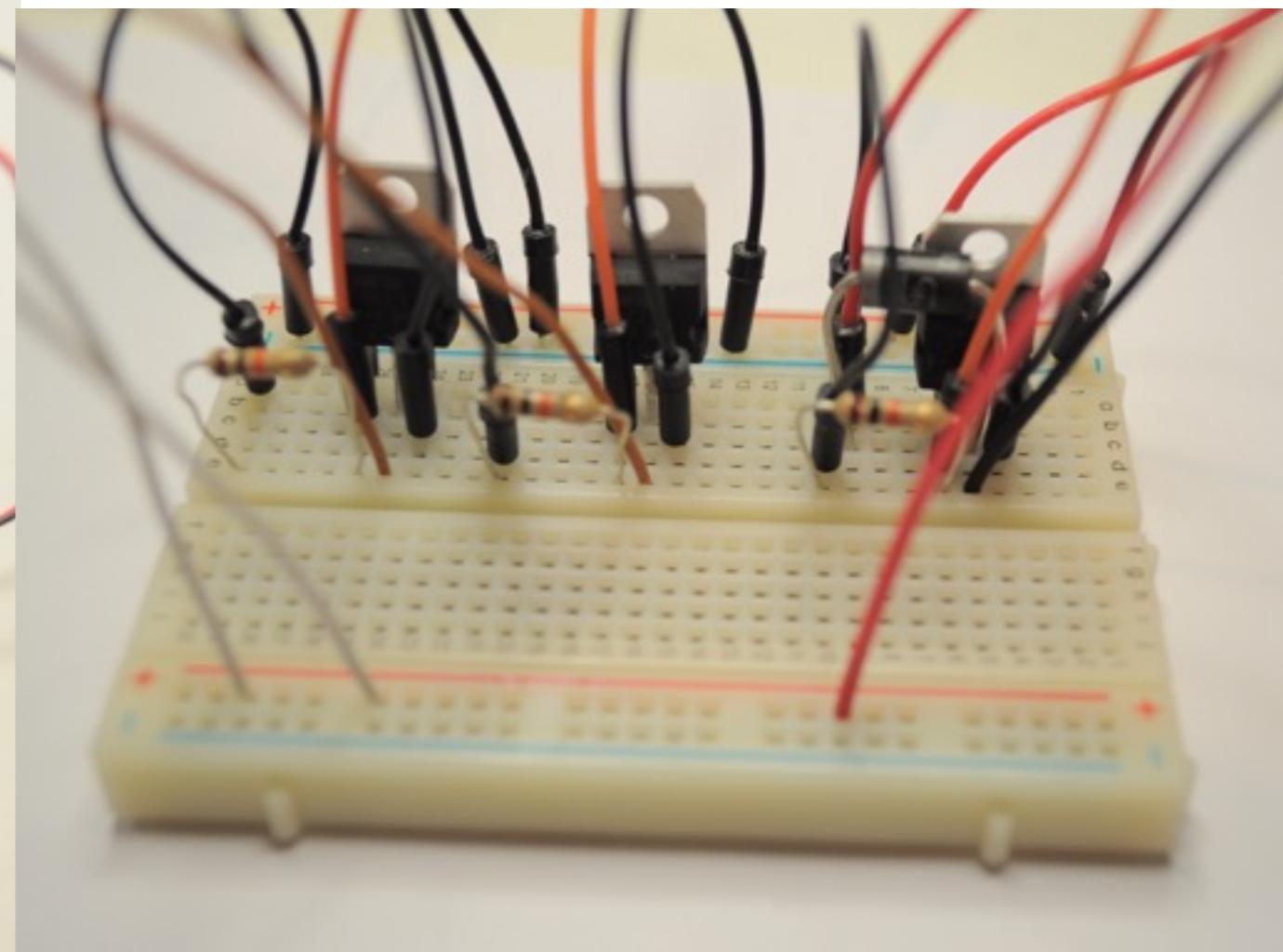
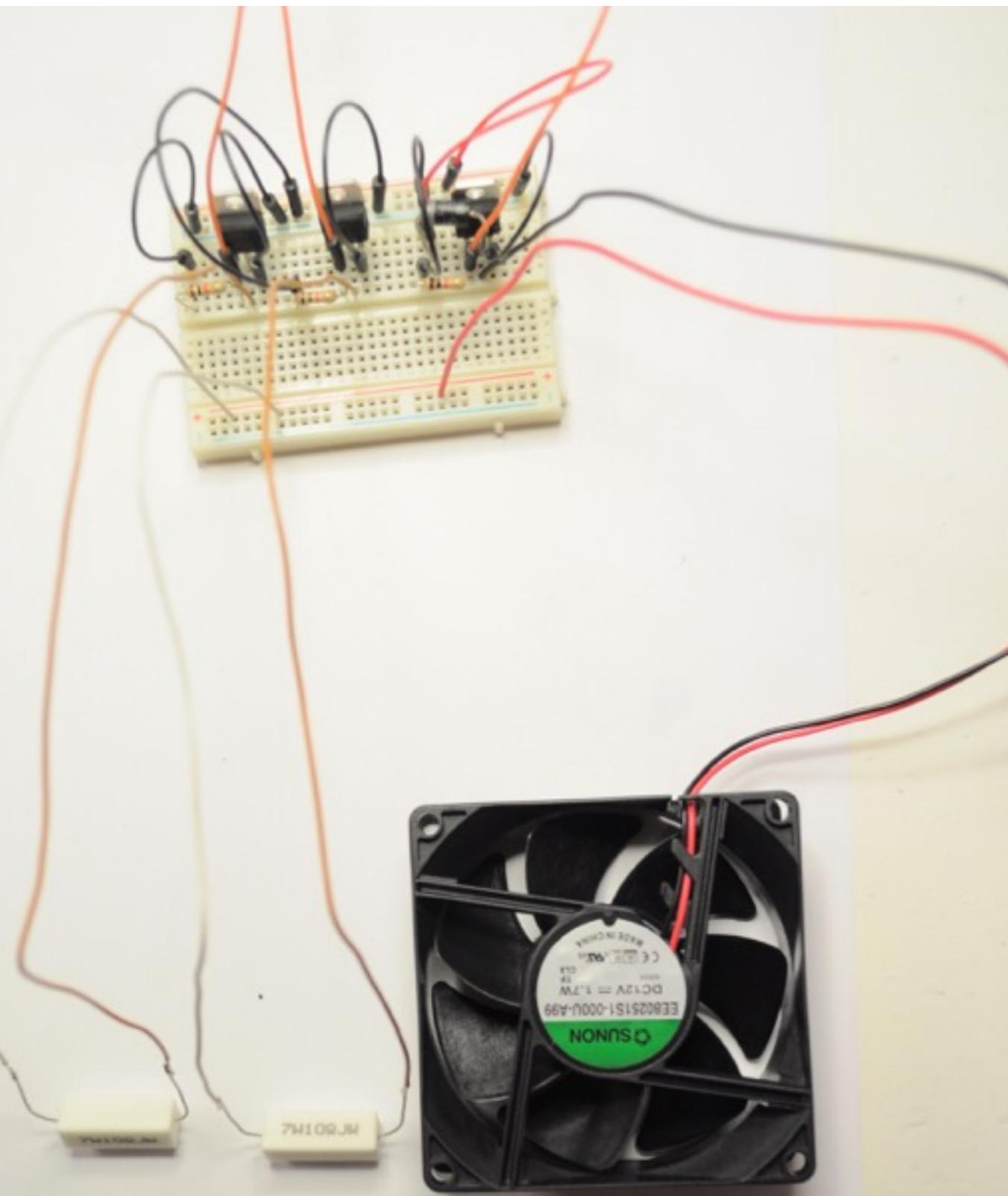


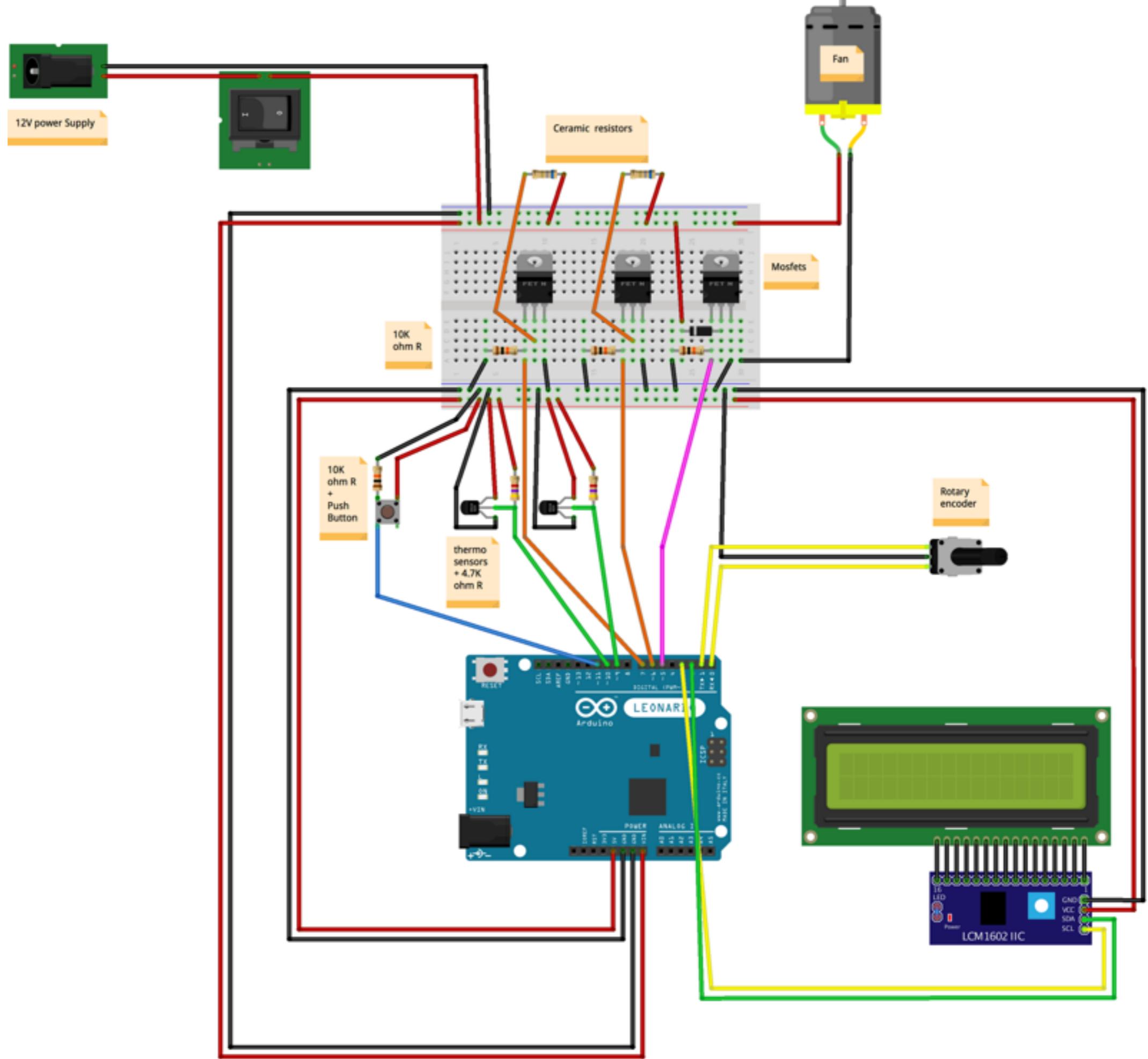
Test the MOSFETs





Wires up everything







Before uploading the code

- Get the Arduino code from the Github repository
 - On Windows: make sure you unzip the ZIP file before opening the Arduino code file
- Install the OneWire library
 - In the Arduino IDE
 - Open the Sketch Menu
 - Go to “Include Library” -> “Manage Libraries”
 - Search for “OneWire”
 - Click on the OneWire library listed in the search result
 - Click on the “Install” button that appears
- Install the DallasTemperature library



Start testing

- Power up with just 5V
 - Check the LCD, button and rotary encoder
- Check the temperature readings
 - Use example sketch
 - File -> Examples -> OneWire -> DS18x20_Temperature
 - Set the right Pin in this sketch
- Connect the 12V power supply
 - Run a PCR program and check the temperature reading
 - Use the “toggleLidHeater” variable to disable the lid heater at first and just check the block heating