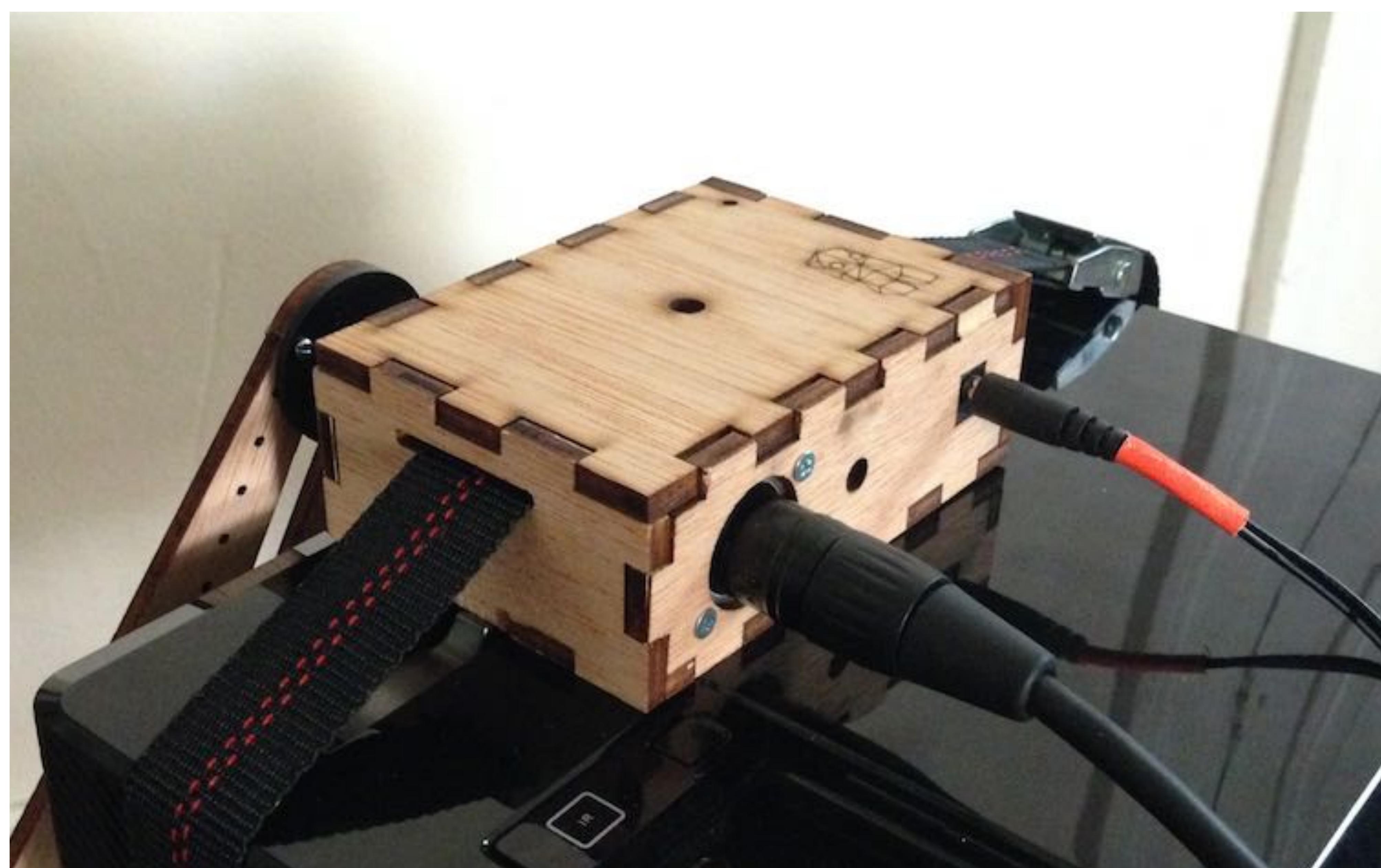


Shutter

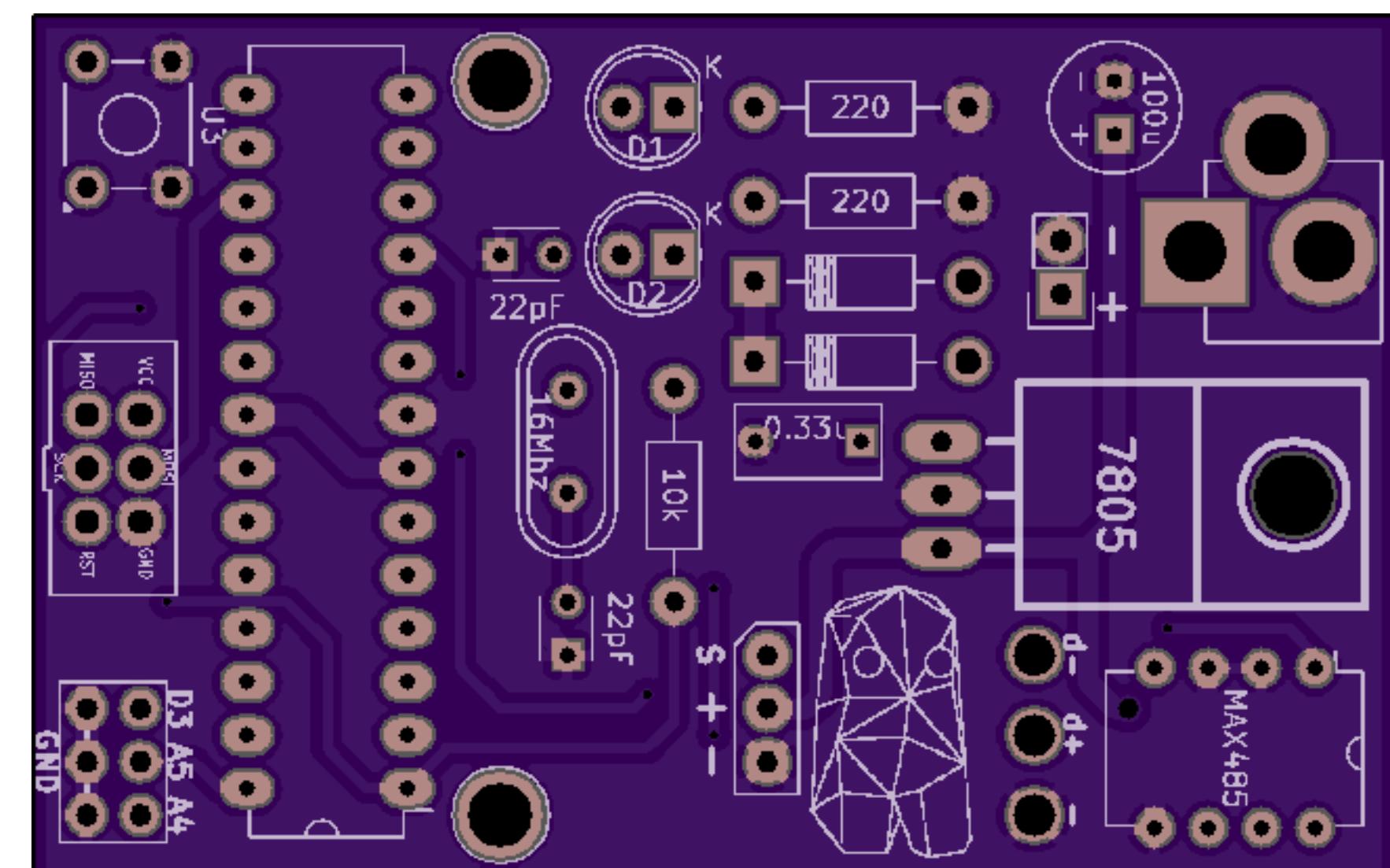
Mounting guide

This guide will show you how to gather all the parts necessary to build the shutter. It also contain a step by step mounting guide and all the references needed to hack it.

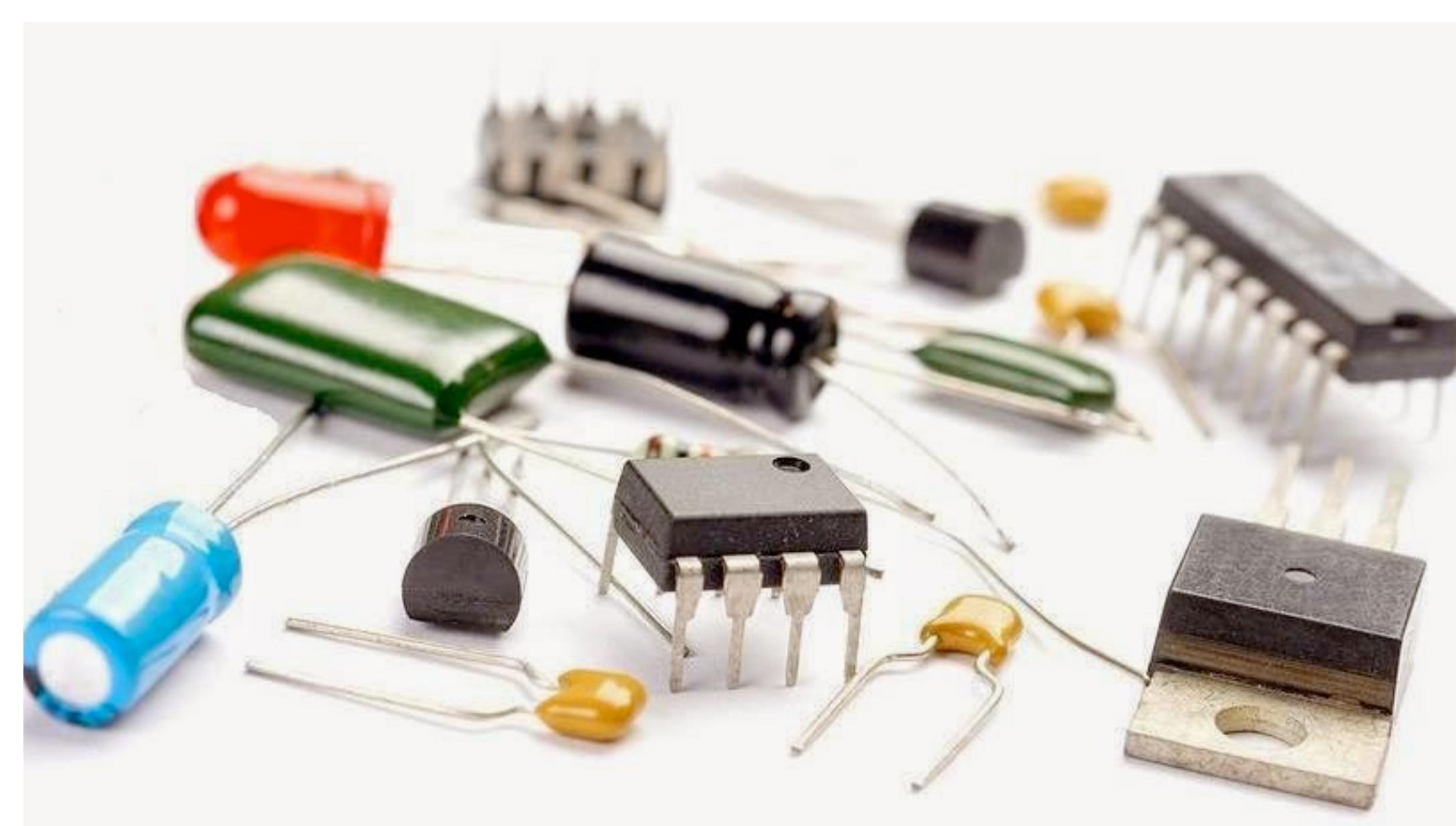


Parts

Board : https://oshpark.com/shared_projects/9gnxMAvh



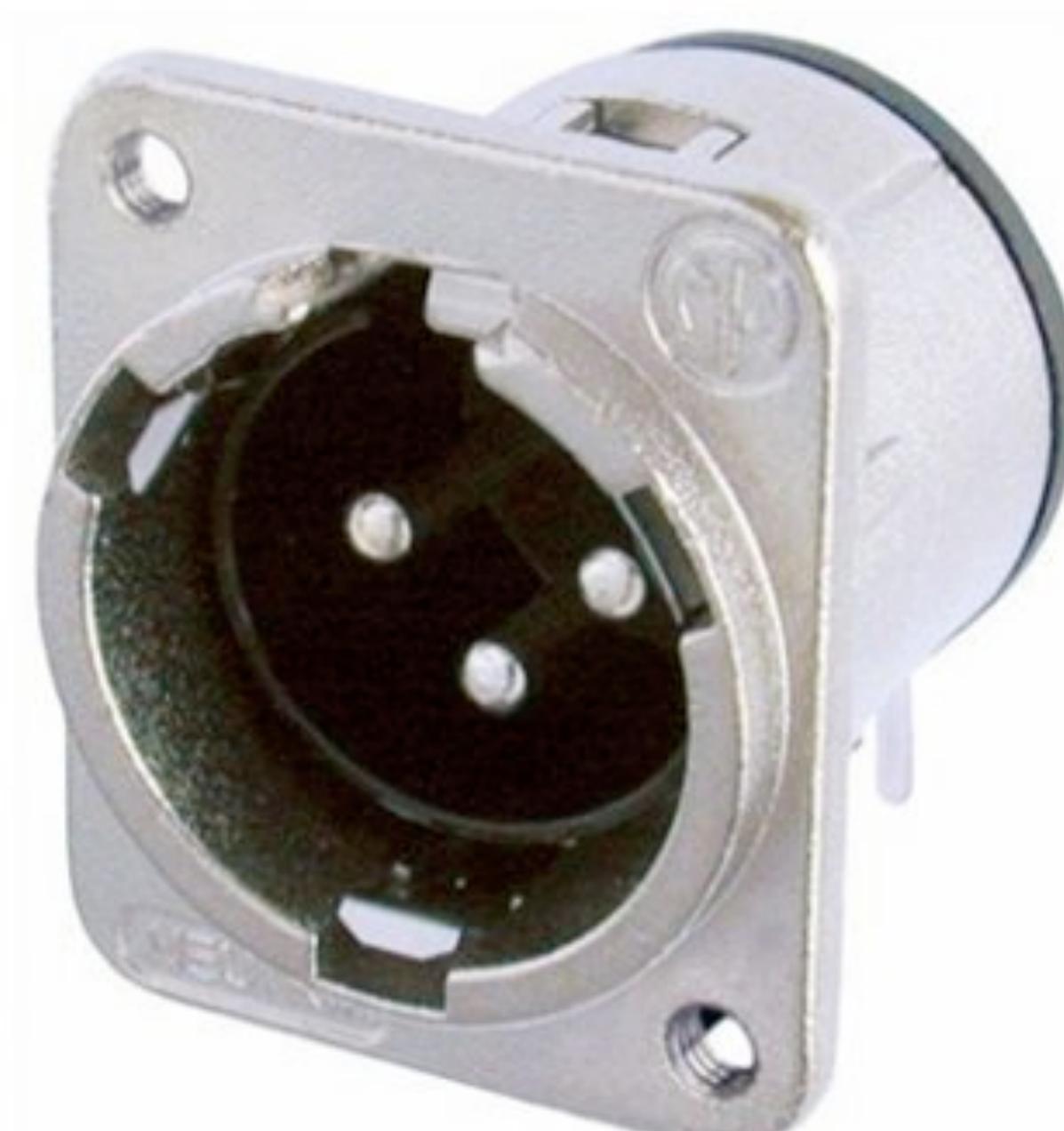
Electronics : <https://octopart.com/bom-lookup/za0eERHM>



Servo : Futaba S3003



XLR : Neutrik NC3MDM3-H

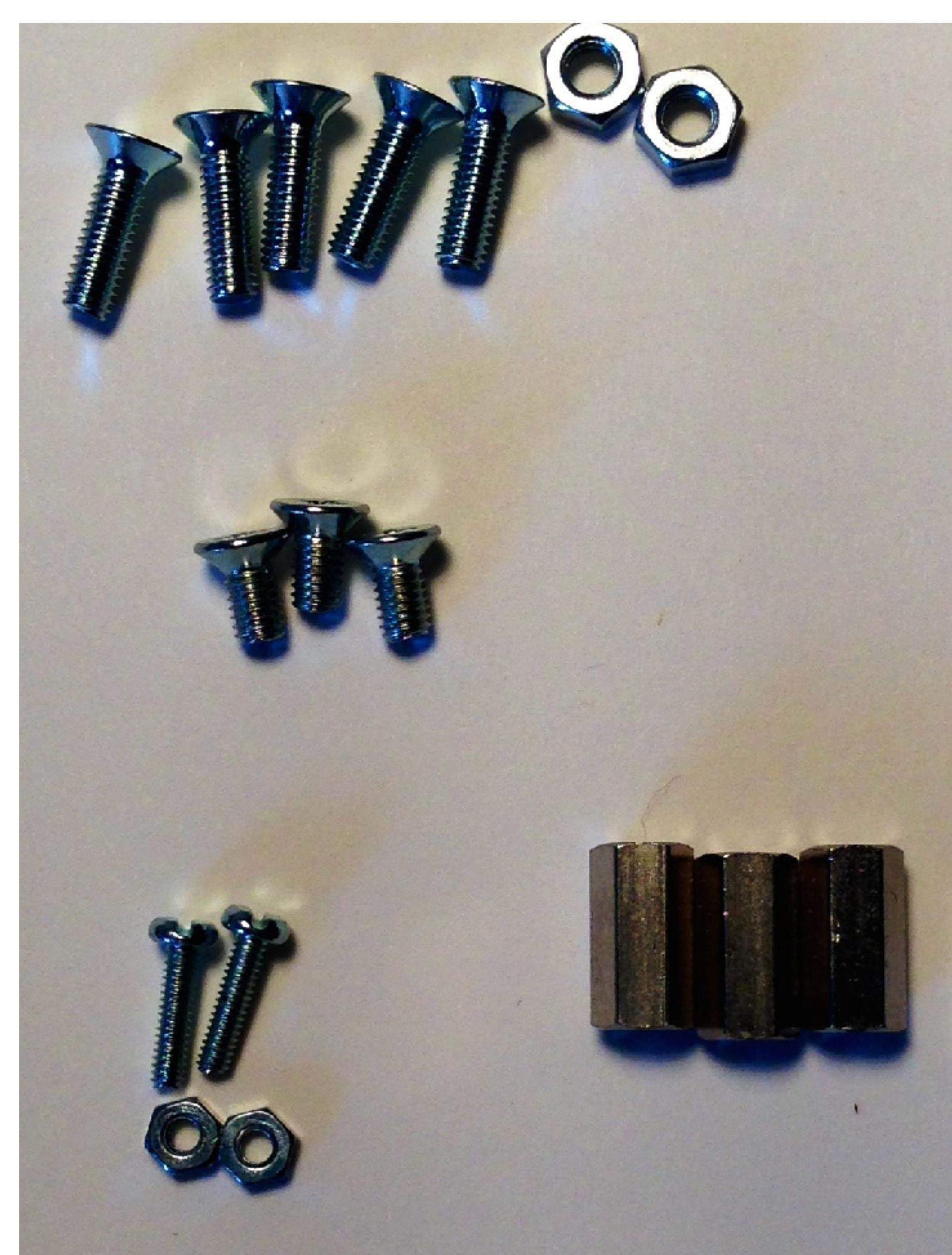


DCPlug : Any 12V-1A DC with a standard plug



Screws :

5*M3*10 + 2M3 bolts
3*M3*6
2*M2*15 + bolts
3 spacers M3*10

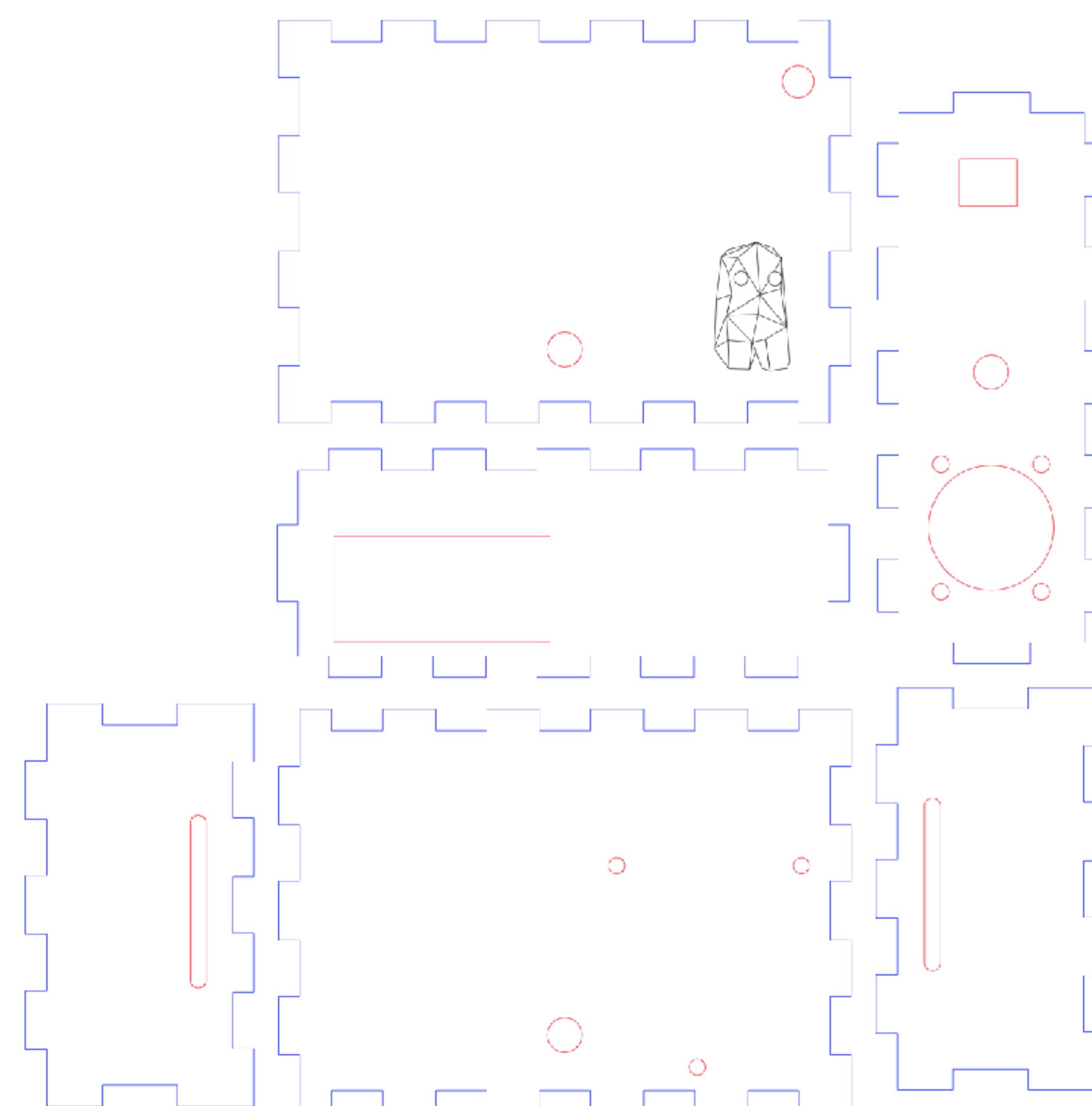


General purpose cable : 30cm

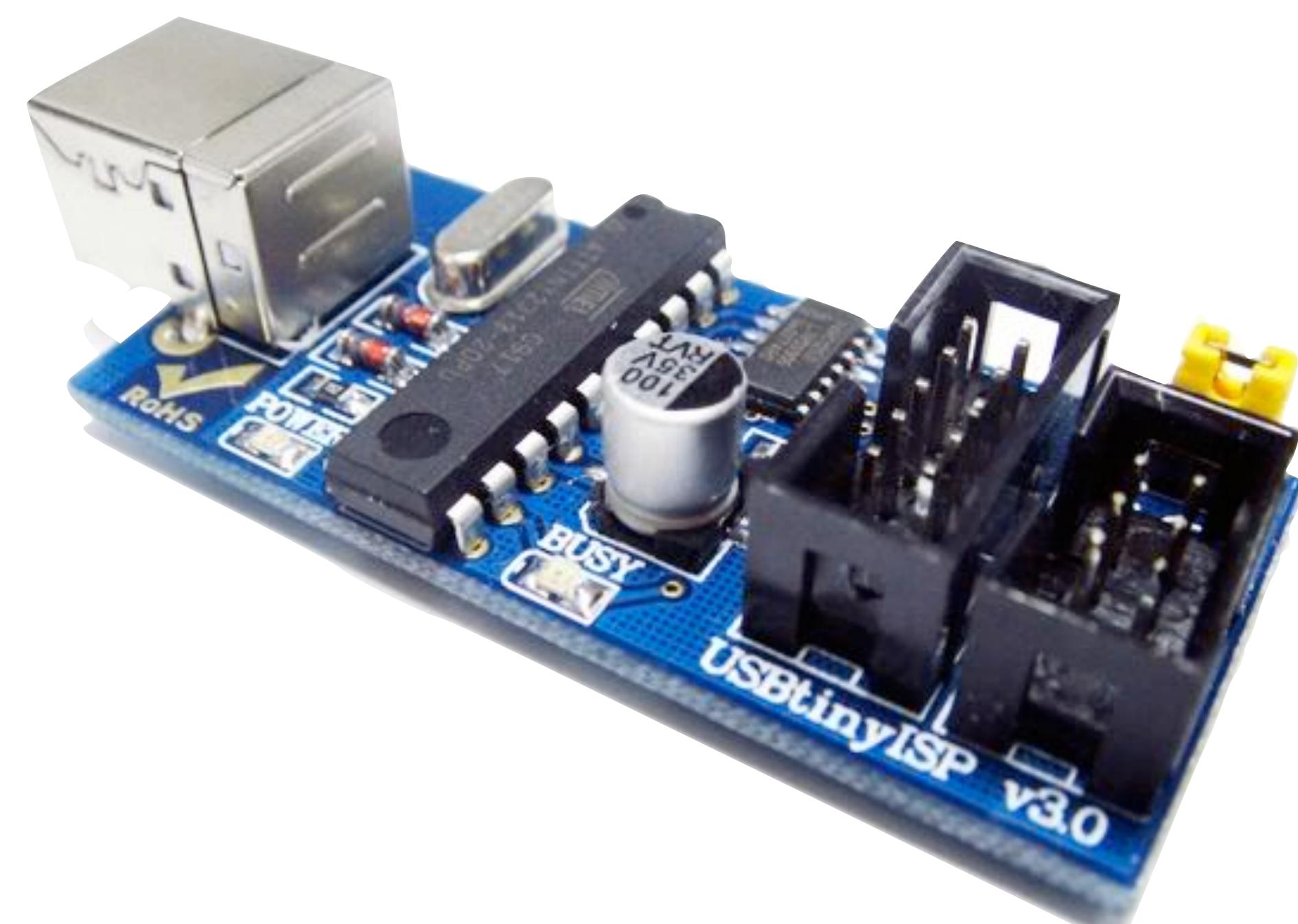


Cut files for the box:

<https://github.com/anome/shutter/tree/master/laser>

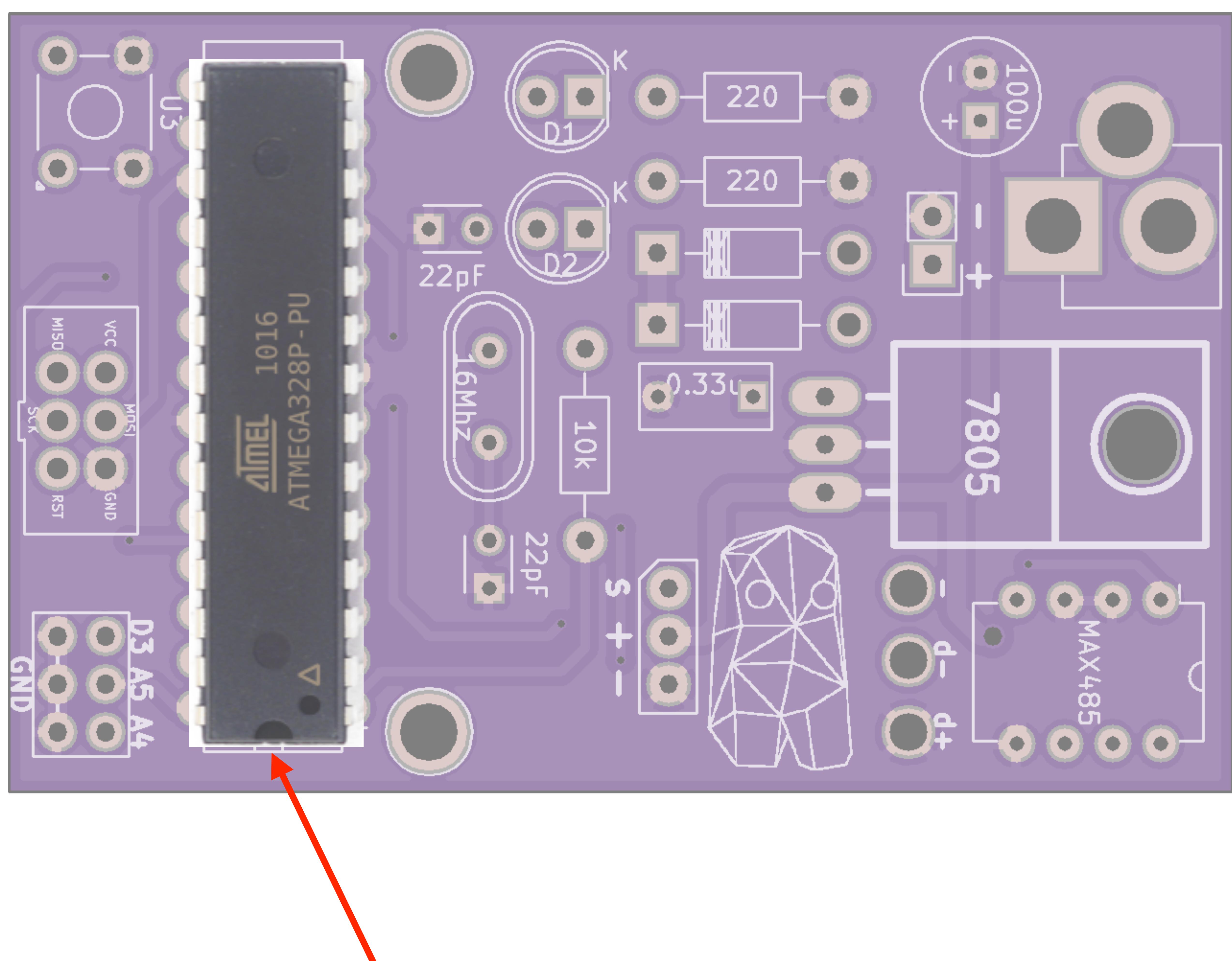


ISP programmer for code uploading :



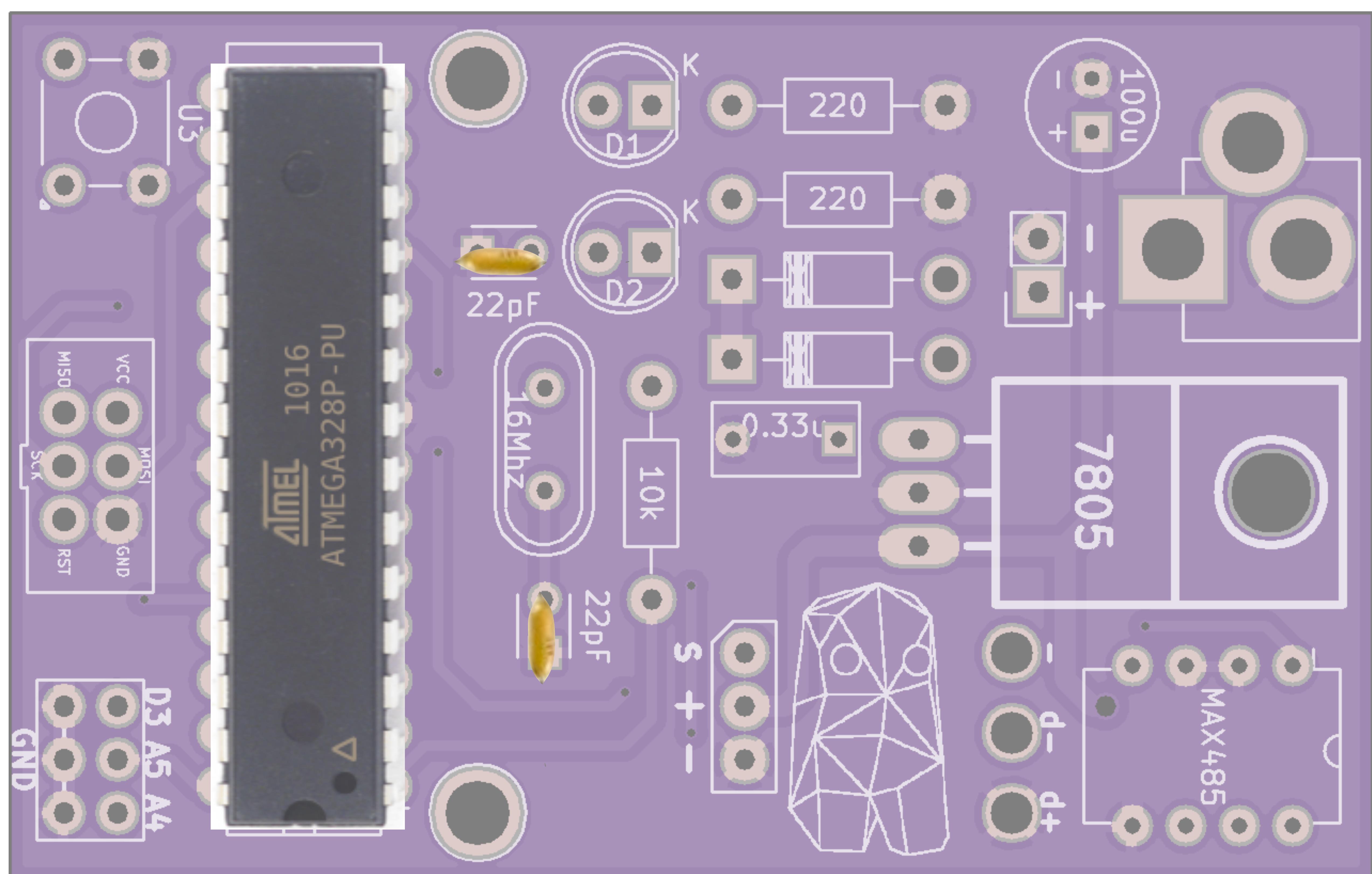
Assembly

Solder the Micro-controller,

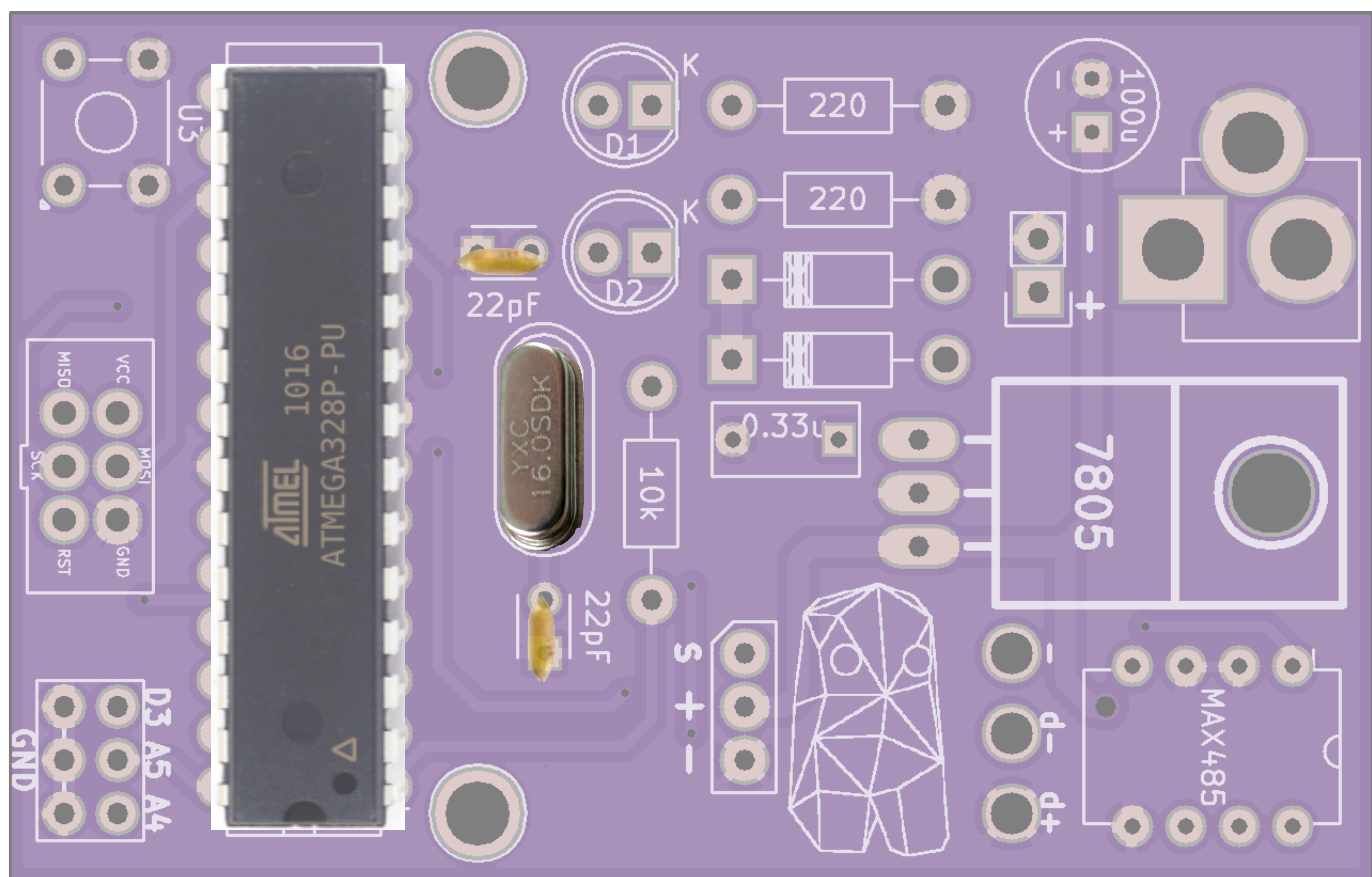


beware of the orientation, notch should be that side

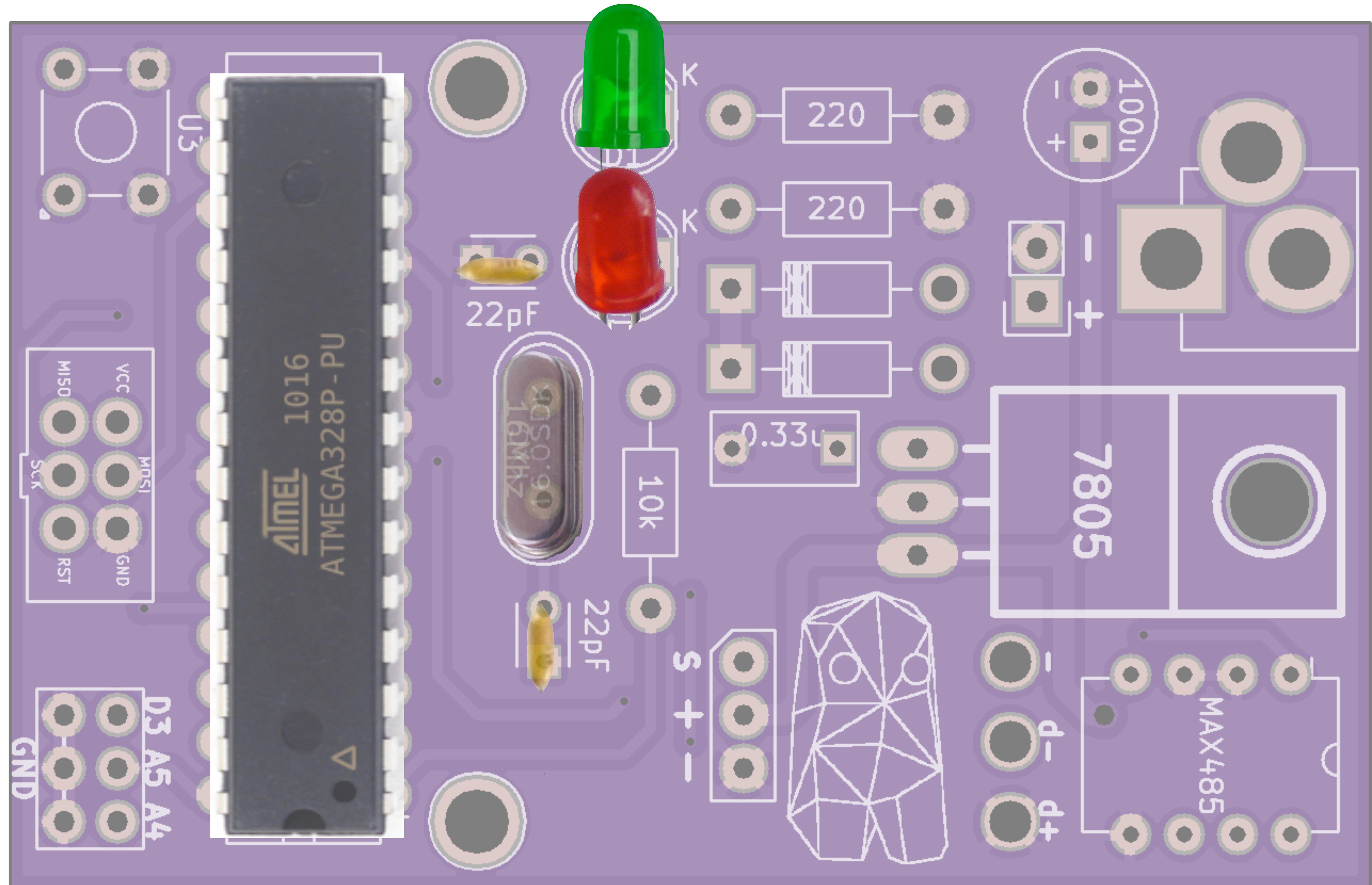
Solder the 22pf capacitors,



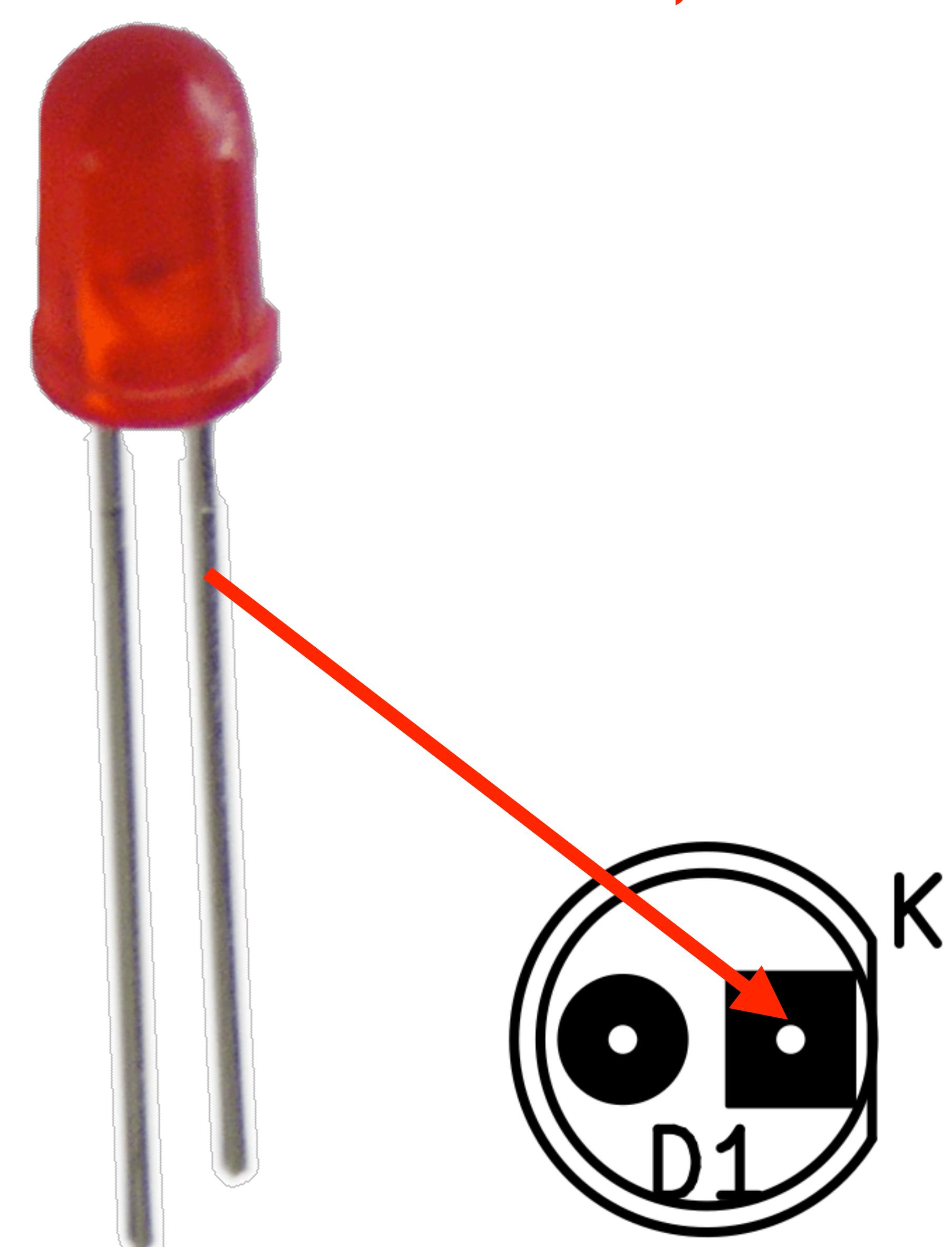
Solder the 16Mhz quartz



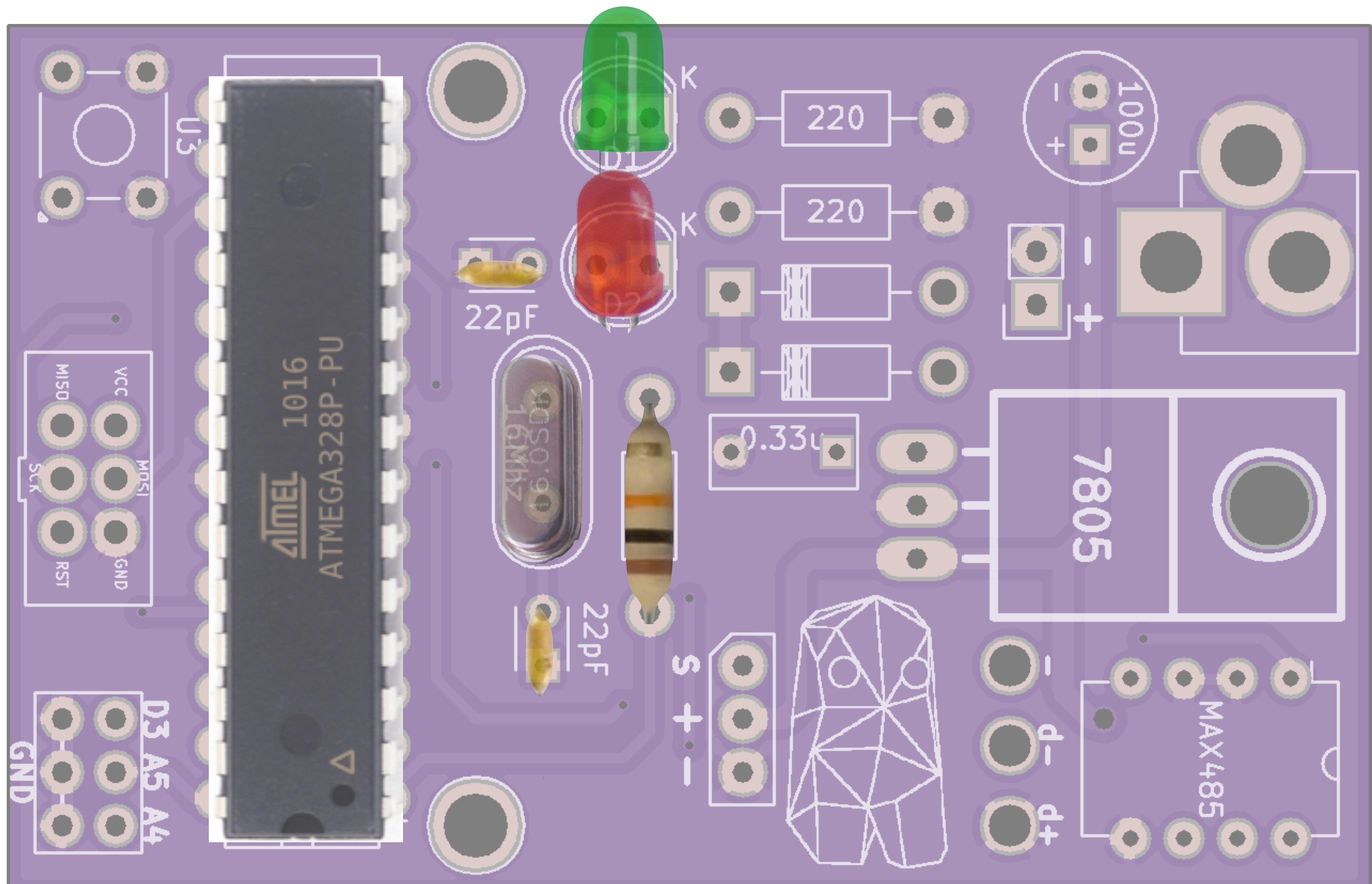
Solder the leds



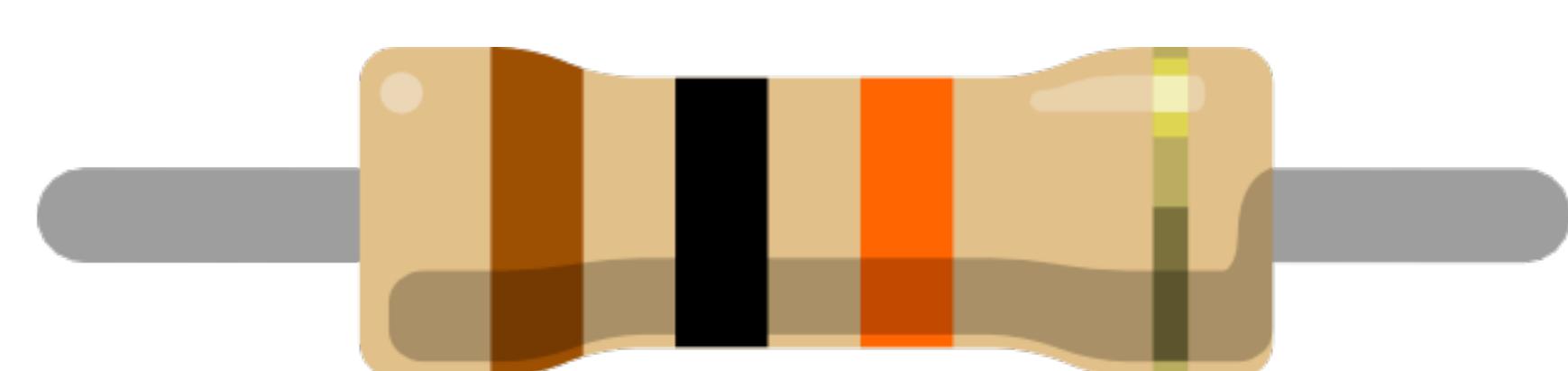
beware of the orientation, shorter pin is on the “K” side



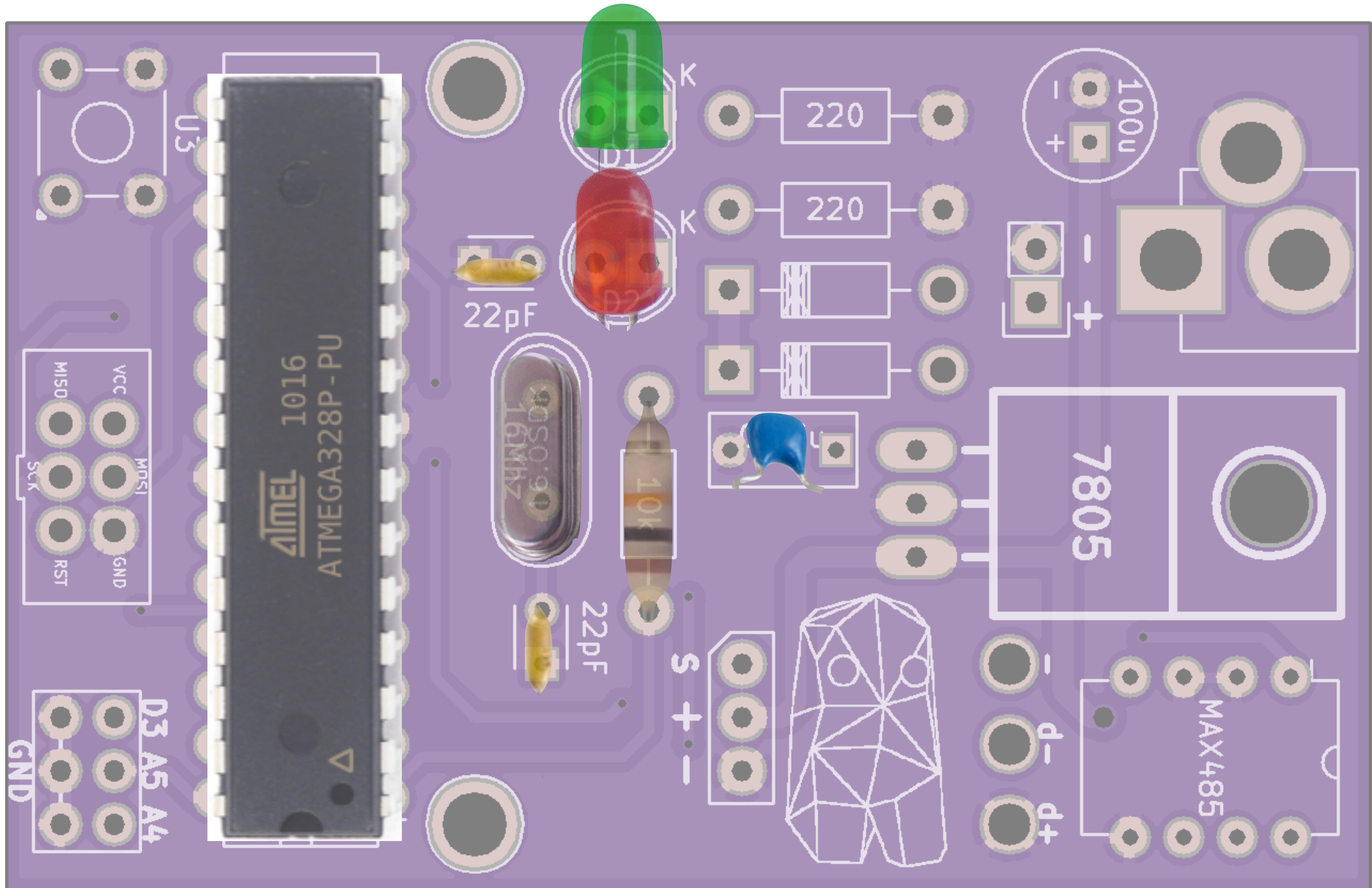
Solder the 10k Ohm resistor



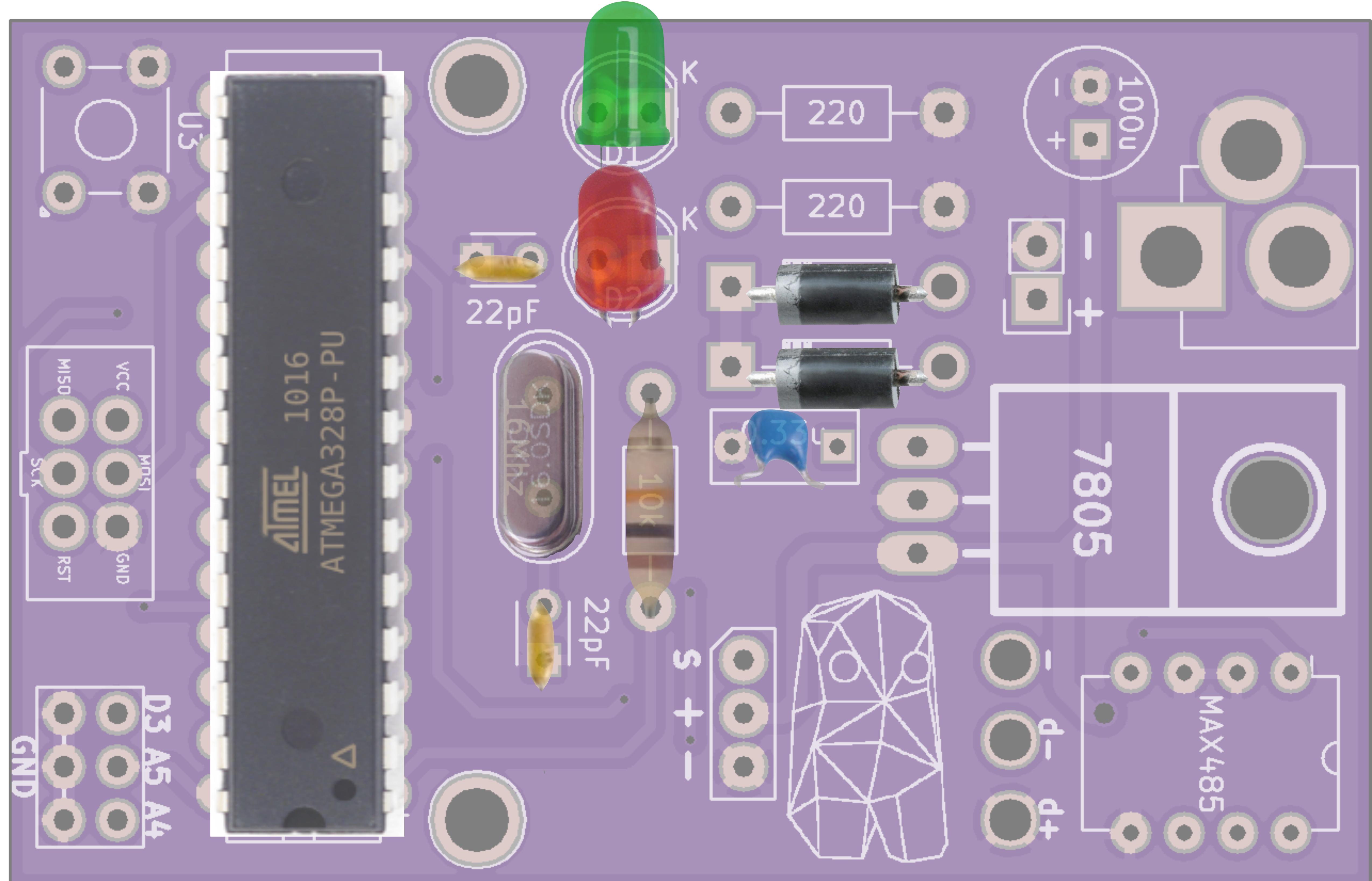
10kOhm is stripped “brown, black, orange”



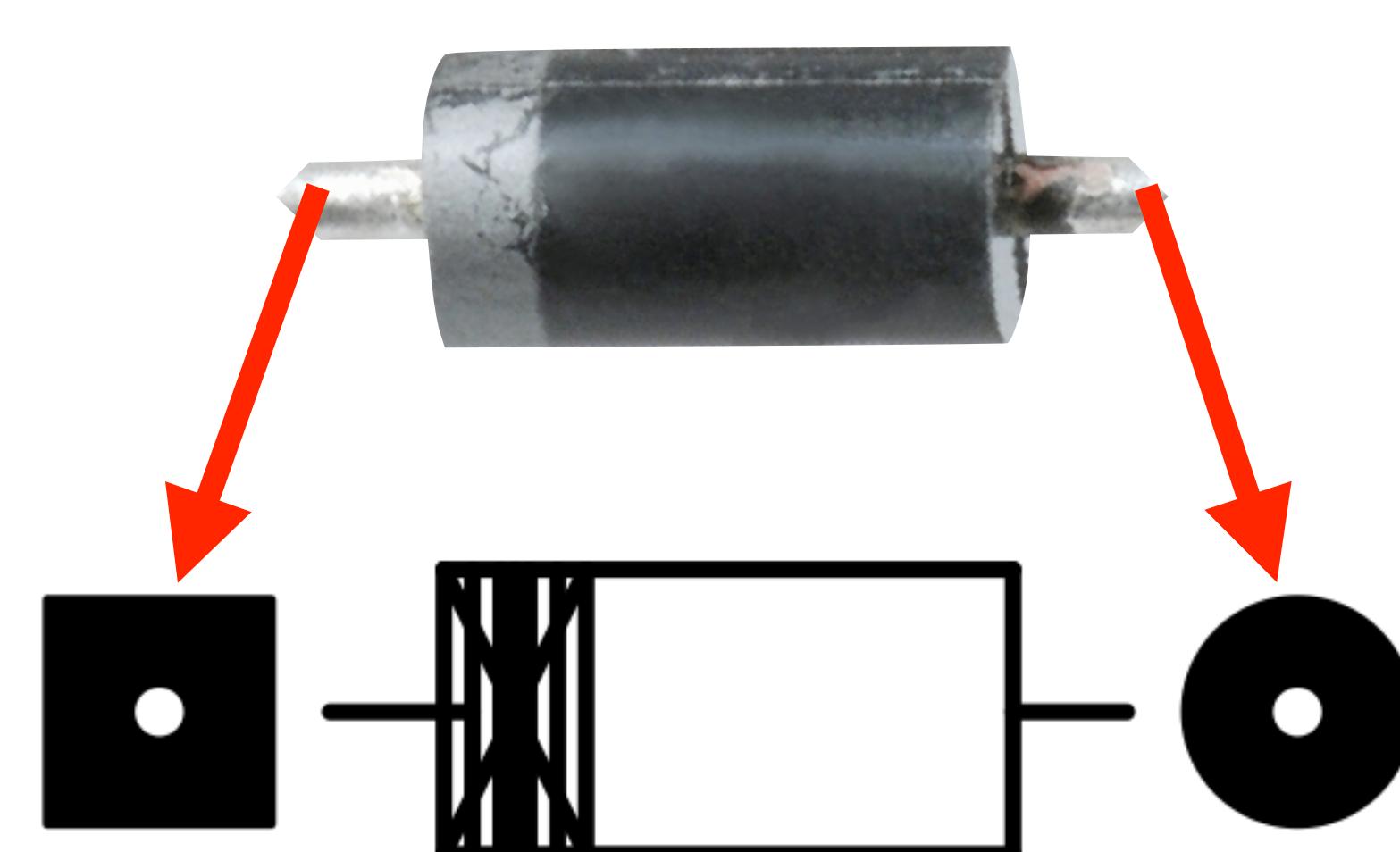
Solder 0.33uF capacitor



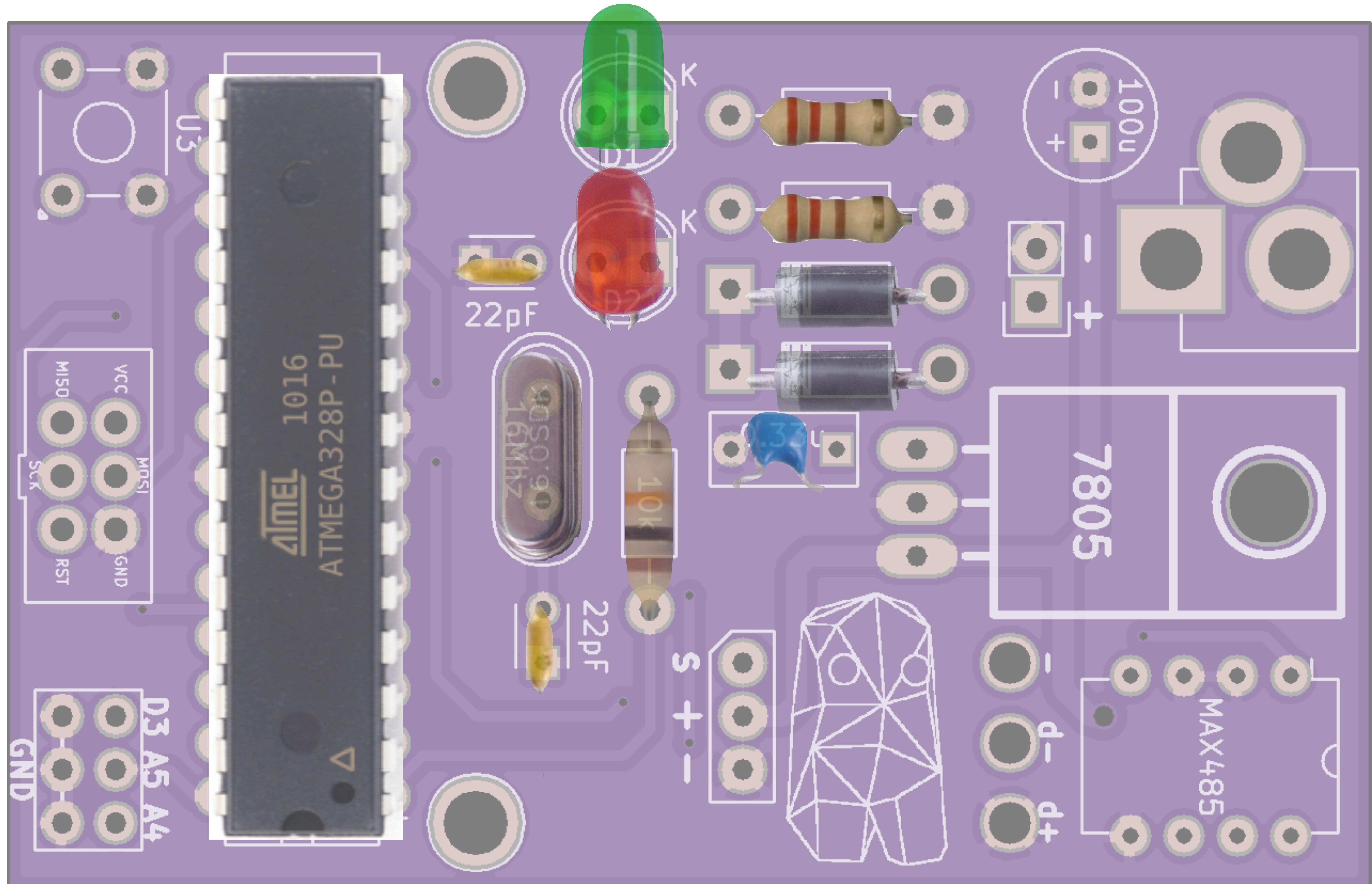
Solder the diodes



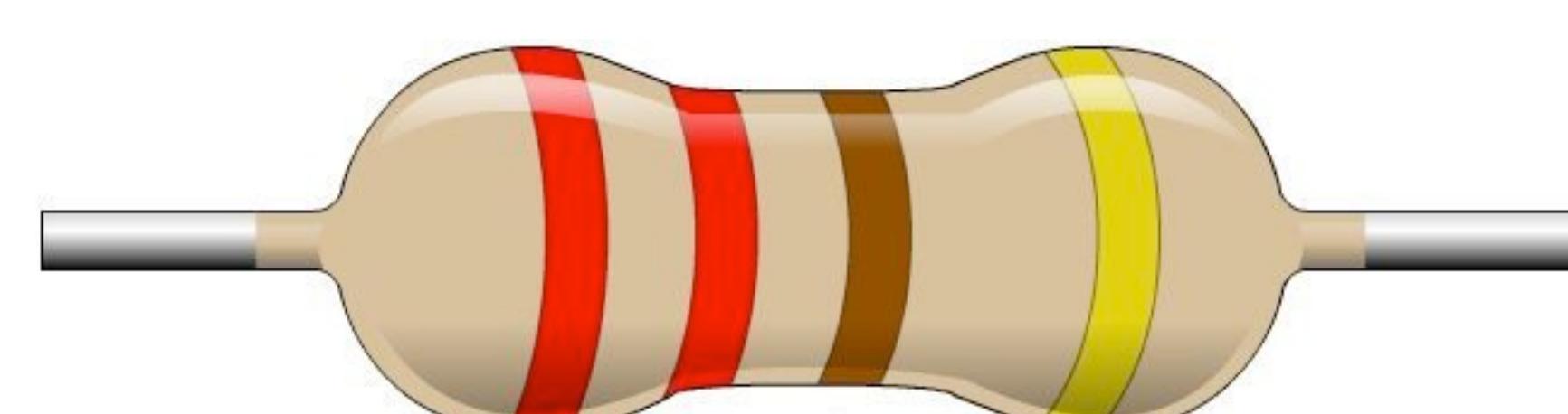
beware the polarity



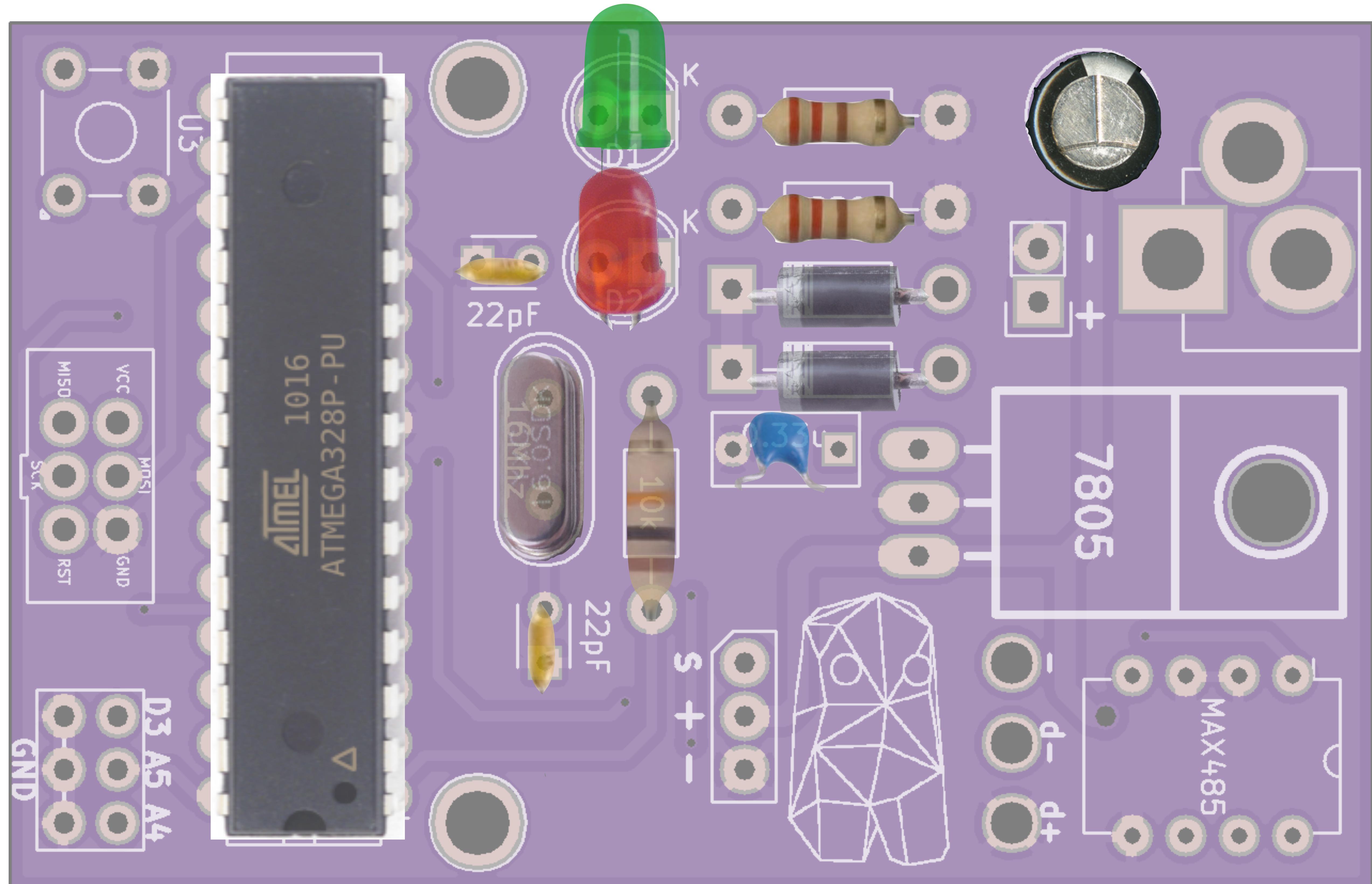
Solder the 220 Ohms resistors



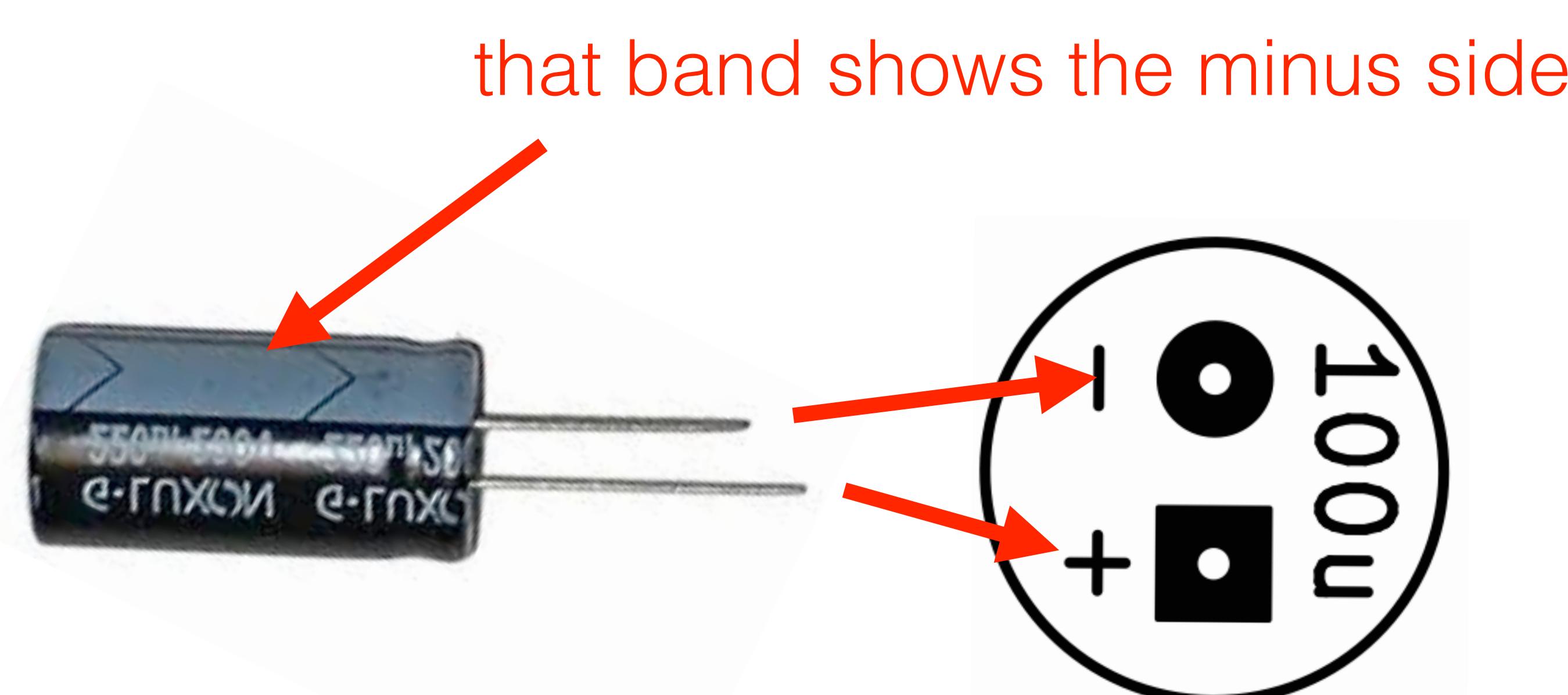
220Ohm is stripped “red red brown”



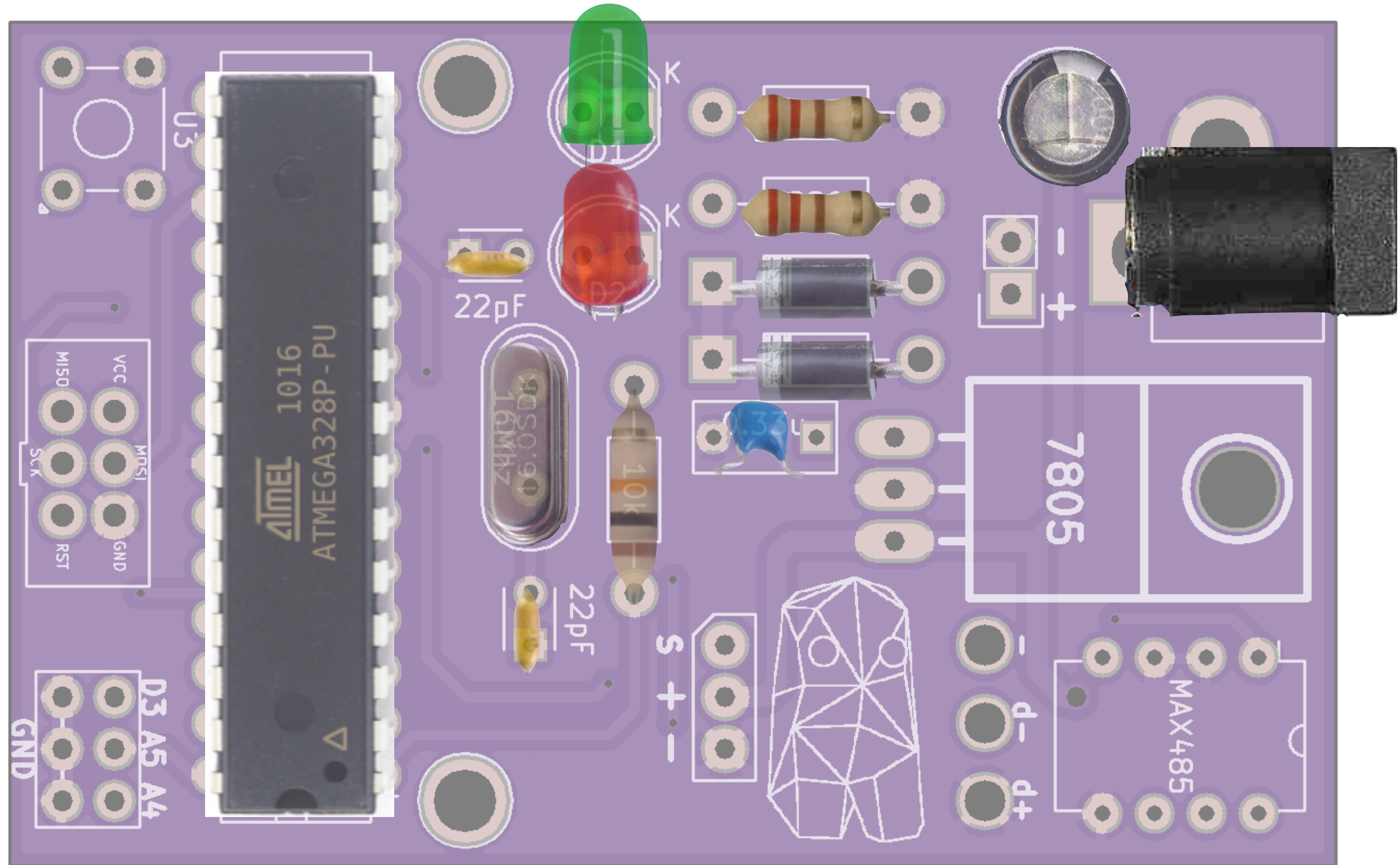
Solder the 100uF capacitor



beware of the orientation, shorter pin is on the “-” side



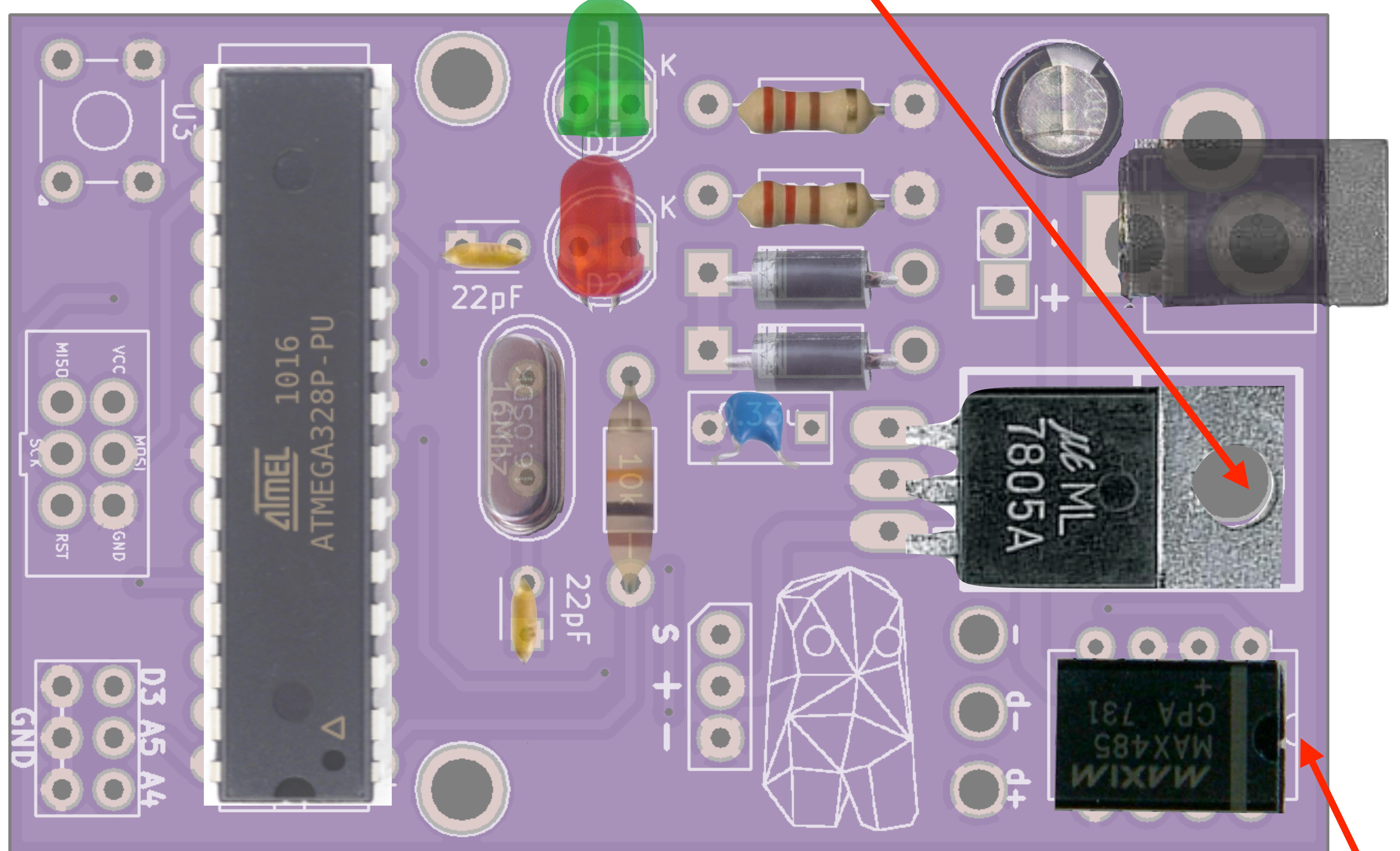
Solder the power plug



don't hesitate to put a lot of soldering
beware to place the plug correctly before soldering

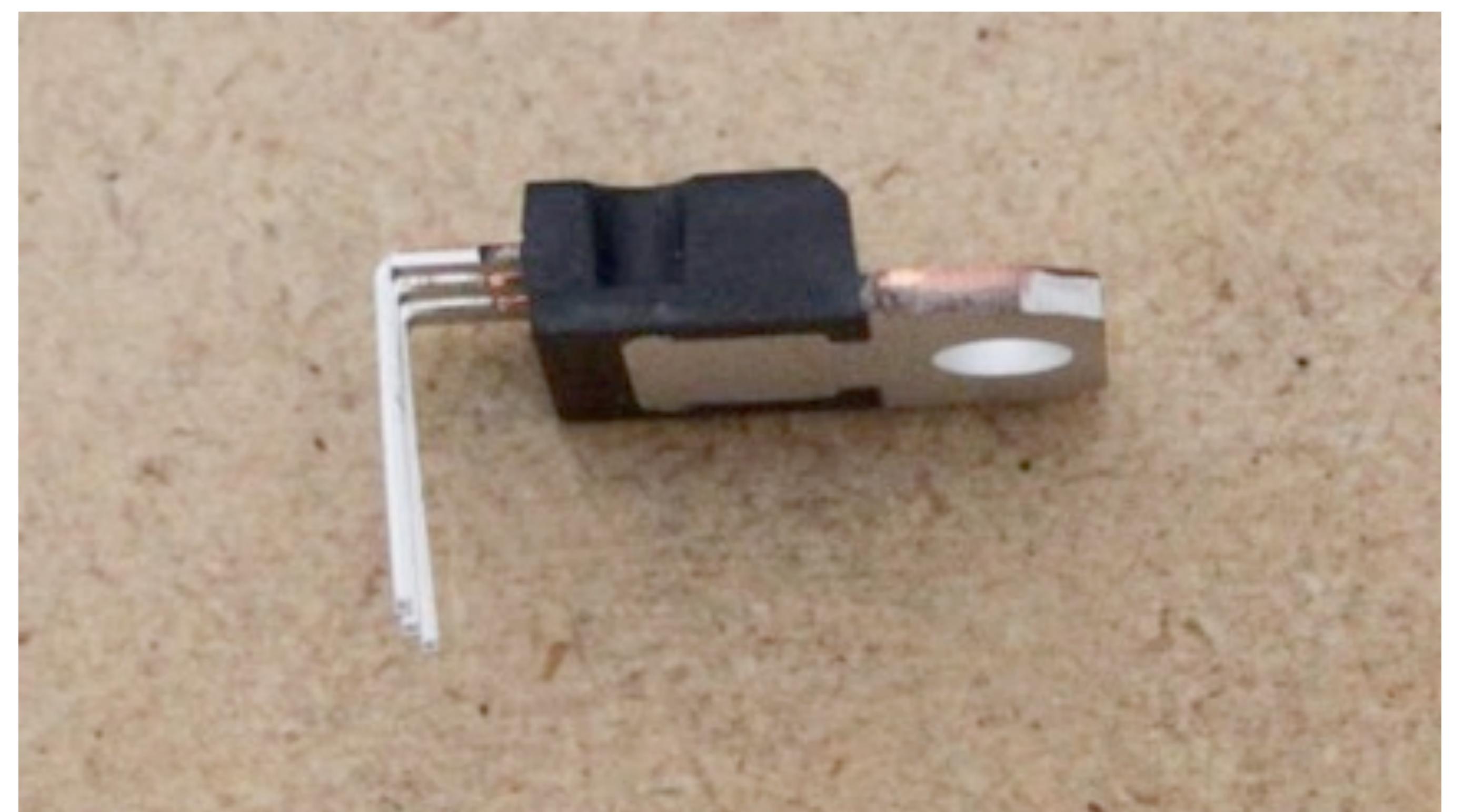
Solder the Max 485 and the regulator

Align the holes

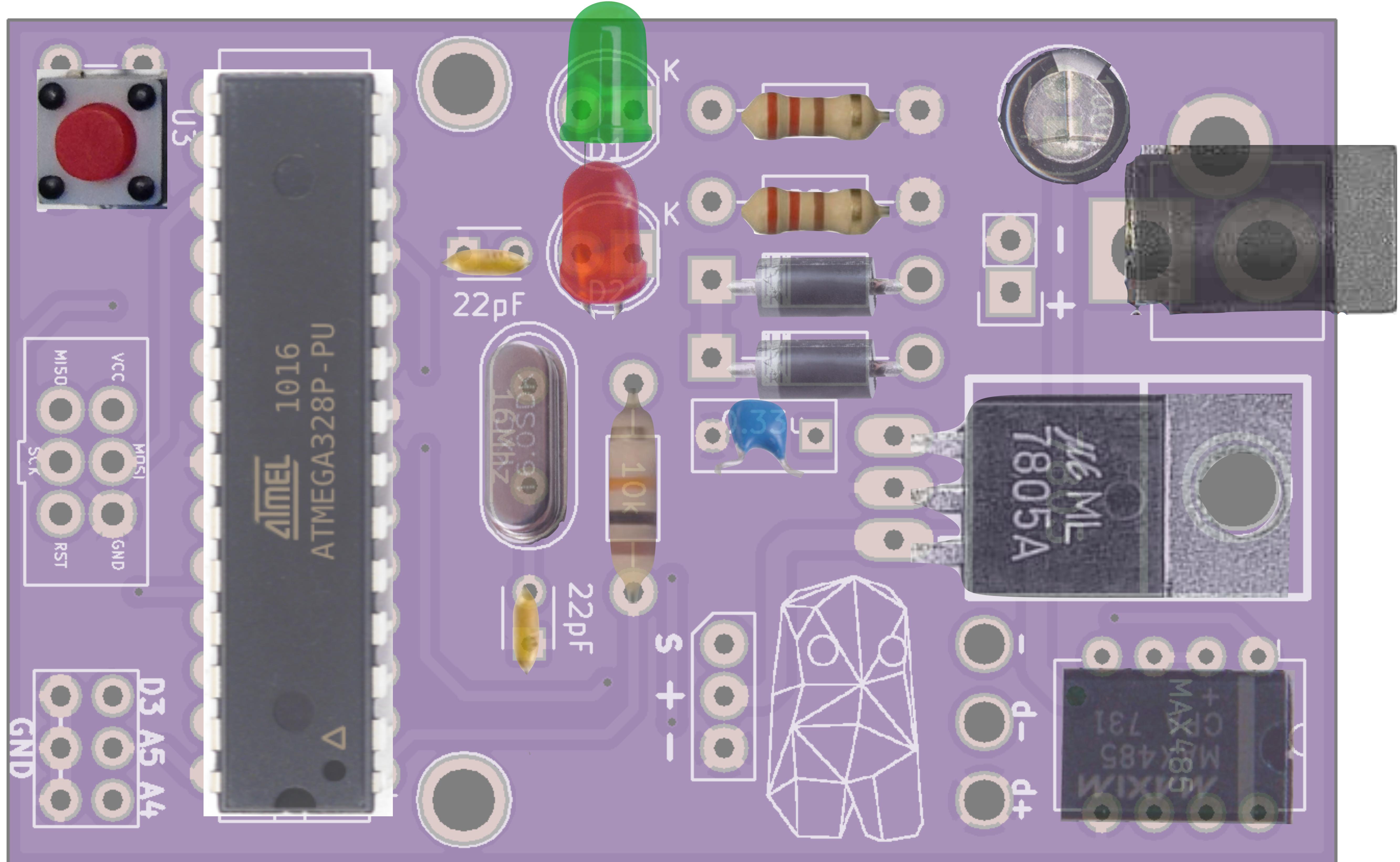


beware of the orientation, notch should be that side

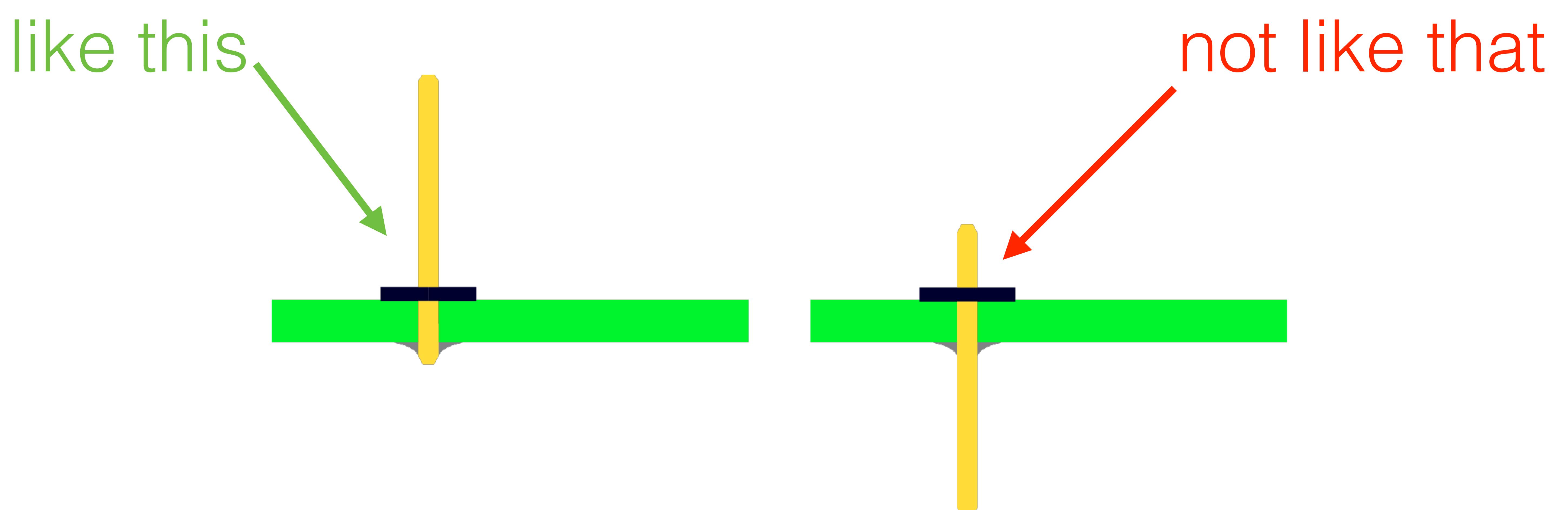
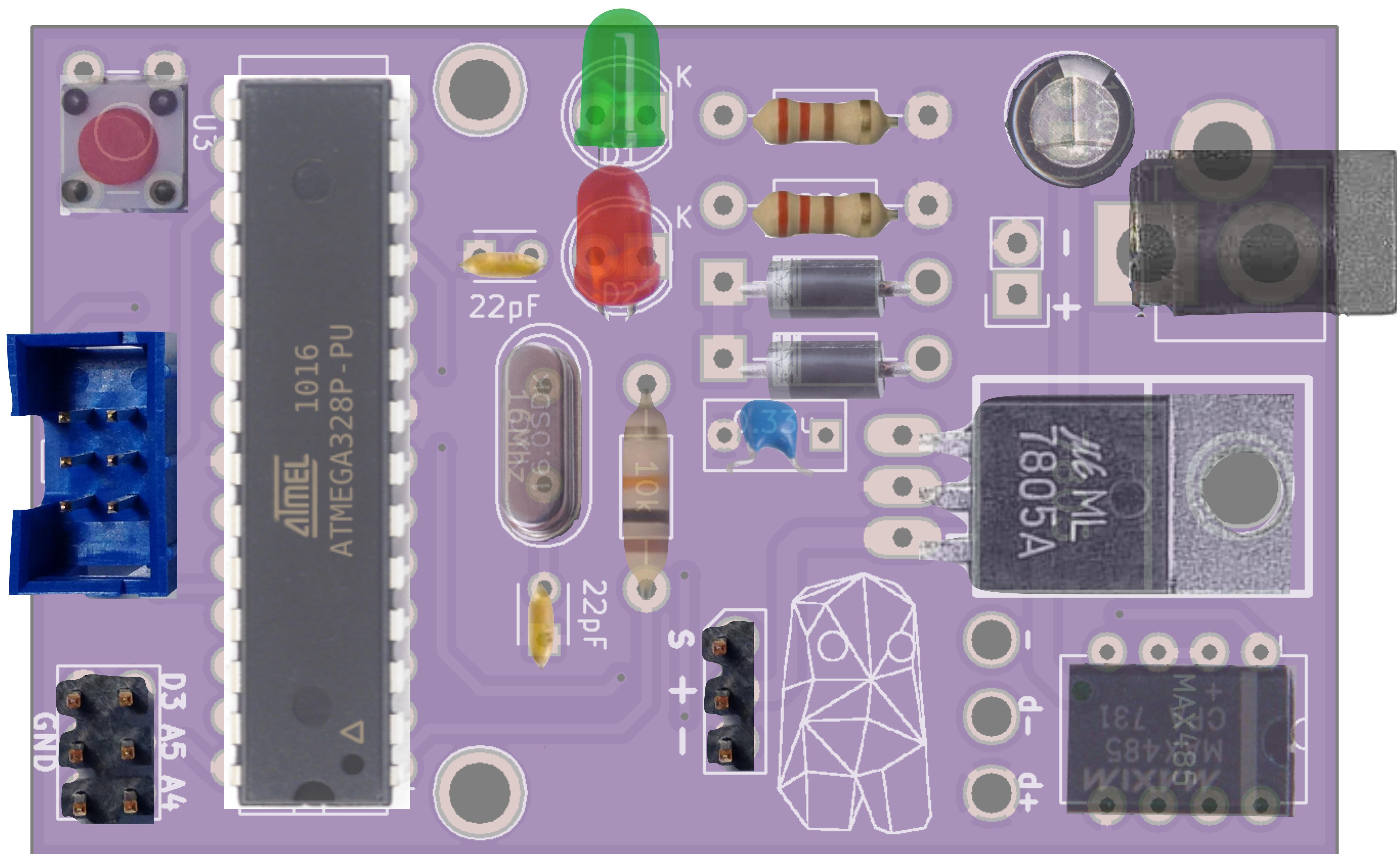
Bend the regulator



Solder the switch

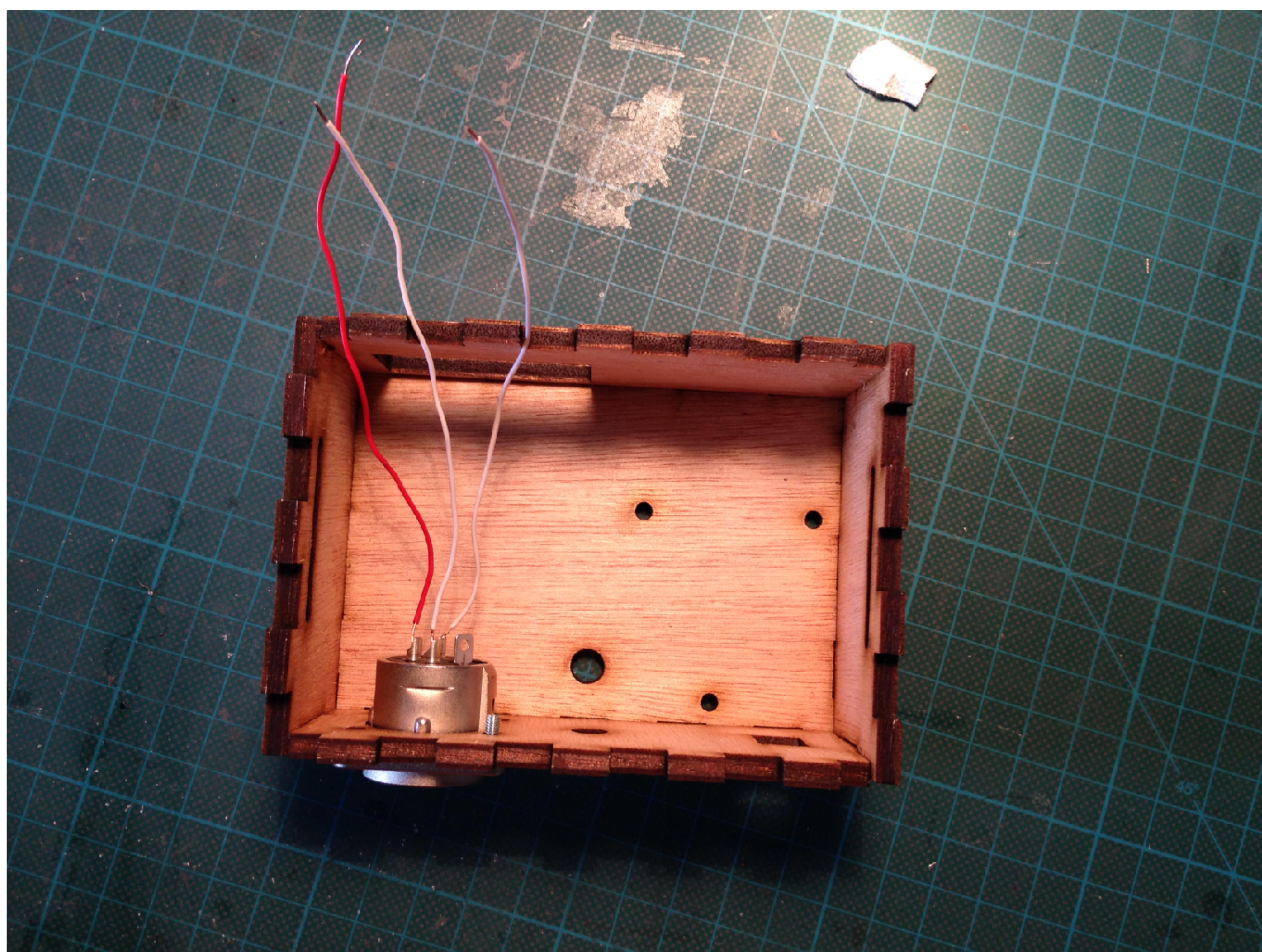


Solder the connectors

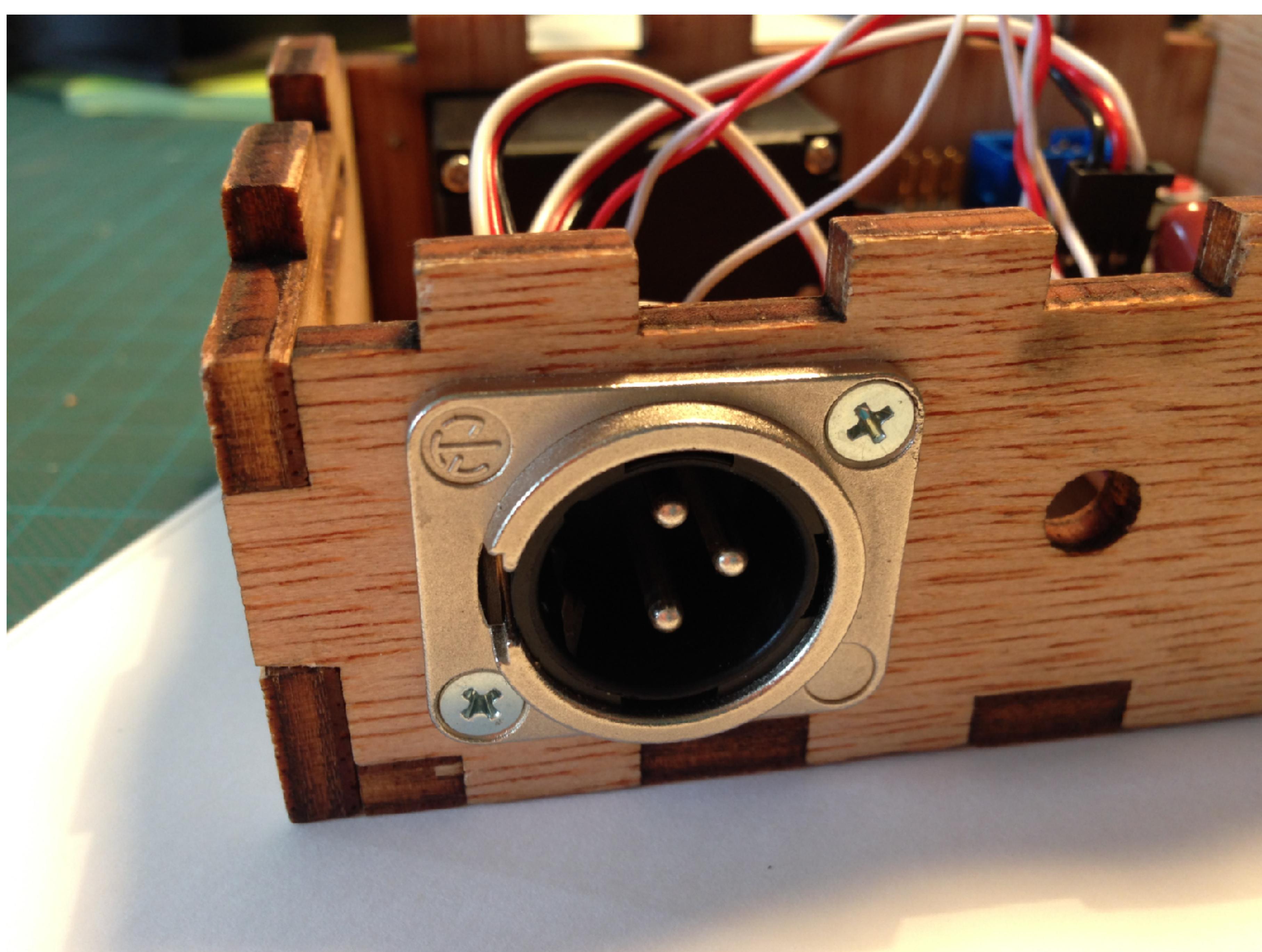


Mount the DMX plug

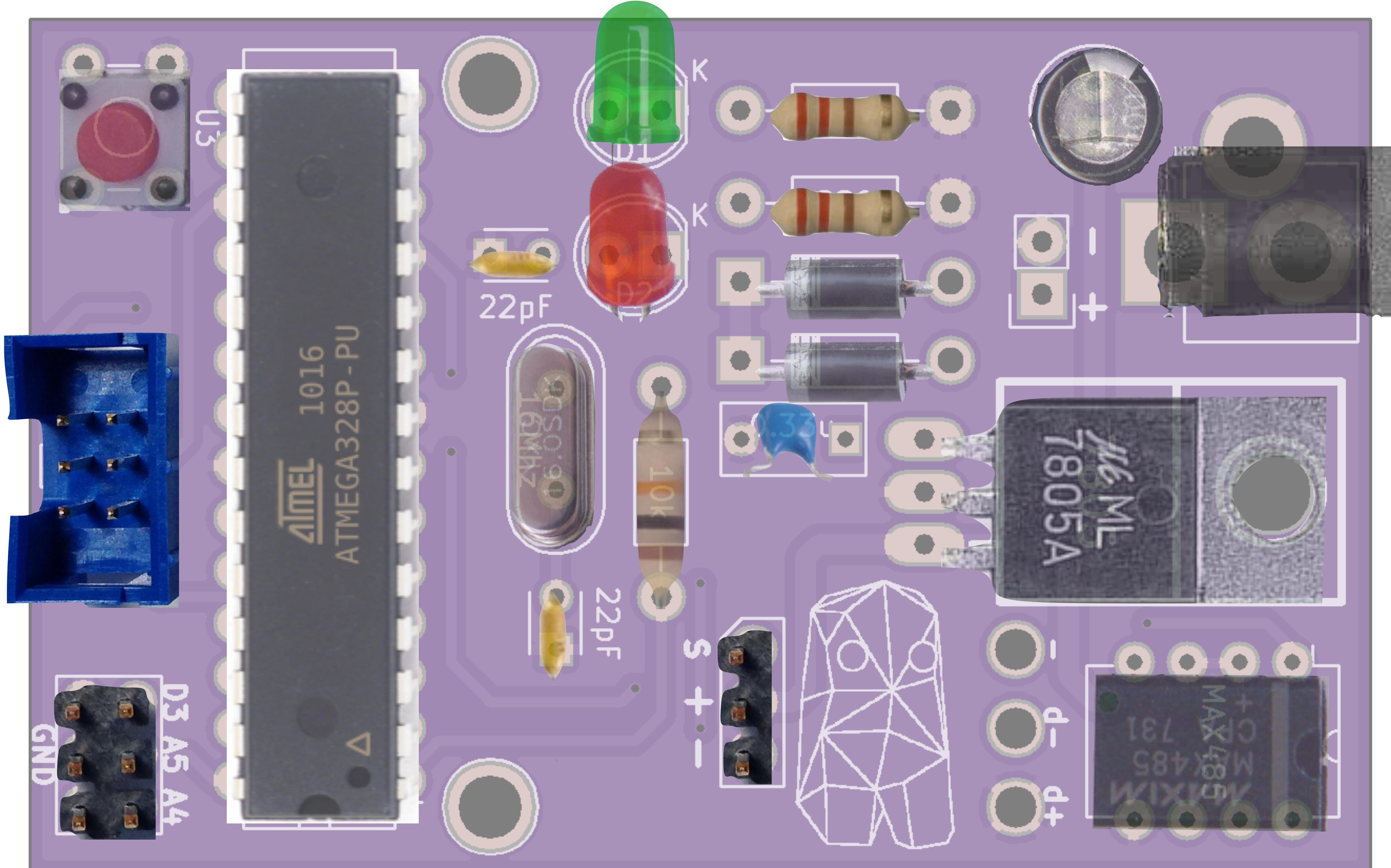
Solder 3*10cm wire to the DMX plug.



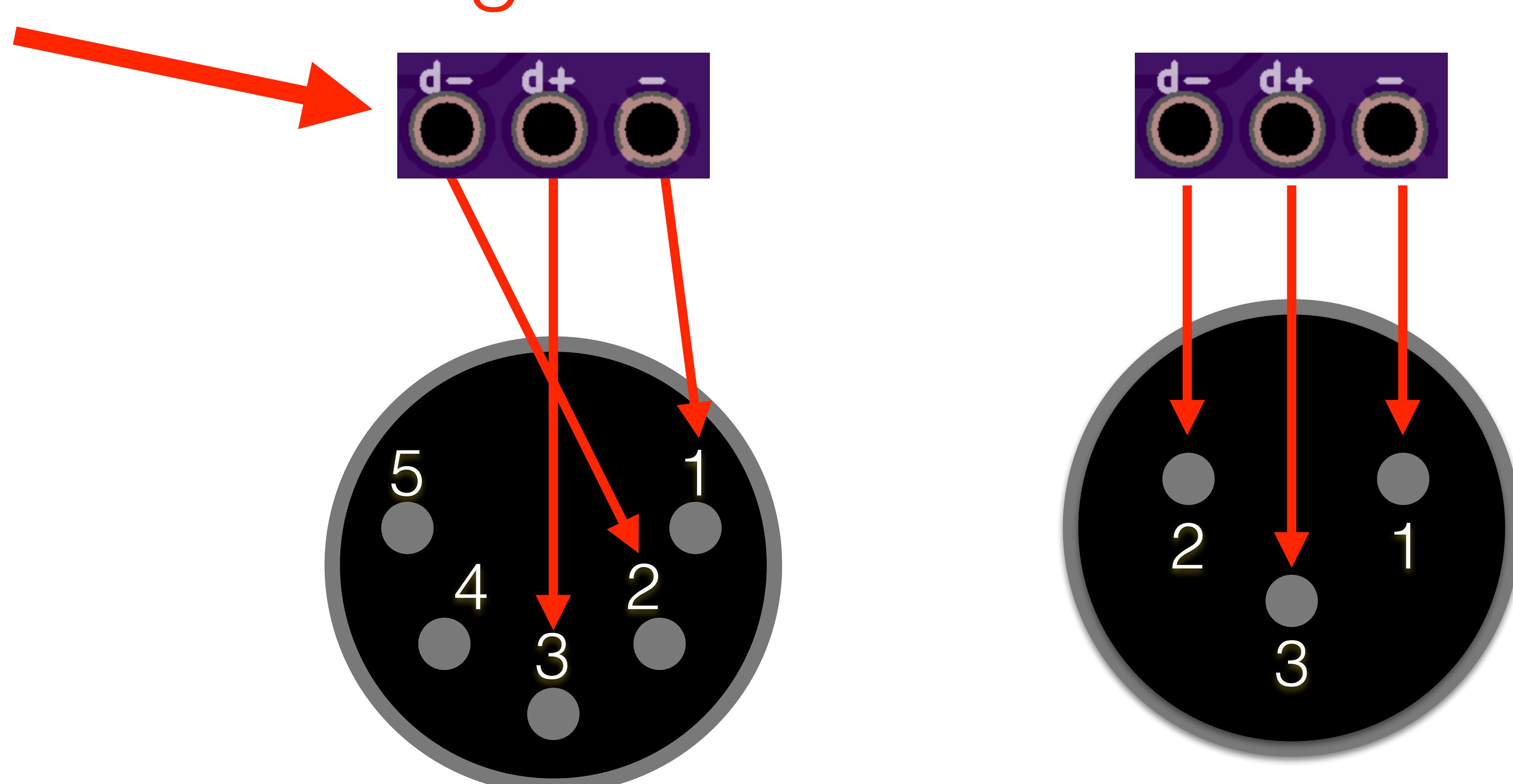
Mount the DMX input in the box (10mm screws + bolts).



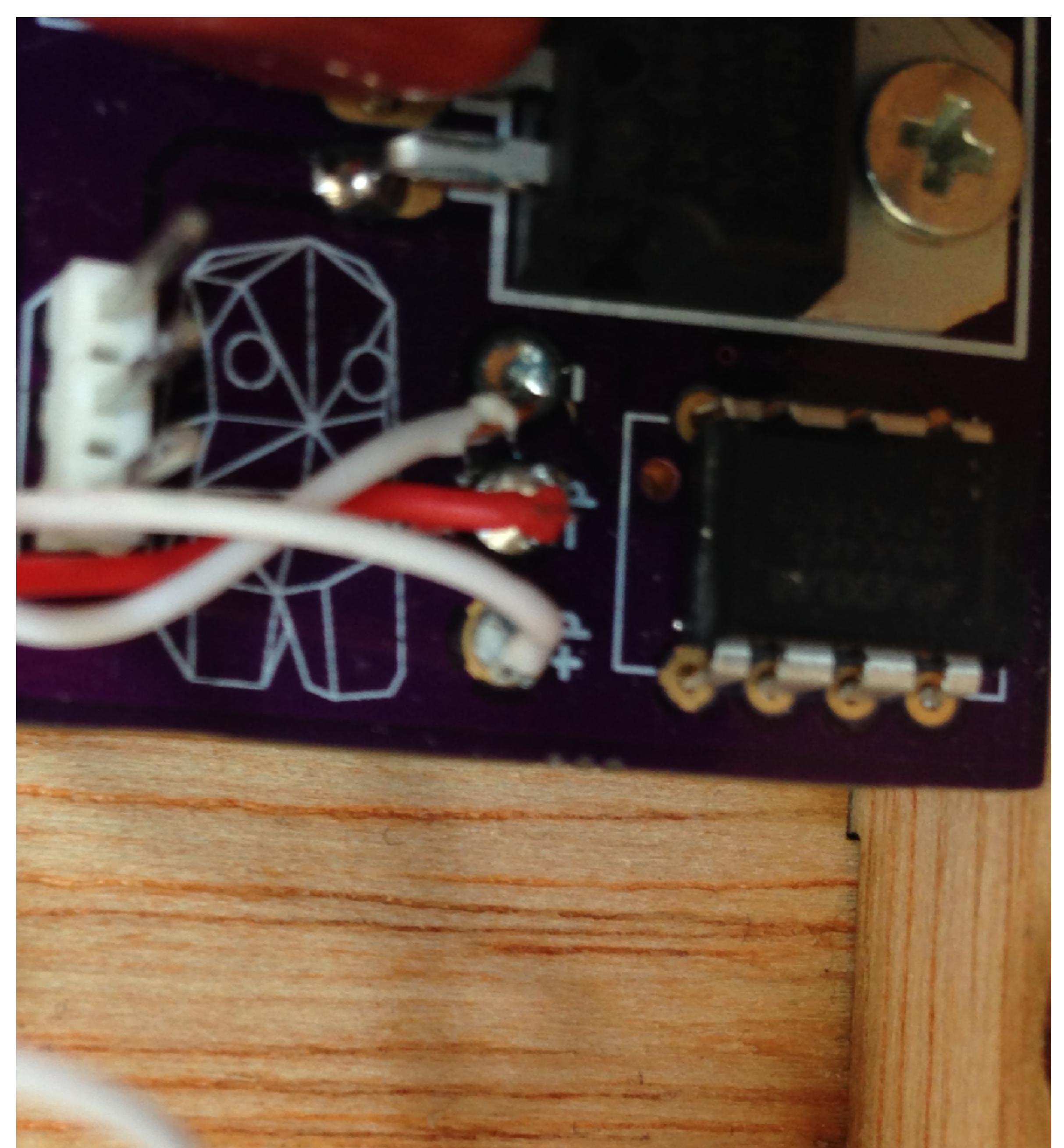
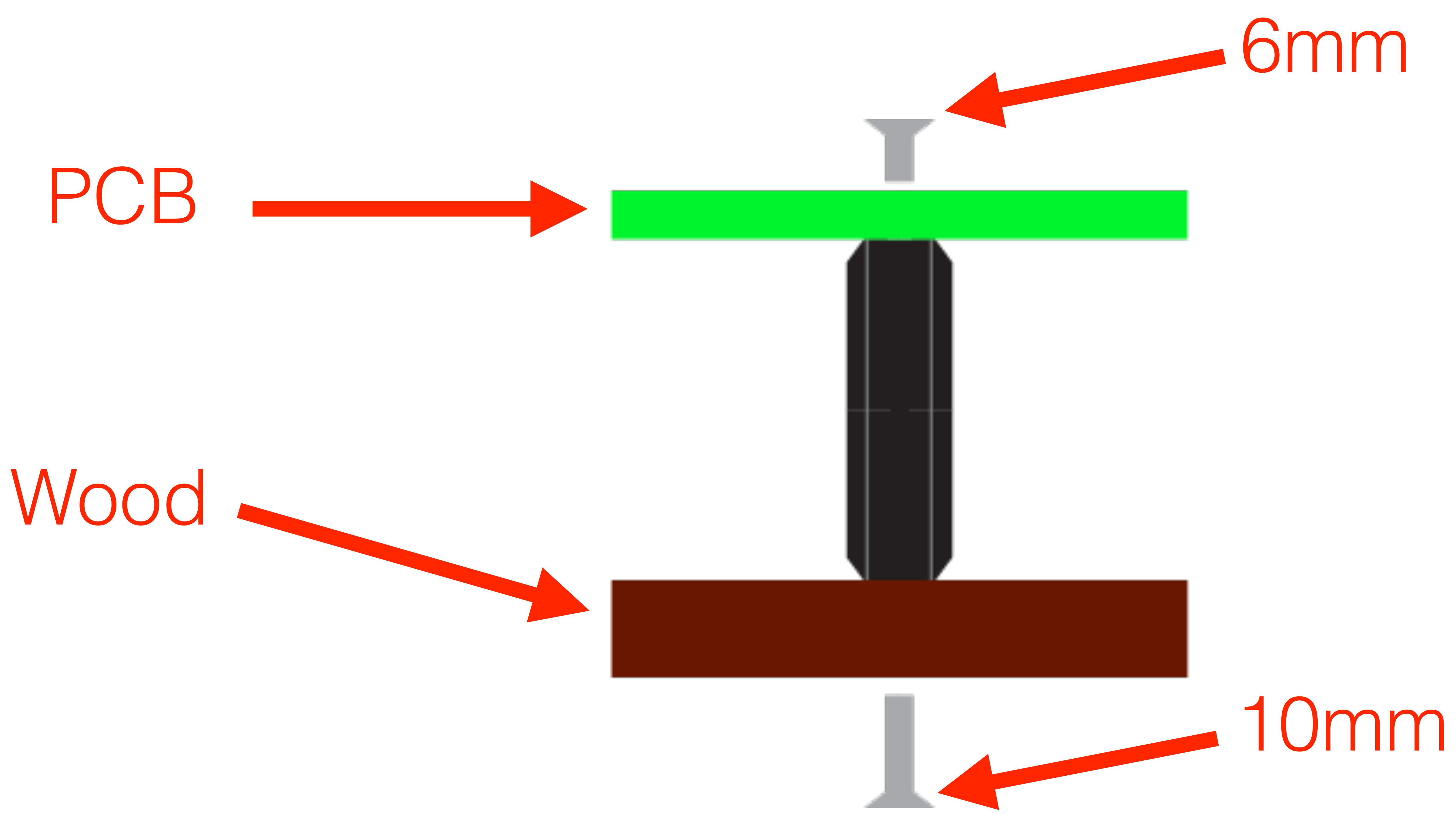
Solder the Wire to the board



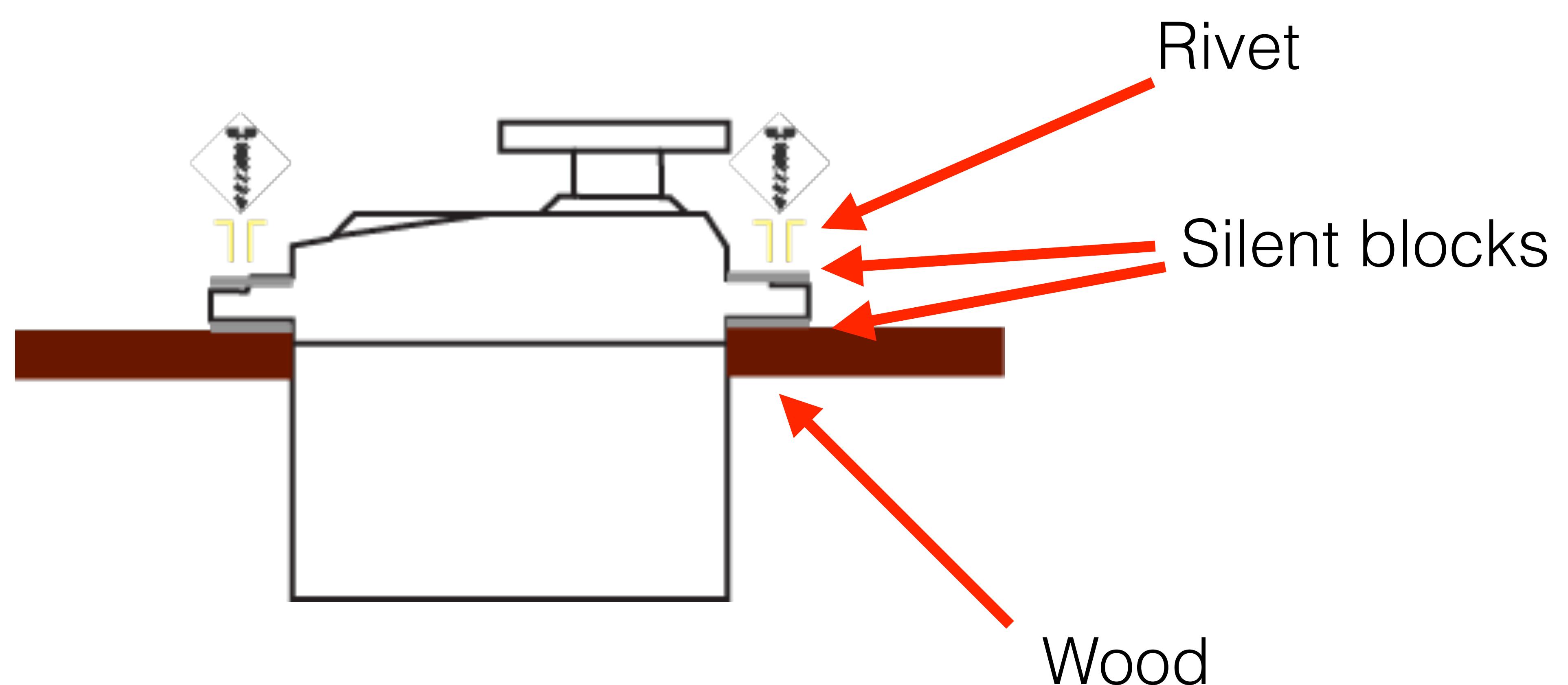
Check the wiring



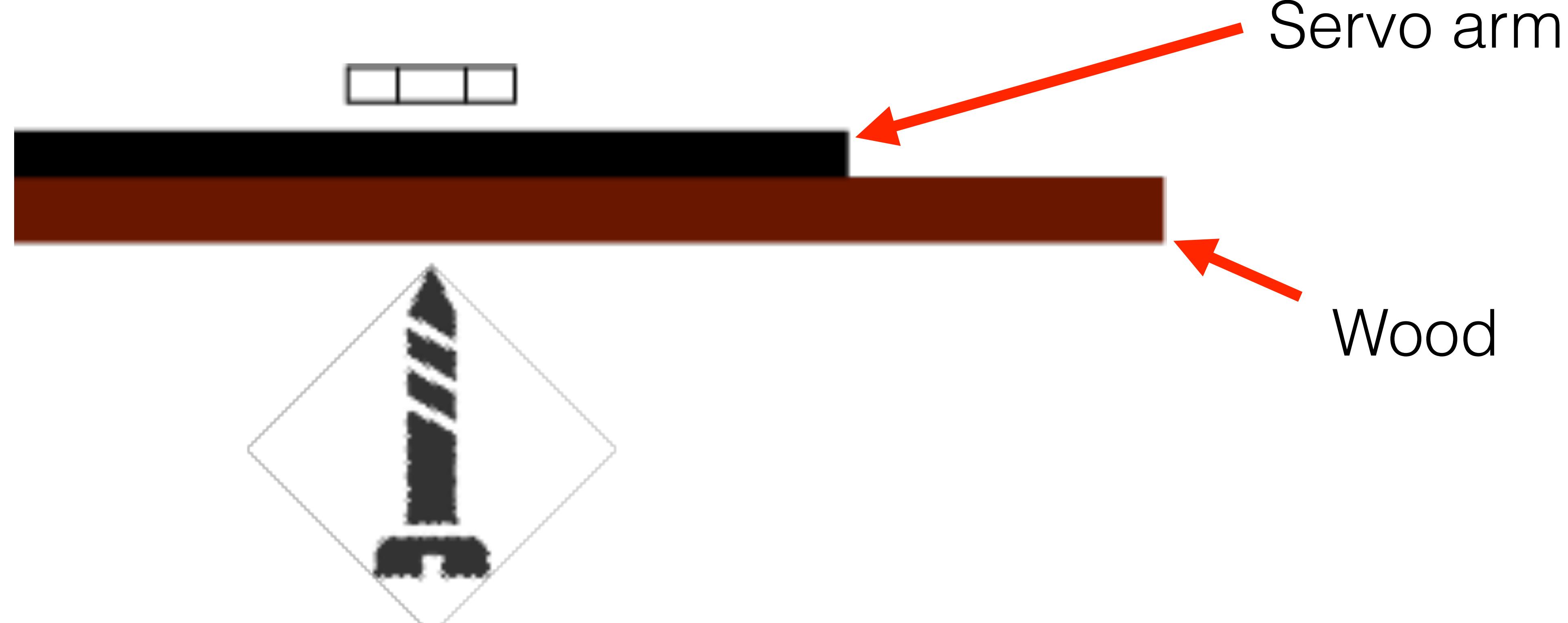
Mount the PCB in the box



Screw the servo



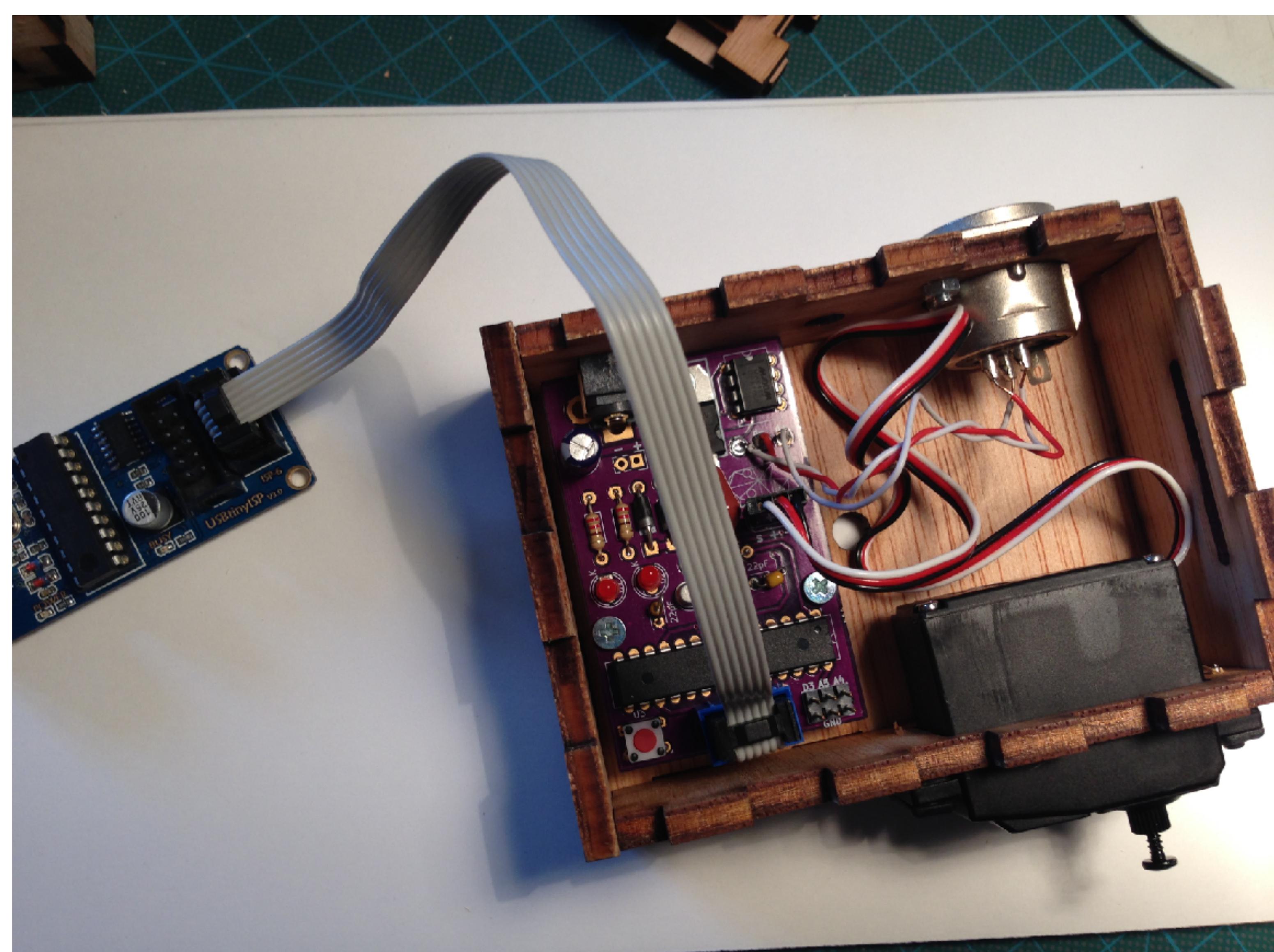
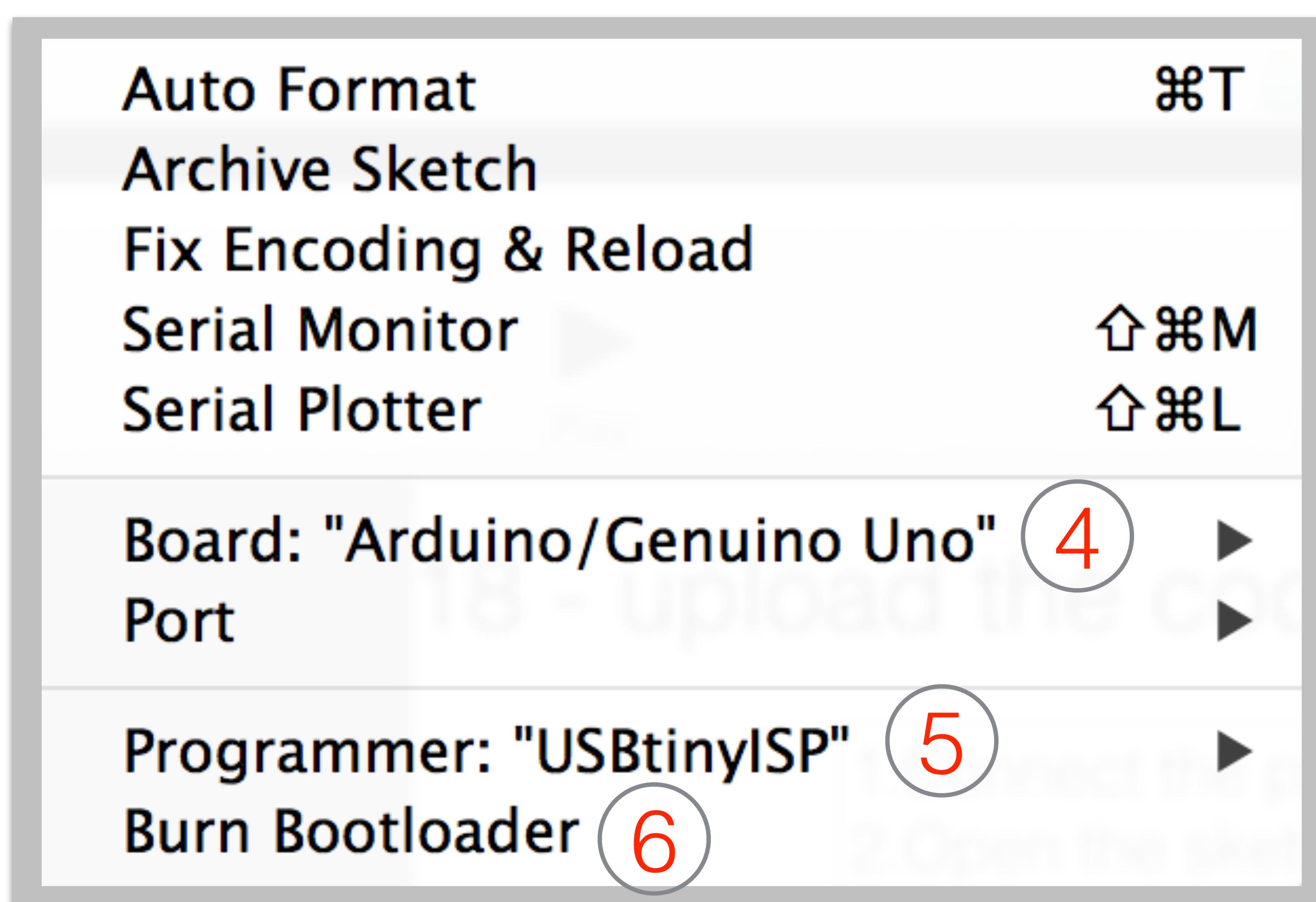
Screw the flap and cut the screws



Code

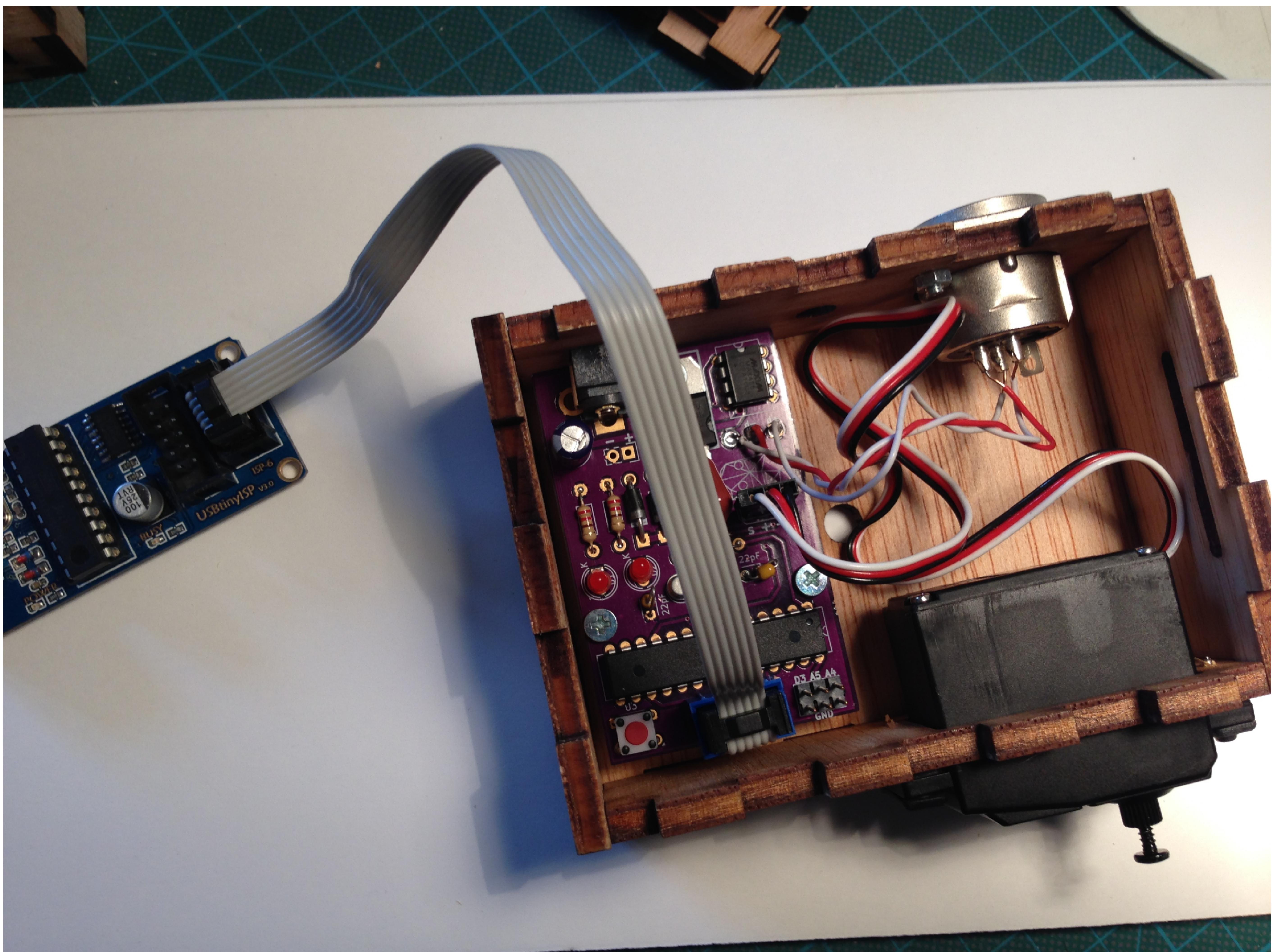
Upload the code using Arduino IDE

1. Connect the programmer (AVRTinyISP)
2. Place the DMX serial folder in the Arduino library folder.
3. Open the sketch (Shutter.ino)
4. Select “Tools->Board->Arduino/Genuino Uno”
5. Select “Tools->Programmer->USBTinyISP”
6. Select “Tools->Burn boot loader
7. Select “Sketch->upload using programmer”



Upload the code (PlatformIO)

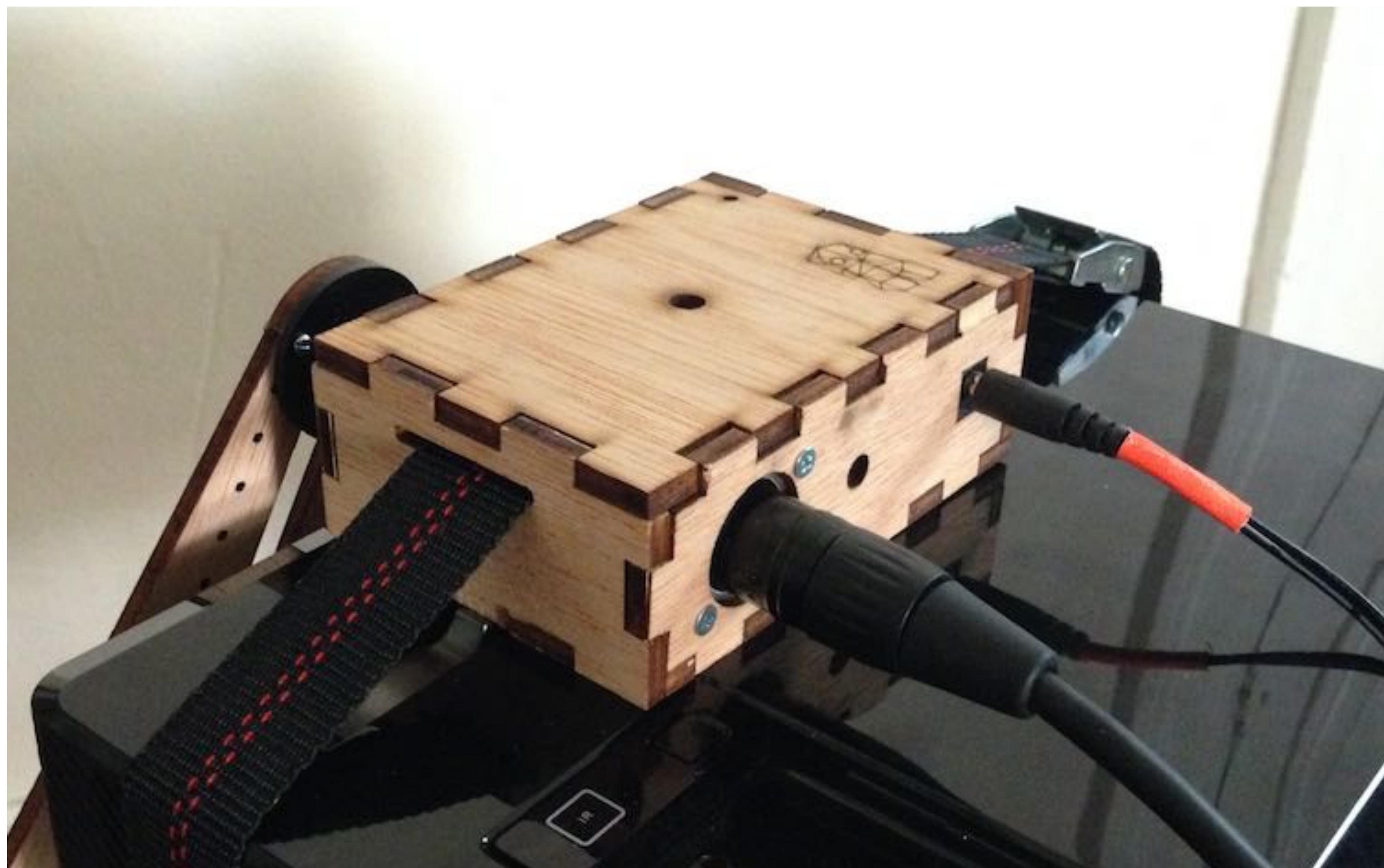
1. Connect the programmer (AVRTinyISP)
2. Open the sketch
3. Go to “PlatformIO->Upload”



Assign DMX address

1. Press the switch
 2. Send the DMX channel you want to assign at full level (only one channel).
 3. Release the switch
 4. Cut the DMX channel
- Note : if you send multiple channels, only the highest one will be recorded.

Mount the flap



Hack it !

Several pin are left free so you can add functionalities to the shutter.
The code is available on github, you can modify it as you want

Tested ideas :

- Make it progressive
- Add a button for manual mode
- Add an IR diode to shut down the beamer
- Add a DMX output
- Create a custom flap
- Transform your shutter into a color changer.

Rig and safety

- The shutter box can be held by a belt (see previous picture)
- You can add an additional sling by passing it through the two front holes.
- You can paint the shutter with fire retardant paint in order to have it fireproof.

Schematics

