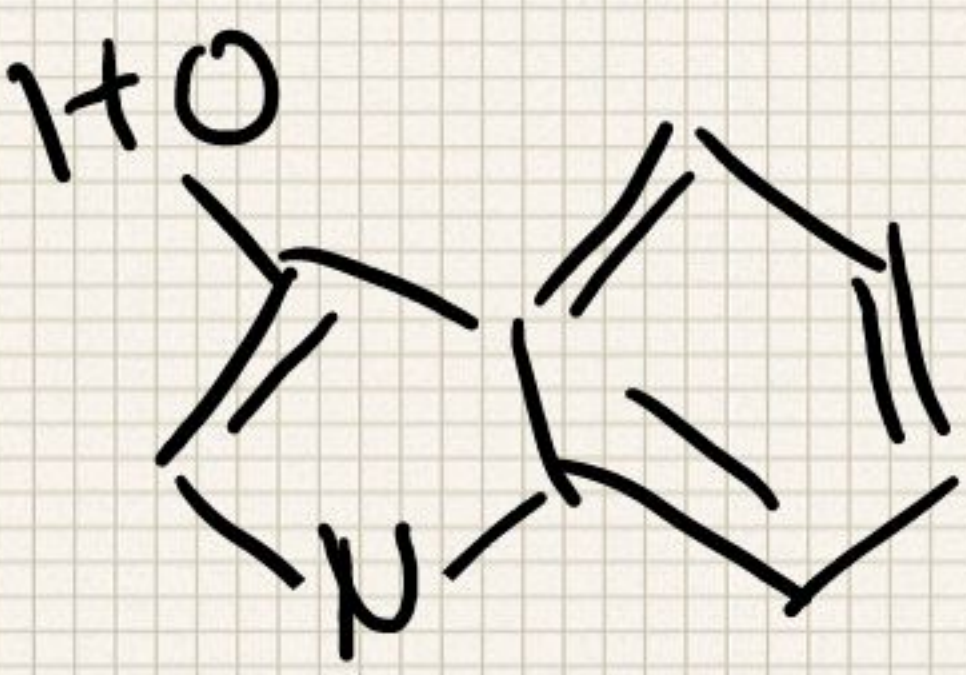
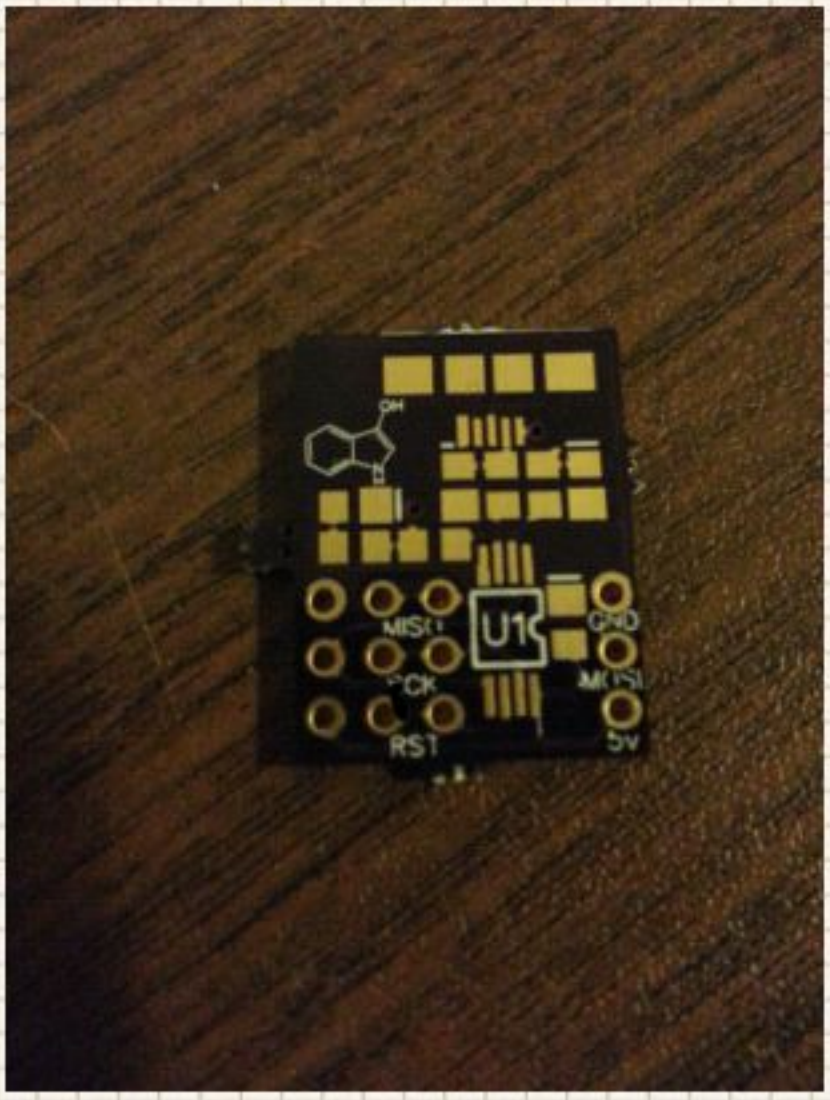
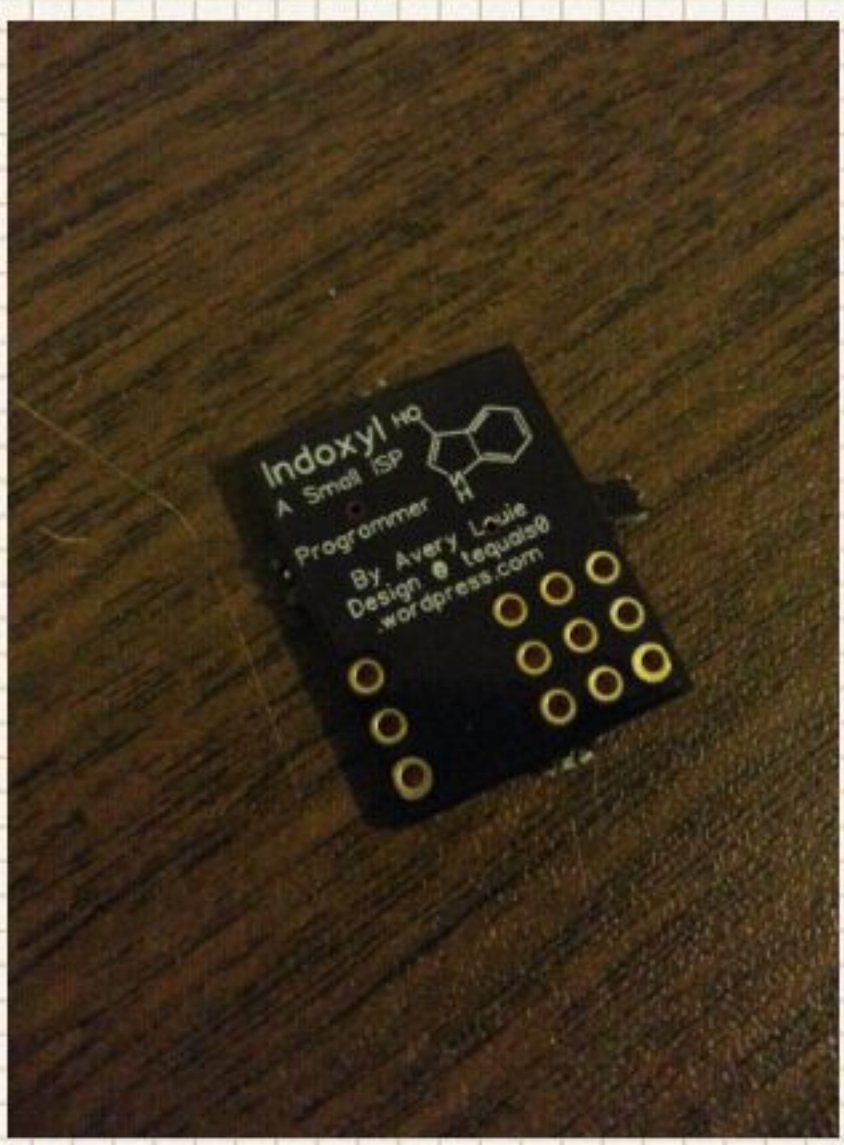
FNDOXYL ASSEMBLY GUIDE



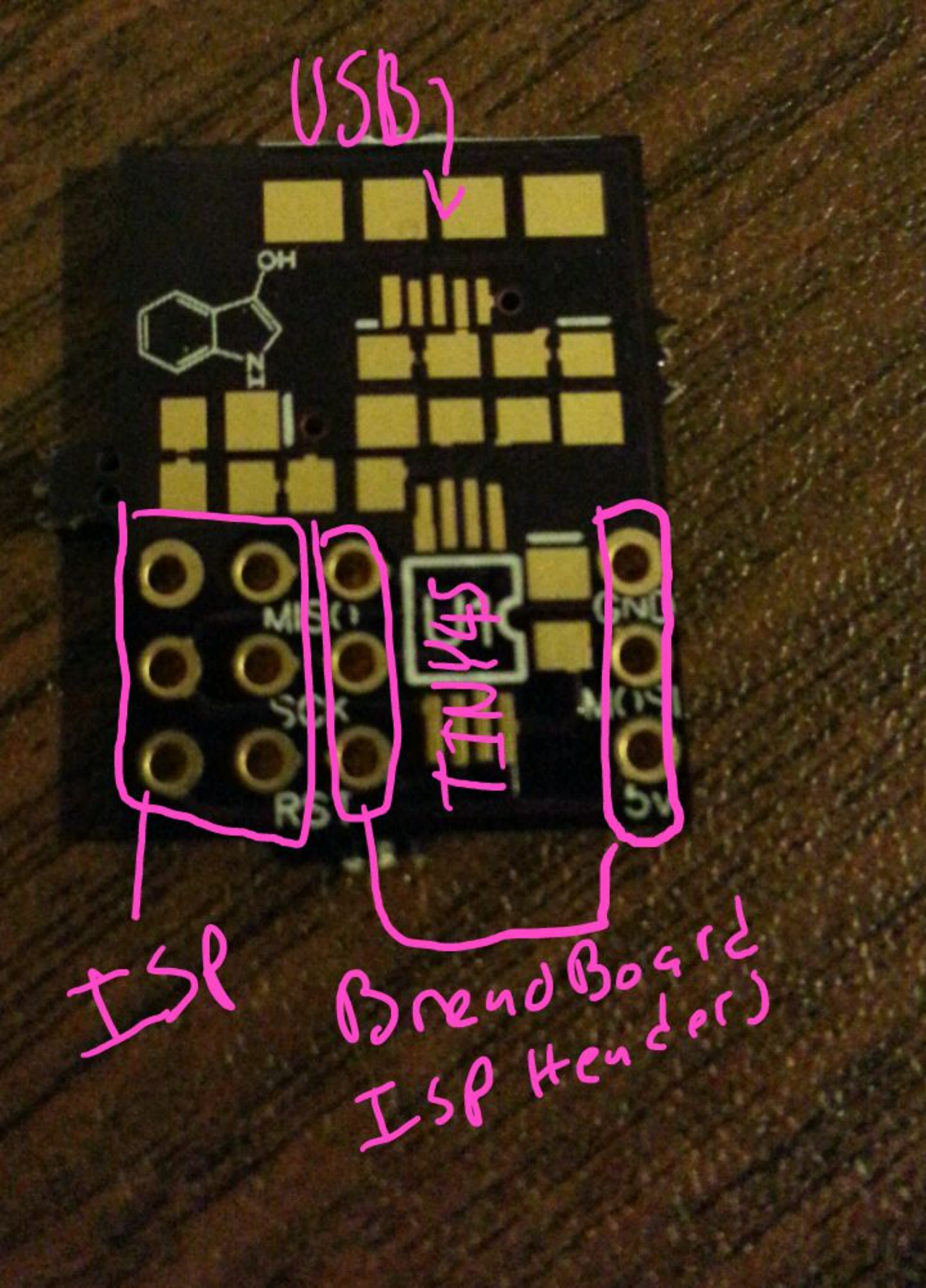
USBTINY ISP

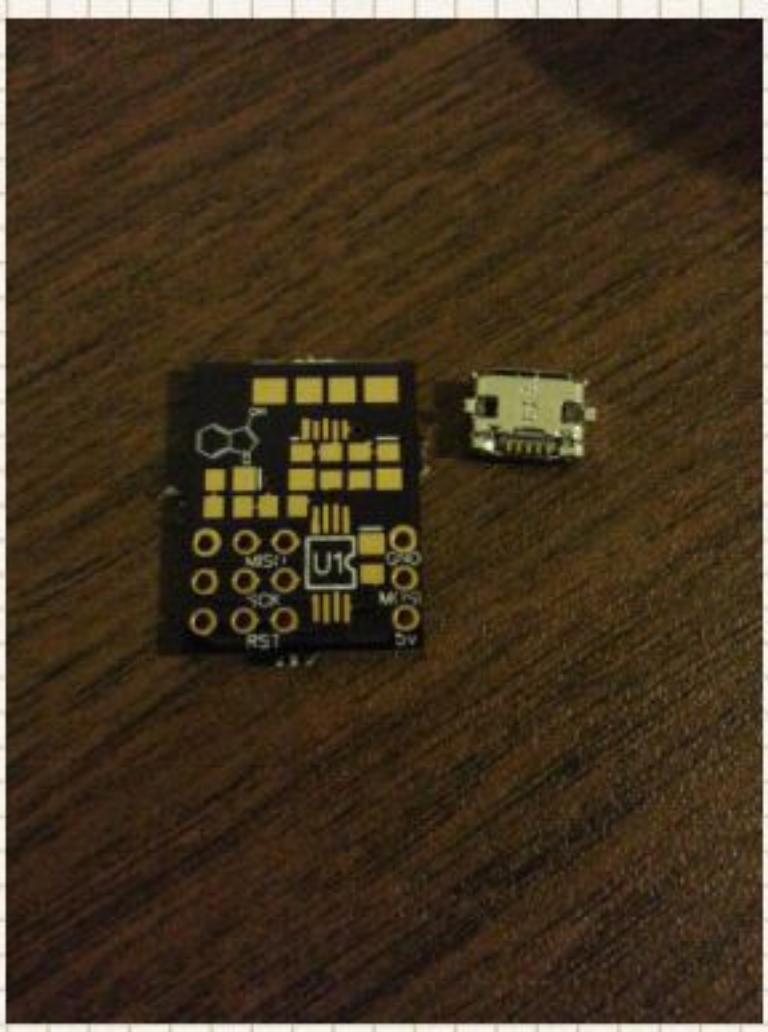




FRONT BACK

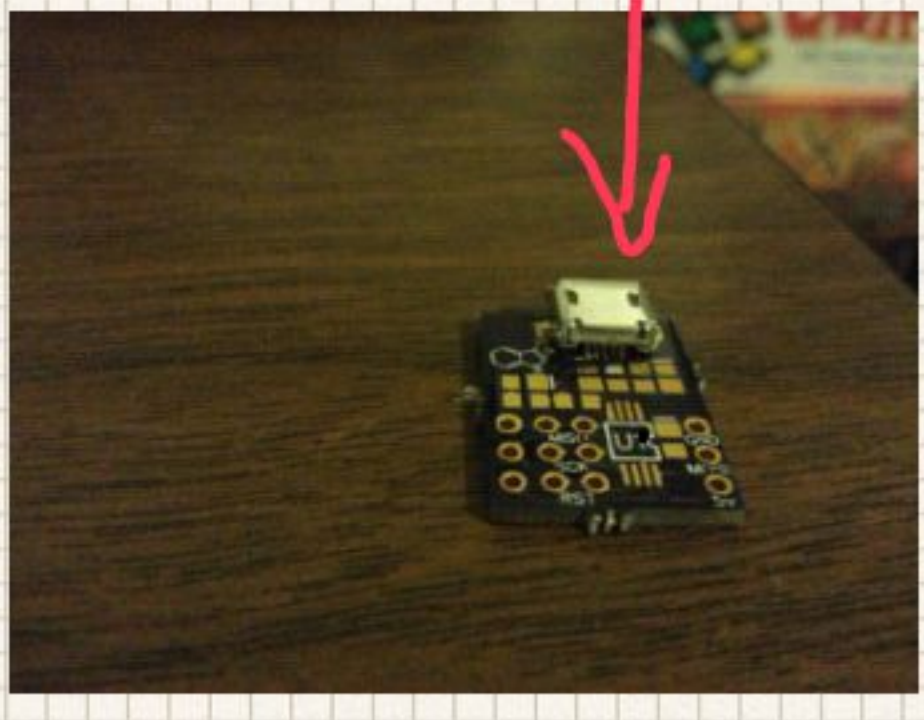
Lets make
Thisching!


USB
OH
N
MISO
SCK
RST
GND
MOSI
5V
TEMPS
ISP
Breadboard
ISP Header



#1: USB con. tin 1 pad and tack it on.

Then CAREFULLY

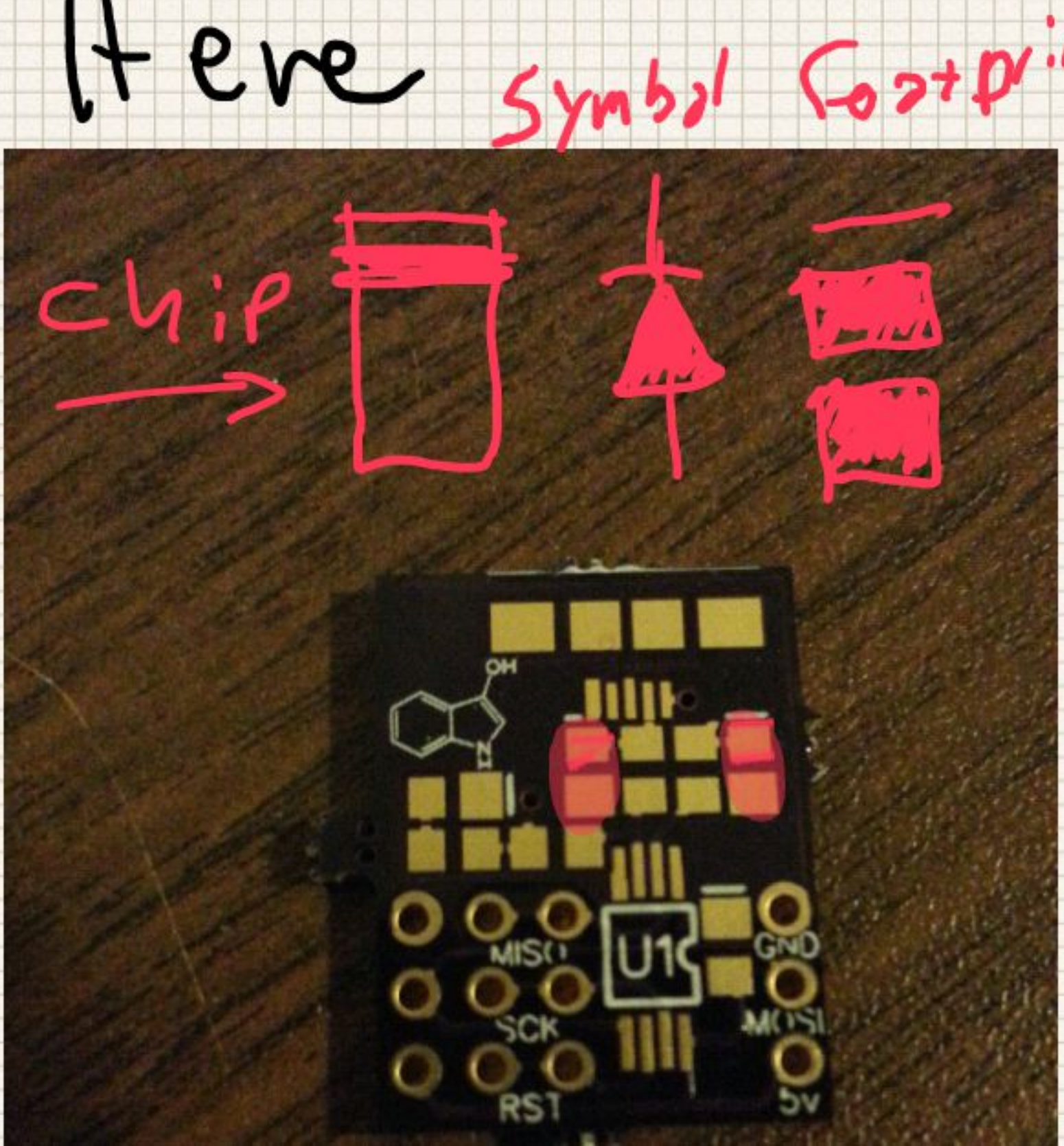


Do the rest.

+est

Connectivity at this point. After this, it is hard to fix!

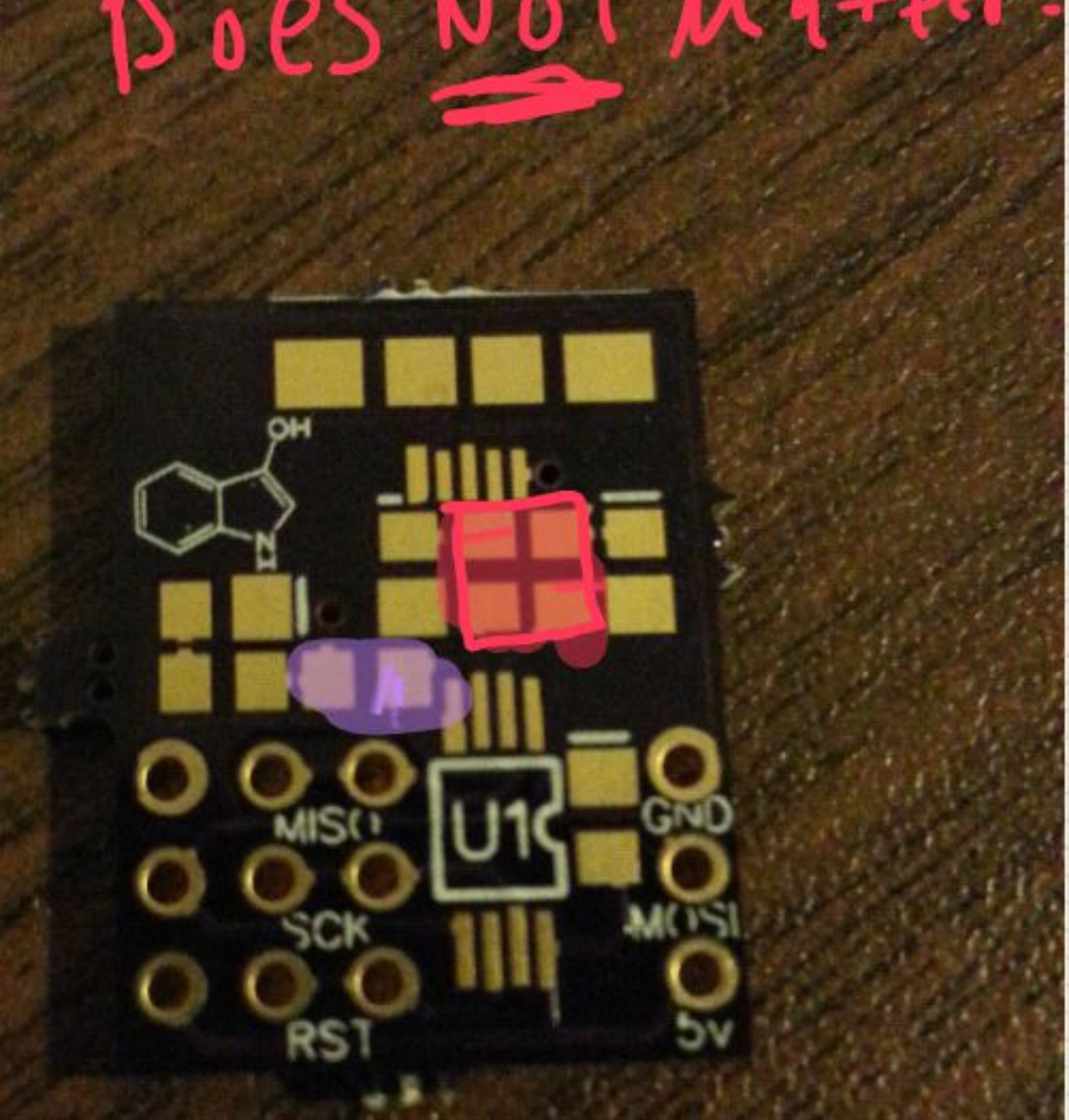
Diodes are next. They are small and go here



Next up: 68Ω Resistors
And 1.6kΩ Resistor

68Ω = [redacted] 1K6 = [redacted]

ORIENTATION
Does NOT matter.

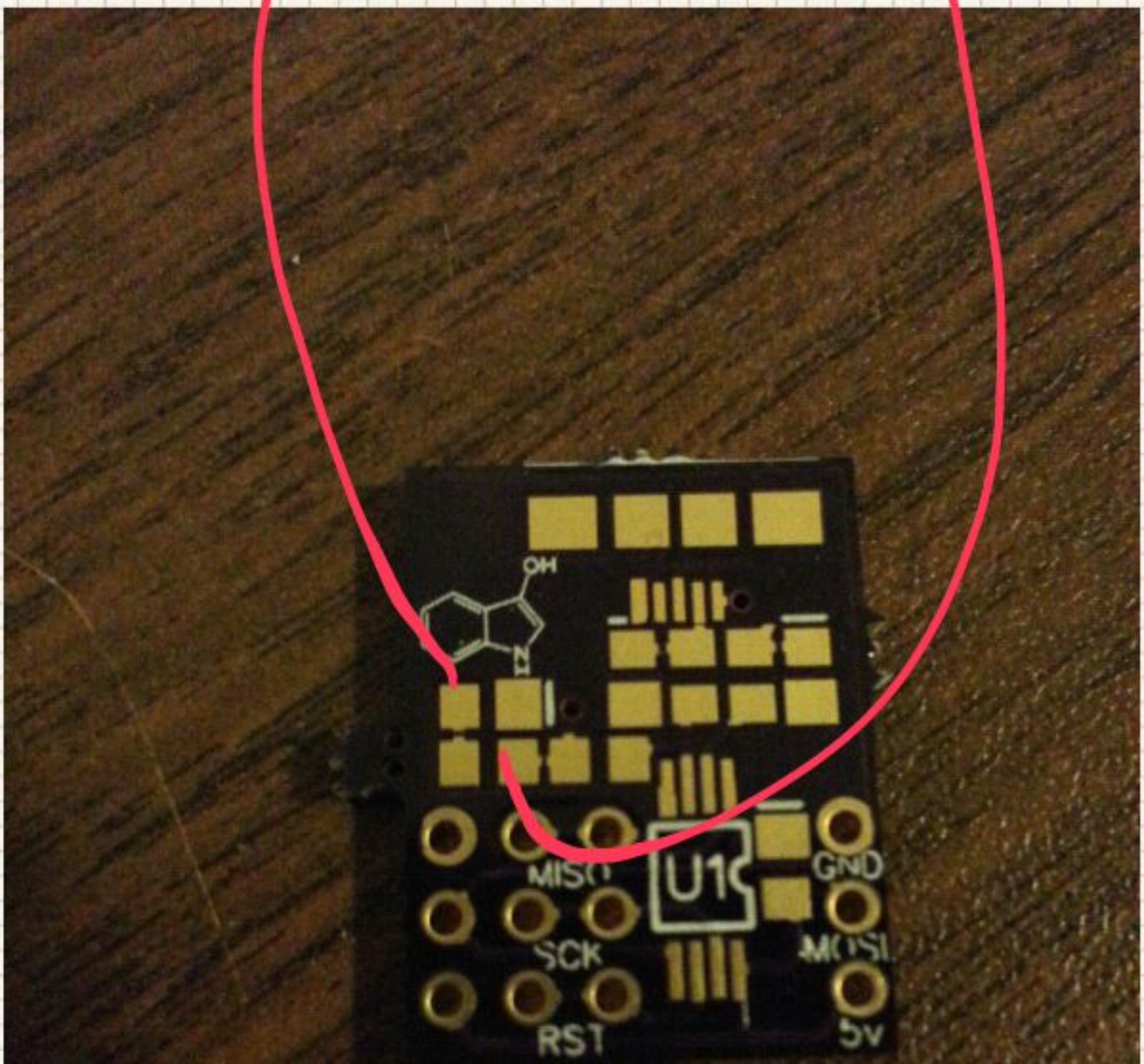


Now we add the dummy LED & Resistor

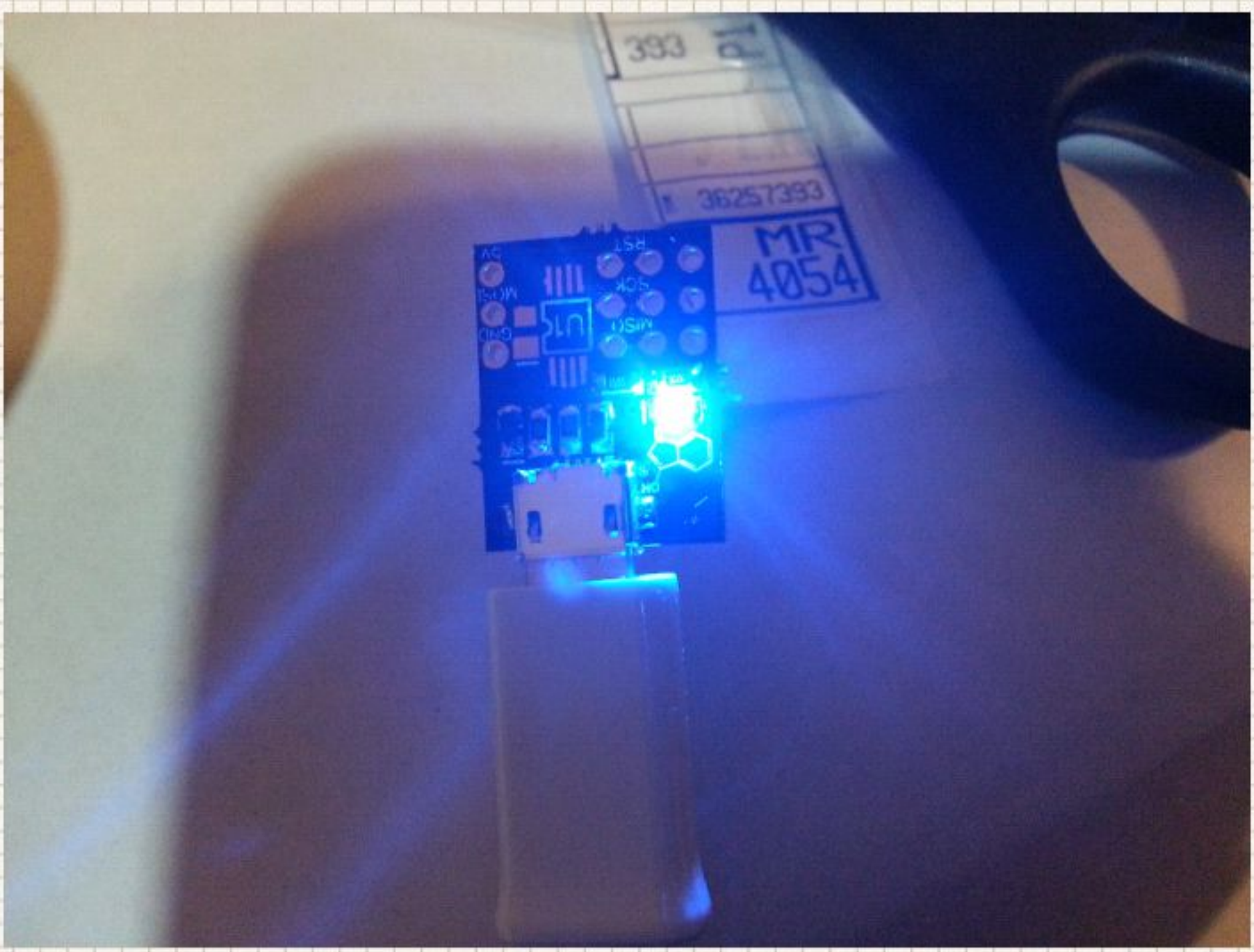
Led

Dois = cathode

Res > 250Ω

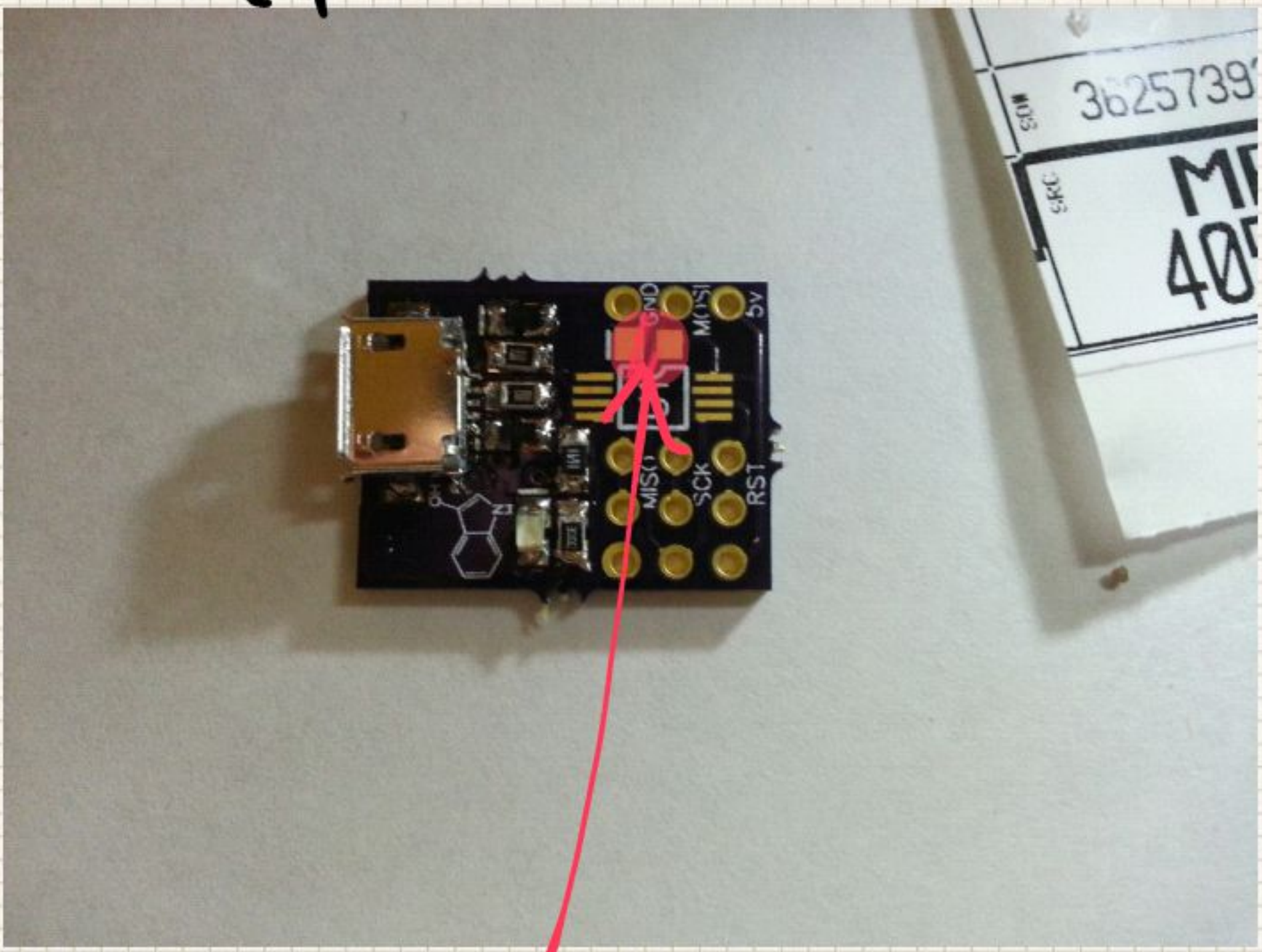


Test LED



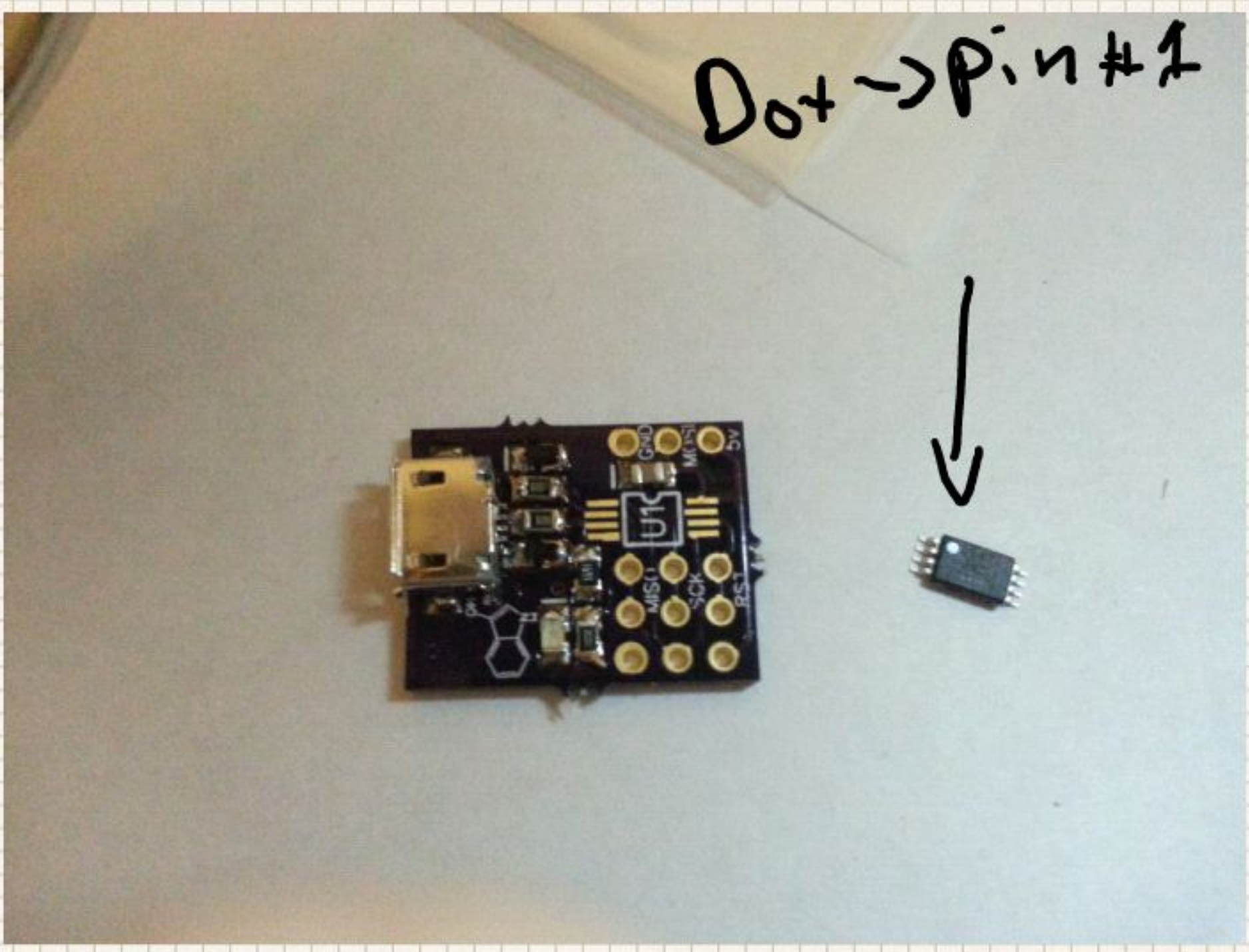
for great Justice

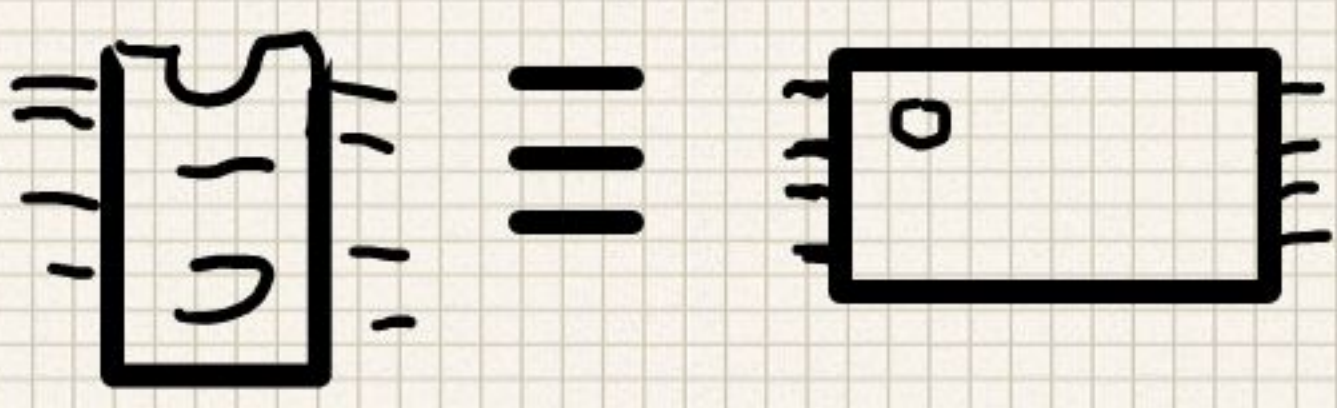
Last 0805!
Capacitor time



goes here.
Not polarized.

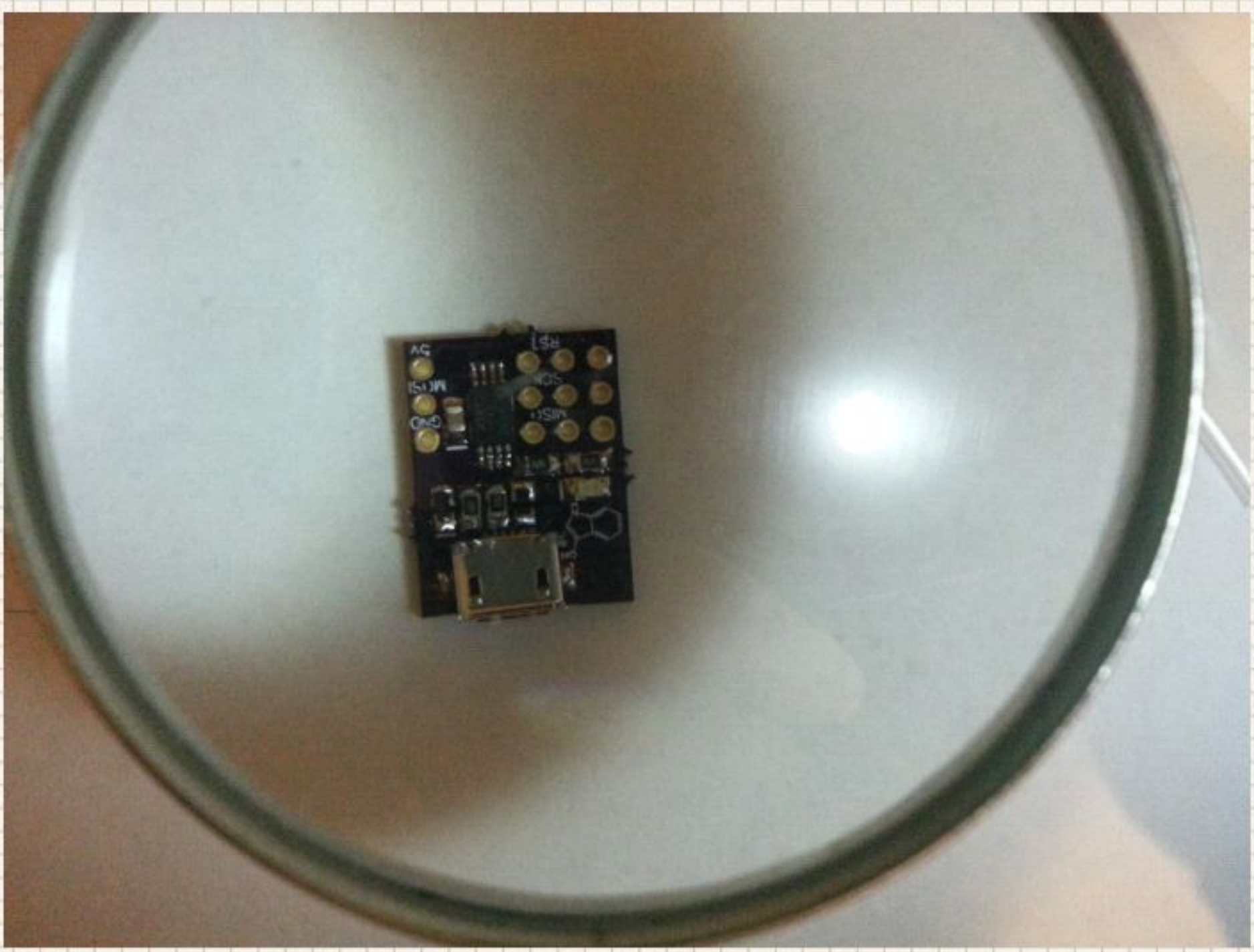
Time for the Chip!





All done!

Optional: Header pins



Needed:

Firmware.

Programming commands:

```
$: sudo avrdude -c
avrispmkii -P usb -p
attiny45 -U
flash:w:vusbtiny.hex
```

Set fuses with:

```
Sudo avrdude -c avrispmkii
-P usb -p attiny45 -U
lfuse:w:0xe1:m -U
hfuse:w:0x5d:m -U
```

efuse:w:0xff:m

That should be it! Now should lsusb/ enumerate as:

```
046d:c52b Logitech, Inc. Unifying
1781:0c9f Multiple Vendors USBtiny
413c:8187 Dell Computer Corp. DW375
0a5c:5800 Broadcom Corp. BCM5880
```

Visual BOM

INDOXYL BOARDS 1.0

20-MAY-2013 11:46 DIGI-KEY 800 344-4539
P/N 609-4053-1-ND
MFG P/N 10104111-0001LF
DESC CONN RCPT STD MICRO USB TYPE AB
IDX: 1

20-MAY-2013 11:46 DIGI-KEY 800 344-4539
P/N 641-1025-1-ND
MFG P/N CZRUS2C3V6
DESC DIODE ZENER 3.6V 150MW 0603
IDX: 5

20-MAY-2013 11:46 DIGI
P/N RMCF0805JT68R0CT-ND
MFG P/N RMCF0805JT68R0
DESC RES 68 OHM 1/8W 5% 0805

8-MAR-2013 11:16 DIGI-
P/N P388CCT-ND
MFG P/N ERJ-6ENF3000V
DESC RES 300 OHM 1/8W 1% 0805 SMD

20-MAY-2013 11:46 DIGI-
P/N RMCF0805FT1K69CT-ND
MFG P/N RMCF0805FT1K69
DESC RES 1.69K OHM 1/8W 1% 0805

DK:
160-1579-1-ND
MFG:
LTST-C170
TBKT
LED 0805
BLUE
200mA
green dot

20-MAY-2013 11:46 DIGI-KEY
P/N 445-7534-1-ND
MFG P/N C2012X7R1H104K085AA
DESC CAP CER 0.1UF 50V 10% X7R 0805

Atting 45-
20 XU (-ND)
8TSSOP

A++

excellent Quality Boards. FAST. USA!