Hardware hack for the tea light upgrade

Lunartec 6er-Set Akku-LED-Teelichter mit Ladestation, Fernbedienung, 15 Std.

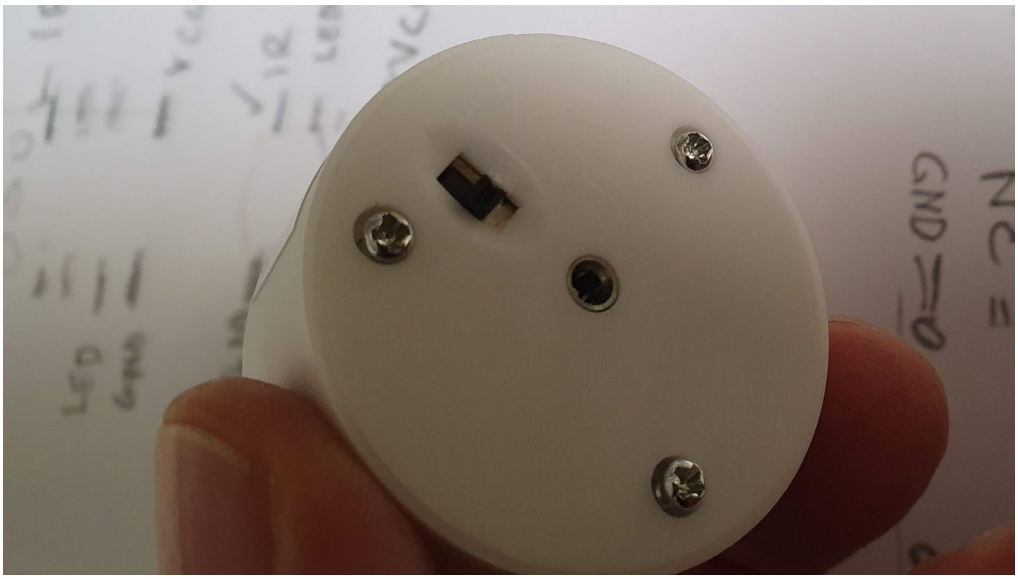
Hardware Instructions

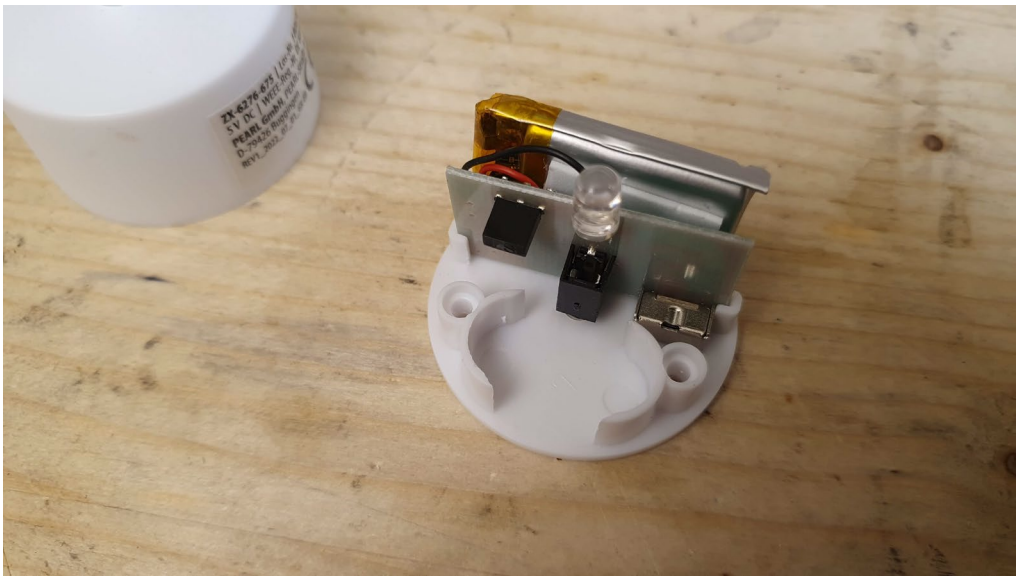
On the following 11 pages
I explain how you can replace the existing chip of a rechargeable tea light with a standard ATiny85 microcontroller on which you can install your own firmware.

Firmware can be found here:

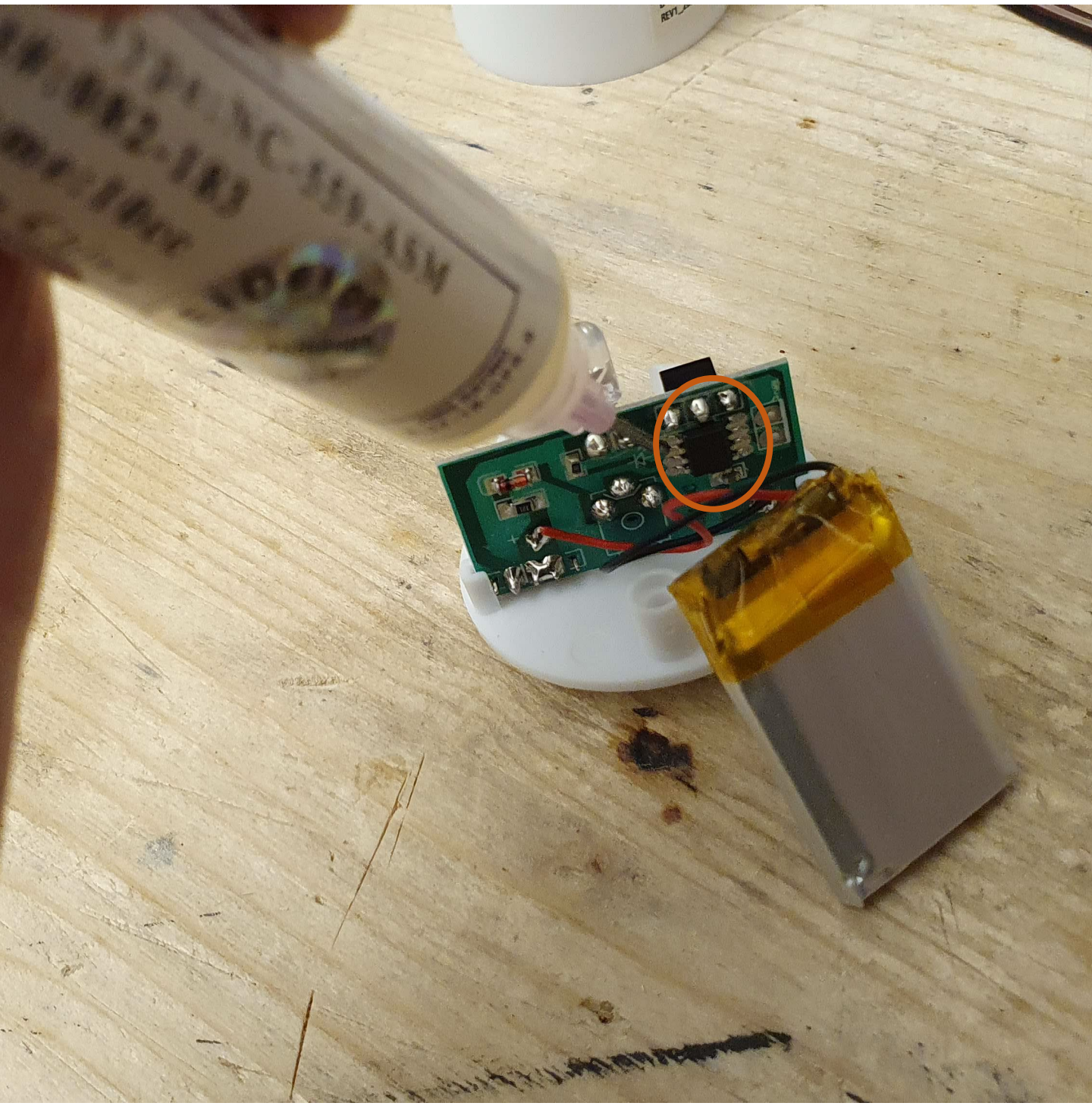
https://github.com/tscha70/LEDCandle

Open the candle by removing the screws on the base plate. And remove the base plate.

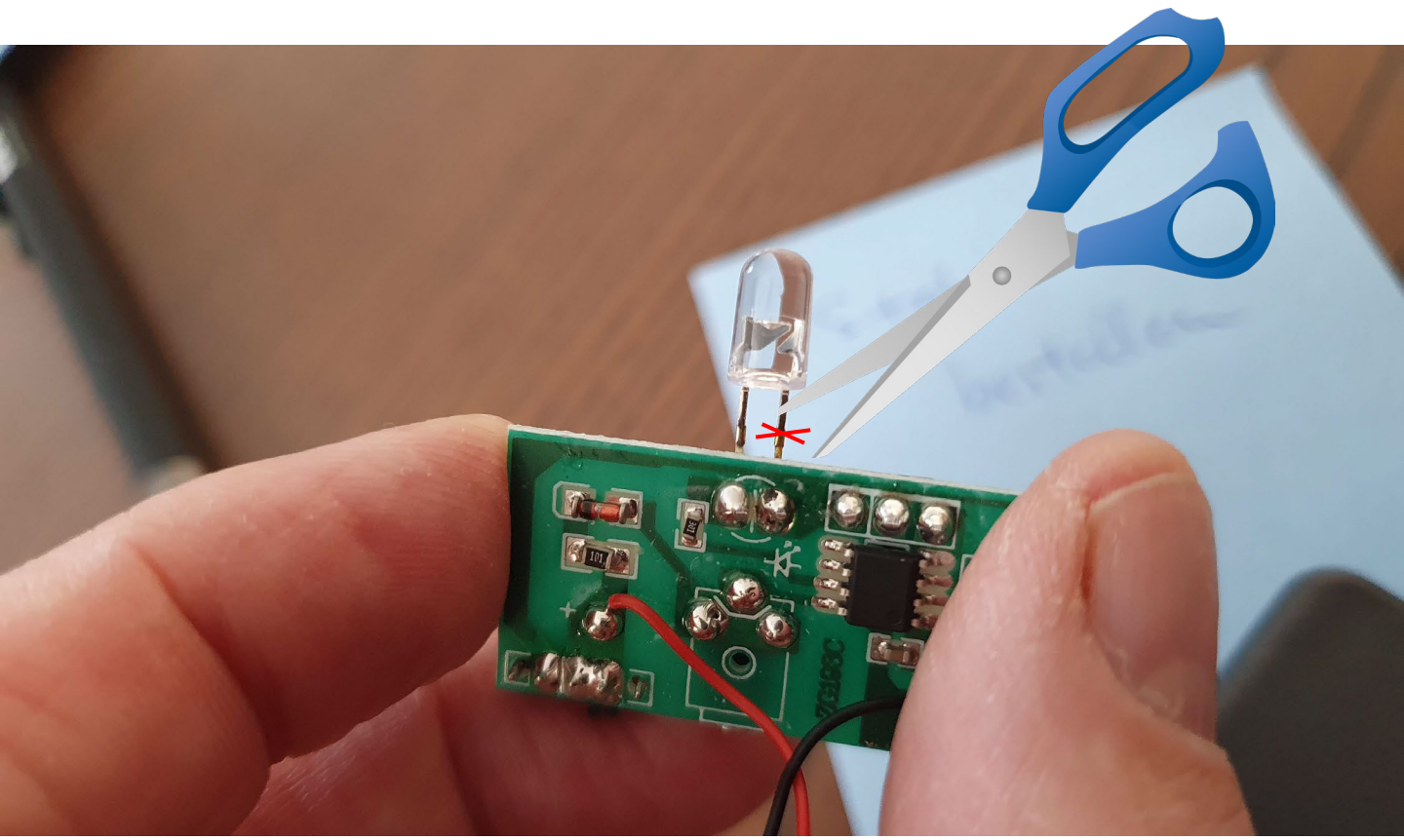




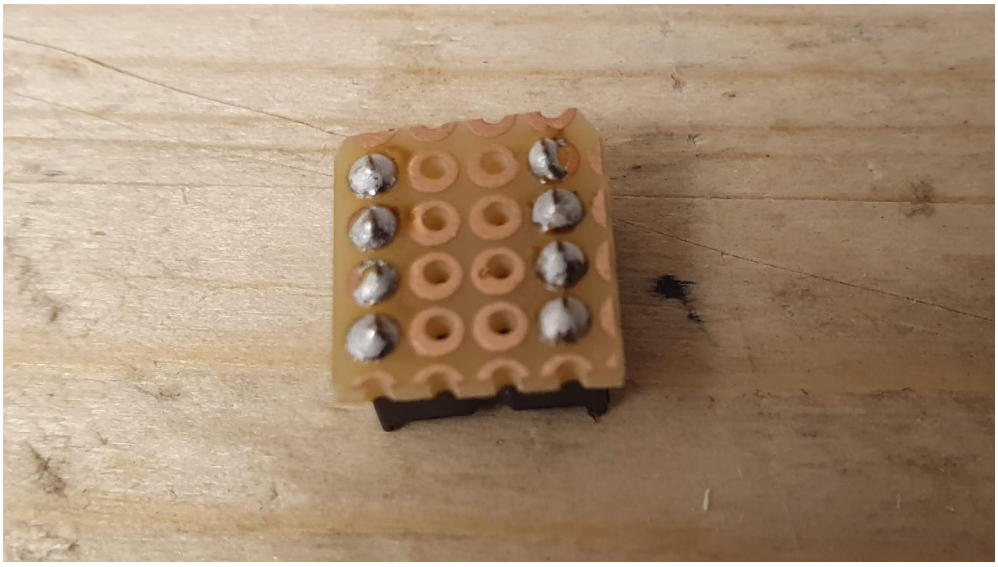
Desolder the chip by first applying flux and then using a hot soldering iron.

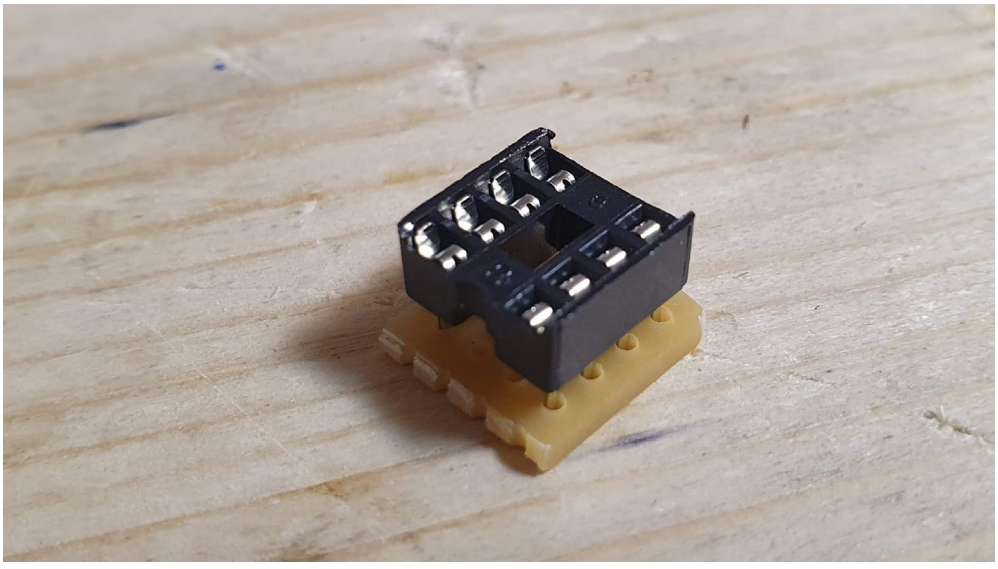


Separate the right leg of the LED from the circuit board.



Prepare an 8-DIP IC socket on a piece of perfboard.

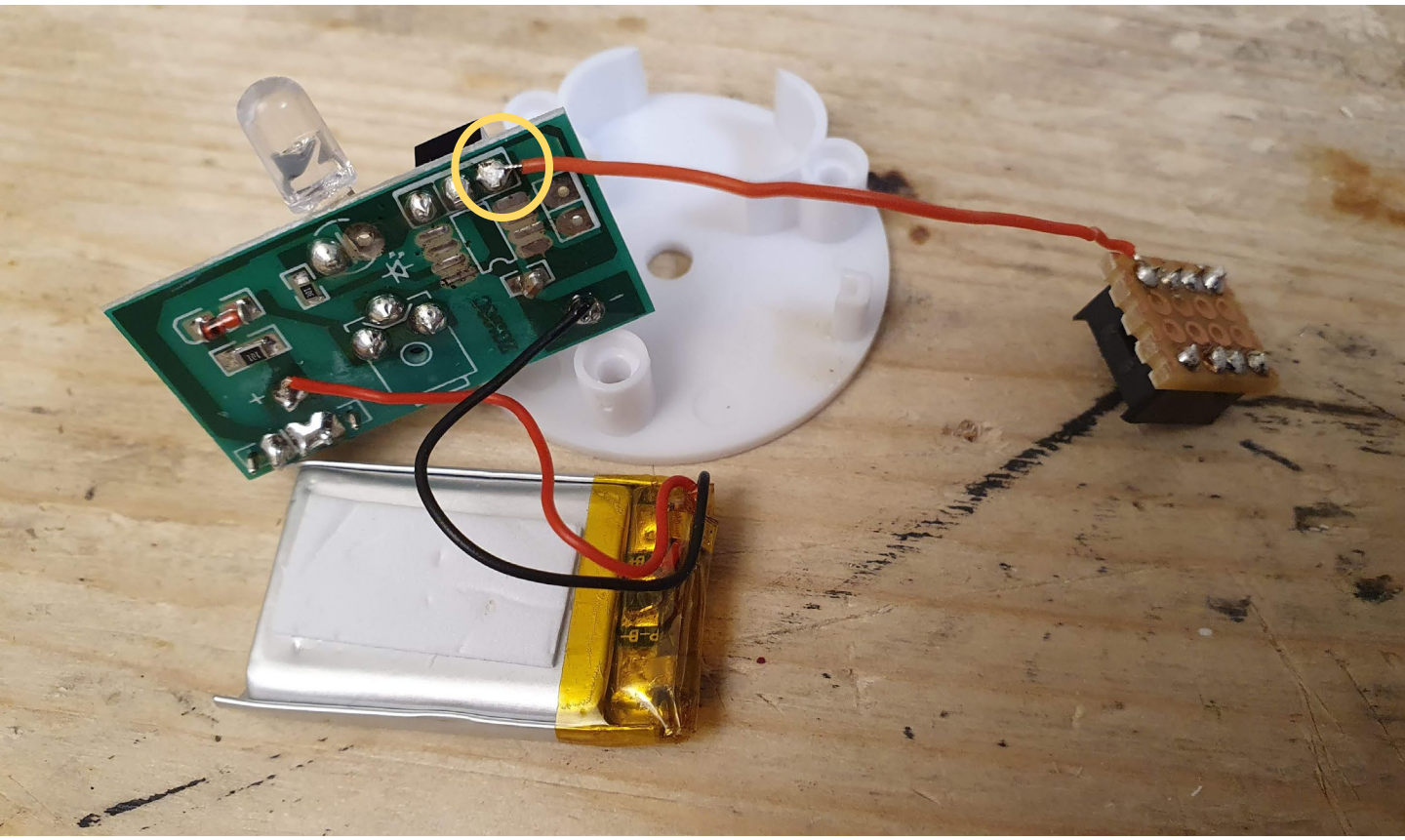




Solder Step 1 of 4

```
//                  +-\/-+
// (5)  PB5   1|     |8   Vcc
// (3)  PB3   2|     |7   PB2
// (4)  PB4   3|     |6   PB1  (1)  LED output  (PWM)
//      GND   4|     |5   PB0  (0)  IR Input
//                  +----+
```

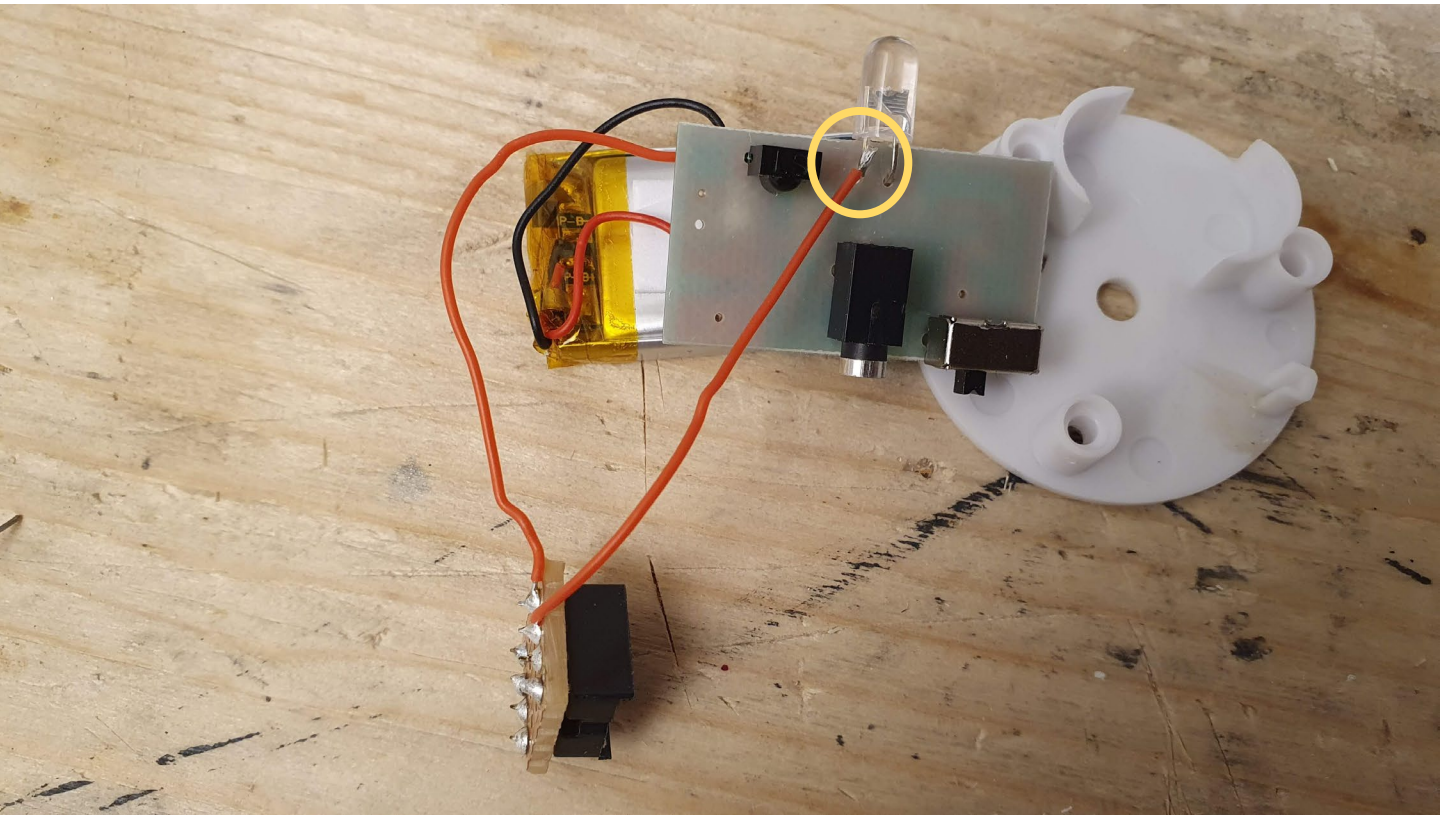
The IR-Connection is soldered to pin 5 (PB0) on the socket.



Solder Step 2 of 4

```
//                +-\/-+
// (5)  PB5   1|     |8   Vcc
// (3)  PB3   2|     |7   PB2
// (4)  PB4   3|     |6   PB1 (1) LED output (PWM)
//      GND   4|     |5   PB0 (0) IR Input
//              +-----+
```

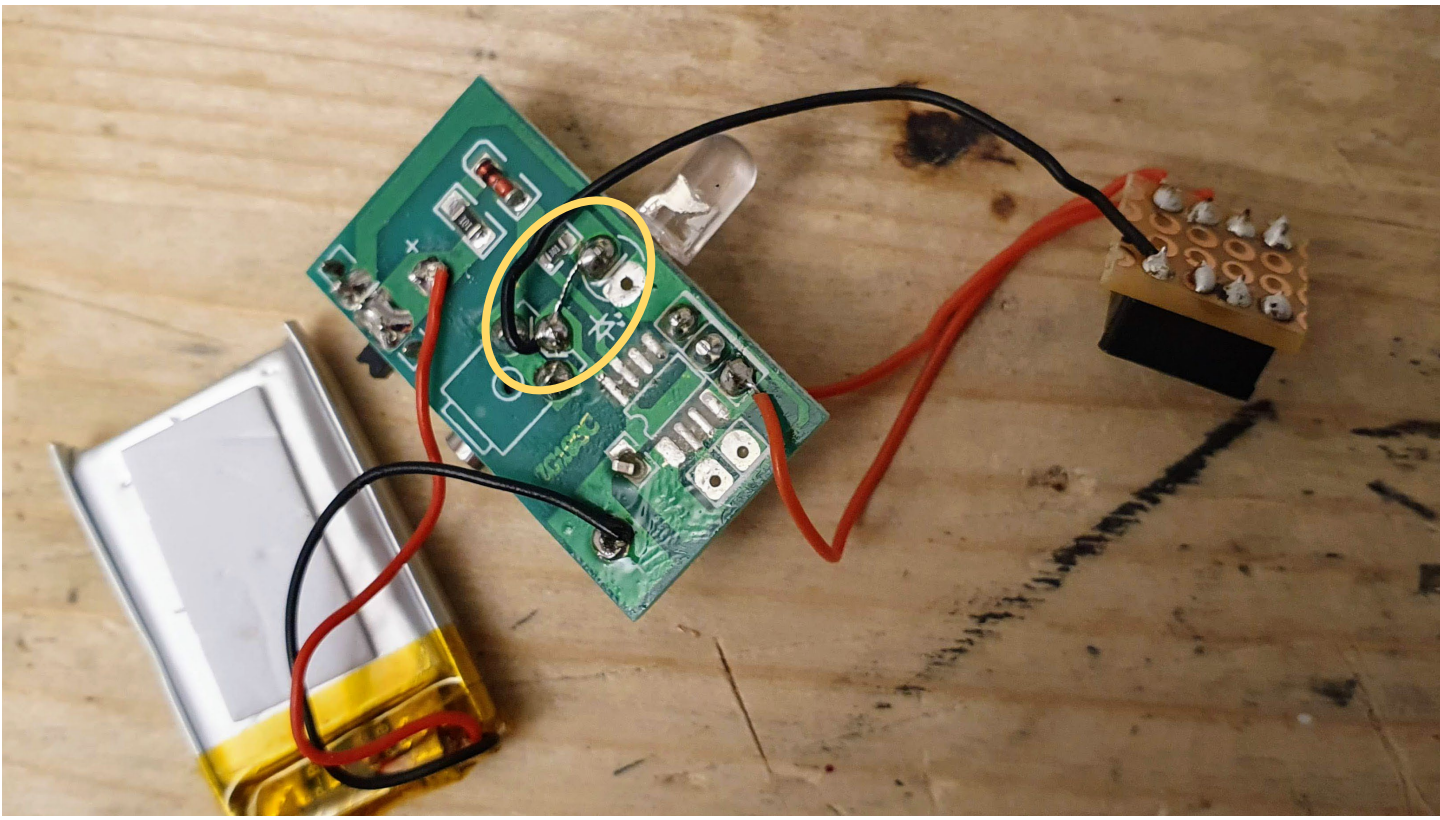
The positive LED-pin is soldered to pin 6 (PB1) on the socket.
(Remember, the LED-leg is disconnected from the circuit board)



Solder Step 3 of 4

```
//                  +-\/-+
// (5)  PB5   1|     |8   Vcc
// (3)  PB3   2|     |7   PB2
// (4)  PB4   3|     |6   PB1  (1)  LED output  (PWM)
//       GND  4|     |5   PB0  (0)  IR Input
//                  +----+
```

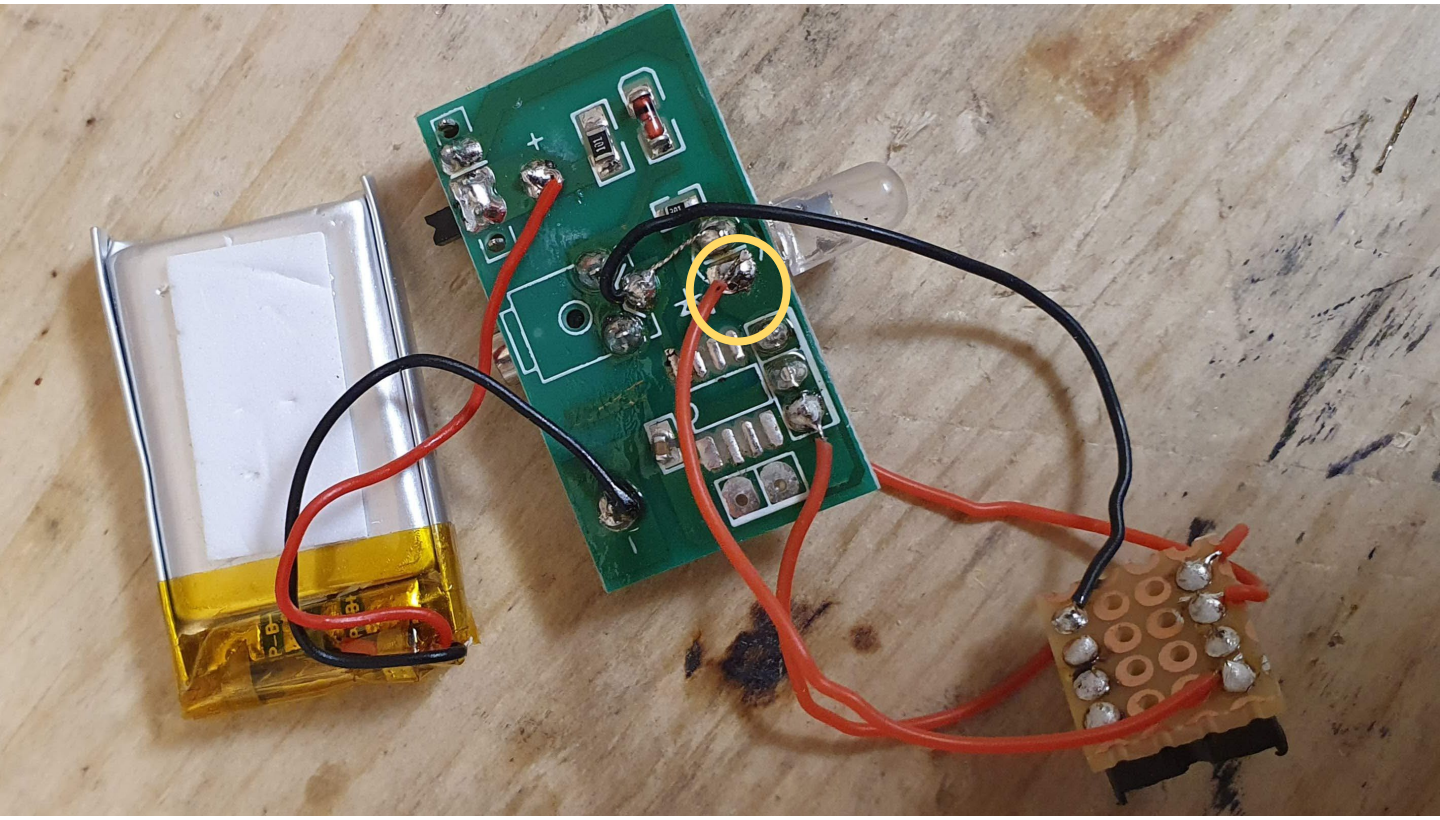
The ground pin 4 is soldered to the circuit board. The two points in the picture below must also be connected at the same time. This means that the LED is earthed.



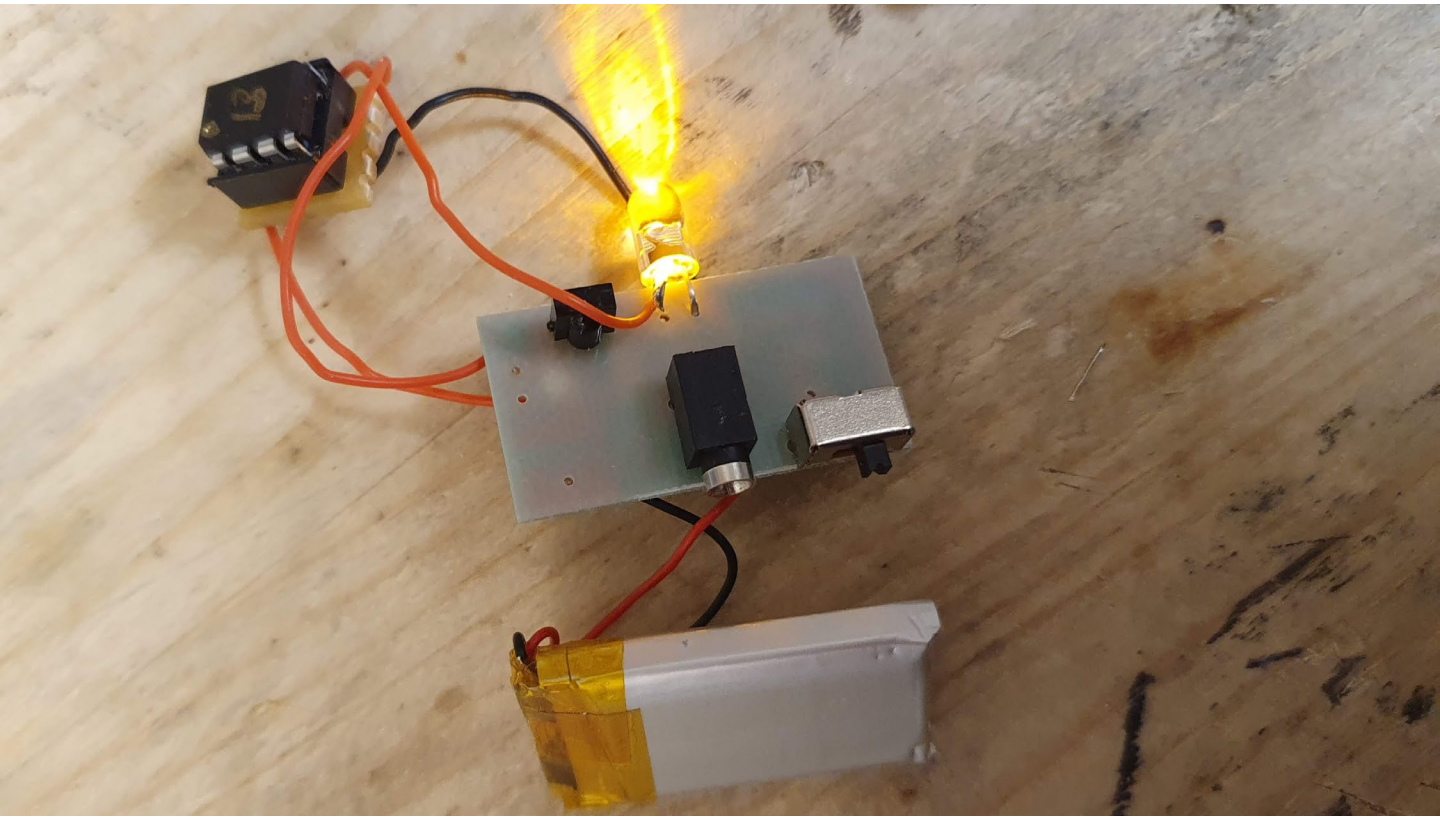
Solder Step 4 of 4

```
//                  +-\/-+
// (5) PB5   1|     |8   Vcc
// (3) PB3   2|     |7   PB2
// (4) PB4   3|     |6   PB1 (1) LED output (PWM)
//       GND 4|     |5   PB0 (0) IR Input
//                  +----+
```

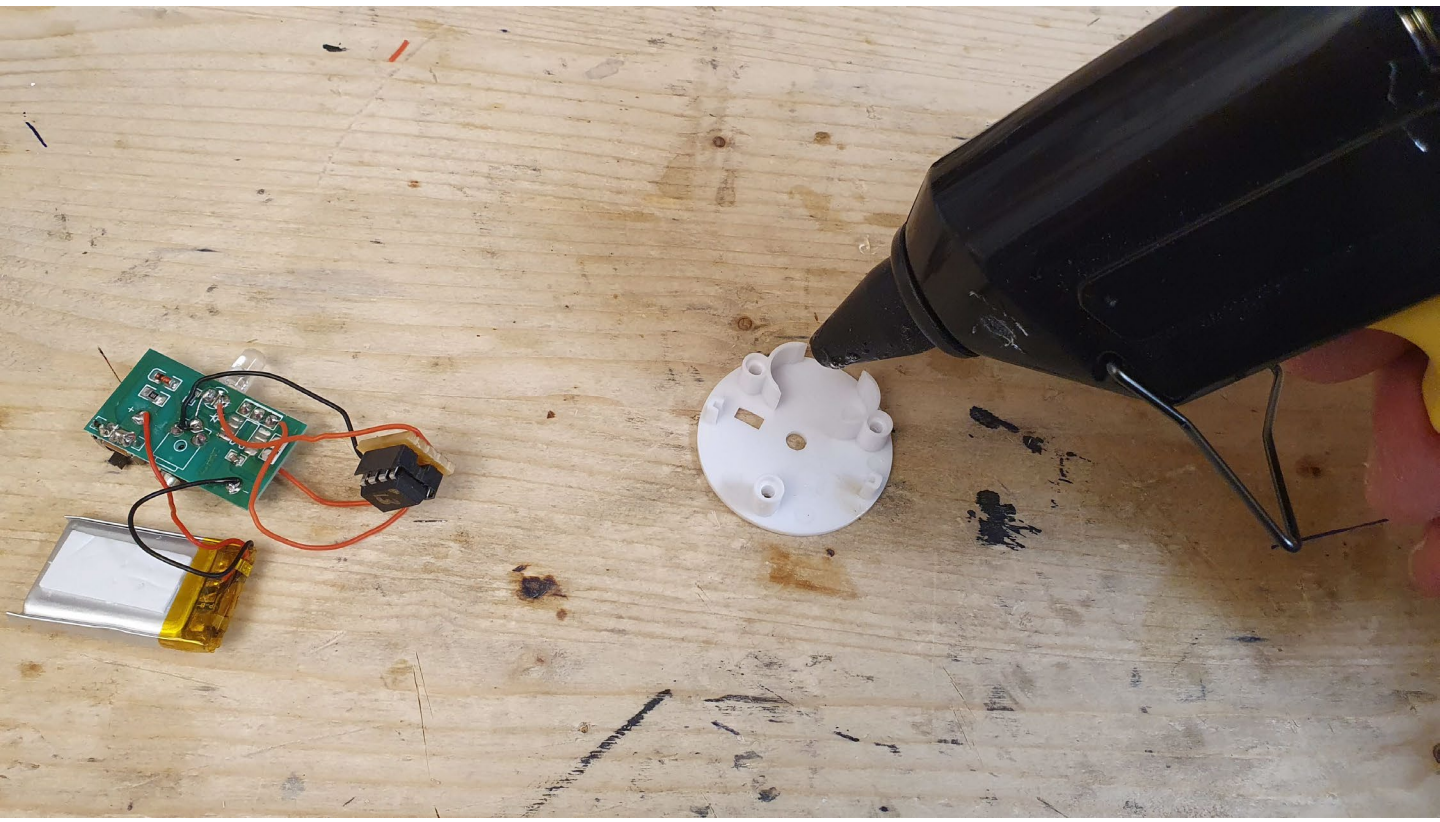
In the last step, the positive power source (VCC) is connected to pin 8 of the socket.



Now you can insert your own microcontroller (ATTiny85) and carry out a basic function test.



Then we can glue the chip socket into place with some hot glue.



We put everything together and we're done!