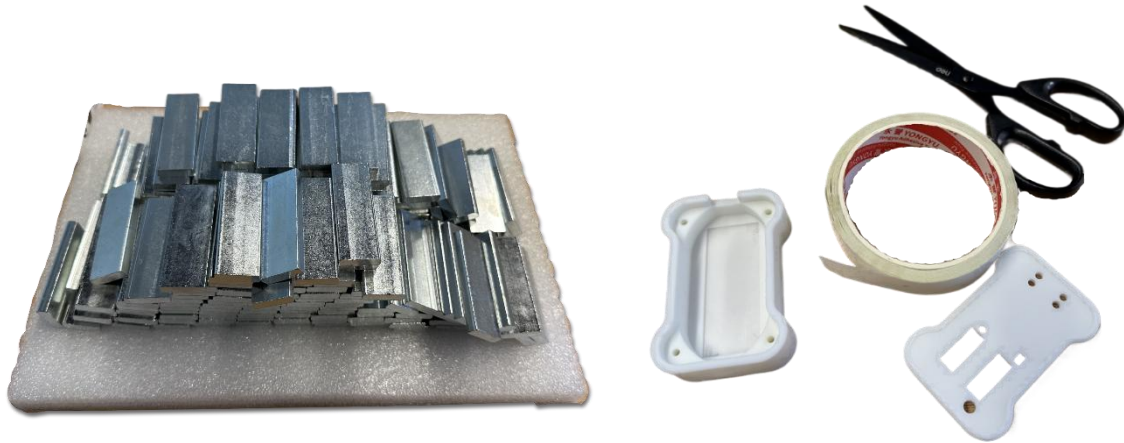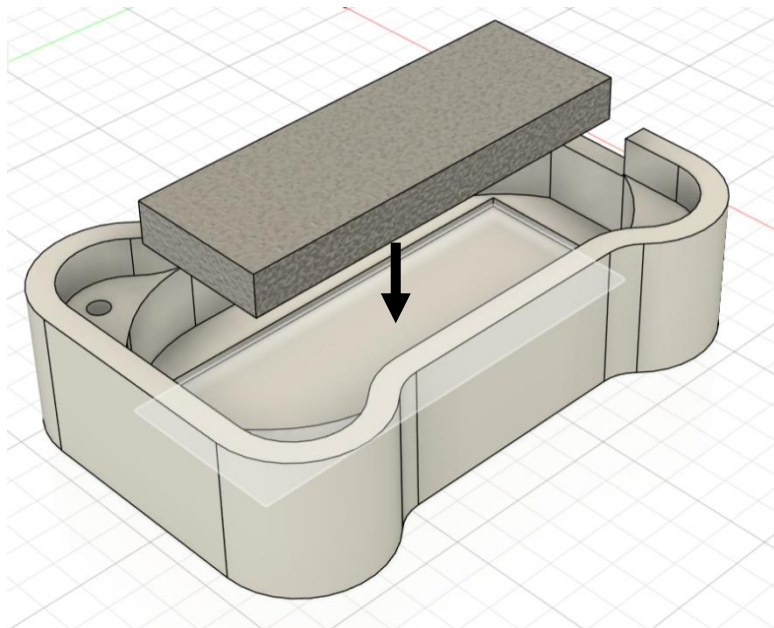# Assembly instructions

1. Metal Block

Cut a strip of double-sided tape and glue it at the bottom of the 3D-printed case.
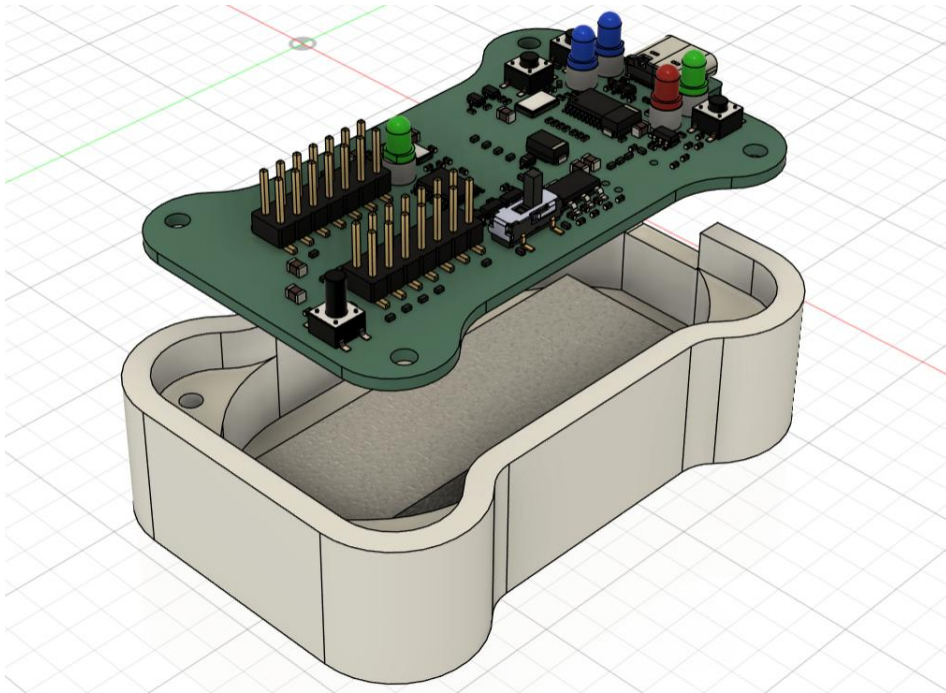

Then take a metal block and press it onto the double-sided tape:

2. Place Board

Insert the circuit board in the 3D-printed case:

Do not use any screws at this point. The screws come in the end.
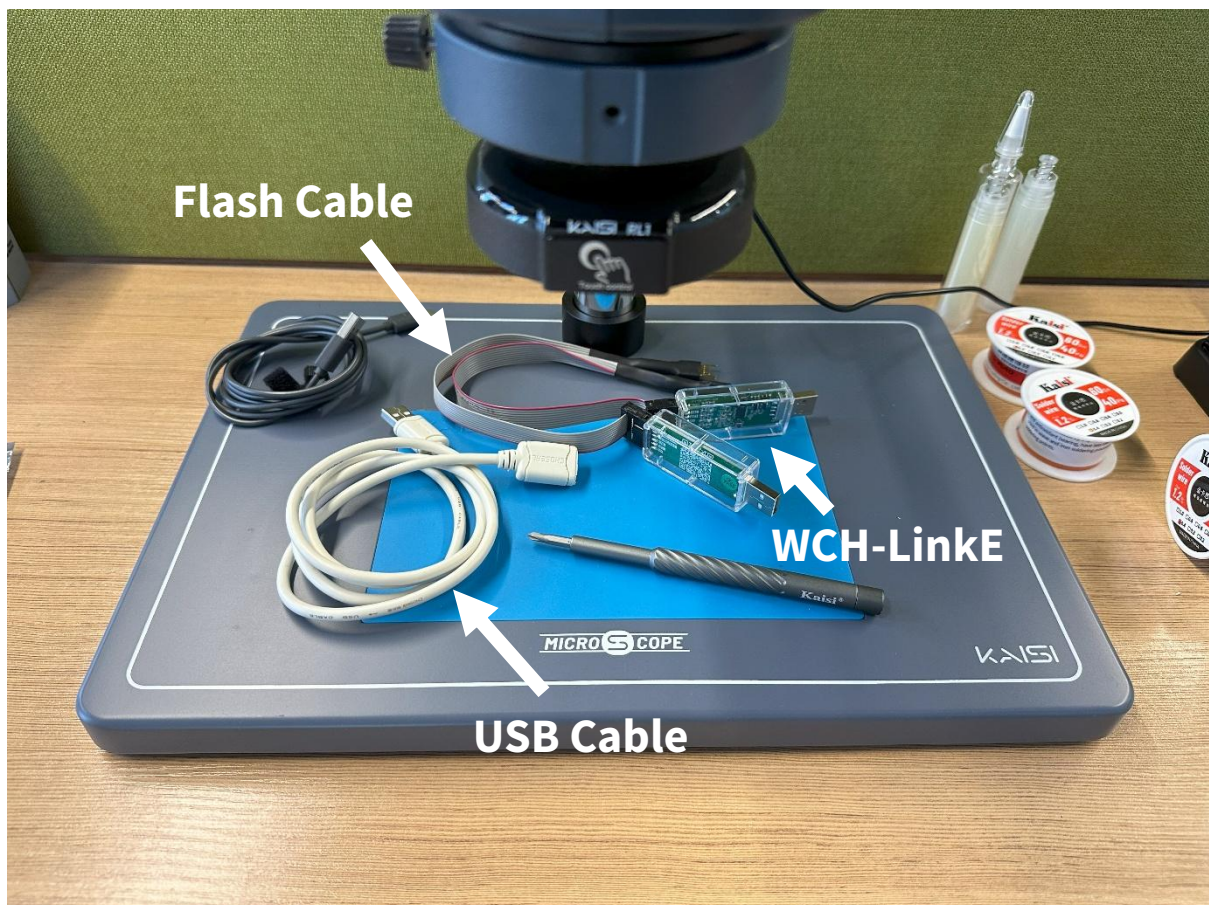
3. Flash Firmware

Download the **WCH-LinkUtility**. This is the software we'll use to flash the firmware to the chip.

https://www.wch.cn/downloads/wch-linkutility_zip.html

Download **Google Chrome Remote Desktop**. This is the software you'll use to connect to me, so I can take over your computer and do the firmware flashes.

https://remotedesktop.google.com

In the photo above, you can see three important items you need to flash the firmware to the chip:

1. **Flash Cable**: this cable ends in a "plug of nails" to make connection to the circuit board:
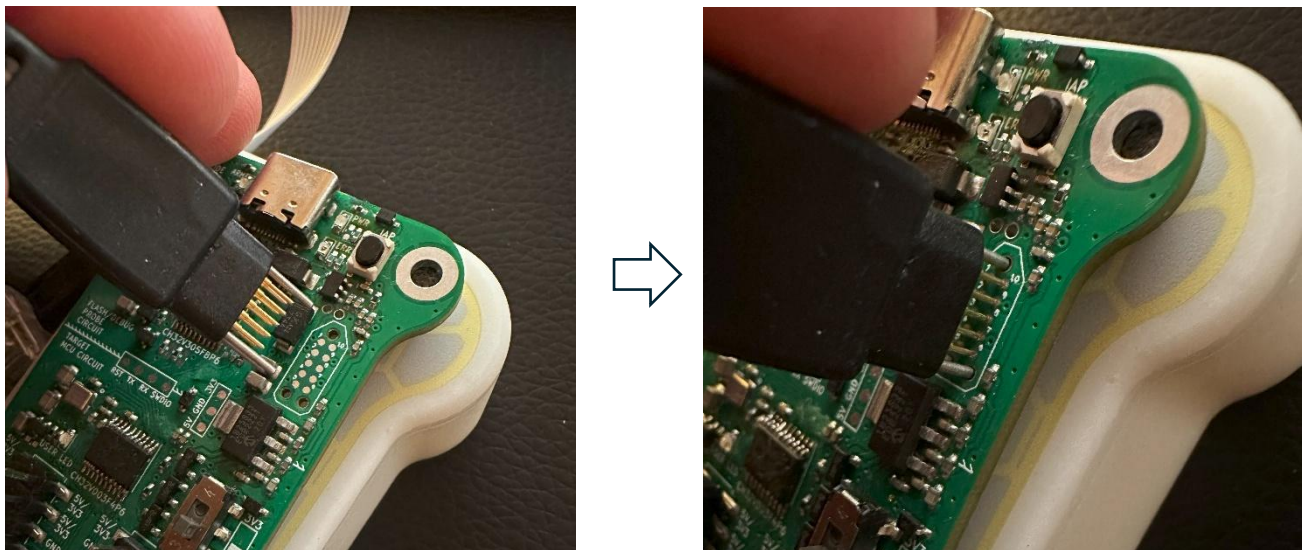
2. **WCH-LinkE**: this device should be plugged into your laptop:

3. **USB Cable**: Plugging the WCH-LinkE device into your laptop directly can be challenging, because of the flash cable on the other side. Use this USB Cable for your convenience.

Push the nails of the **Flash Cable** onto the **Circuit Board**:

In the figure above, the circuit board is taken out of the 3D-printed case. There is no need to do that (I simply didn't have any other photo). Just leave the board inside the 3D-printed case while you push the Flash Cable on it.

Launch the **WCH-LinkUtility** software on your laptop. Then launch **Google Chrome Remote Desktop**. I will take over your computer for a moment and do the flashing for you. You need to keep the Flash Cable pressed onto the Circuit Board during the flash procedure.

4. Close the Solder Bridge

The circuit board has a **Solder Bridge** that must be closed *after(!)* you flashed the firmware. All you need to do is to place a blob of solder that makes the connection between both sides of the solder bridge. Be careful. Don't apply too much solder, because then you might short-circuit other signals nearby!
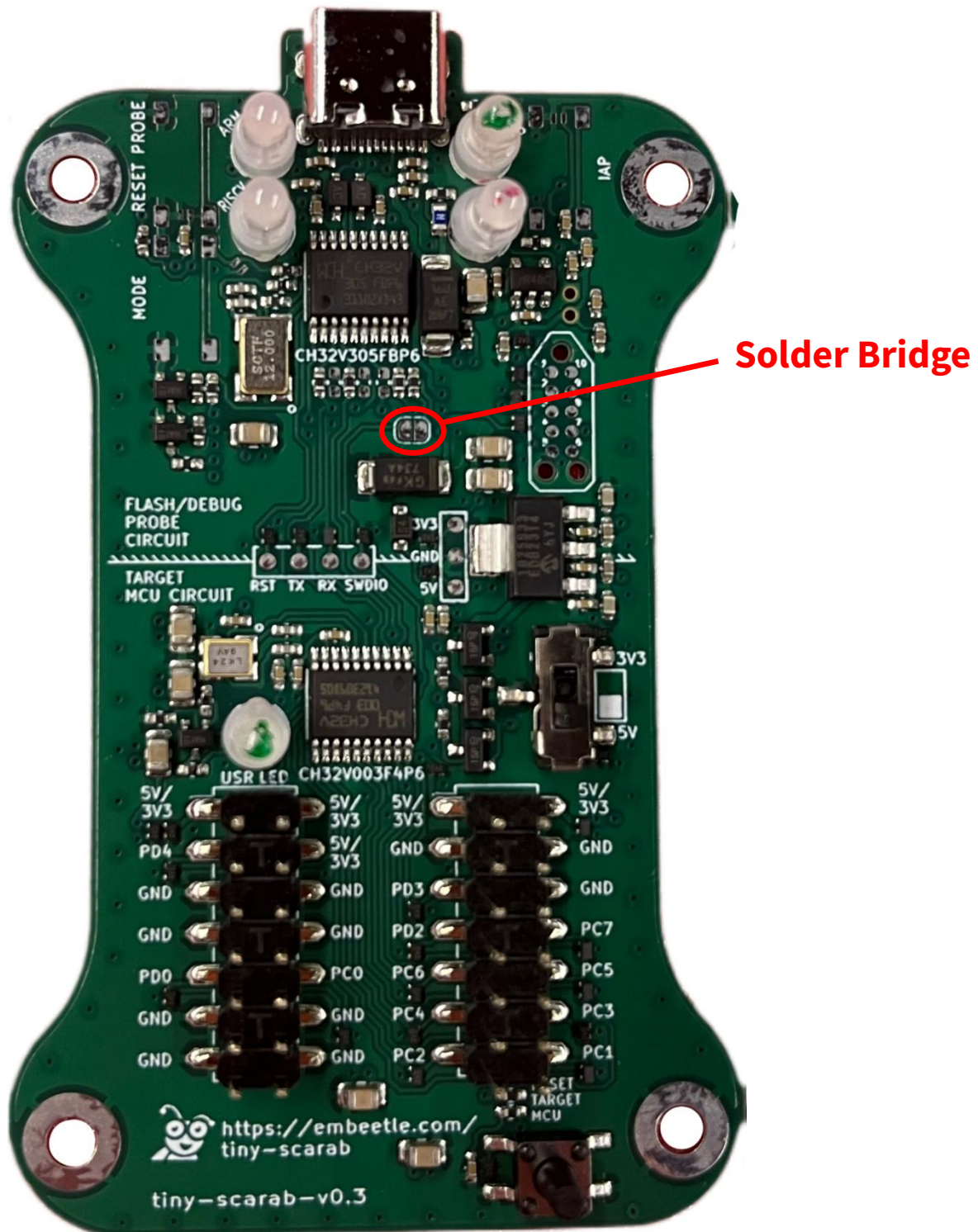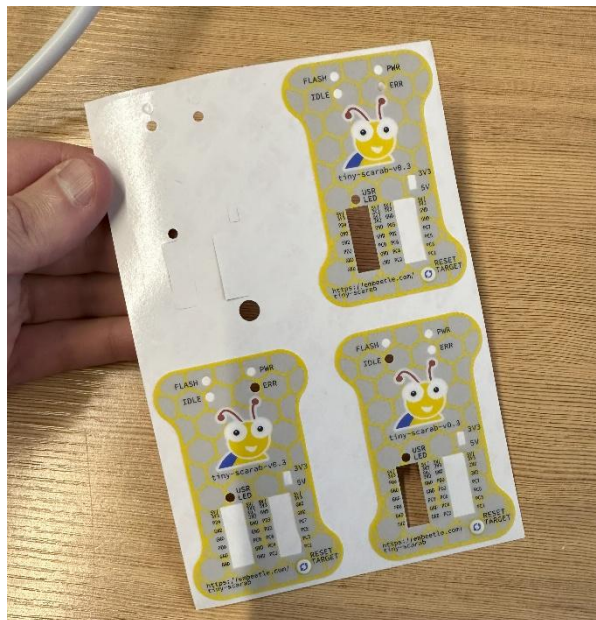
5. Close Lid and Glue Graphical Membrane

Close the **Lid** of the 3D-printed case. The Lid has openings for the LEDs. These LEDs should poke through. Then glue the **Graphical Membrane** on top.
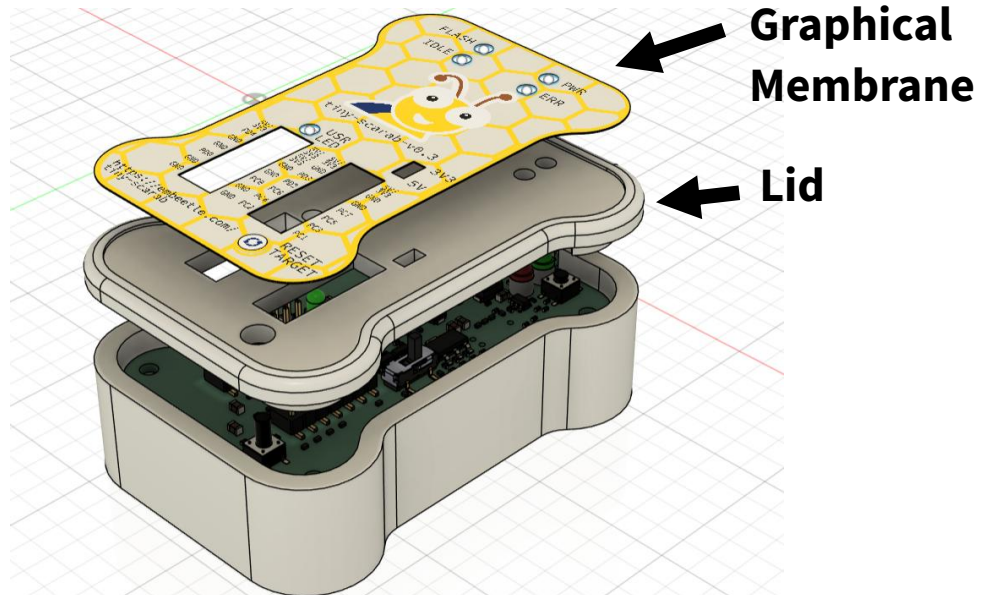
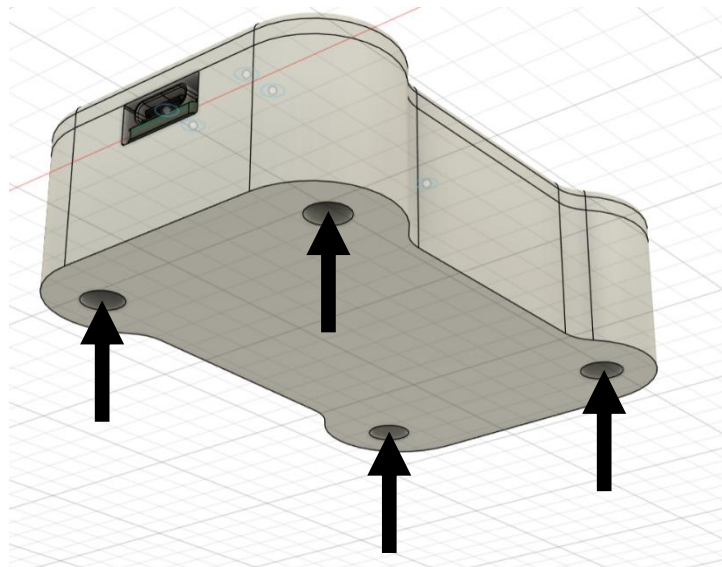You can find the Graphical Membranes here:

These Graphical Membranes are like stickers. Take caution when gluing them onto the lid! The LEDs should poke through the holes. Make sure everything is aligned properly.

6. Screws

Take four **screws** from the box and take the **Screwdriver**:

Insert the four screws in the bottom of the 3D-printed case:

Screw until the lid is relatively fixed. DO NOT APPLY TOO MUCH FORCE! With too much force, the plastic will no longer hold the screw.

7. Packing

Use the protective plastic (bubble wrap and the white foamy plastic) from this box, and wrap it around the 3D-printed case:

Then shove the 3D-printed case into the cardboard box:

Last but not least: put some bubble wrap (or the white foamy plastic) around the cardboard box to protect it from damage during shipping.