last update: 17. 7. 2019

BASTL
INSTRUMENTS

DUDE v1.2c - Assembly Guide

Bastl-instruments.com

INTRODUCTION

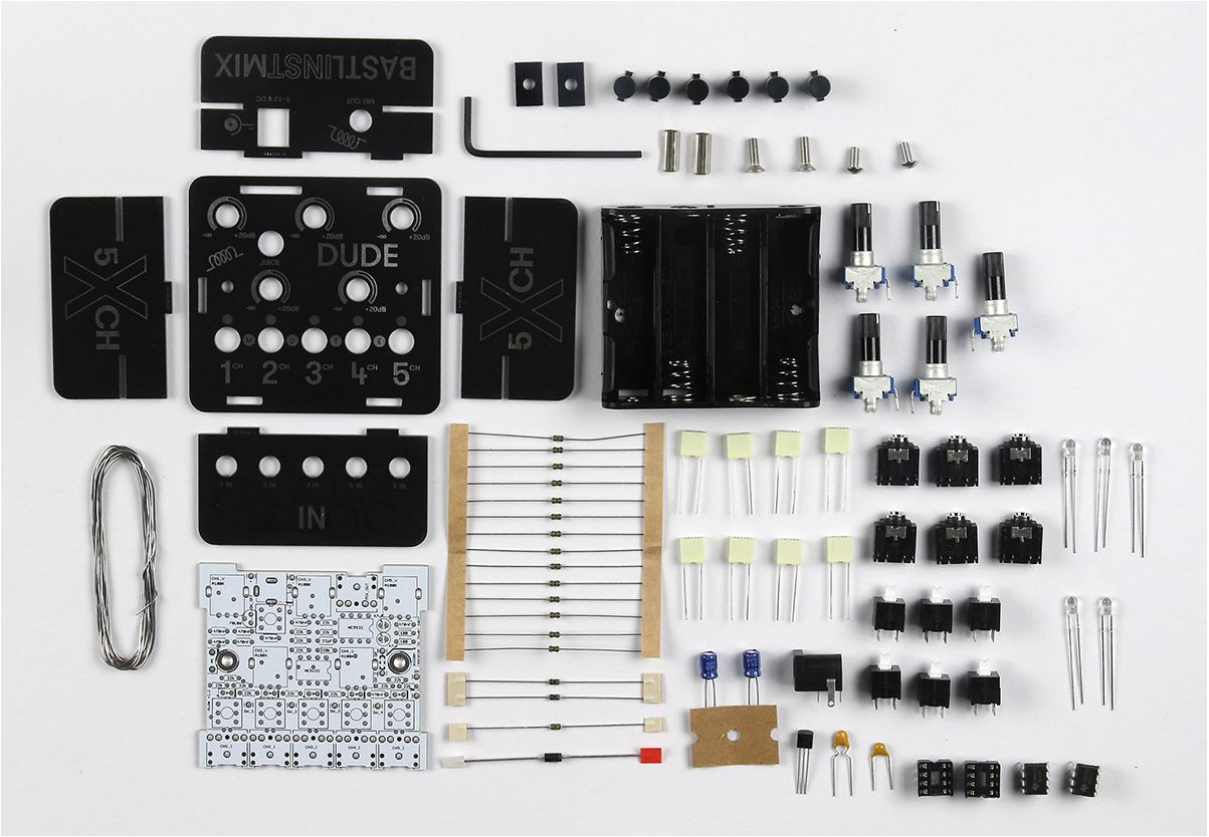
Welcome to the assembly guide for the **DUDE** by **BASTL INSTRUMENTS**. It is a portable battery operated 5 channel audio mixer with mini jack inputs and output. For all the features go here[1]. This kit is suitable for beginners. It is good to have basic soldering skills and to be able to identify electronic components before starting this kit. However if you have never soldered before, check out some of tutorials here[2] or here[3]. We also included one of the best quality solder to help you solder everything faster and better.

The Dude consists of just one printed circuit board PCB. All the parts comes mainly in two bags separated for the soldering and assembly parts. Please check all of your parts BEFORE you begin work to make sure you are not missing anything. See the bill of materials (BOM) for detailed list.

[1] http://www.bastl-instruments.com/instruments/dude/
[2] https://cdn-learn.adafruit.com/downloads/pdf/adafruit-guide-excellent-soldering.pdf
[3] http://www.instructables.com/id/How-to-solder/

BILL OF MATERIALS

DUDE v1.2c BOM		
SOLDERING		
qty	**value**	**part**
2	100R	R-EU_0204/5
14	22k	R-EU_0204/5
1	220k	R-EU_0204/5
1	22pF	ceramic capacitor
8	470nF	polyester capacitor
2	47uF	electrolytic capacitor
1	1N4007	DIODE-D-7.5
1	L78L06	voltage regulator
2	NE5532	IC in foam
2	8 pin DIL	DIL socket - in foam
6	jack TRS 3.5mm	audio connector
5	OSW5DK7331A	LED 1,8mm white
1	2.1mm	power barrel connector
5	A100k 25mm	logarithmic potentiometer
6	B1702A	button
1	100mA	fuse
ASSEMBLY		
2	12 mm nut x nut	spacer
2	M3 x 10mm	screw
1		allen key
2	M3 x 6mm	screw
6	ZIPPY 2P1-2TB-B201A-Z	button cover
1	Dude v1.2	PCB
2		Plastic spacer
1	BH-341-1D	4x 1,5V BATTERY HOLDER
1	top	PCB enclosure
2	side	PCB enclosure
1	front	PCB enclosure
1	back	PCB enclosure



BEFORE STARTING THE KIT...

Prepare the following tools:

- Soldering iron
- Multi-meter
- Flush cutters
- n2. hex screwdriver or allen key (enclosed with kit)
- Isopropyl alcohol + smaller and clean brush (optional)
- Protective eyewear

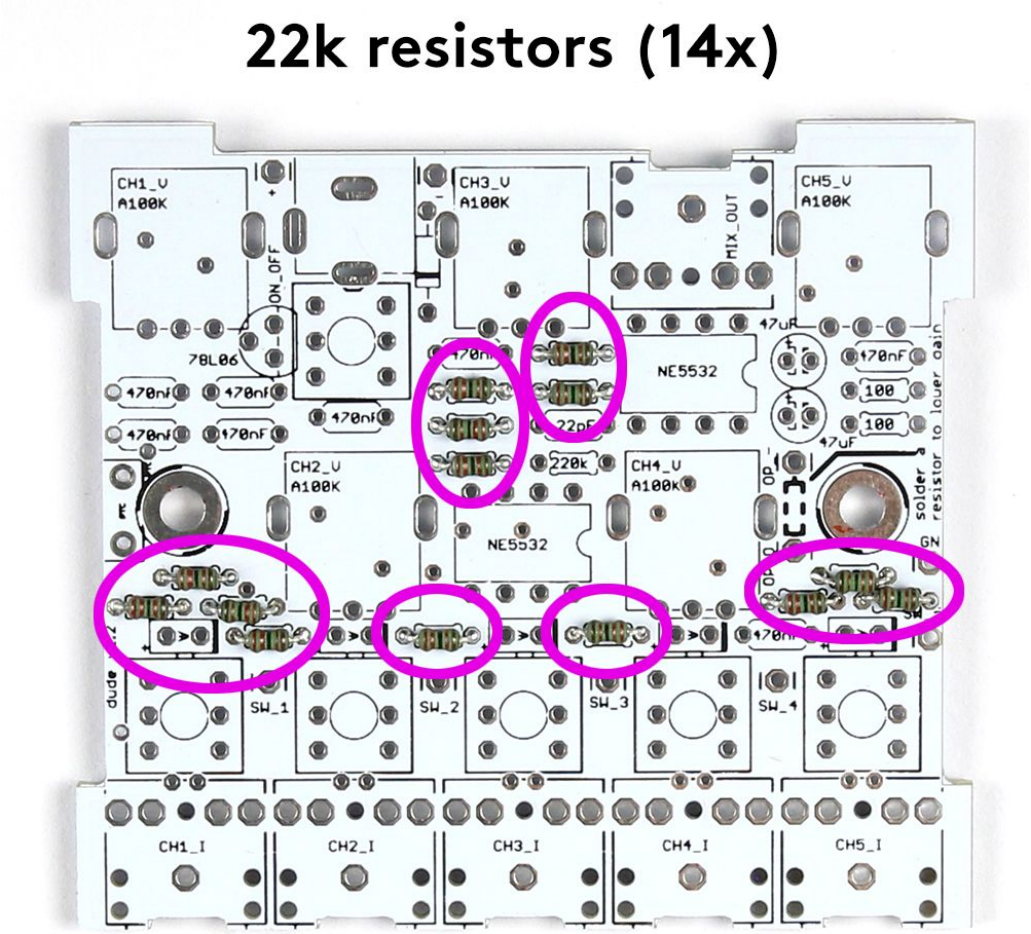
We suggest to work in a clean and well lit and ventilated environment to avoid accidents or losing any of the small components.

Also briefly go through this guide and make sure that you understand all the steps.

SOLDERING

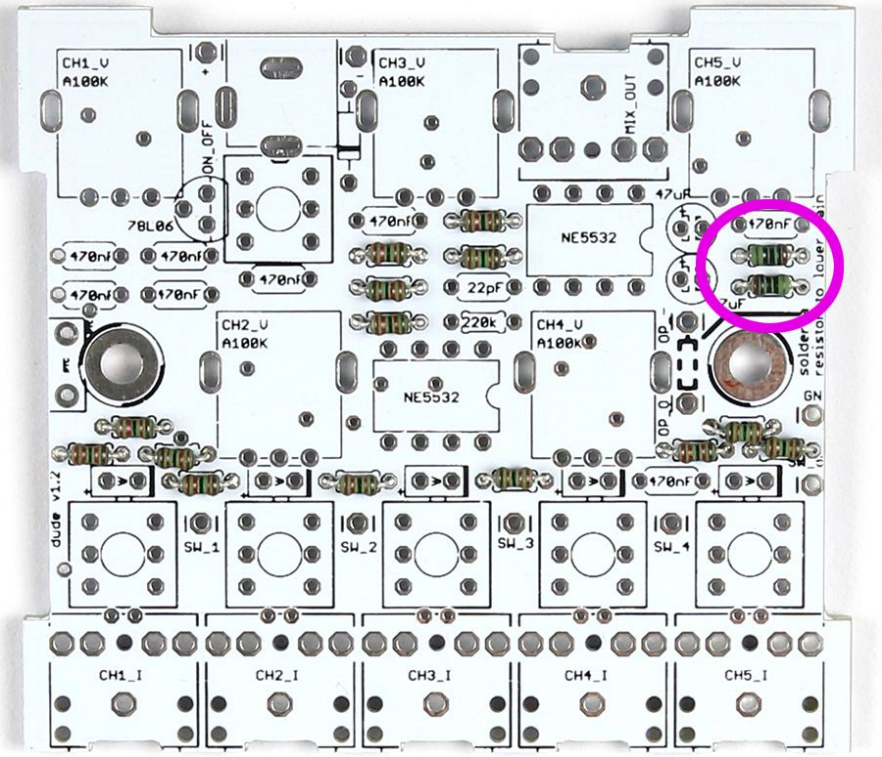
RESISTORS

Start soldering with the **resistors**. There are just **three values** of them: **22k** (14x), **100R** (2x), and **220k** (1x). Before you start soldering, check the values by using a multimeter[4] (or you can check the color codes if you are seasoned enough). Snip the leads close to the PCB after soldering (be sure to make this step on all remaining leads in the course of this guide) and **set aside a few of them**. You will use them later.

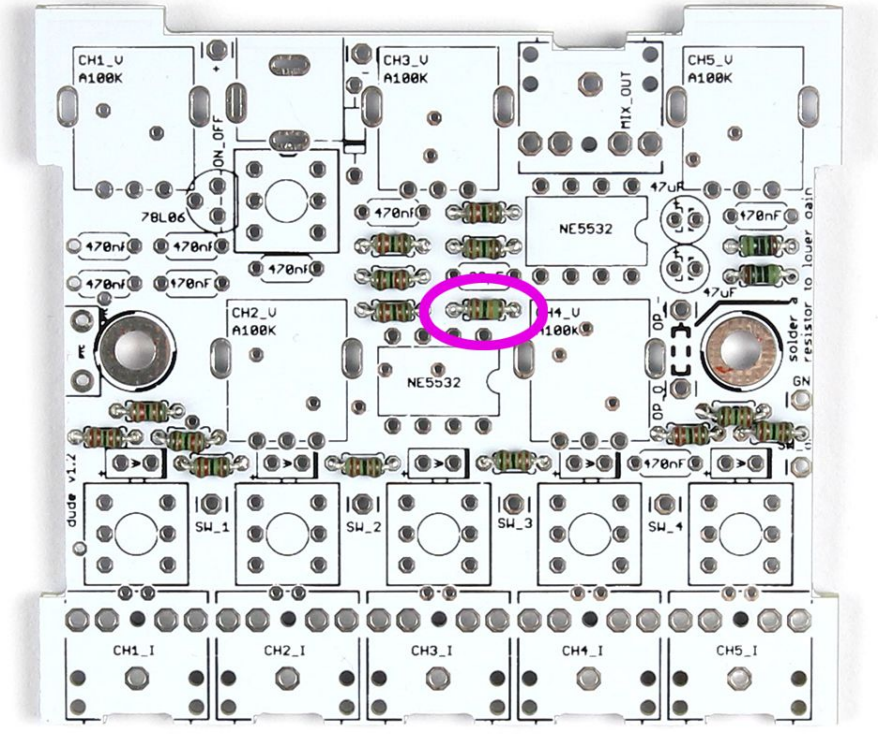


[4] https://learn.sparkfun.com/tutorials/how-to-use-a-multimeter/measuring-resistance

100R resistors (2x)

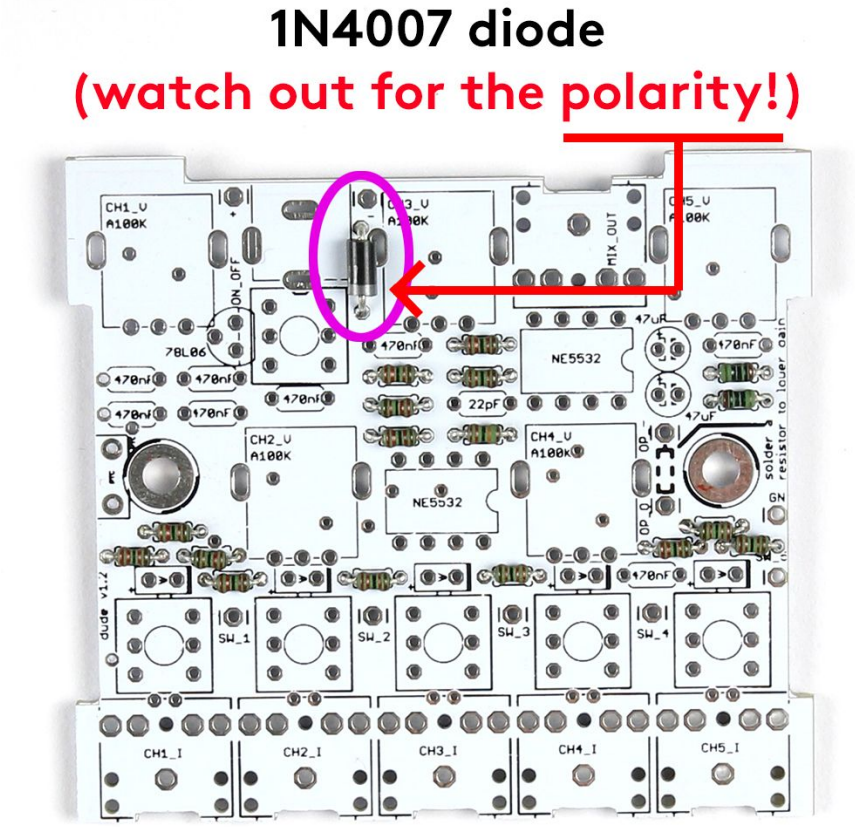


220k resistor (1x)



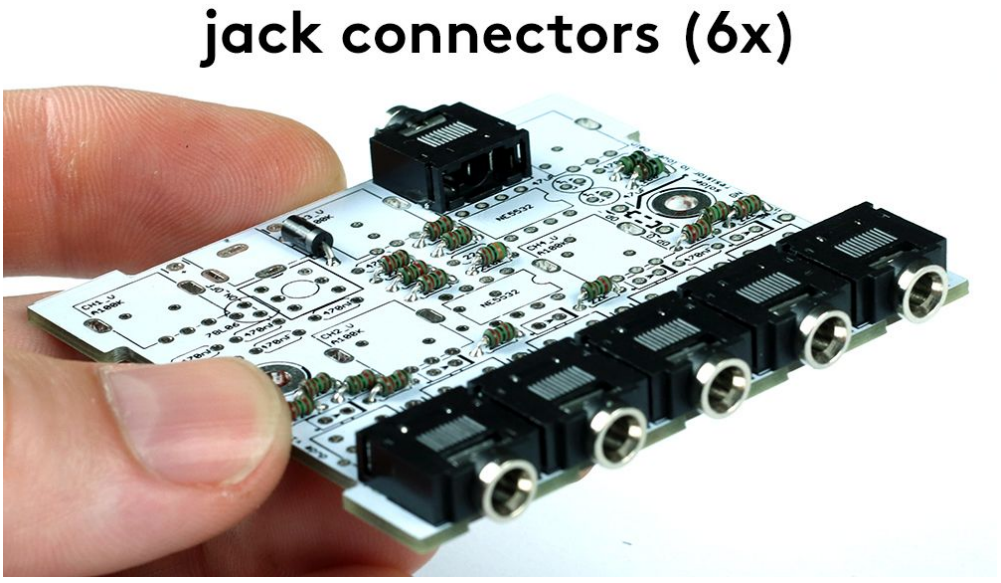
DIODE

Next solder the **1N4007 diode** - **be careful, diodes are polarized!** Make sure that the grey stripe on the diode matches the stripe on the PCB.



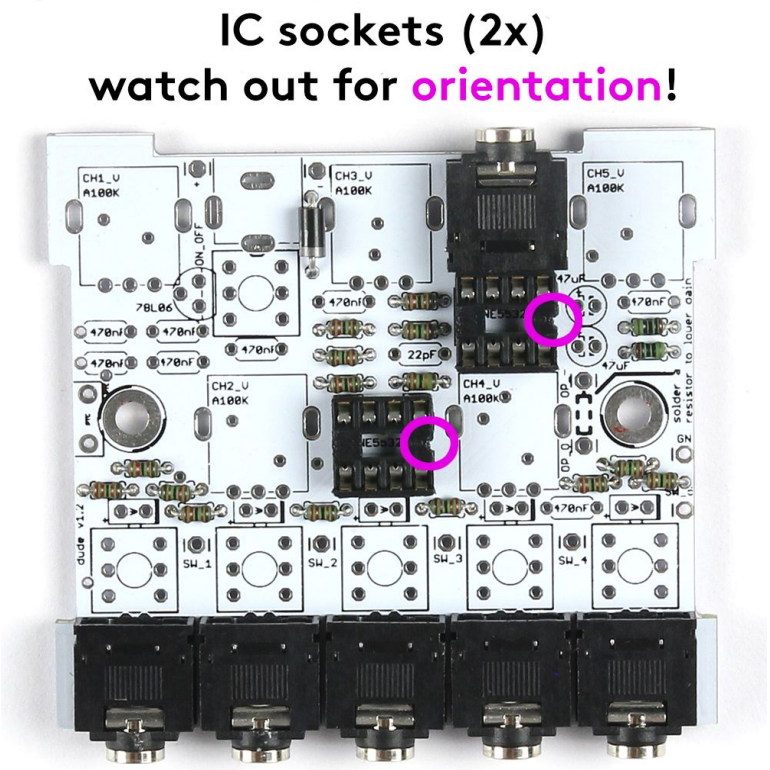
JACK CONNECTORS

Add the **3,5mm jack connectors** (6x). They have to be soldered precisely down on the PCB. You can start soldering just one leg of each connector, check it and then do the rest.



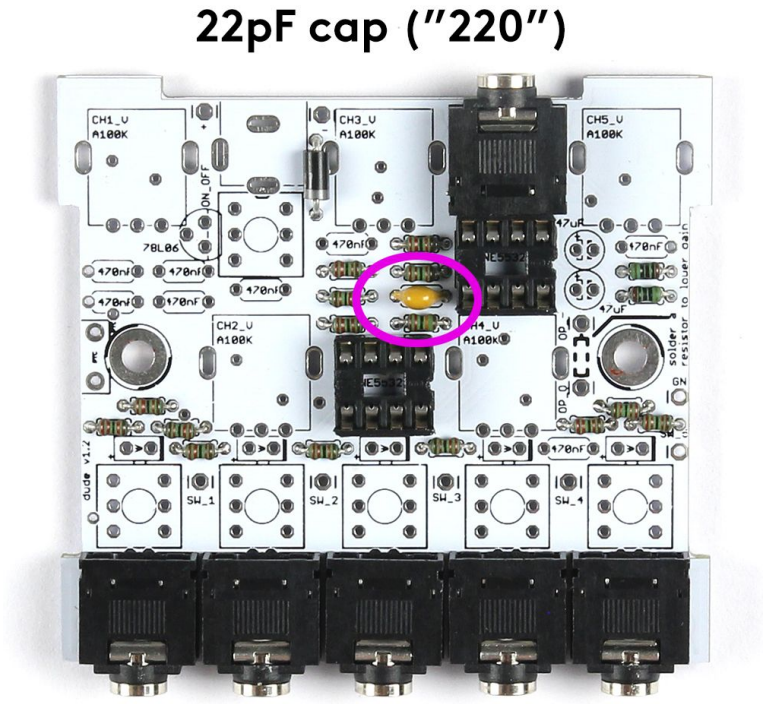
IC SOCKETS

Insert the **IC sockets** (2x; 8 pin DIL). Just be aware of the **right direction of sockets** - there is a notch on the sockets that has to match with the ring on the PCB.

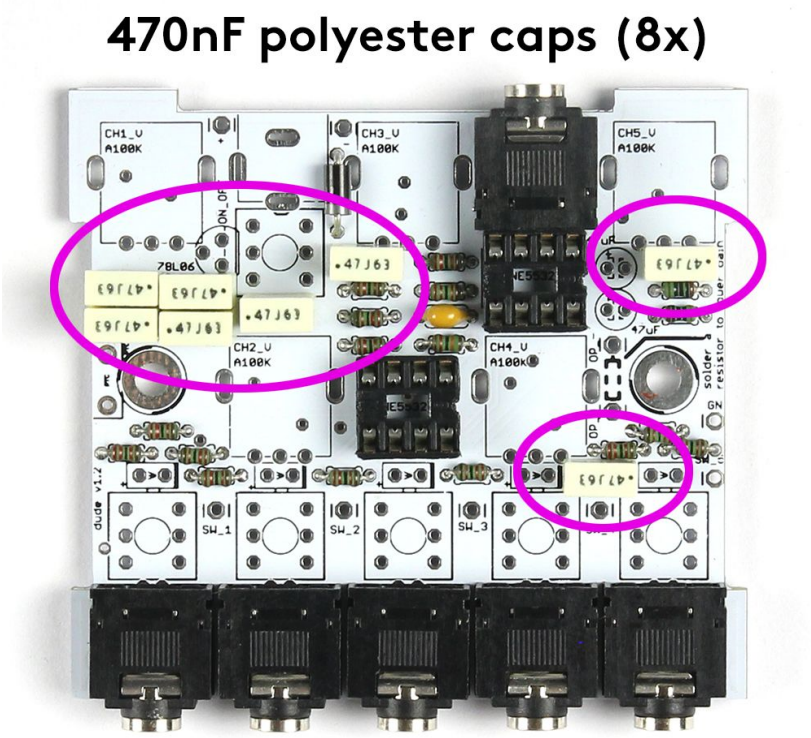


CERAMIC & POLYESTER CAPACITORS

Move to the **ceramic capacitors** now. First solder the **22pF** cap (1x) which is marked "220".

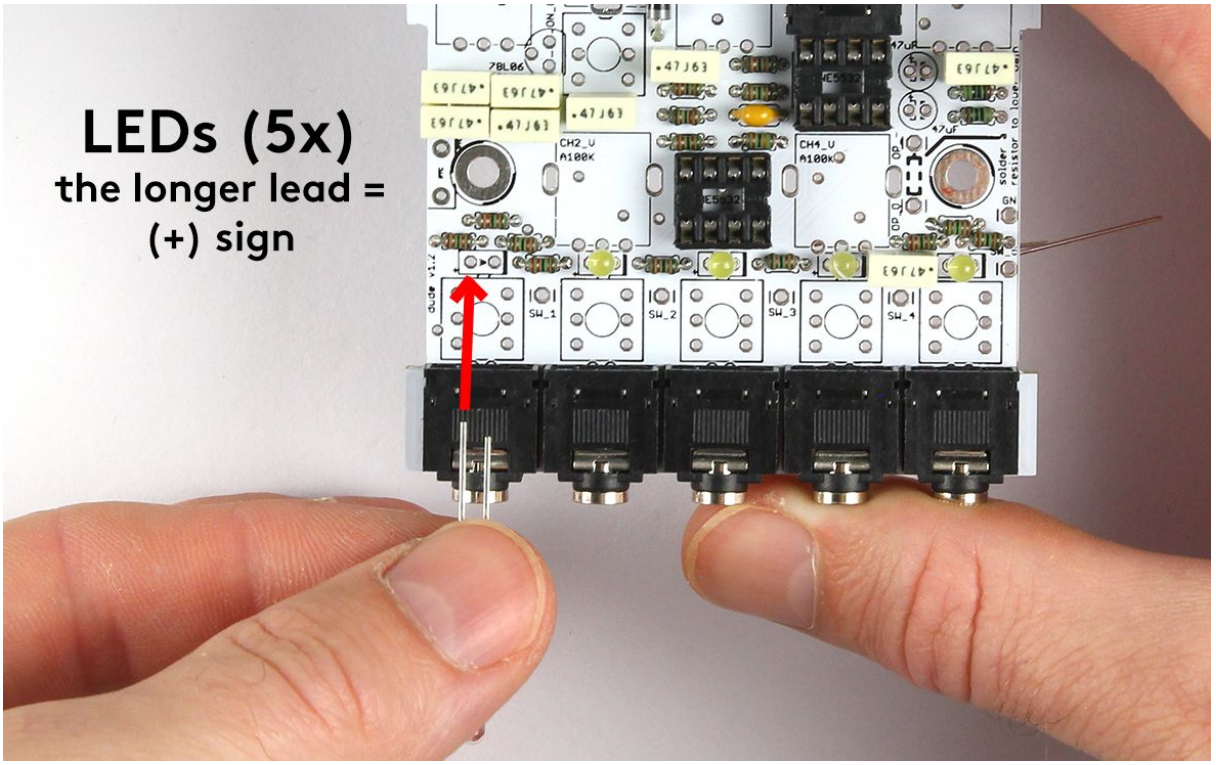


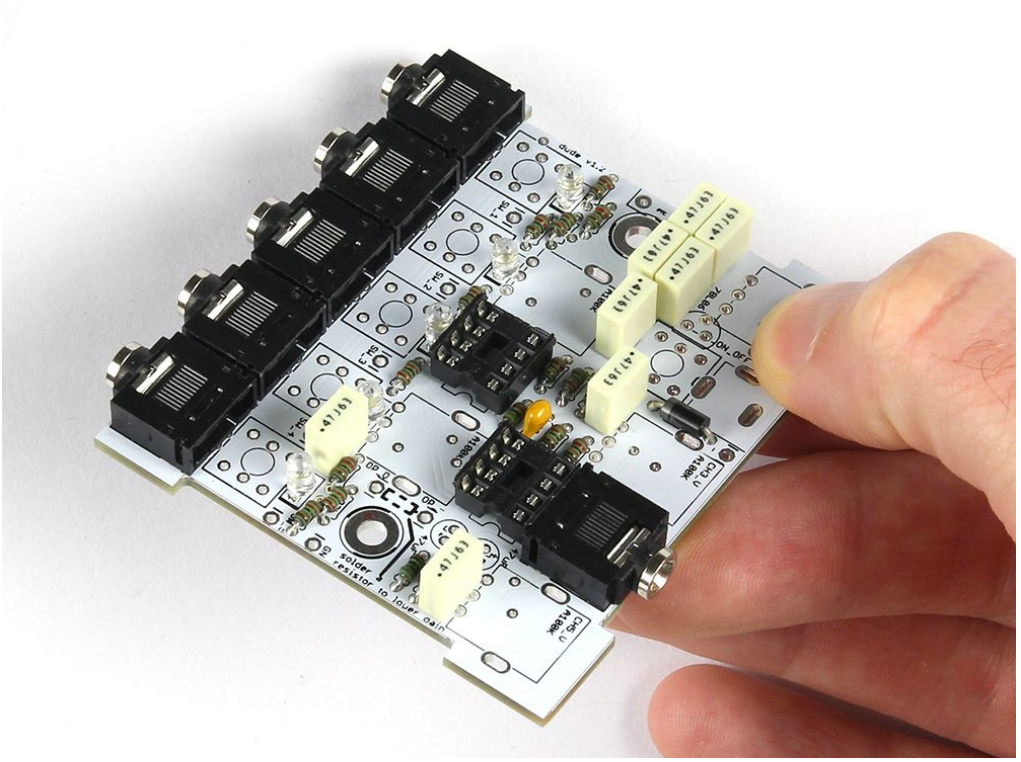
Then do the **470nF polyester** ones (8x). They have insulating plastic film.



LEDs

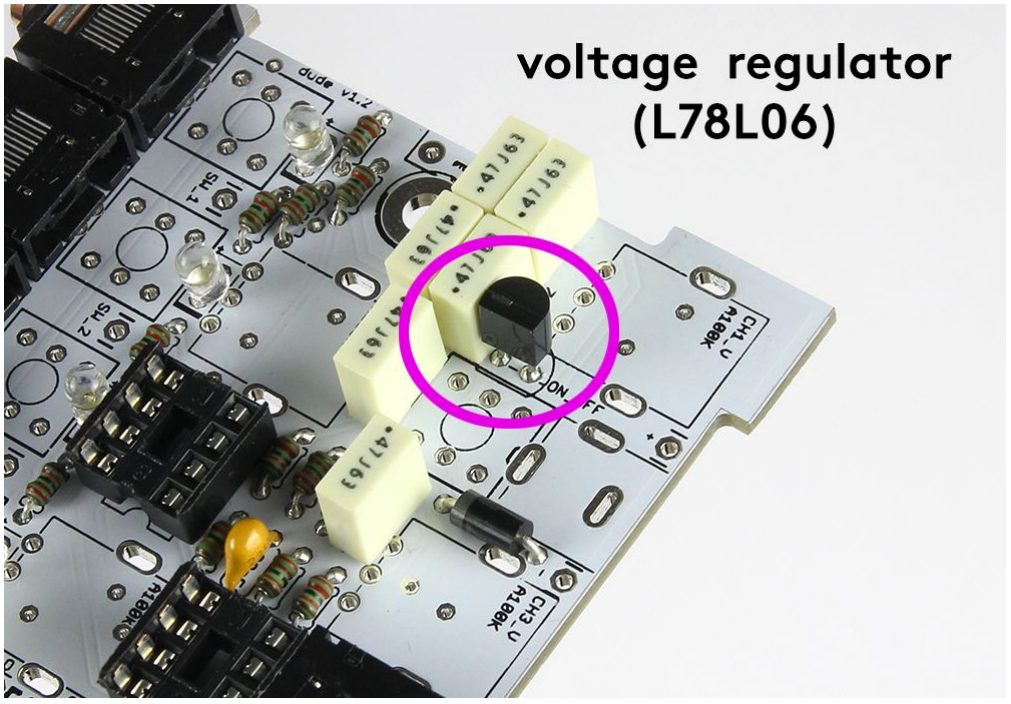
Solder the **LEDs** (5x) now - **these are polarized too**! Be sure to insert the longer lead into the plus (+) hole. Place the LEDs down to the PCB. It is better to solder just one leg first and then do the adjustments by resoldering and repositioning at the same time.





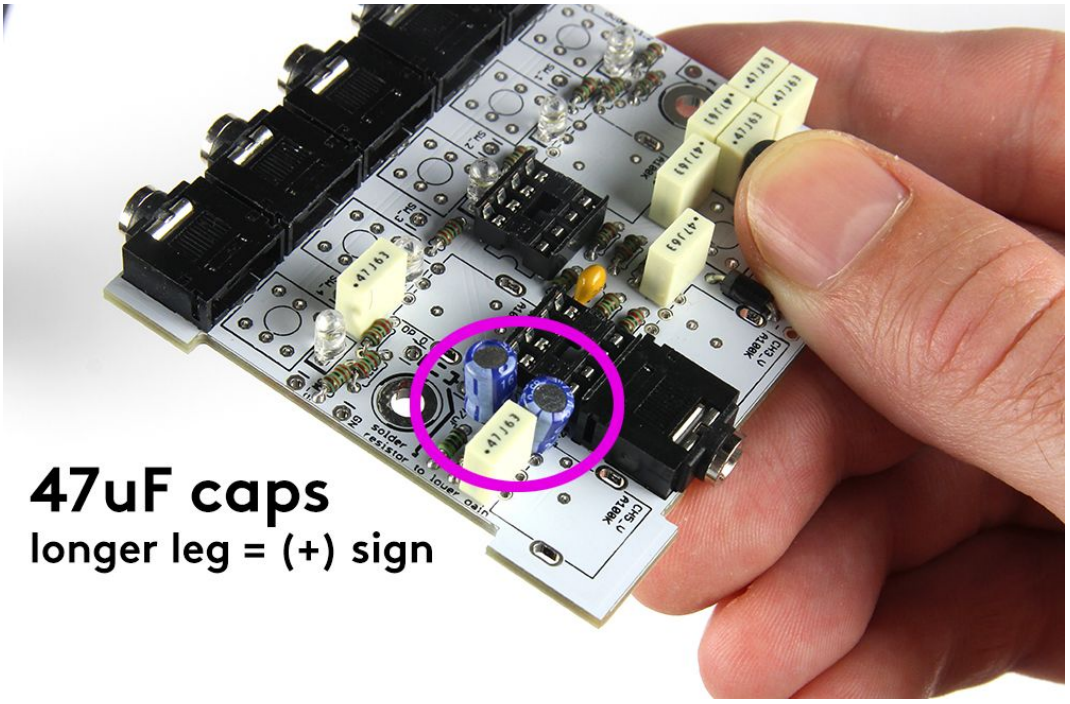
VOLTAGE REGULATOR

Now you can do the **voltage regulator** (**L78L06**). The **flat side** has to match with the printing on the PCB.



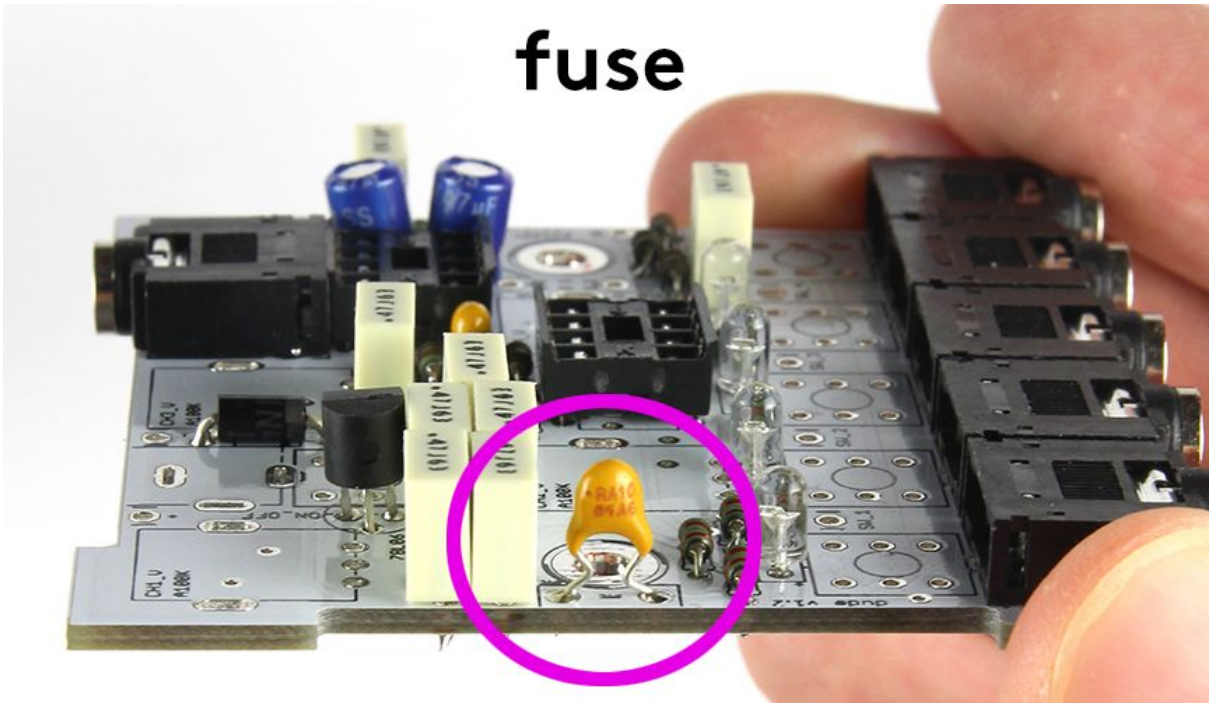
ELECTROLYTIC CAPACITORS

Also don't forget to solder two **electrolytic capacitors (47µF)**. These ones are **polarized!** There is a plus (+) sign on the PCB that should match the longer lead of the electrolytic capacitor (actually the minus (–) side is also marked on the body of the capacitor with a white strip).



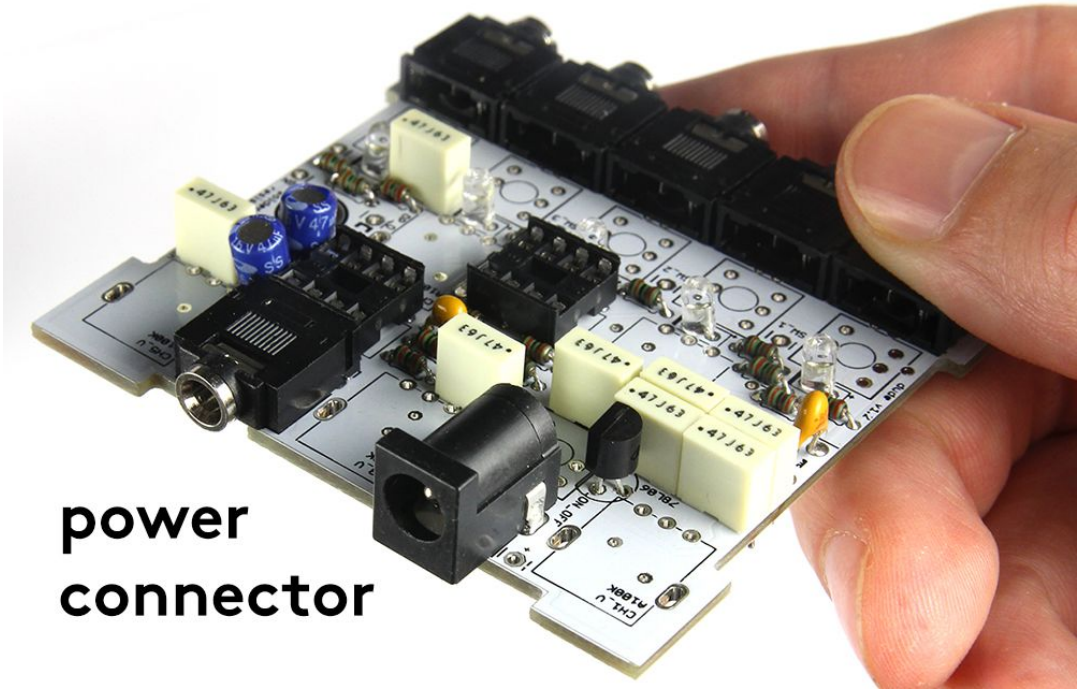
FUSE

Next one is a **fuse** (**100mA**) to solder. It is not polarized and it looks almost like a ceramic capacitor. Then snip the overhanging lead a little bit.



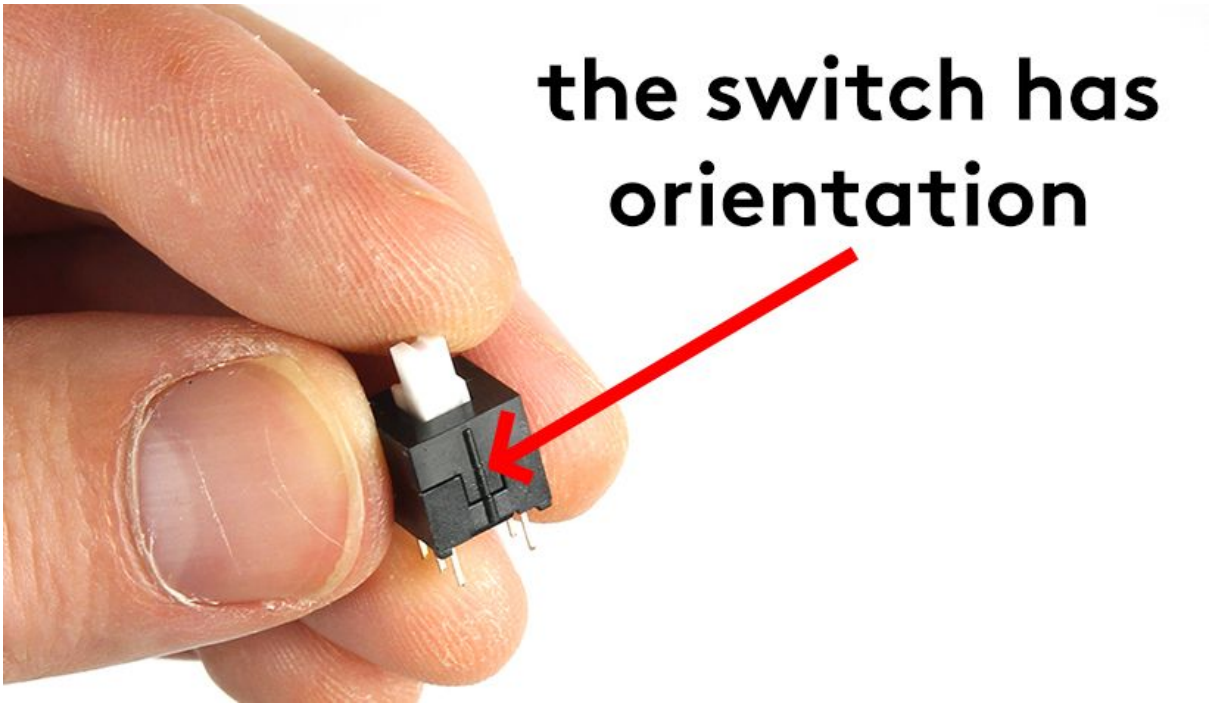
POWER CONNECTOR

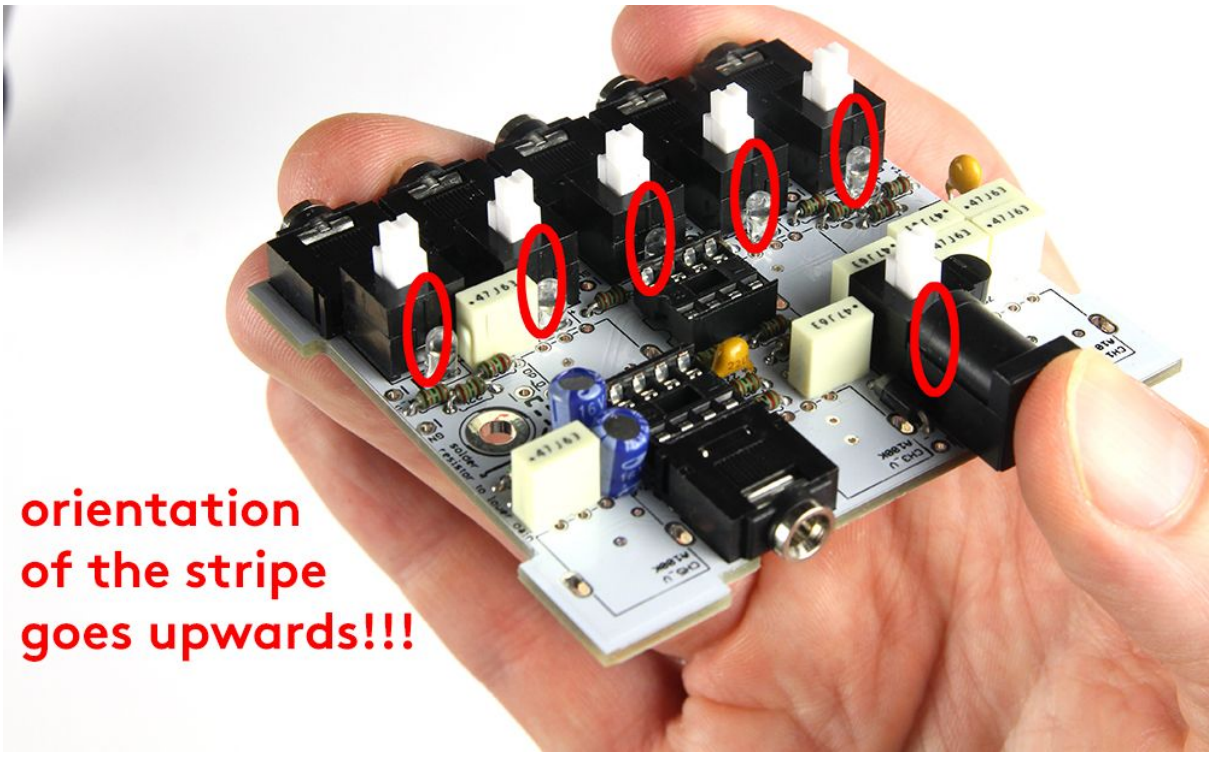
Let's add the **power connector.** Just be sure to solder it flat with the PCB and straight.



BUTTONS

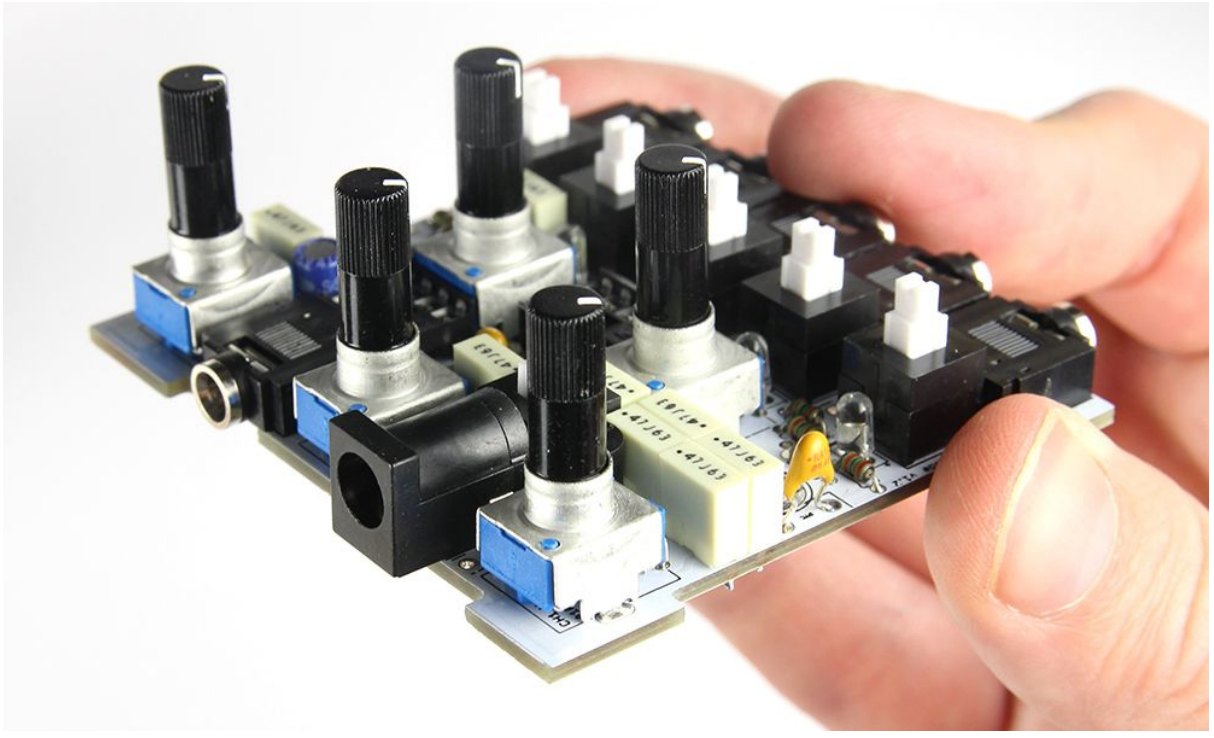
Go for the **button switches** now. Be aware that these parts have to be **oriented**! There is a marked line on the one side of button which has to be oriented upwards. Remember to solder these switches straight. See the pictures before soldering.





POTENTIOMETERS

Move to soldering of **potentiometers** (A100k). Install them in **straight** (you have to push them down), solder just one side leg, check the position and do the re-heat and repositioning adjustments in need. Then solder the rest if there is no problem. Remember - they have to be soldered straight really seriously!

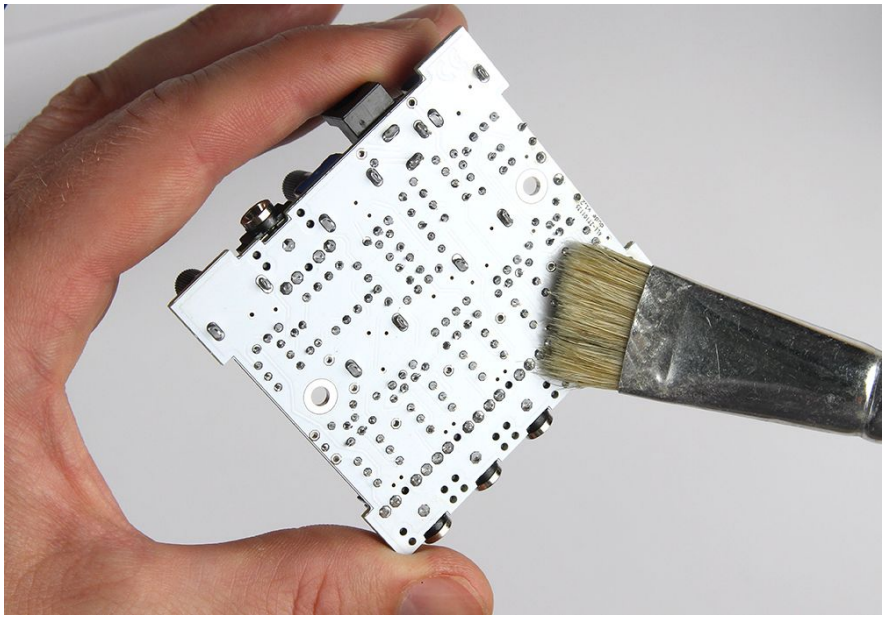


DOUBLE CHECK

Take your time now and relax for a while. Do the last **double check of all soldered joints at this point**. After next steps it would be **MUCH HARDER** to do any repairment.

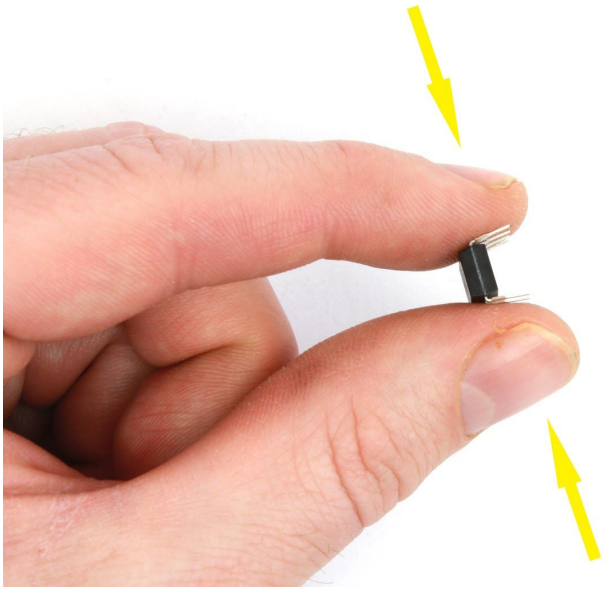
CLEANING (OPTIONAL)

Before you begin to move forward, you might want to **clean** your PCB. You can use e.g. isopropyl alcohol. Put some of the liquid all over the PCB using the brush, let it act for a while and sweep it off. Then just let it dry. You can repeat these steps until you are satisfied with the result.



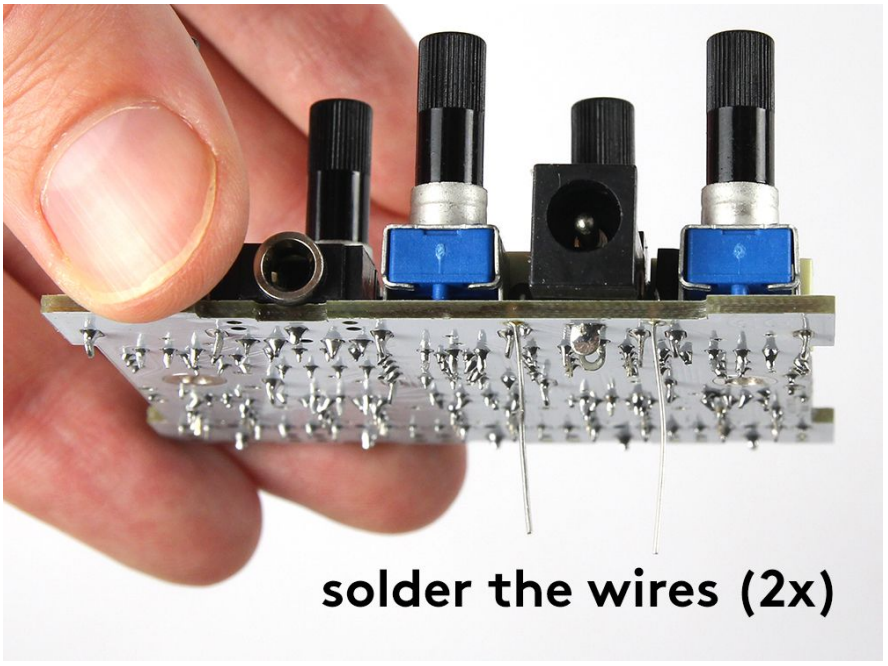
ICs

Don’t forget to place the two **ICs** into the sockets (**NE5532P**). There is a signed **notch on each IC** that has to match with the **notch on the socket**. Installing ICs can be also a little tricky. You should bend the IC leads in slightly with your fingers first. Then press all the leads into the sockets in one shot

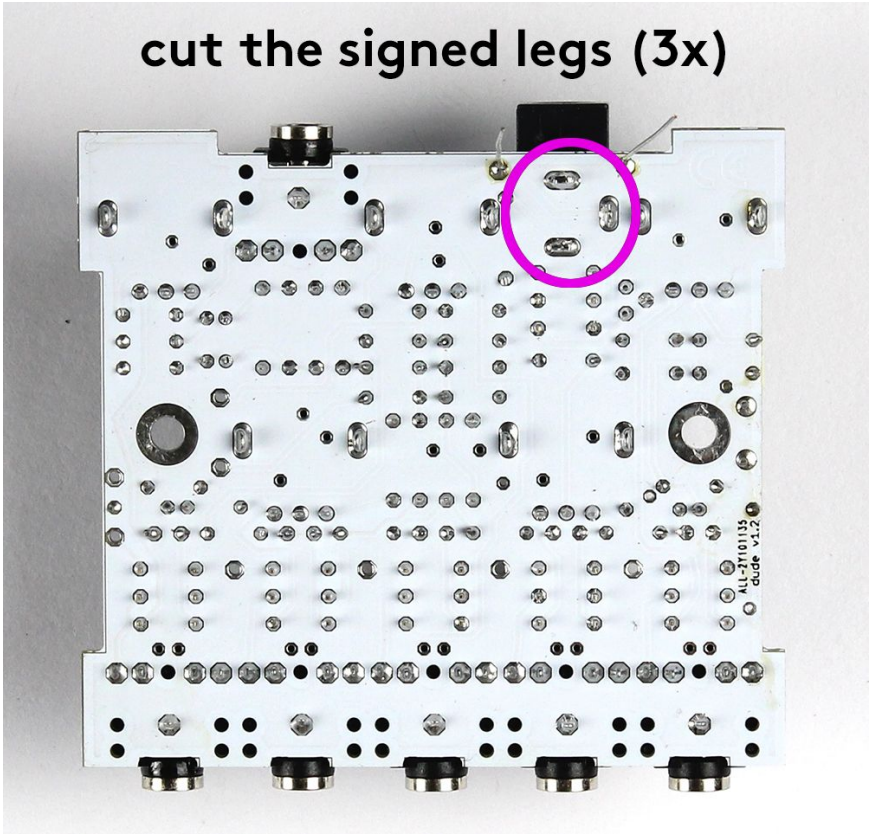


BATTERY HOLDER

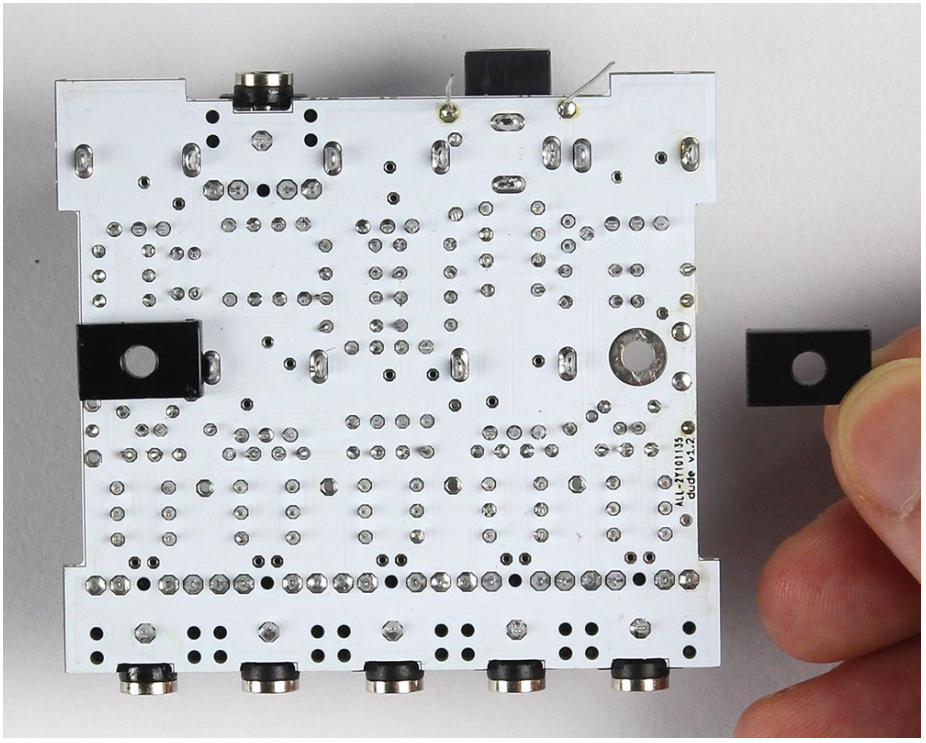
Take the remaining leads then and solder them into the holes near the power connector. It is good to melt some solder into the holes first and then reheat them and place the wire inside.



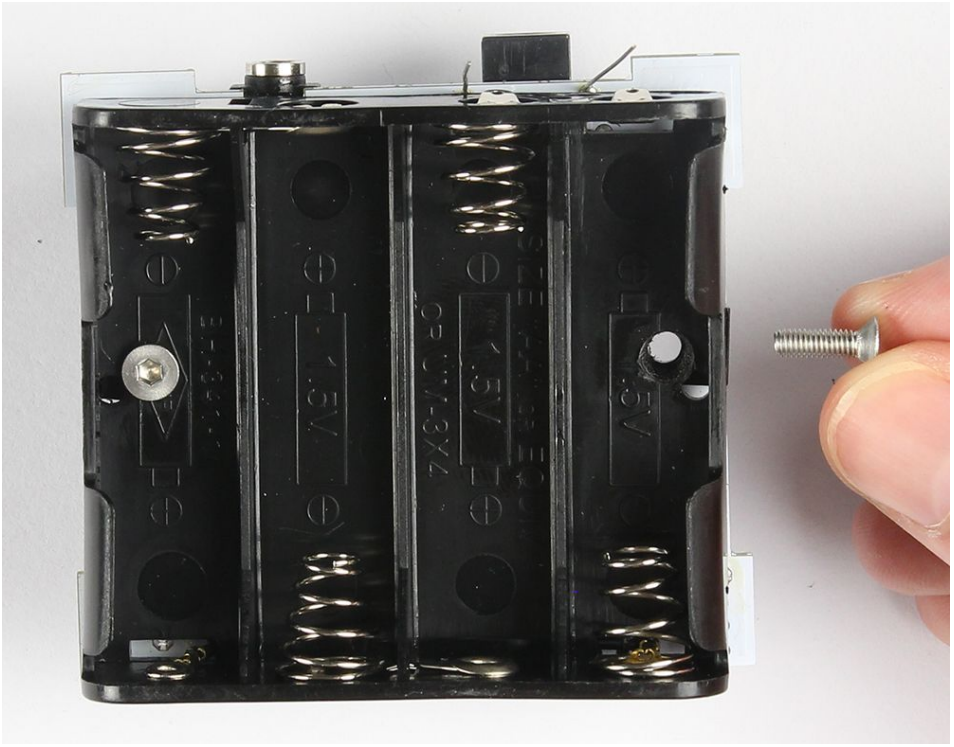
Before placing the battery holder you have to do a little adjustment. See the photo and cut the signed legs.



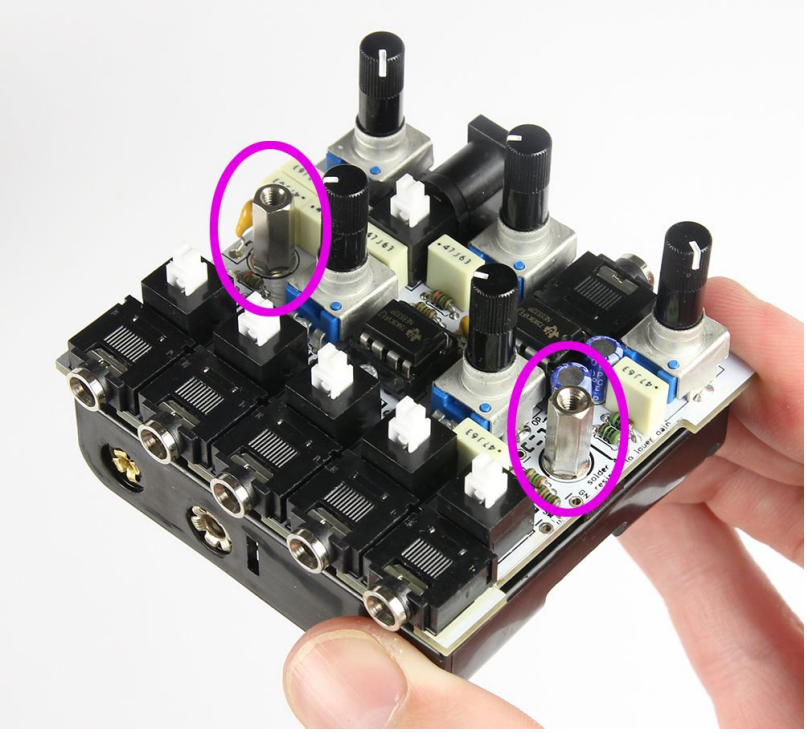
Then place the plastic washers on the PCB to fit them with the holes.



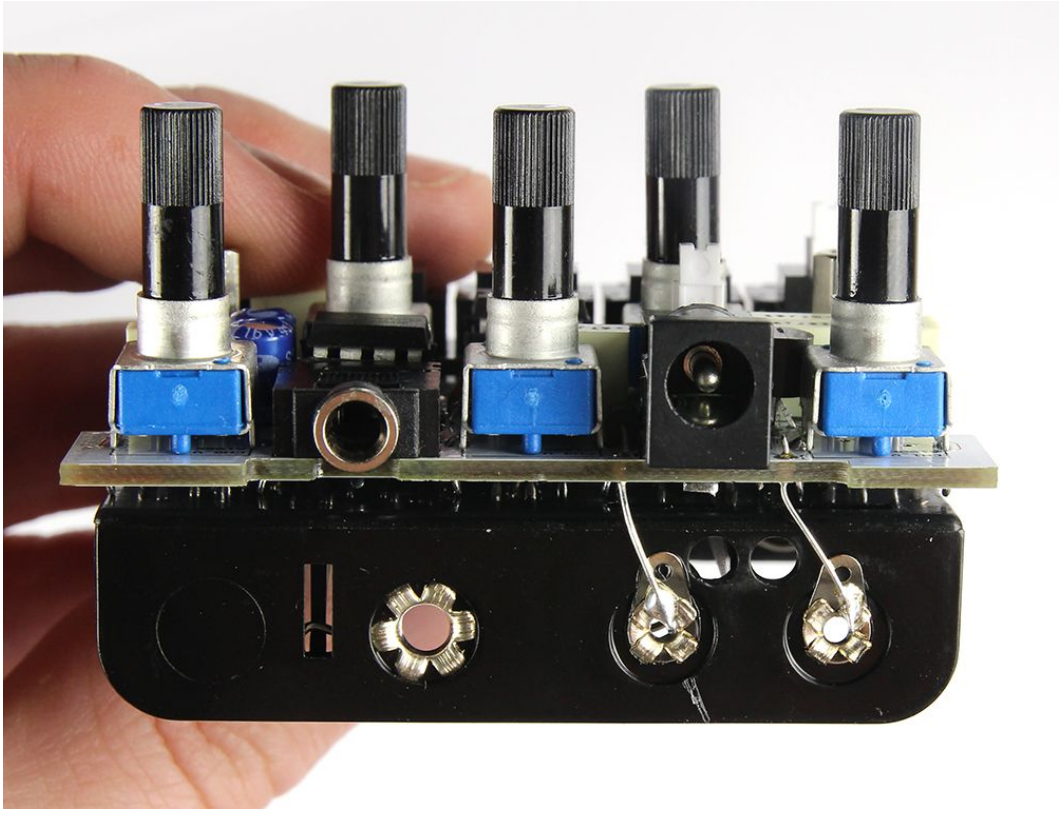
Let's secure the battery holder now with the **spacers** and **screws** (the longer ones) from the bottom. Watch out for the **orientation** of the holder!



Secure the holder with spacers from top.

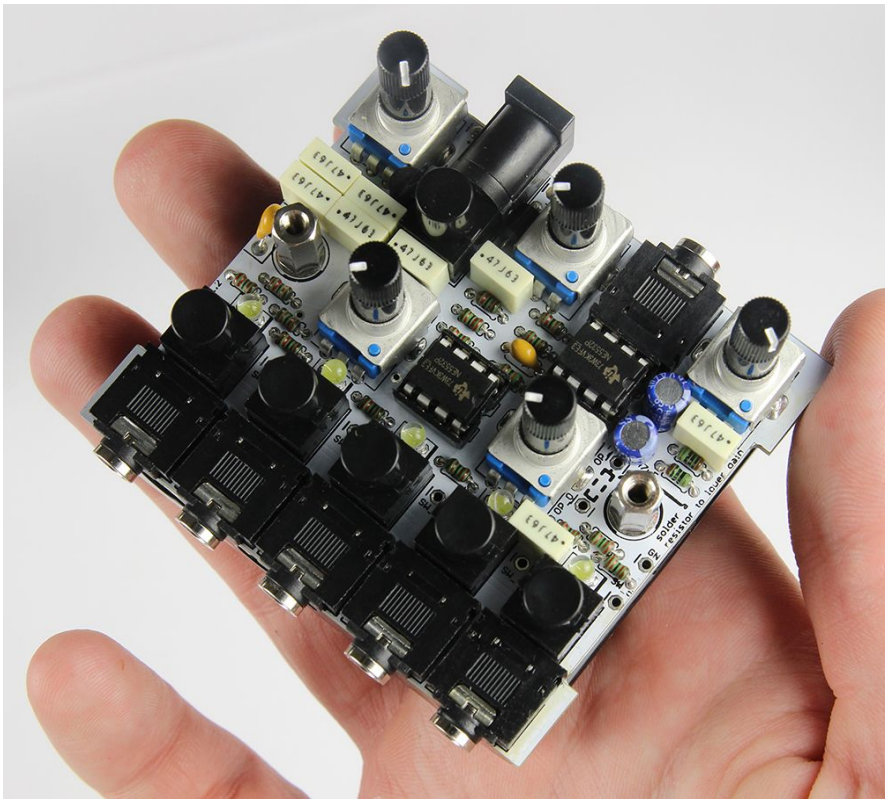


Now you will do the soldering. You have to connect the leads with the lugs. **Do not let the lug heat too much!** (it would break the connection of the coil and the lug) Use just the tip of your soldering iron for a second.



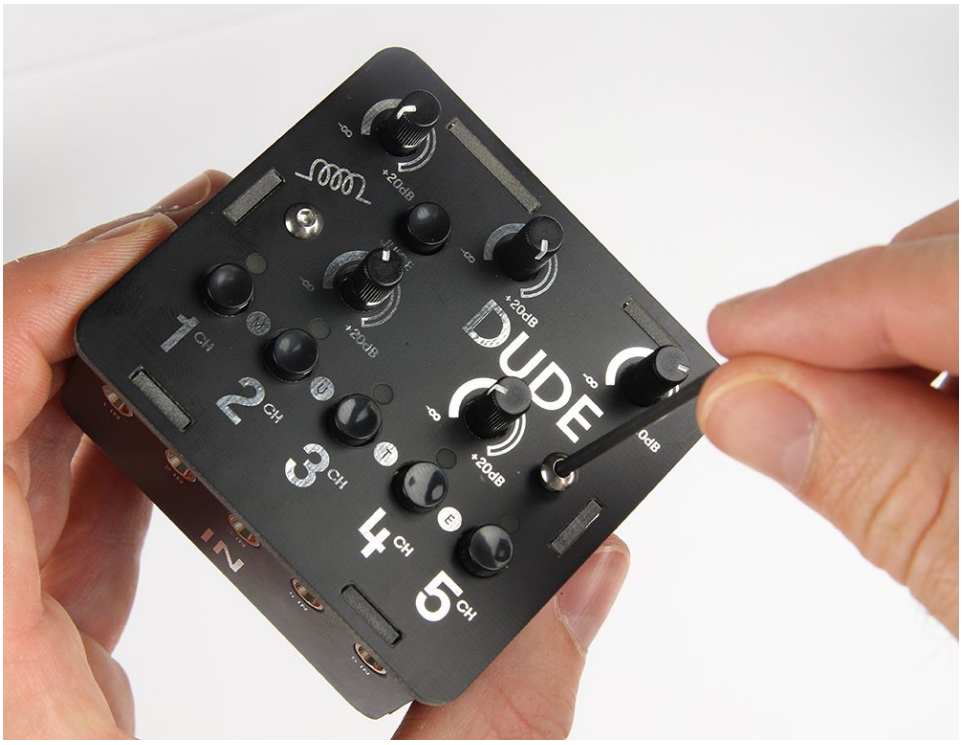
YOU ARE ALMOST DONE...

Now you can complete the Dude with the plastic enclosure parts. Start with the **button covers**. Push them on the buttons.



Push the **side parts** in. First do the front and back one. Then two side parts.

Finish the enclosure with the **top cover** and mounting screws.



Here it is, your Dude is finally completely alive! Congratulations!

TROUBLESHOOTING

Check the F.A.Q.[5] on our website first. If you are still in trouble the best thing is to take a nap! Especially late at night! Then you can can send the detailed description of the problem with enclosed high-resolution photos on diy@bastl-instruments.com. Consider our "Come to Daddy" service if you think that you are unable to make the instrument work on your own.

[5] http://www.bastl-instruments.com/diy-kits-f-a-q/