

4TOMS

Build document

Soldering of components

Most of the components are already soldered to the PCB, there are only a few elements left to be soldered by you.

Soldering tip:

When it comes to soldering a component, I do it this way all the time:

I solder only one leg of the component. Then I adjust its position. It is indeed easy to apply the soldering iron to the soldered leg and move the component by hand to better replace it.

Typically by making sure that the component is firmly seated in its place. We will see more example bellow.

KIT CONTENTS :

The kit contains :

- Aluminium front panel x1
- Main PCB x1
- Voice PCB x2

The kit does not contains screws to fixe your module into your case, and the PSU cable.



The kit does not contains the components listed below :

BOM :

Main PCB :

- 2x5 Pin Header (PSU connector) x1
- 2x3 Pin Header x4
- 1x2 Pin Header x4
- JUMPERS x8
(example : <https://www.digikey.fr/fr/products/detail/sullins-connector-solutions/STC02SYAN/76372>)

Note about the pin headers and the Jumpers, see below.

- 1x12 Socket x2 (example : [RS1-12-G/9832041](#))
- 1x10 Socket x2 (example : [RS1-10-G/9832059](#))
- 10uF capacitor x2 (example : [ECE-A1VKS100/160560](#))
- 3,5mm MONO Jacks x18 (**Thonkiconn**)
- 10Kohm potentiometers x8 (9mm Trimmer Pots)
- 100Kohm potentiometers x16 (ALPHA 9mm Pots, or compatible)
- Knobs x16

Use same Shaft as your Pots : D-Shaft, T-18 or Round.

Davies, SIFAM or others styles as you prefer.

Color as you prefer.

(The original module uses whit, black dark grey and light grey)

Voice PCB : (count for the two PCBs) :

- 1x12 Pin Header x2
- 1x10 Pin Header x2

Note about the pin headers and the Jumpers, see below.

- 47nF x2 (example : [R82EC2470DQ60J/1930806](#))
- 100nF x2 (example : [R82DC3100DQ50J/1930798](#))
- 10nF x4 (example : [R82EC2100DQ50J/1930804](#))
- 1nF x4 (example : [R82EC1100DQ50J/1930802](#))

Note about the capacitors :

1- which ref. ?

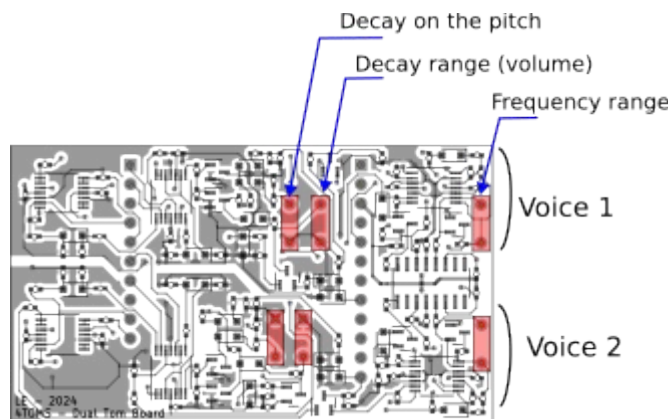
You can use other references, with pin spacing of 0,197po (5,00mm)

2- Exactly these values !?

No ! You can test other values to change the toms features :

(this is a copy form the user manual :)

- Pitch range Low : 50Hz to 300Hz approx. 100nF
 High : 110Hz to 630Hz approx. 47nF
- Decay range <1ms to 3sec. approx. 10nF
- Decay of the (fixed) small envelope on the pitch. 3ms. 1nF



Note about the pin headers :

1-Buying or not buying ?

Except for the PSU connector (2x5 pin header), and the connector between the Main PCB and the two Voice PCB (1x10 and 1x12 pin headers), the others are optionnal :

The 2x3 pin headers allows to choose which parameter is controlled by the CV jack.

The 1x2 pin headers allows to use the CUT jack for another CV instead of the CUT fonctionnality.

If you don't want to change your setting, for example, always controlling the pitch. In this case, you can solder a small wire instead of using pinheader and jumpers.

2- Which one to buy ?

You can use right-sized components, or cuttable bars like these ones :

<https://www.digikey.fr/fr/products/detail/te-connectivity-amp-connectors/146851-2/5008965>

<https://www.digikey.fr/fr/products/detail/te-connectivity-amp-connectors/5-146850-1/2275964>

Even more : Instead of buying two row pinheaders, you can by only the one row. The two row is simply two time the one row !

Needs for the two row : $2 \times 5 + (2 \times 3) \times 4 = 17$

Needs for the one row : $(1 \times 12) \times 2 + (1 \times 10) \times 2 + (1 \times 2) \times 4 = 52$

Needs for one row only : $17 \times 2 + 52 = 86$

MAIN PCB components:



**Voice PCBs components :
(for the two PCBs)**



A- MAIN PCB, components side:

1-PSU capacitors :

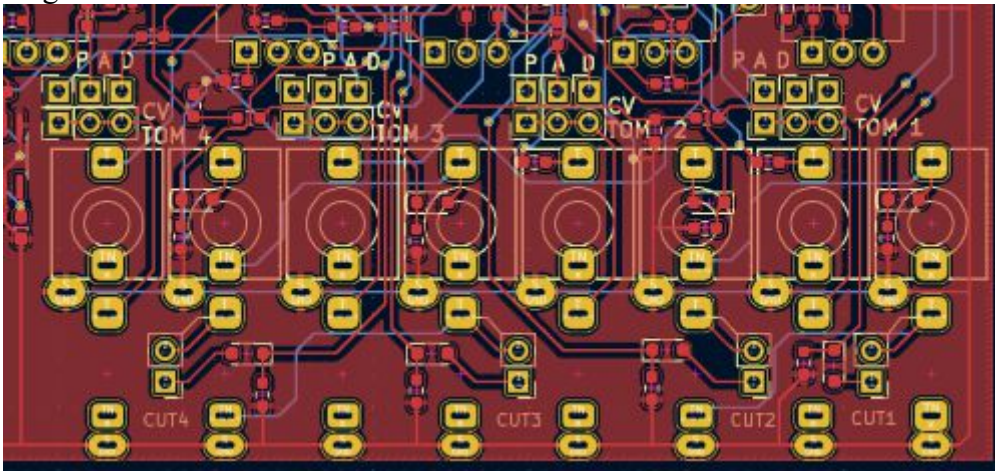
Solder the two 10uF capacitors. Take care of the component orientation : the « - » must goes into the hole surrounded by white.



2- Pin headers 1x2 and 2x3

As explained in the BOM section (« Buying or not buying? »), these pin headers can be replaced by a wire. You may have enough wire after cutting the legs of the 10uF cap.

Here a drawing of the PCB :



For each toms (so a total of 4) :

The 2x3 pin headers allows you to choose which parameter is controlled by the CV jack.

This is the **CV TOM** 1, 2 3 and 4.

And the 1x2 pin headers allows to use the CUT jack for another CV instead of the CUT functionality.

This is the **CUT** 1, 2 3 and 4.

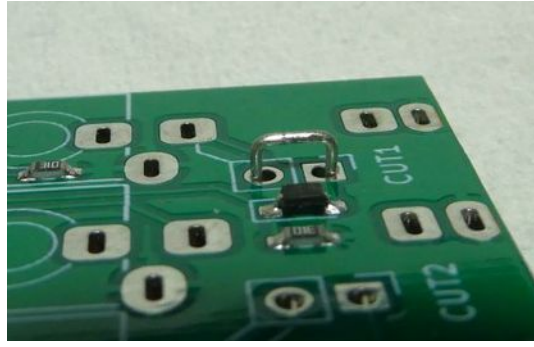
For the 2x3 pin header, the lower line is connected to the CV jack. And for the highest line, each of the 3 holes goes to one of the parameter :

P to controle the pitch

A to controle the accent (volume)

D to controle the decay

So if you want to fixe the use of the CV jack, insert a wire between the two line, at the raw you want.



Exemple of wire instead of a pin header, for the CUT circuit.

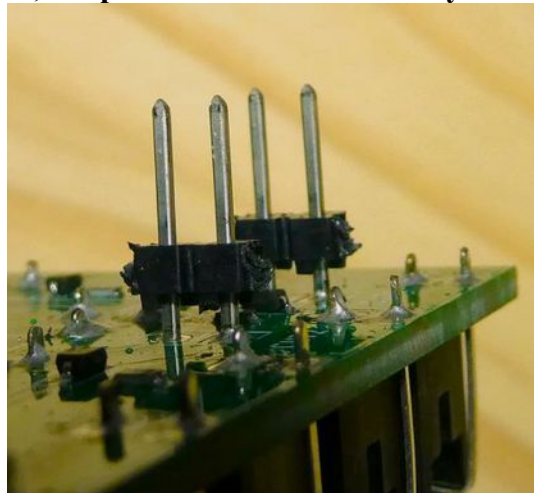
The CUT pin header connect the CUT jack into the CUT circuit. But maybe you will prefer to use this jack for another CV ?

If you want to fixe the use of the CUT as espected, connect a wire between the two holes.

If you want to use the CUT jack as a second CV input, connect the upper hole (the round one, not the square one) to the hole you want from the 2x3 pin header holes.

If you want to build your module as the original, solder the 2x3 and the 1x2 pin headers.

WARNING !!! The 1x2 pin headers are just above the jacks, so do not push the connector all the way in : On the other side, the pins should not extend beyond the edge of the PCB.



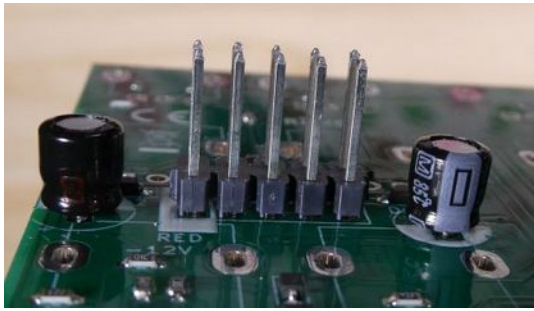
After soldering one pin, and adjusting the position, you can finish to solder the other pin.

Don't worry : being excatly on the edge of the PCB is not critical.

But make sure to have filled the hole well with solder, to have good mechanical solidity.

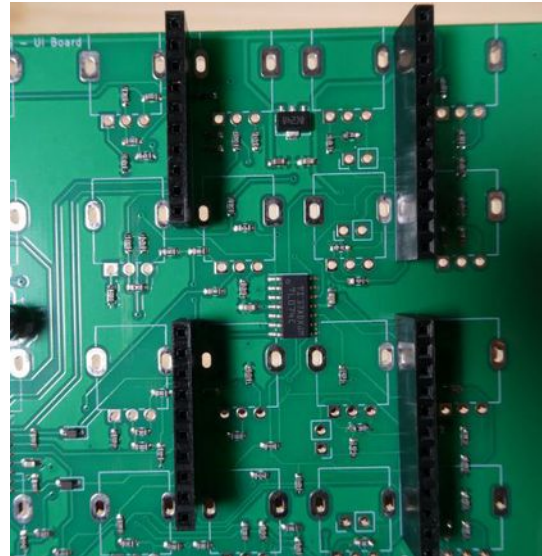
3-PSU connector:

Solder the 2x5-pin connector.



4-Socket connectors :

This is the connectors for the two voice PCBs.
The 1x12 and 1x10 sockets.

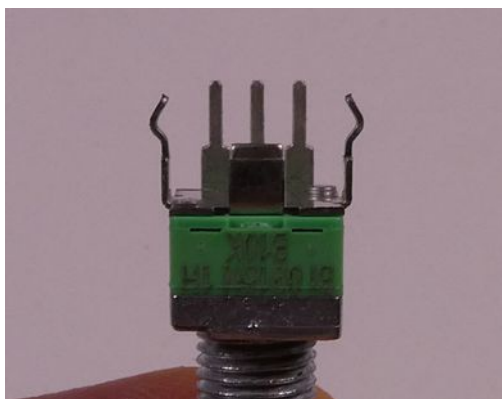


B- MAIN PCB. Side without components:

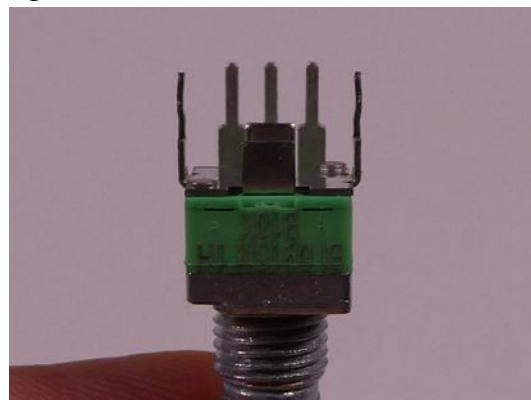
All that remains is what will be on the front panel: the jacks and potentiometers.

As space was limited, it was necessary to reduce the size of some holes.

"Pinch" the pin of the potentiometer to make it straight:



before



After

JACKS and POTENTIOMETERS

Place all jacks on the PCB. There are **18** in all.

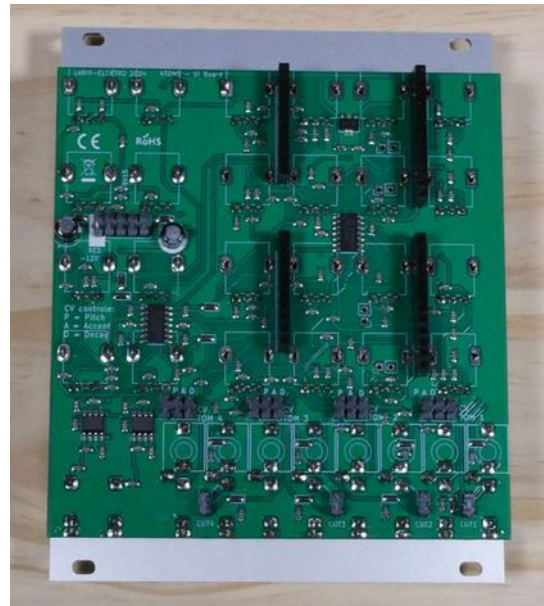
Then place all the potentiometers. There are **16**, and **8** trim potentiometers.

Insert the front panel into the jacks.

Screw at least 4 jacks onto the front, one of each corner.

Screw at least 4 potentiometers too.

There is no need to screw them too hard, this is just to fixe everything together.



Before soldering, check that the jacks are firmly inserted in the PCB.

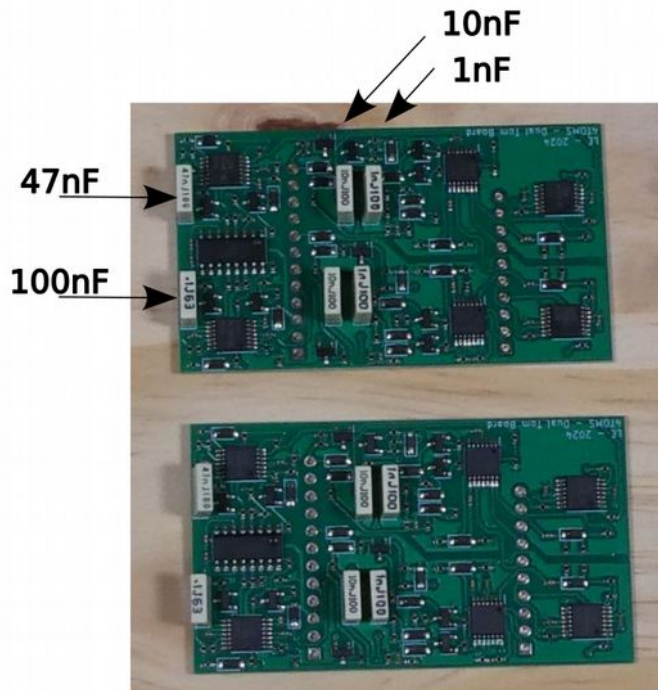
At first, solder all Jacks, potentiometers.

As with the previous steps, solder only one PIN of each Jack.

Check again that all the components are against the PCB before soldering all the others pins.

C- VOICE PCB :

1- Solder the capacitors



According to your tast (see BOM) insert the capacitors.

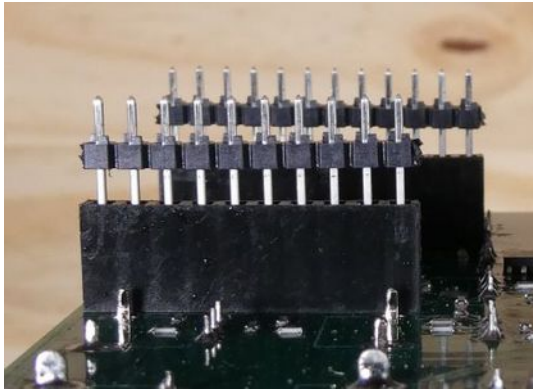
The picture shows the values from the original module.

(Don't forget to solder the second PCB !)

2- pin headers

We will use the MAIN PCB to solder the pin headers.

Insert the pin headers into the corresponding sockets :



Then insert the Voice PCB into the top :



Finally, solder the pinheaders to the Voice PCB.



3- Finalize

Screw the last jacks, insert the knobs, and it's done. Your module is finished !



D- TESTING YOU MODULE :

There are no adjustments to be made, the module is ready to use.

To test the module, you need a clock generator like any square generator (LFO is OK). Something to hear.

So, simply connect the CLK signal into each IN.

To check the individual output, connect your case output into the corresponding OUT.

To check the mixer output, use the LR outputs.

Then turn all the knobs corresponding to this input (all on the same line of knobs).

If something sounds wrong or has no effect, check that everything is soldered correctly.

Take care that the volume knob is not at minimum.

And that the Accent and decay are not at minimum too.

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