Nice69 Build Guide

Table of Contents

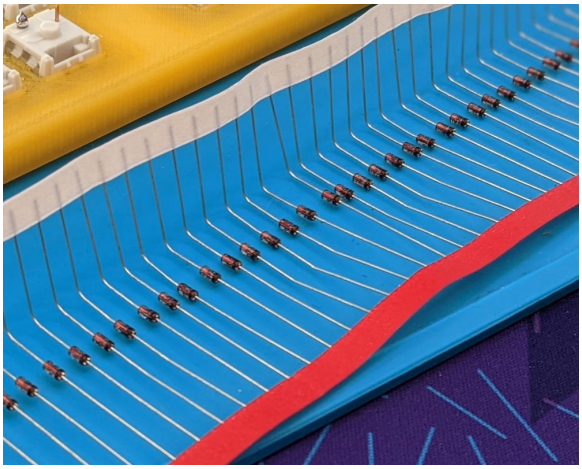
1. Included in the kit
2. What you will need
3. Software you will need
4. Installing stabilizers & switches
5. Handwiring your Nice69
    i. Installing the row diodes
    ii. Installing the column wire
6. Connect rows & columns to microcontroller
7. Customizing in Vial

1. Included in the kit

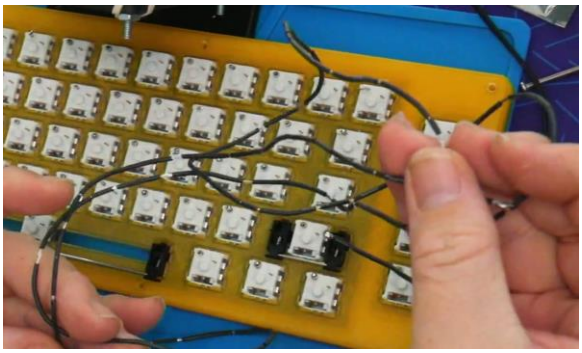
The Nice69 kit includes most of the components you will need to handwire your own keyboard:

- 3D printed Nice69 Case

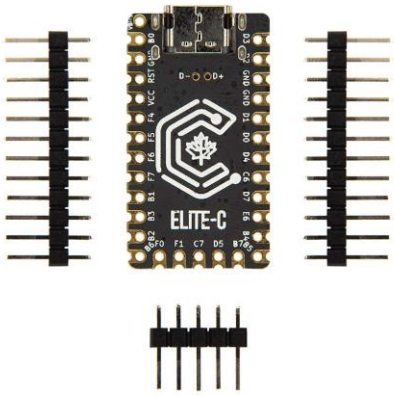
- 1n418 diodes *(75)*



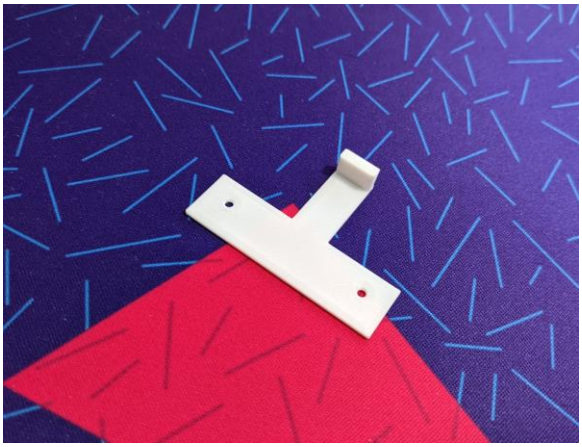
- Insulated wire for your build *(pre-scored for easy wiring)*



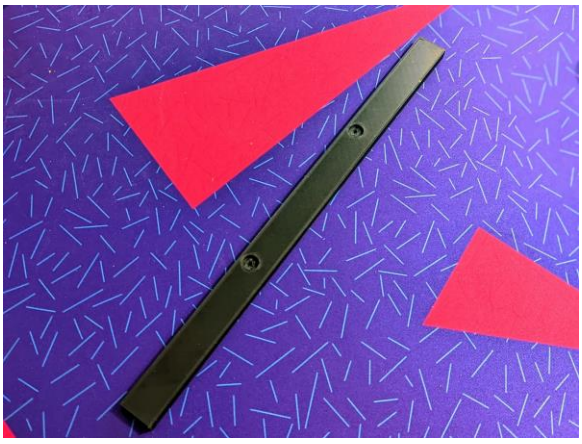
- Elite-C microcontroller *(pre-flashed with Nice69 firmware)*



- Elite-C retention bracket



- Case foot for optional typing incline.



**Final foot design subject to change*

- Screws for case assembly *(8x)* and Elite-C bracket *(2x)*

2. What you will need

While the Nice69 comes with most of what you'll need, there are a few things that you still need to complete the build:

- Stabilizers, plate-mount *(handwired keyboard = no pcb!)*
  3x 2u, 1x 7u
- MX style key switches (*69 needed)*
- Keycaps *(7u spacebar needed for Nice69 bottom row)*
- Screwdriver, Phillips head – *Screwdriver Kit: https://amzn.to/3n8iuzC*
- Soldering iron - *Soldering Kit: https://amzn.to/3q7RF0o*
- Solder, flux core electrical solder *(thinner diameter)*
- Wire snips – *Flush Kutters: https://amzn.to/3q7RF0o*
- Needle nose tweezers or forceps – *Tweezers https://amzn.to/3HNkmpt Forceps https://amzn.to/3HNkmpt*
- Keycap puller & keyswitch puller - *https://amzn.to/3HNkmpt*

There are also a few things you may want to bring to the build to further customize and make your Nice69 build your own, such as:

- Soldering fan/fume extractor – safety first!
- Helping hands – to hold the microcontroller for soldering
- Acoustic dampening/case foam – cheap and effective, a little bit of 1- or 2mm is my go-to.
- Wire of your own choice *(ultimate aesthetic control... or for adding LED)*
- Wire strippers *(in case you bring/use your own wire)*
- LED's for case lighting/backlighting

3. Software you will need

There are a few programs that you will need to take advantage of the Nice69 firmware, and for any possible firmware updates that may be available.

- QMK Toolbox for flashing microcontrollers (just in case) - *https://github.com/qmk/qmk_toolbox/releases*
- Via for key testing, json modifications - *https://caniusevia.com/*
- Vial for Nice69 keymap customization - *https://get.vial.today/download/*
- QMK MSYS in case you want to try compiling your own firmware - https://msys.qmk.fm/

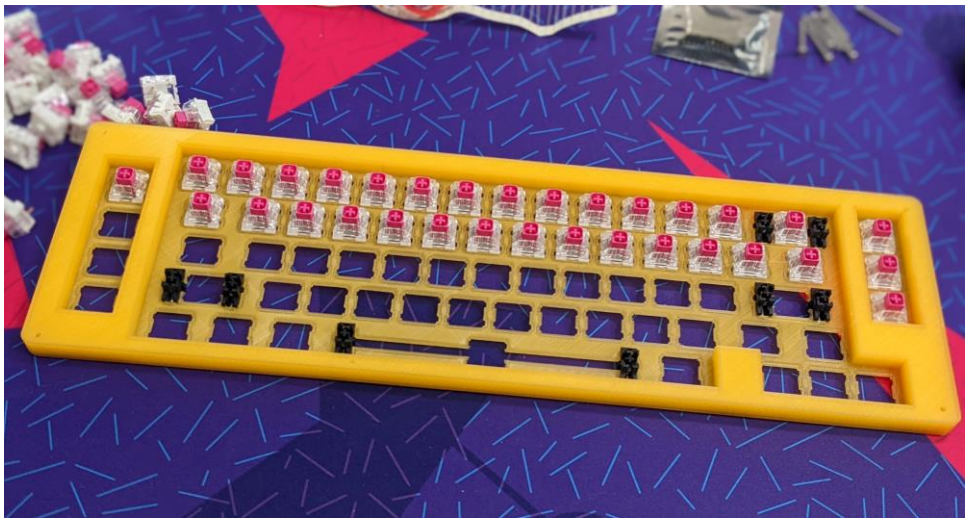
4. Installing stabilizers & switches

Open up the case of your Nice69 and set the bottom case, foot, and bracket to the side for now. Most of the assembly is centered around the top case.

First, install your stabilizers. There are 3 positions for 2u stabilizers (Left Shift, Backspace, and Enter), with the 7u stabilizer being used for the spacebar.

fig 4.1 Stabilizer positions circled in picture above

After stabilizers are in place, switches can be installed. Switches click into position on the integrated plate, though you may need to push the plate from below to properly seat some switches.



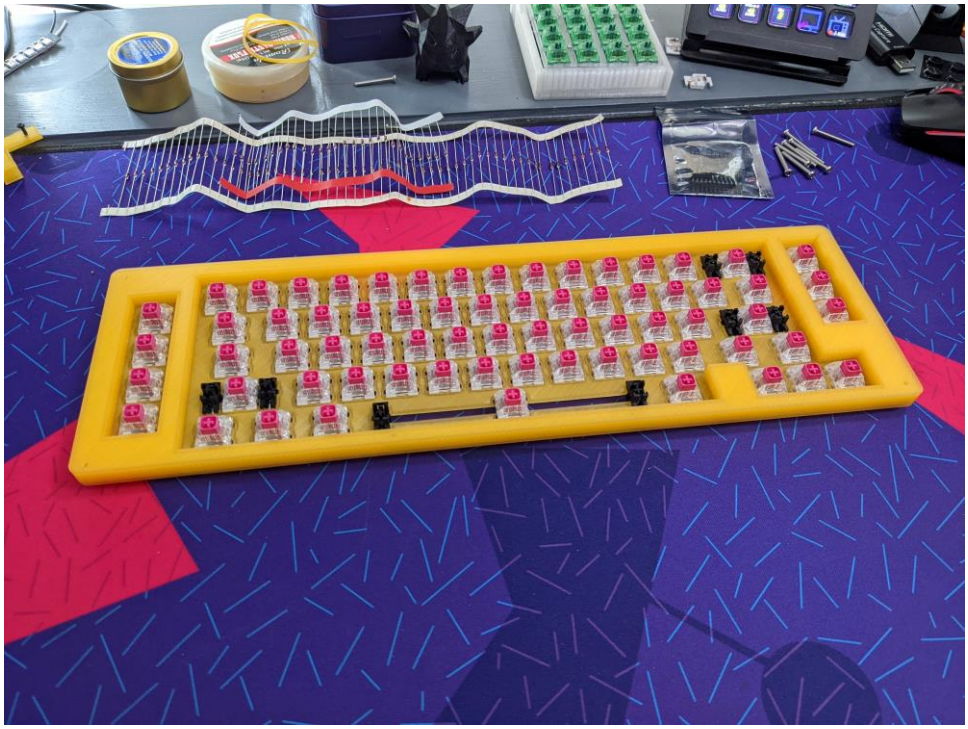


fig 4.2 (top) and fig 4.3 (bottom) Switches installed on integrated plate

5. Handwiring your Nice69

Now that we have the stabilizers and switches in place, this is where the fun begins. ***Keep in mind!*** From here, we are looking at the switch matrix from the back. This means that our columns are mirrored; C15 is on your left and C0 is on your right.

fig 5.1 soldering view

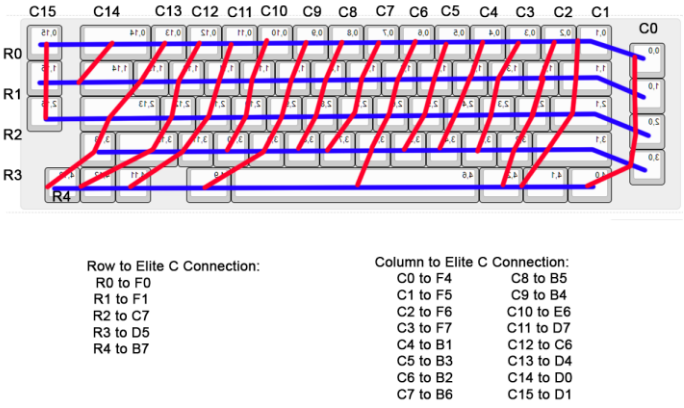


fig 5.2 mirrored wiring diagram

This is where the soldering starts. I typically solder the diodes into place, then solder the column wire into place.

i. Installing the row diodes

The 1n418 diodes included in your Nice69 kit are more than enough to complete your build – with a few extras included just in case! The diodes allow current to pass through them in only one direction. If you look, you can see that each diode has a dark stripe on one end – we want to make sure that end is pointing **AWAY** from our switch when it's put into place.

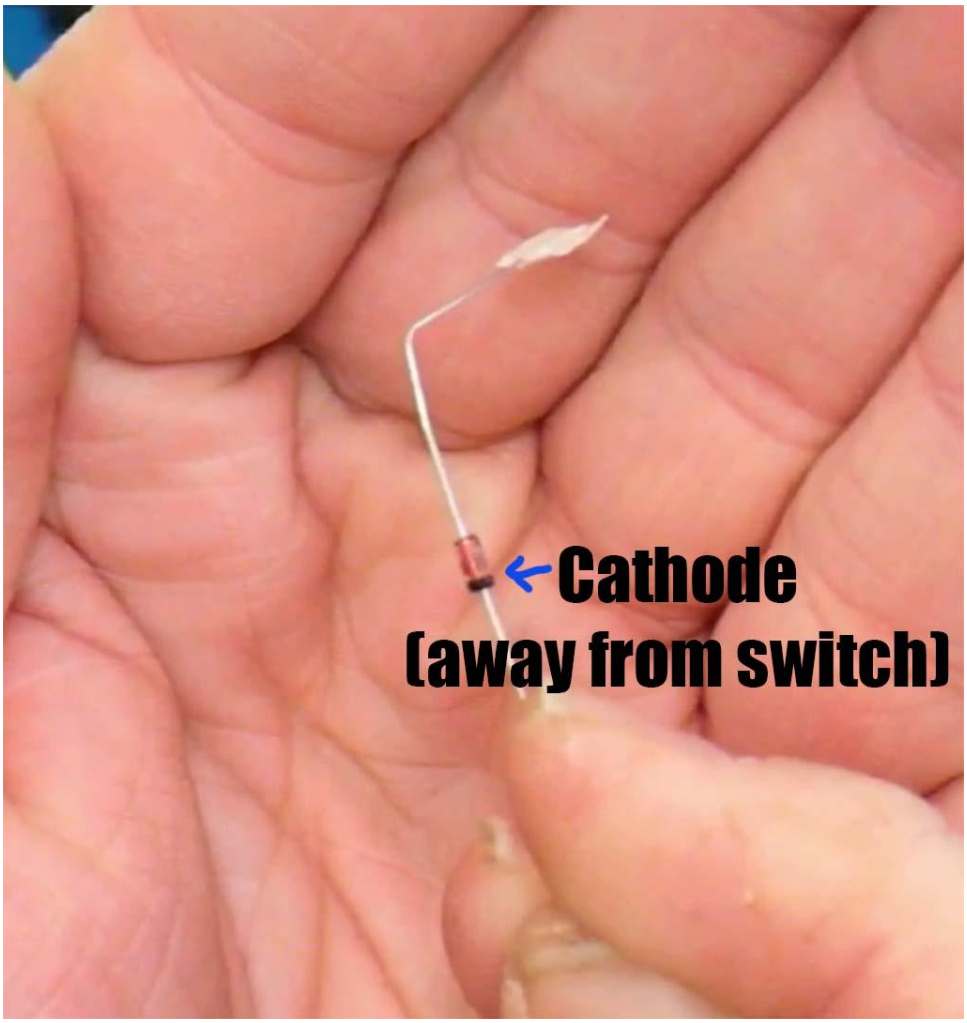


*fig 5.3 the cathode of each diode is marked by a dark stripe make sure **ALL** of these are pointed in the same direction.*

To start, tin the left pin on each switch of your keyboard. Bend your diodes on the unmarked side using a straight edge *(ruler, book, etc)* - this will help us to hook the diode against the switch leg.

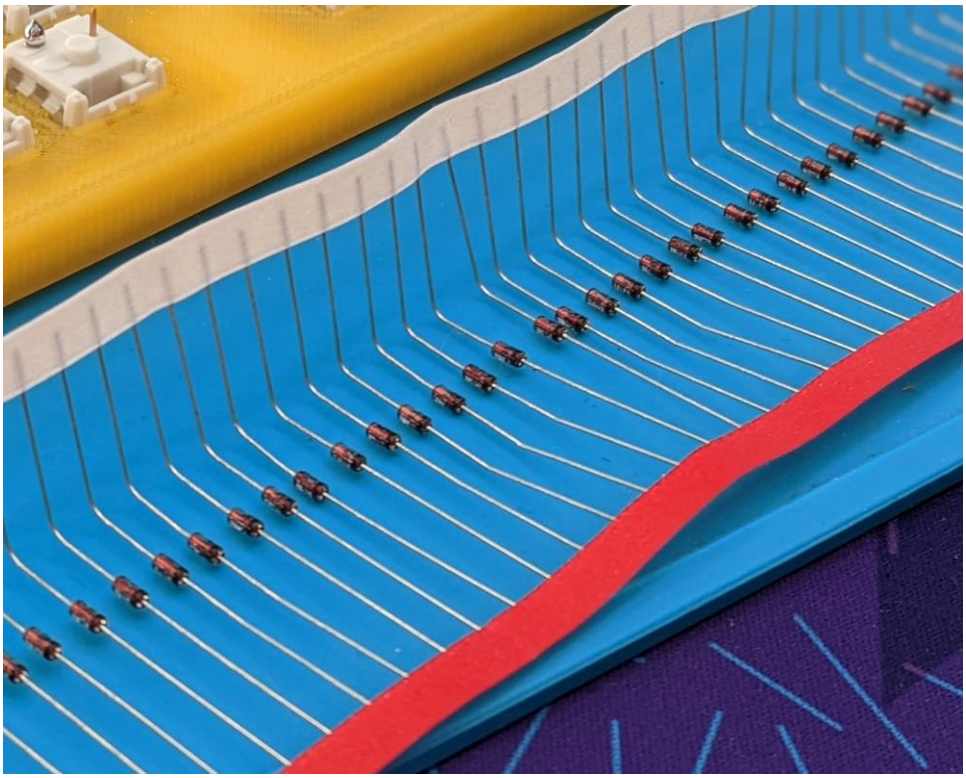


fig 5.4 diodes pre-bent to help with soldering

fig 5.5 pre-tinned switch pins for diodes

We can now solder the diodes into place on the switch pin, afterward we will twist the diode leg around the switch pin and reflow solder for a more secure connection *(you may need to add a little more solder)*.

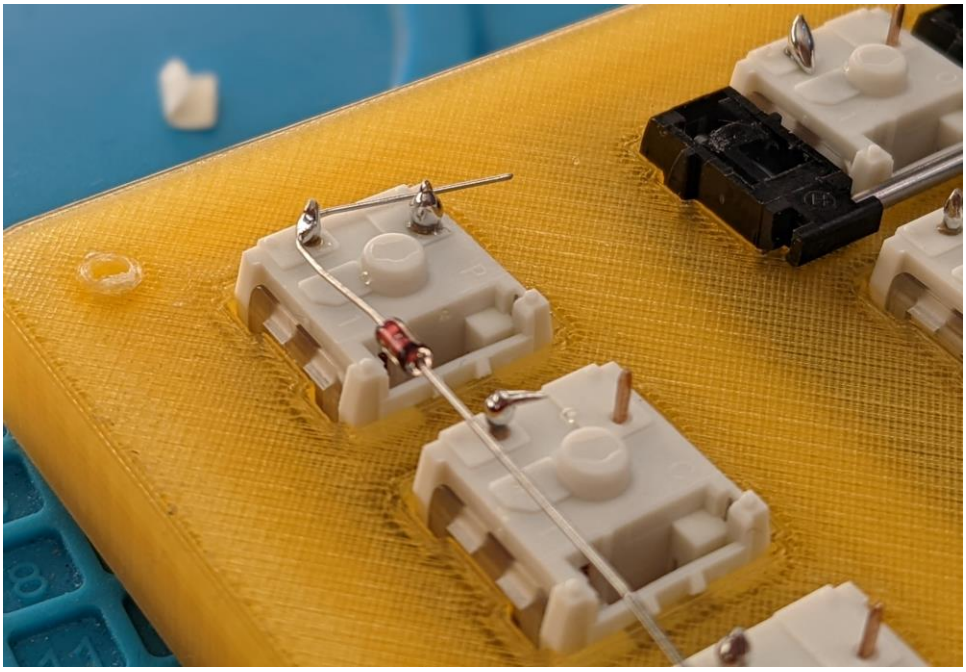


fig 5.6 first diode soldered into place

From here, we can bend the other leg of the diode toward the next switch, soldering to the next diode. This process is repeated from diode to diode along the row – some diodes may need to be bent or stretched, while others may need a length of wire to cover gaps.

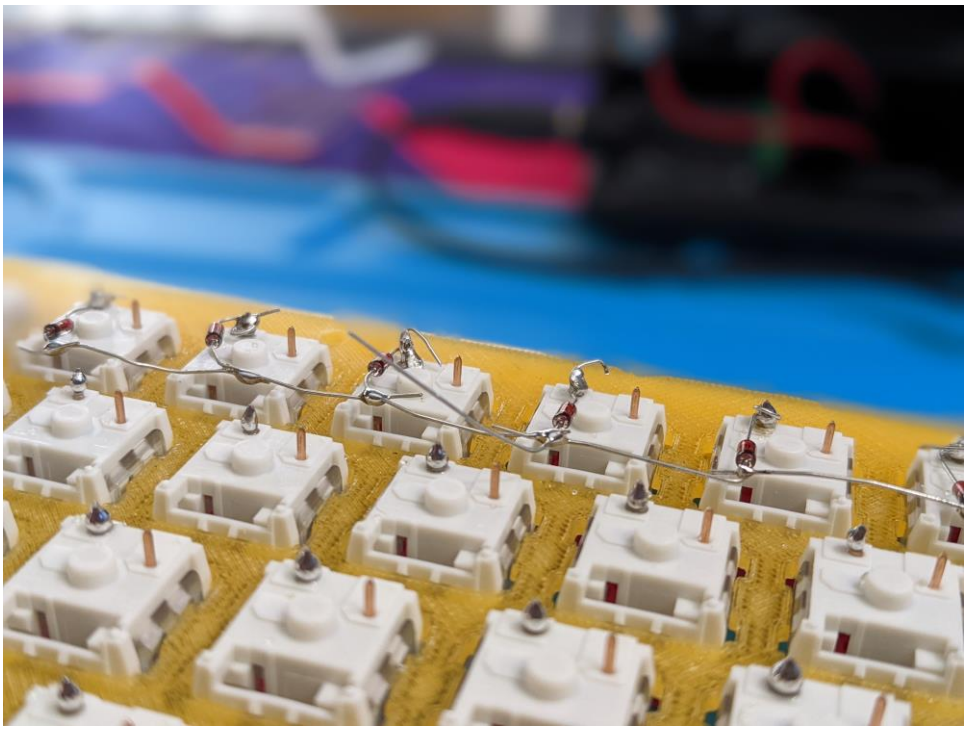


fig 5.7 each diode soldered and twisted around the switch pin; cathode wire bent and soldered to next diode pin

After the diodes have been soldered into place and are secure, use your flush cutters to trim away any excess wire from the diodes to prevent any potential shorts.

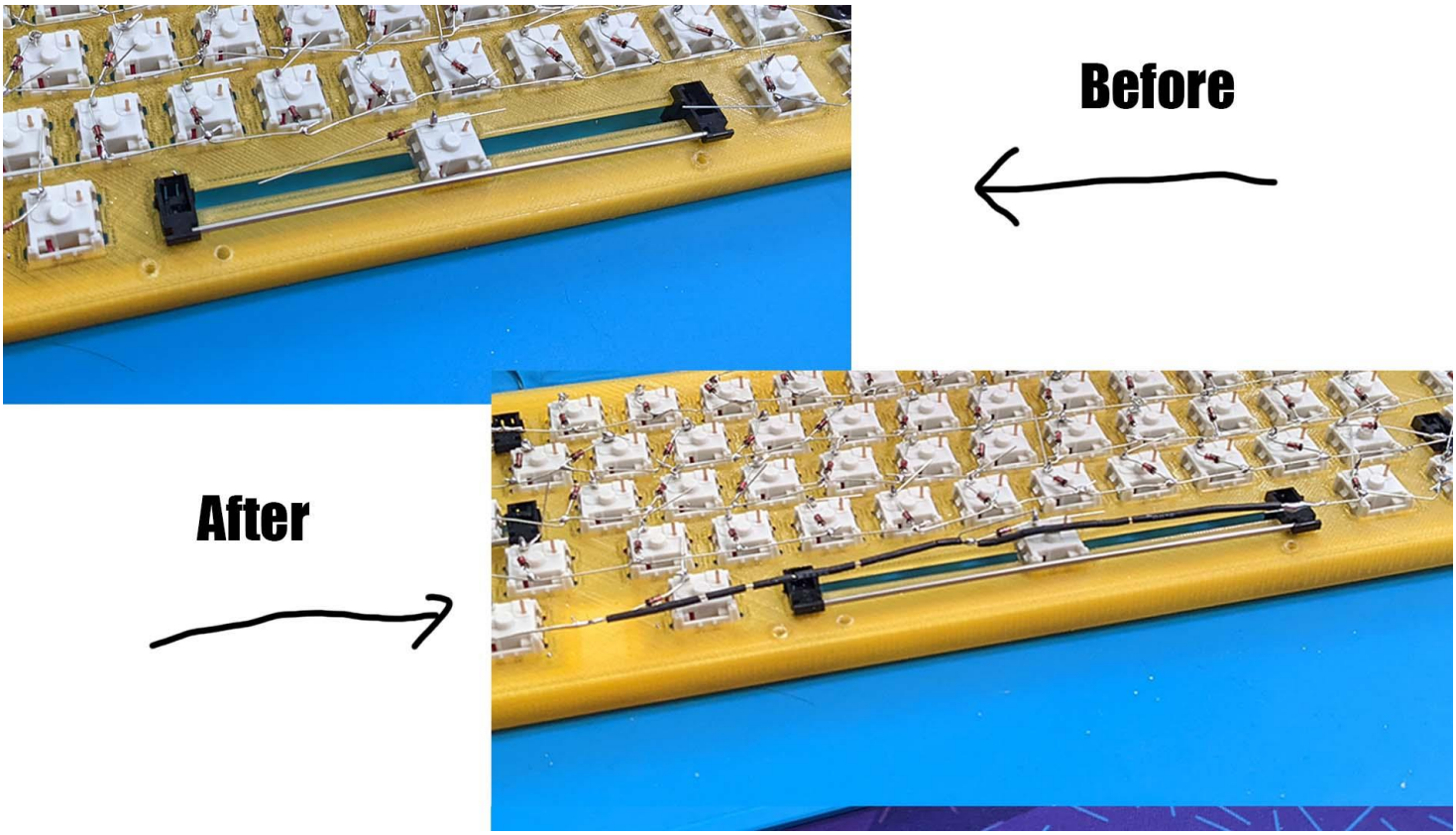


fig 5.8 the spacebar diode will need an extra length of wire to connect to switches on either side

ii. Installing the column wire

With the diodes soldered into place as our rows, simple wire soldered to the right pin of our key switches will create the columns of our keyboard matrix.

The wire in your Nice69 kit is pre-tinned on each end, and the insulation is pre-cut to prevent any need for having to work with small lengths of wire. Solder one of the tinned ends of your wire to the right pin of your first switch.

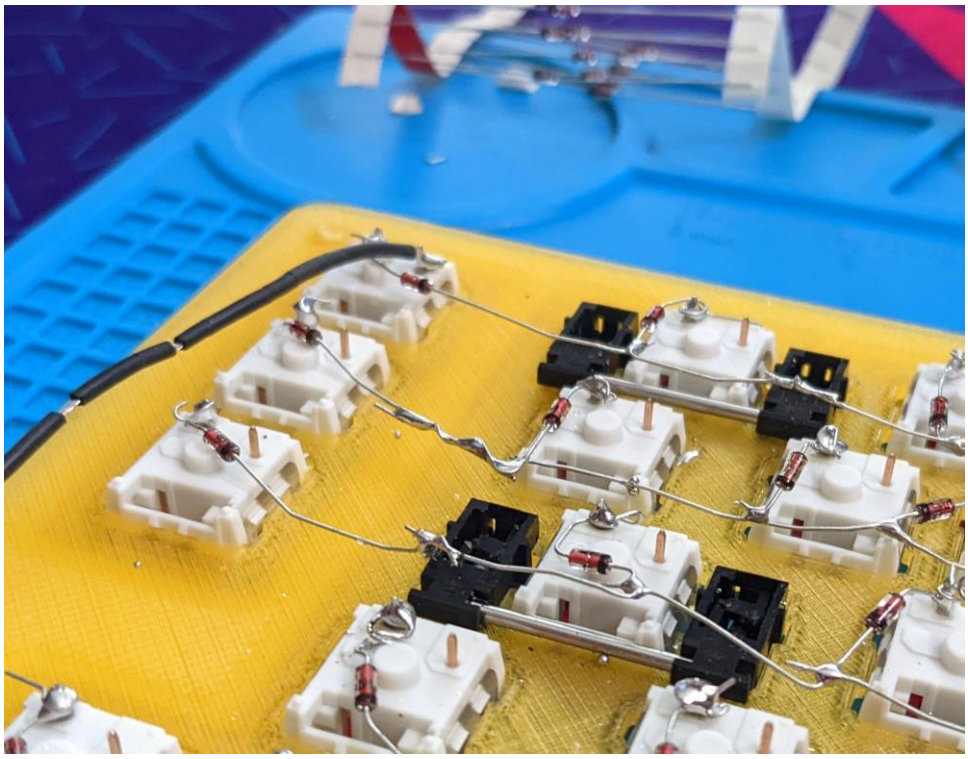


fig 5.8 column wire anchored on switch at point 0,15; insulation has been moved to expose wire for soldering on the next switches

Using the first pin as your anchor point, slide the wire insulation down toward the solder joint to expose wire for soldering on the next switch – slipping the switch pin through the wire even. Solder your wire into place, then repeat this process with each switch until the column is complete.

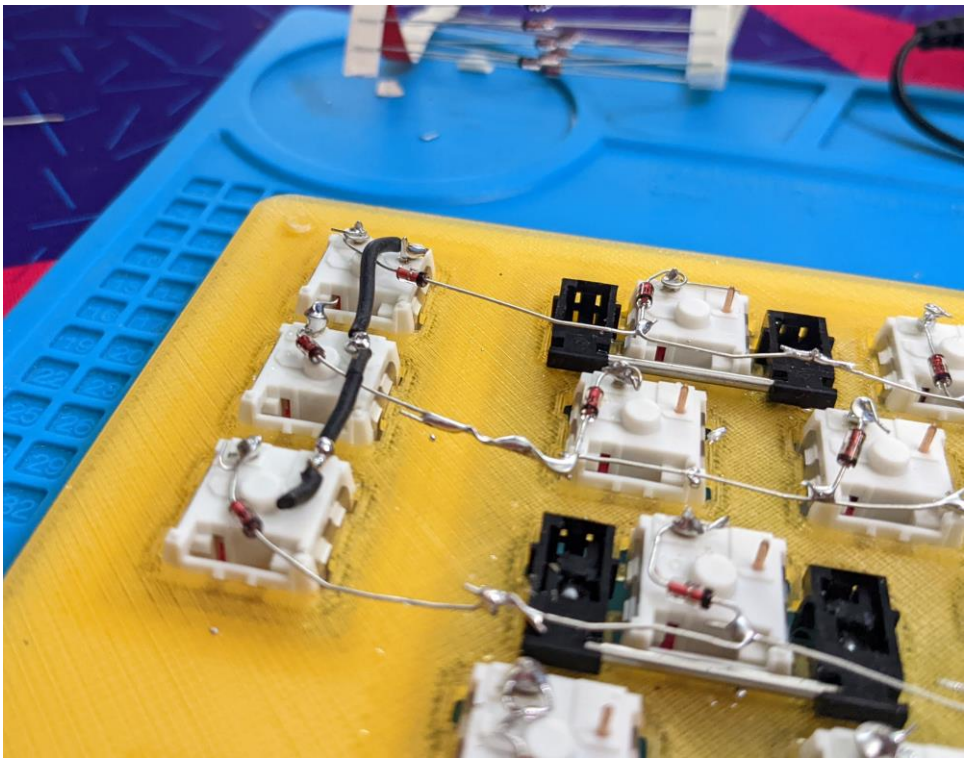
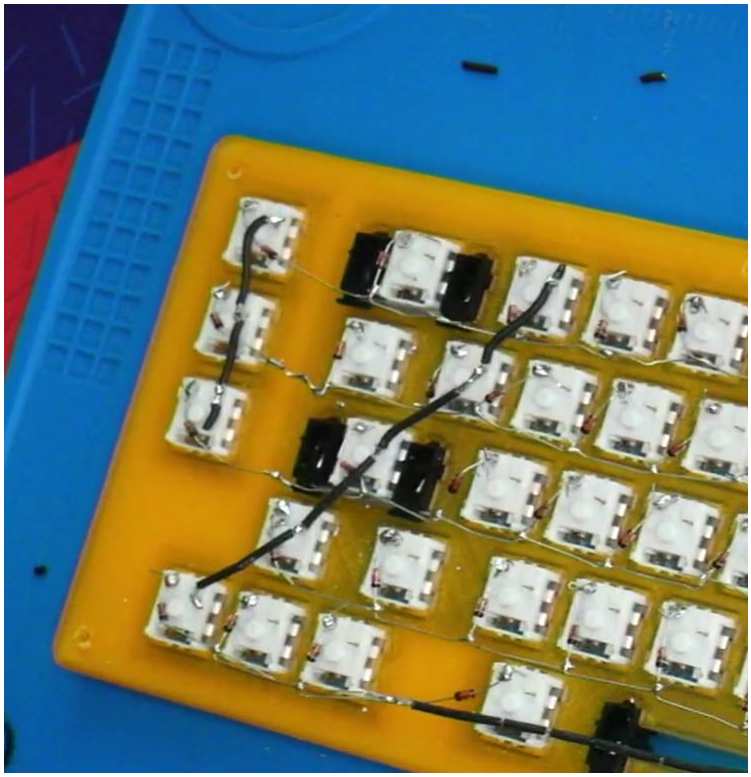


fig 5.9 column wire soldered into place and trimmed

When the final switch of the column is soldered, snip the rest of the wire, remove the insulation from the new end and anchor it on the first switch of the next column. Repeat this process for each column until each one has been soldered into place.



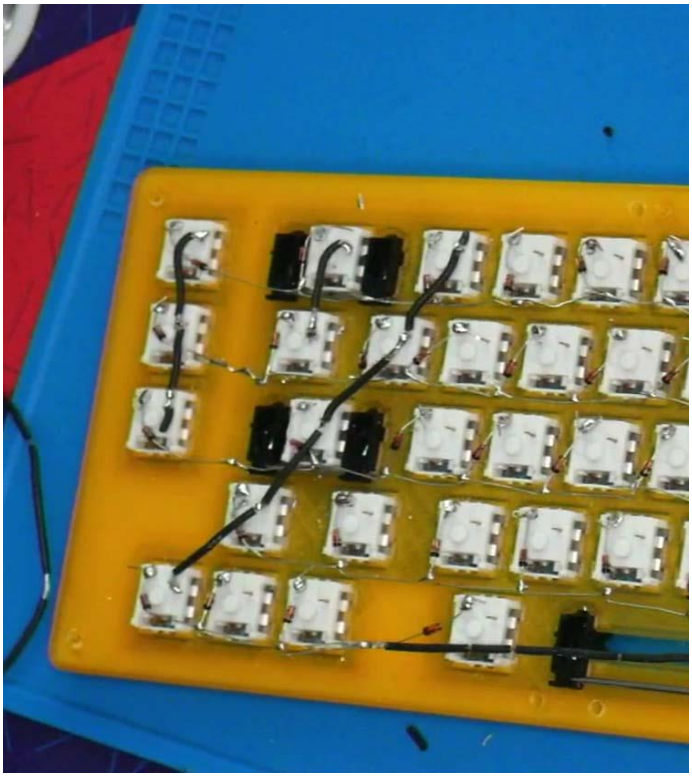


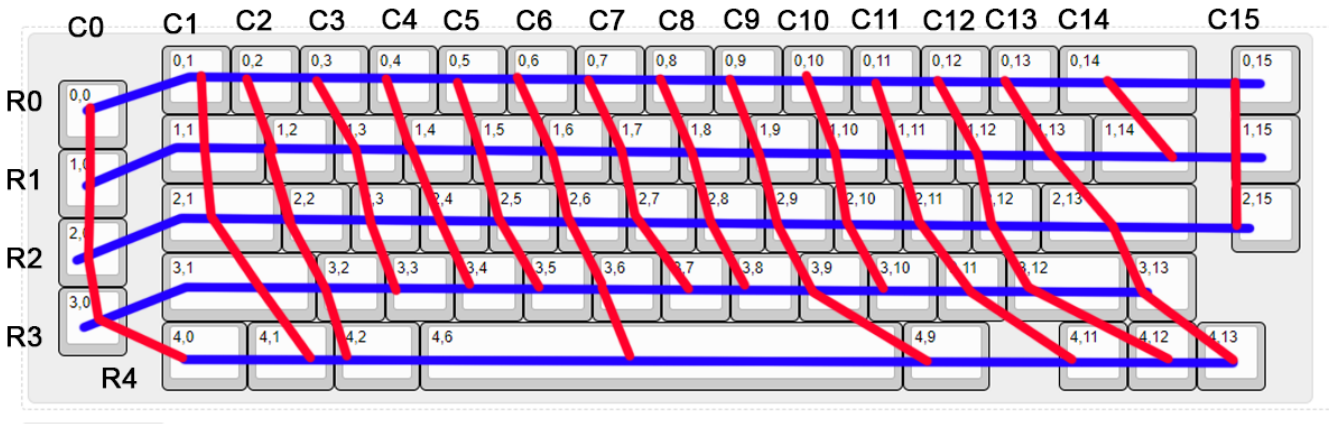
fig 5.10 (left) and fig 5.11 (right) column 14 is only two switch positions: backspace & backslash
<u>be careful not to solder all the way down here!</u>

fig 5.12 fully soldered, matches the wiring diagram linked in fig 5.2

6. Connect rows & columns to microcontroller

The rows and columns of your Nice69 can be wired with just about any wire. Inside of each Nice69 kit is a selection of cut and pre-tinned wire to use for these connections at manageable lengths. If preferred, ribbon cable also makes for simple wire management and works just as well as what's included in the kit.

Use the pictured Elite-C pin diagram to help guide in wiring your columns and rows.



Row to Elite C Connection:

R0 to F0
R1 to F1
R2 to C7
R3 to D5
R4 to B7

Column to Elite C Connection:

C0 to F4	C8 to B5
C1 to F5	C9 to B4
C2 to F6	C10 to E6
C3 to F7	C11 to D7
C4 to B1	C12 to C6
C5 to B3	C13 to D4
C6 to B2	C14 to D0
C7 to B6	C15 to D1

fig 6.1 full wiring diagram with Elite-C Pinout key

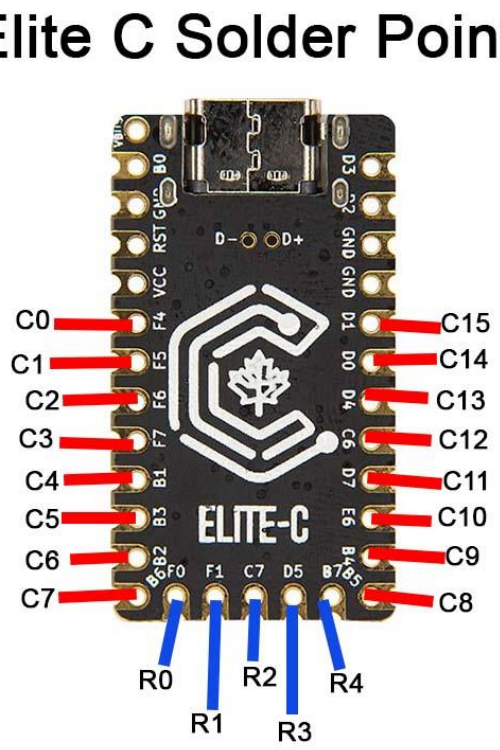


fig 6.2 Elite-C solder points; columns marked red and rows marked blue

To help with cable management in your keyboard, the rows have been assigned pins across the bottom of the Elite-C.

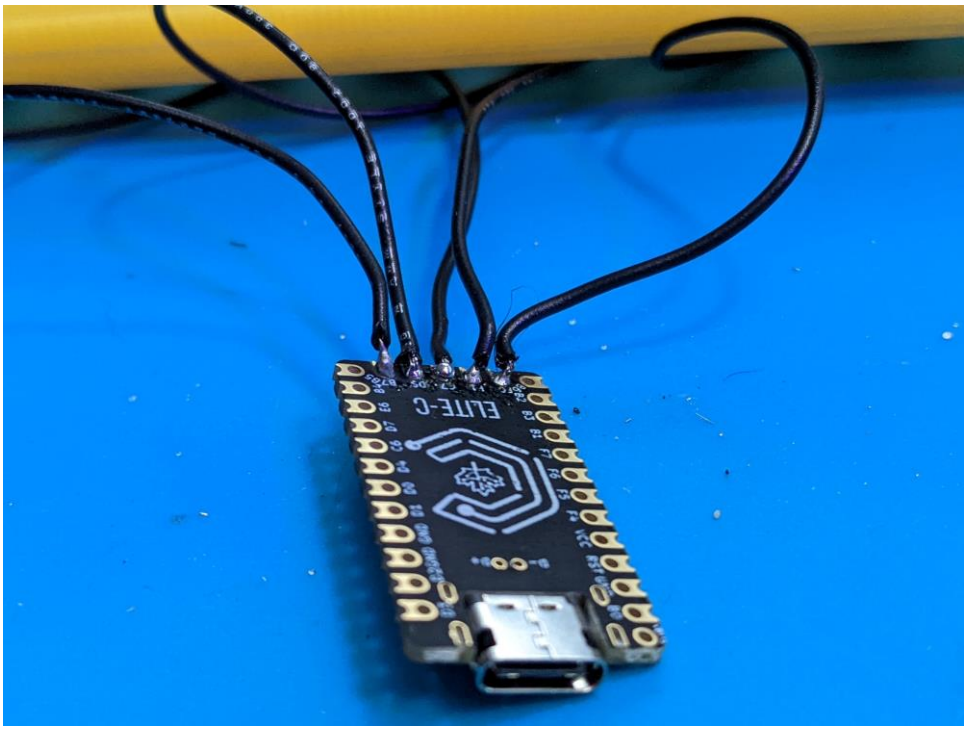


fig 6.3 rows soldered to Elite-C

Columns have been assigned to the side relative to them on the Elite-C.

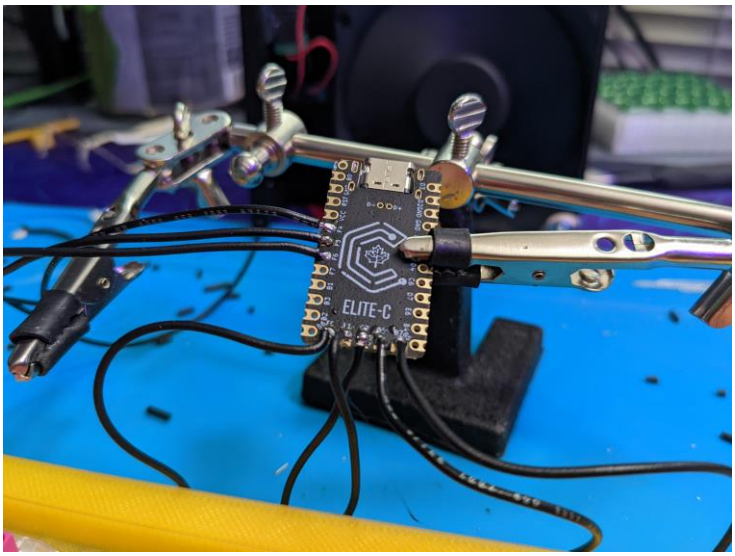


fig 6.4 I started to wire connections to the Elite-C first when soldering rows

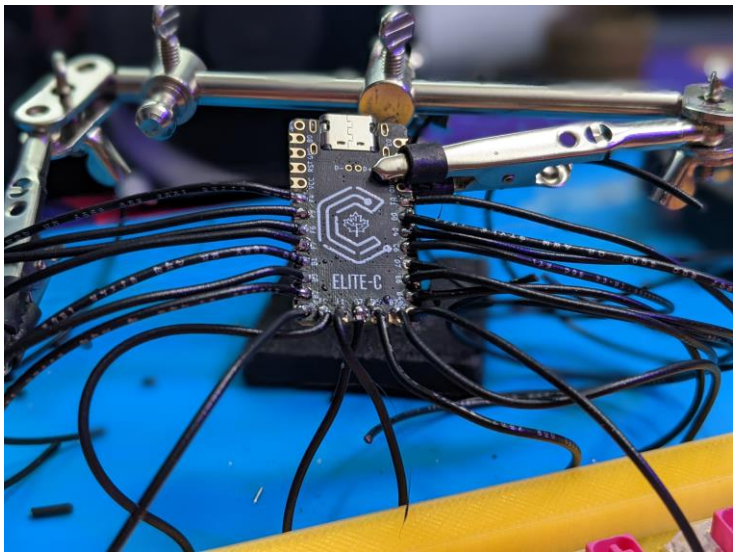


fig 6.5 all columns soldered to Elite-C

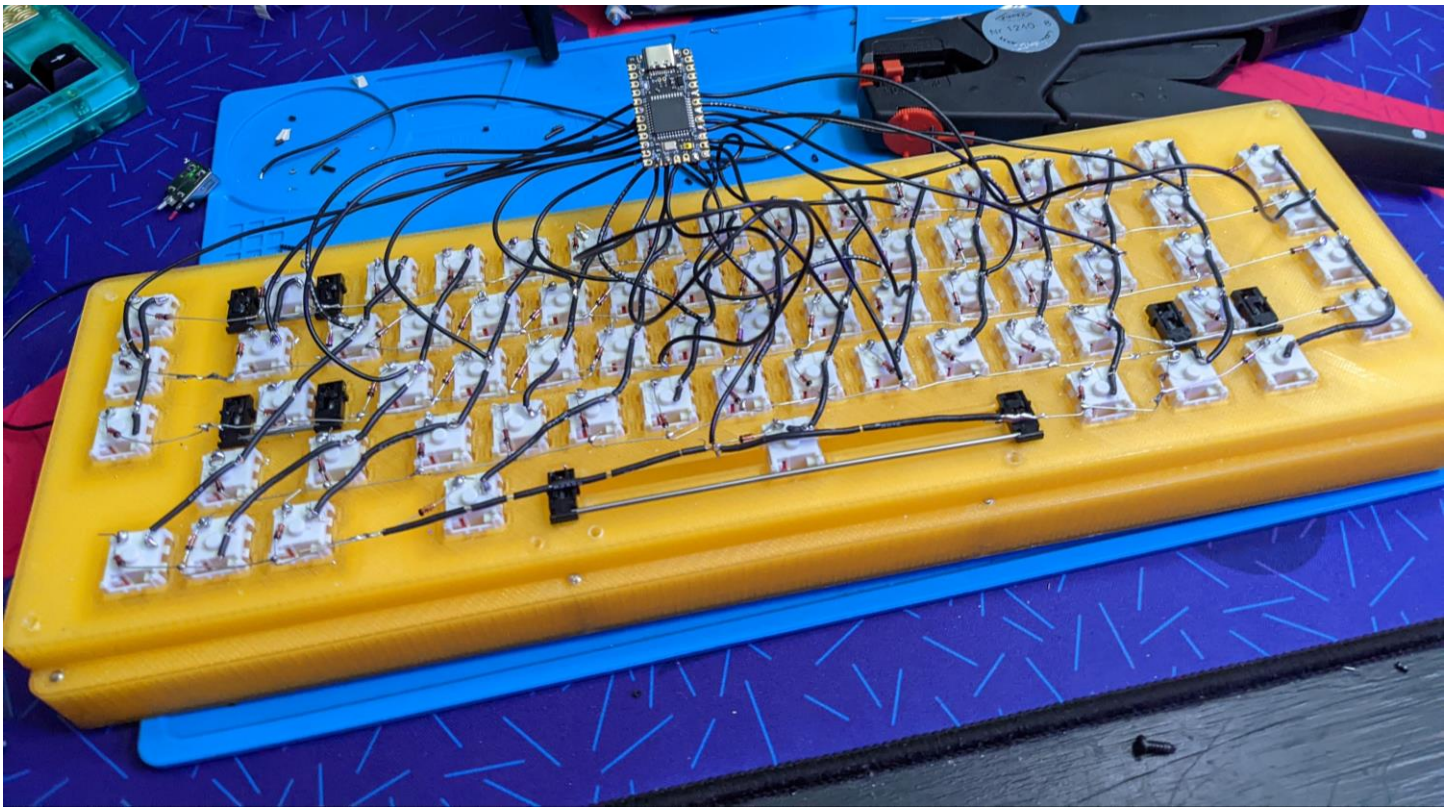


fig 6.6 all column wires soldered into place; these can be soldered to any point of the column

Once all of your columns and rows have been soldered into place, plug the keyboard into your computer before final assembly. At this time, use Via (or your preferred alternative) to make sure all your keys register. After testing your keyboard, use the included Elite-C retention bracket to secure the microcontroller into place in your bottom case.

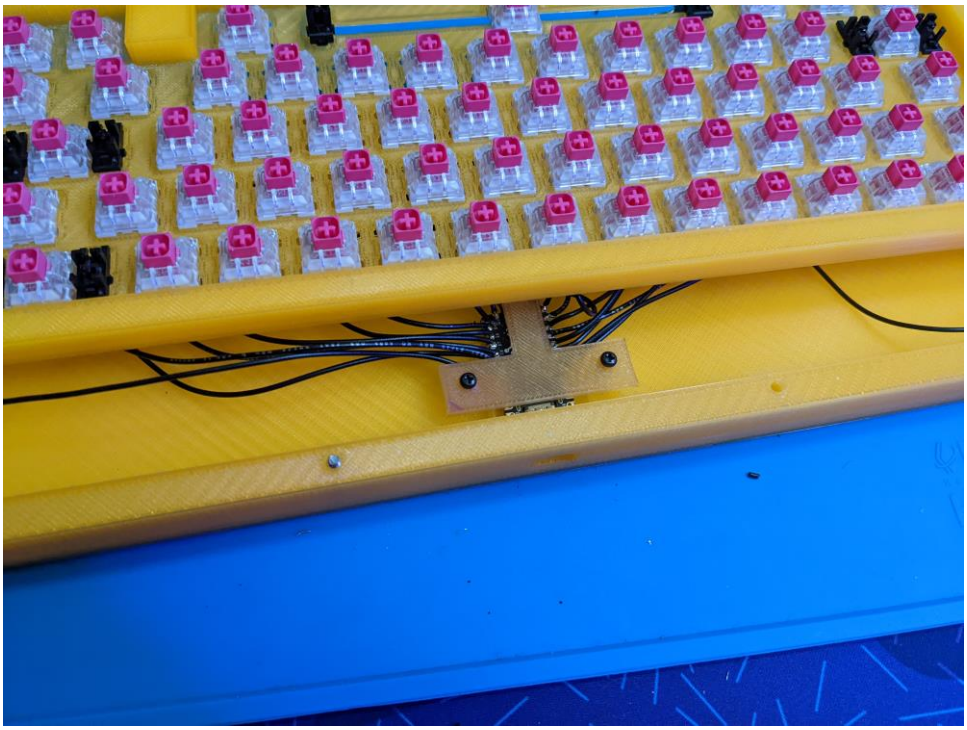


fig 6.7 Elite-C held in place under retention bracket

Be sure to tuck any extra bits of wire back into your keyboard's case as you put the top and bottom pieces together. When assembling the Nice69, start with placing screws in positions 1 through 8 as shown below. Do not fully tighten case screws until they have all been seated to prevent warping.

7. Customizing in Vial

Now that you have your Nice69 fully assembled and ready to go, you can have full control over customizing your layout! Anytime your Nice69 is connected to your computer, Vial will immediately recognize the keyboard. Any changes you make to the layout are instantly saved onto the microcontroller and stored for use. Even if you plug your keyboard into another computer, the layout you have configured will be stored on the keyboard!

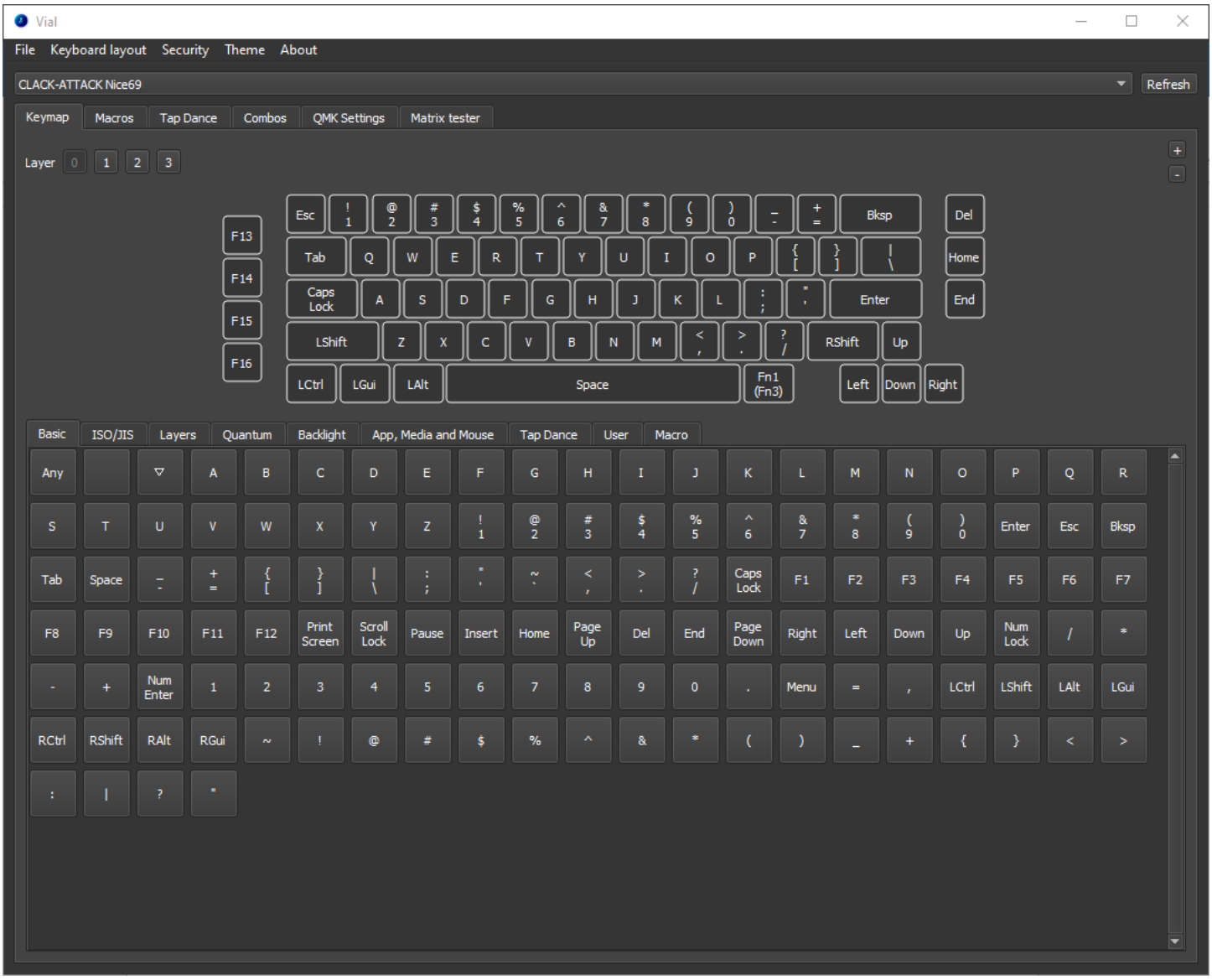


fig 7.1 the Nice69 recognized in Vial