NYSTRÖM - Crum Drum
Build Document

For the most recent version of this document please visit –
https://www.thonk.co.uk/shop/crum-drum

All Thonk kits are sold under our standard Terms and Conditions -
http://www.thonk.co.uk/faq/

DIY INSTRUCTIONS

This document gives detailed instructions that assume you have purchased a complete Crum Drum kit from www.thonk.co.uk after May 2025, it also assumes no previous knowledge of electronics.

To learn to solder try https://www.youtube.com/watch?v=IpkkfK937mU and the **Adafruit guide to excellent soldering** – http://bit.ly/1l77tF4

Watch and understand that whole YouTube video! If you're not achieving the results shown in the video then you need to buy new tools or seek advice. **You will not end up with a working unit otherwise.**

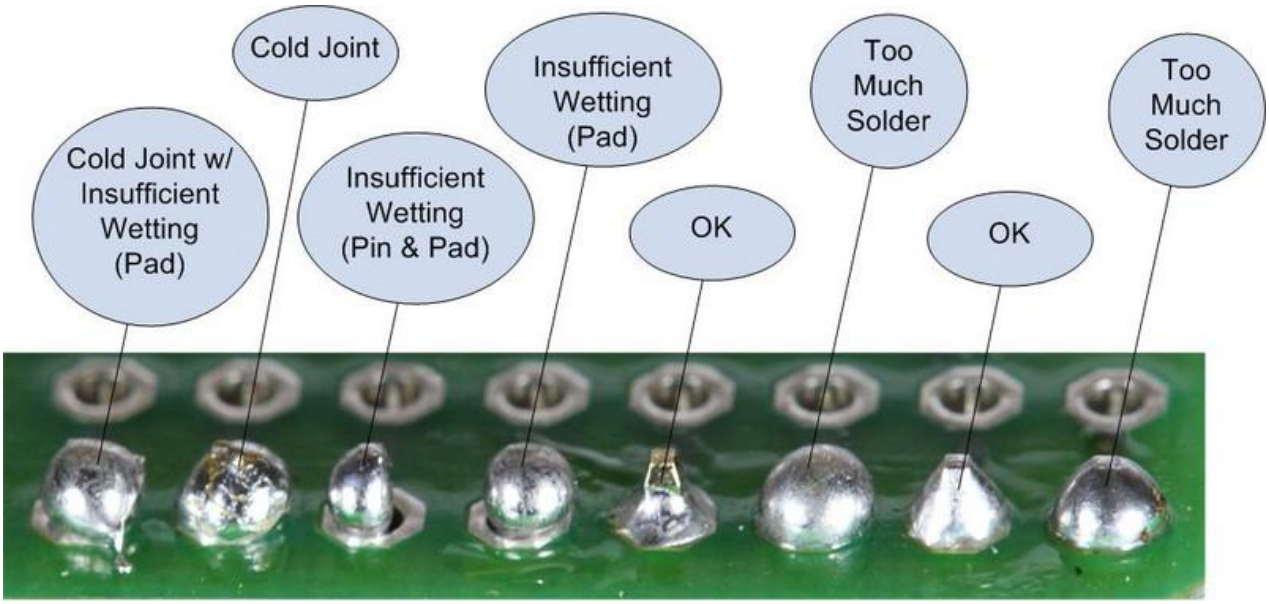
TOOLS REQUIRED

Soldering iron, snipe nose pliers, wire strippers, small flat head screwdriver and diagonal cutters AKA snips AKA side-cutters. A Digital Multimeter is always helpful for checking for bad solder joints and continuity. Thonk sell a range of inexpensive tools here - http://bit.ly/1jxqF3n

SOLDER JOINTS

Your solder joints should look like those shown as 'OK' below, they should have that neat conical shape on BOTH sides of the PCB. If they don't look the same on both sides then stop! Work out why from the soldering guides linked and don't continue until you are getting those results.

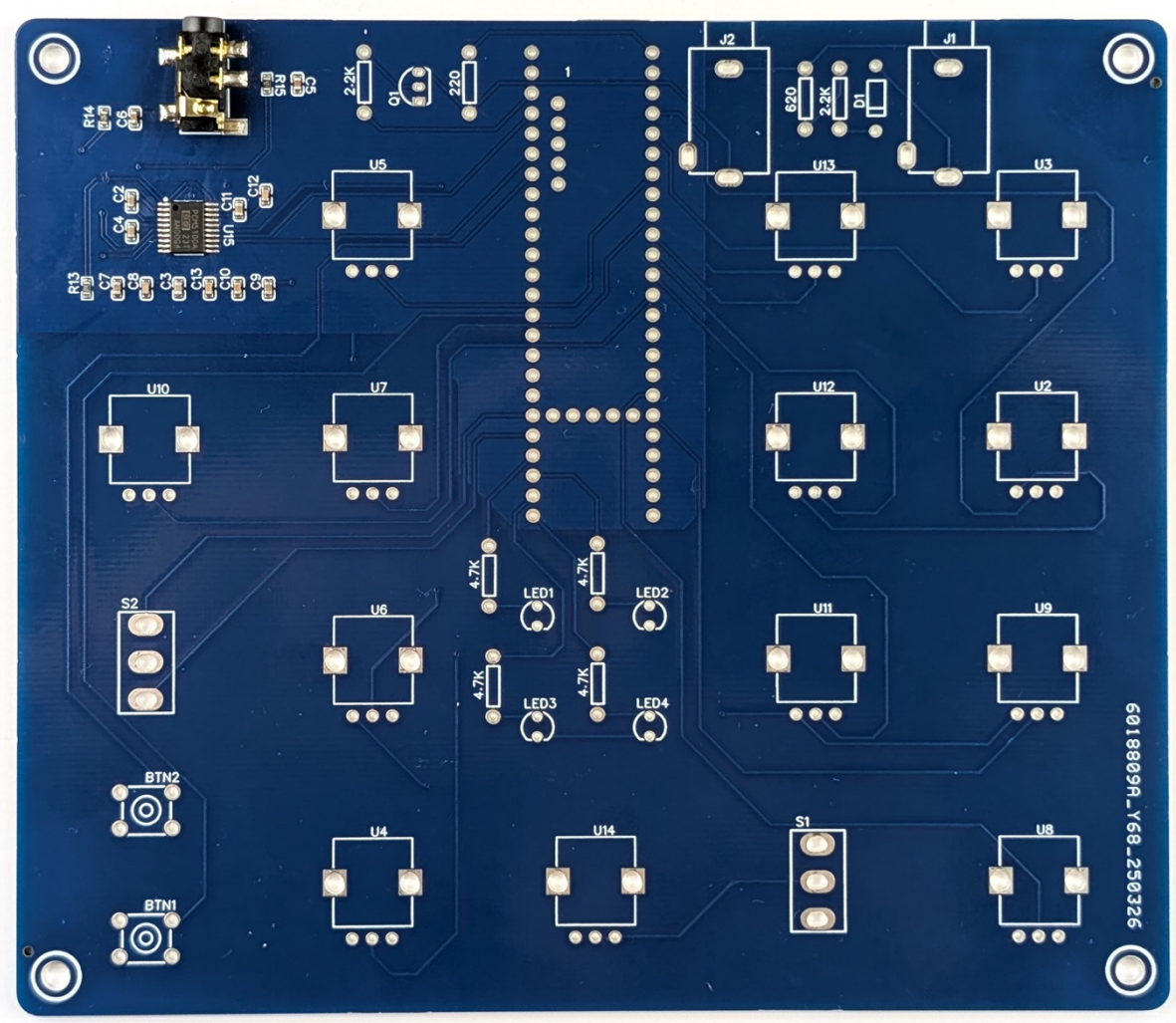
This isn't about perfectionism, you are very likely to end up with a destroyed, damaged or defective unit if you're not hitting that standard.



This photo is from the **Adafruit guide to excellent soldering** - http://bit.ly/1l77tF4 and is reproduced under an Attribution-Sharealike creative commons license - http://creativecommons.org/licenses/by-sa/3.0/

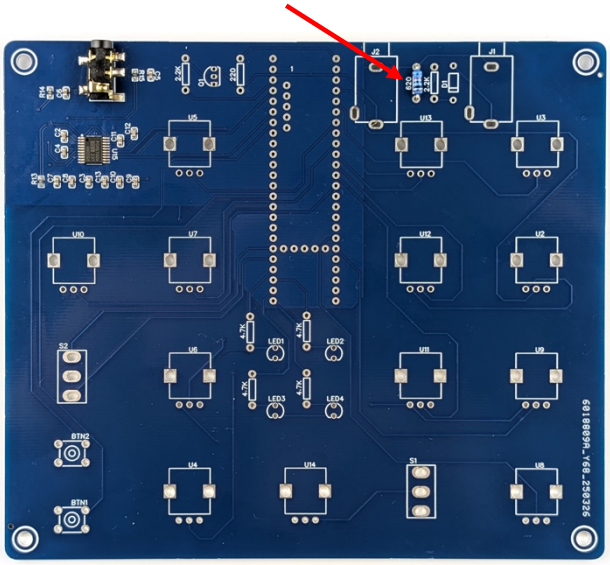
Read before continuing

This build doc is for use with kits purchased in May 2025 and later. The PCB has been updated and now includes the DAC section pre soldered. If the PCB provided in your kit looks like this one below then continue to use this document.



This document has hi-res images.
ZOOM IN for a closer look

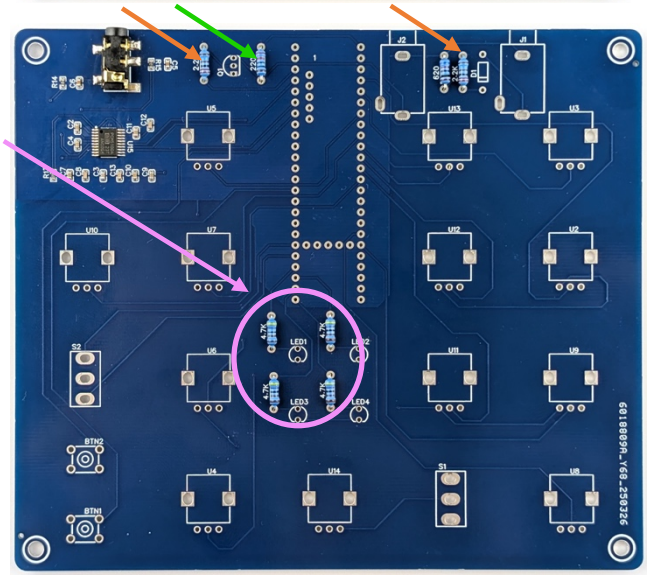
A schematic can be found on the last page of this document.



1. First, using the coloured chart provided, locate the single 620R Resistor and solder into the position marked.

   Use the resistor colour bands and quantities to identify the different resistor values.

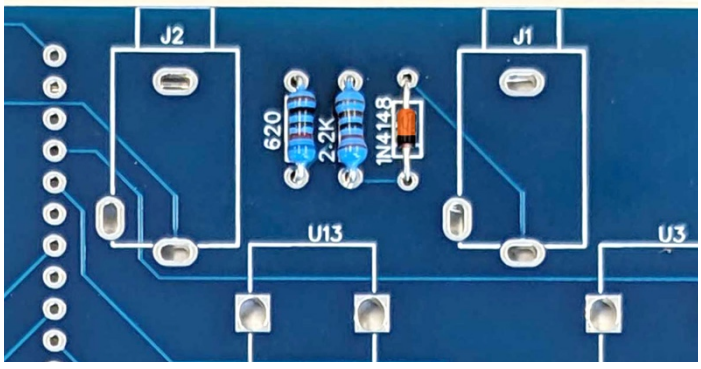
   Repeat the same method for all remaining resistor values, 220R, 2.2K, 4.7K.



2. Locate the single 1N4148 diode and solder into the position shown.

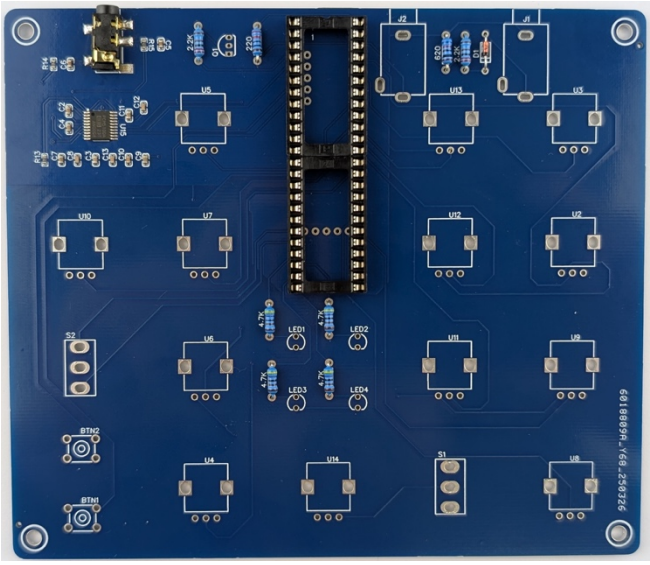
   NOTE: ORIENTATION IS VITAL

   Ensure the black line on diode lines up with the white line marked on the PCB, the device will not function correctly otherwise.



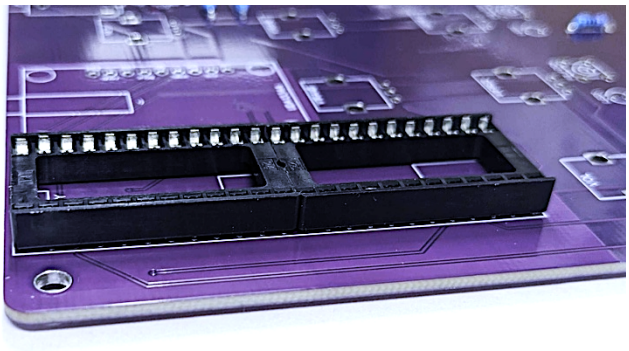
3. Next locate the two 24 pin IC Sockets and place them as shown.

   These are used to connect the teensy PCB to the main board.



   Flip the PCB onto a flat surface and first solder just 2 pins on the bottom of each IC socket ensuring they lay flush to the PCB.

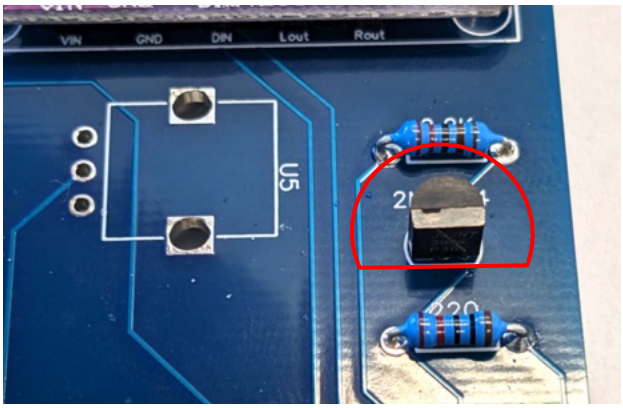
   Reflow the joints and adjust the sockets if necessary to ensure they are flush to the PCB surface. Then continue to solder all remaining joints.



4. Next locate the single 2N3904 transistor from the components bag.

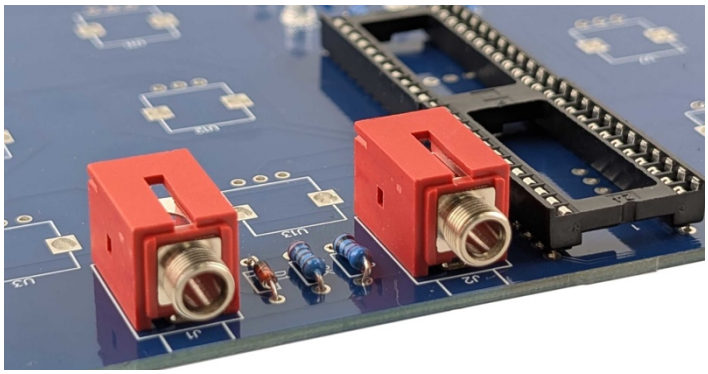
   NOTE: ORIENTATION IS VITAL

   Solder into the position shown ensuring the flat edge of the body lines up with the flat edge on the PCB silkscreen.



5. Place the 2 x jacks on to the board adjacent to the teensy as shown.

   Solder one pin of each jack and check they sit flush to the PCB before soldering the remaining pins.

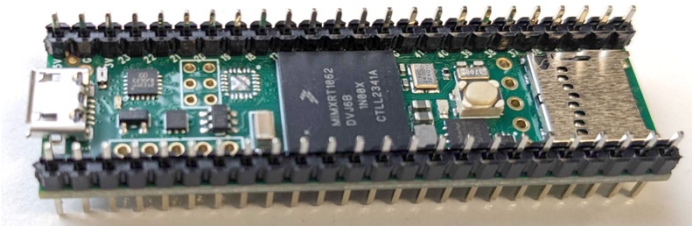


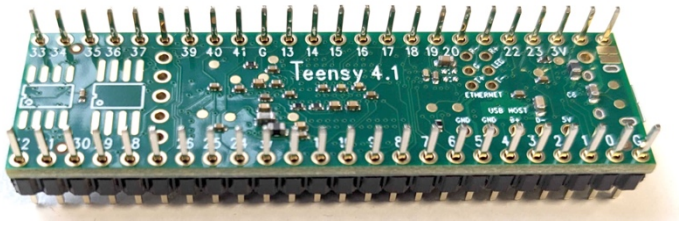
6. Now locate the teensy board from your kit along with two strips of 36 pin headers.

   Split both sets of pins so that you have 2 strips of 24 pins remaining.

   Place the pins into the top of the teensy as shown with the black plastic sitting on the same side of the PCB as the USB socket.

   DON'T SOLDER PINS YET



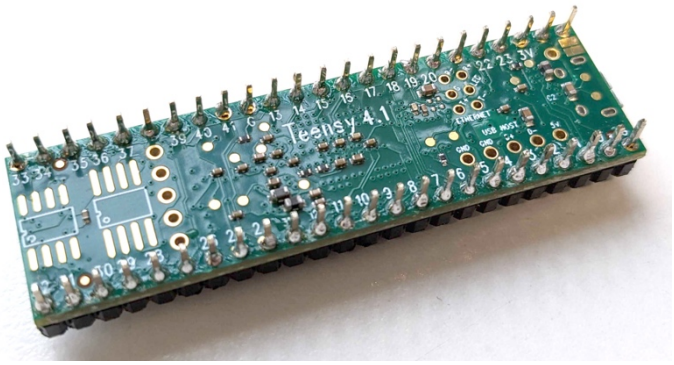


7. With the teensy flipped upside down solder just two pins from at the end of each strip.

   NOTE: Don't apply too much solder as this will prevent the teensy from sitting well in the sockets.

   Check that the black body of the headers is flush to the top of the teensy board.

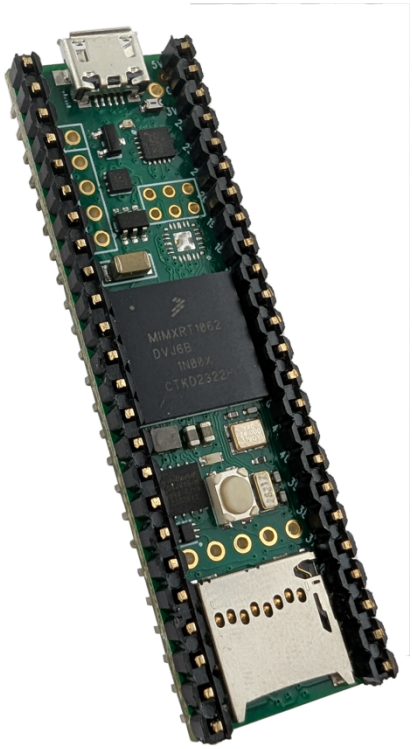
   Reflow the joints and adjust if necessary before proceeding to solder the remaining points.



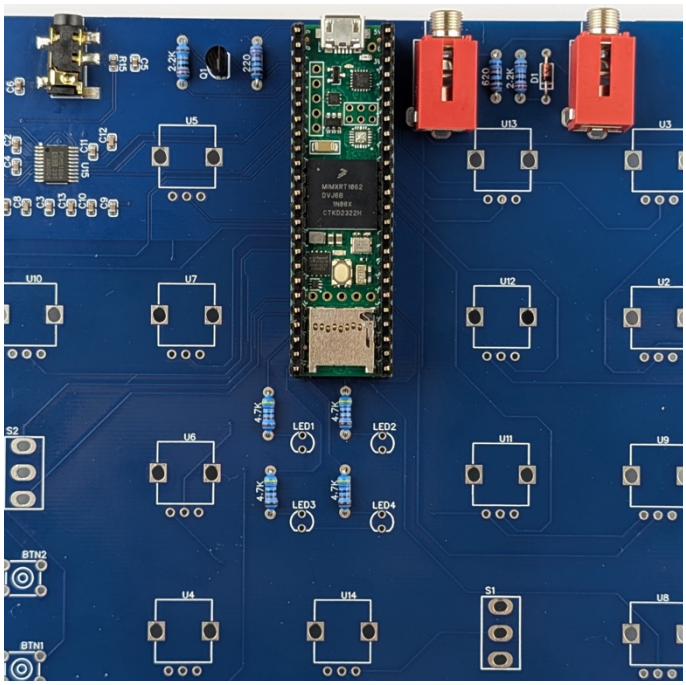
8. Before placing the teensy you must trim the headers next to the plastic on the USB side of the board.

   Trim these pins so they are flush to the black plastic on the headers.

   Please wear eye protection when trimming these pins.

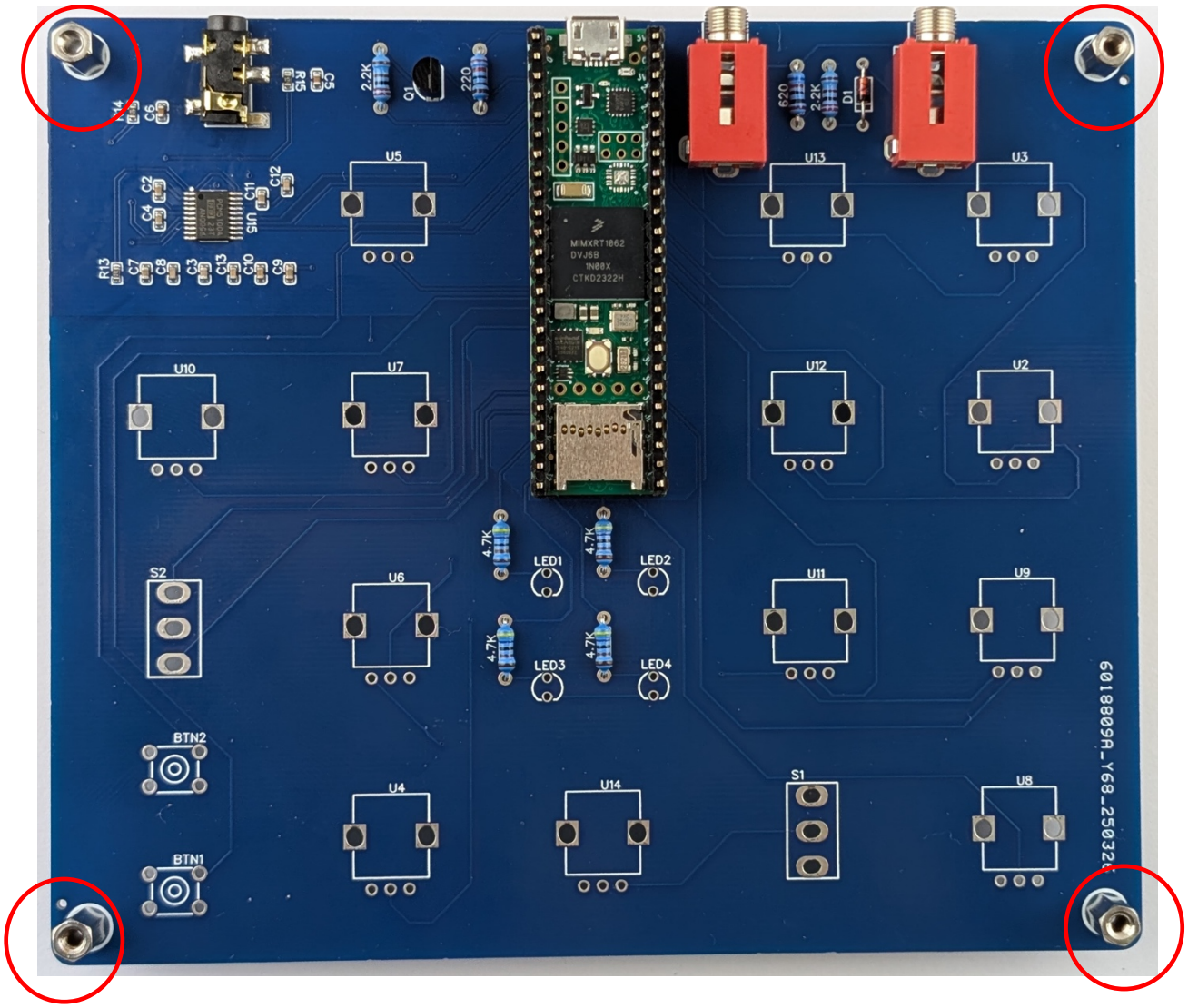


9. Now place the Teensy with the USB socket facing the edge of the PCB as shown, and gently press the Teensy pins down into the sockets until it's sitting as far down as it can go.



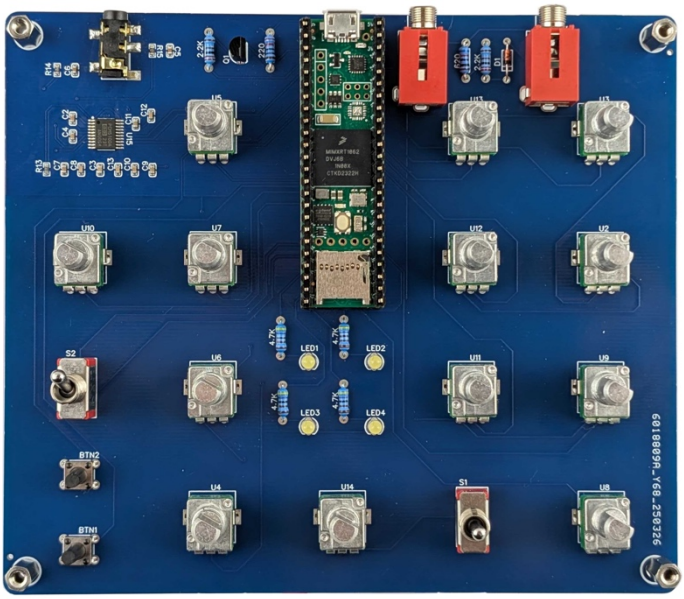
10. For the next stage secure the 12mm spacers to the PCB as pictured, using any four of the screws provided.

    These will be removed again before the final assembly but are necessary at this stage to ensure the remaining mechanical components sit correctly.



11. With the spacers in position locate the following parts and place but don't solder yet on the PCB.

    13x B10K Pots
    2x On-Off-On Toggle Switches
    2x Button Switches
    4x LEDS

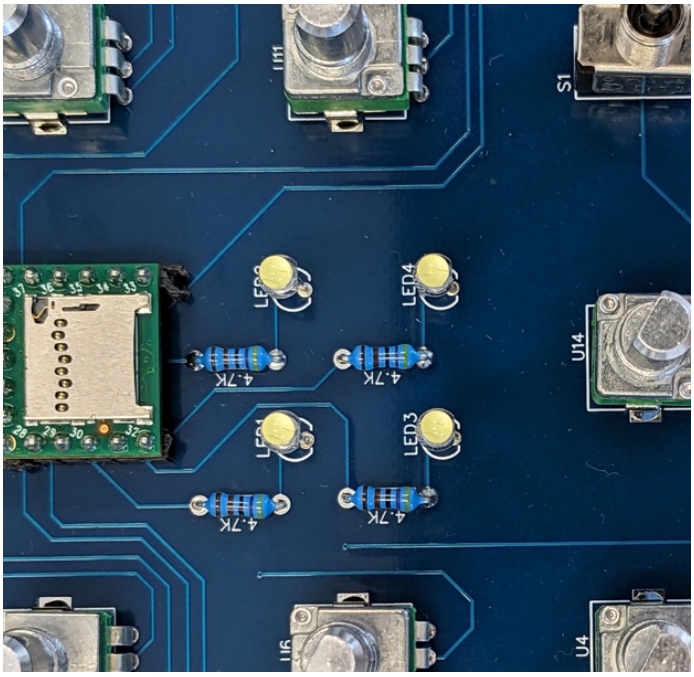


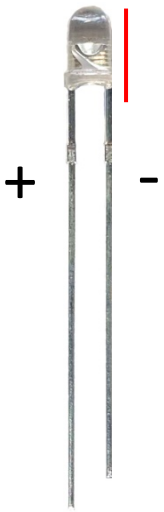
IMPORTANT: DON'T SOLDER YET

Continue reading to step 14 before resuming soldering.

ORIENTATION OF LEDs IS VITAL

The LED's must be placed with the negative short '-' leg going to the flat side of the diagram on the PCB. The positive '+' leg of the LED should be noticeably longer.



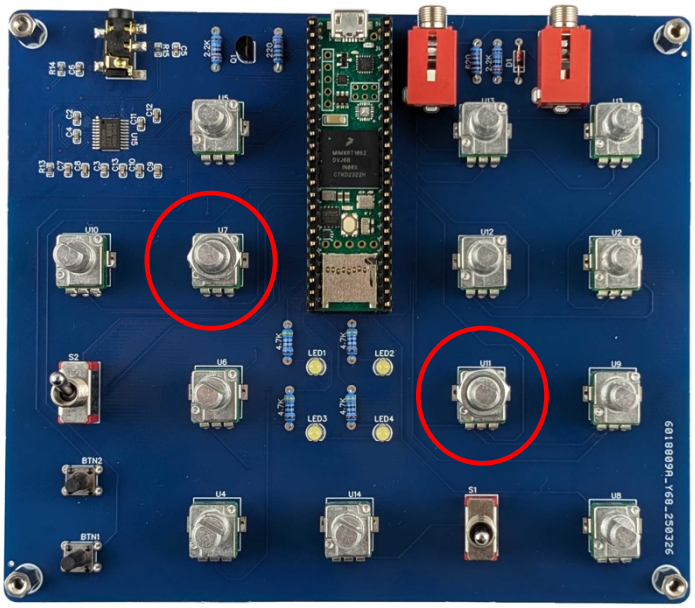


12. Next place two of the included pot nuts underneath two of the central pots and tighten them right down.

    These are placed to help support the centre of the panel when it comes to securing the boards together.

    DON'T SOLDER YET

    Continue reading to step 14 before resuming soldering.



13. Place the frontpanel over the top of the components ensuring all parts are inserted fully through the holes.

    Secure both toggle switches against the panel with the nuts provided and use the pot nuts and washers to secure a few of the pots as pictured.

    Check the 2 x small button switches are sat flush to the PCB and make sure they can be depressed without any obstruction.

    The four LED's should be pushed fully through their panel holes.

14. Once everything is lined up and secure you can now proceed to solder all points on the reverse of the PCB.

15. The final stages involve the assembly of the front and back panels.

    For this you must first remove the nuts/washers, panel, and 11mm standoffs. Set these aside for the moment.

    Take the back panel and find the 4 longer 10mm screws and mini 3mm standoffs, secure to the back panel as shown.

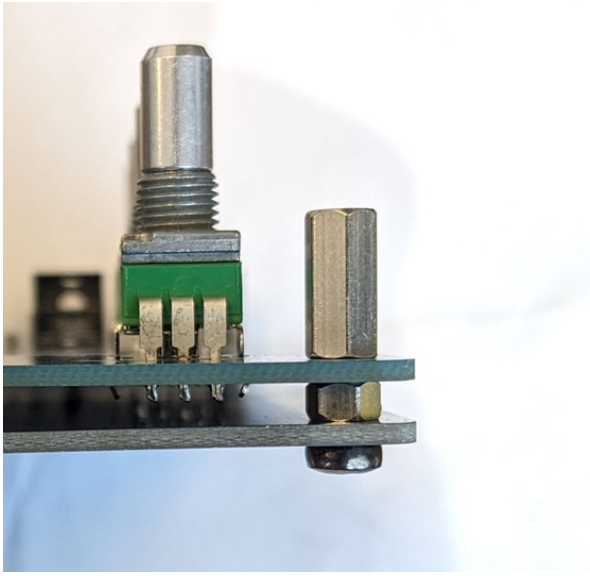
    Ensure you use the long screws at this point otherwise the next stage will not work.
    Repeat for each corner of the back panel and then apply the four sticky feet as pictured.

16. Next place the PCB onto the back panel inserting the four screws through their holes.

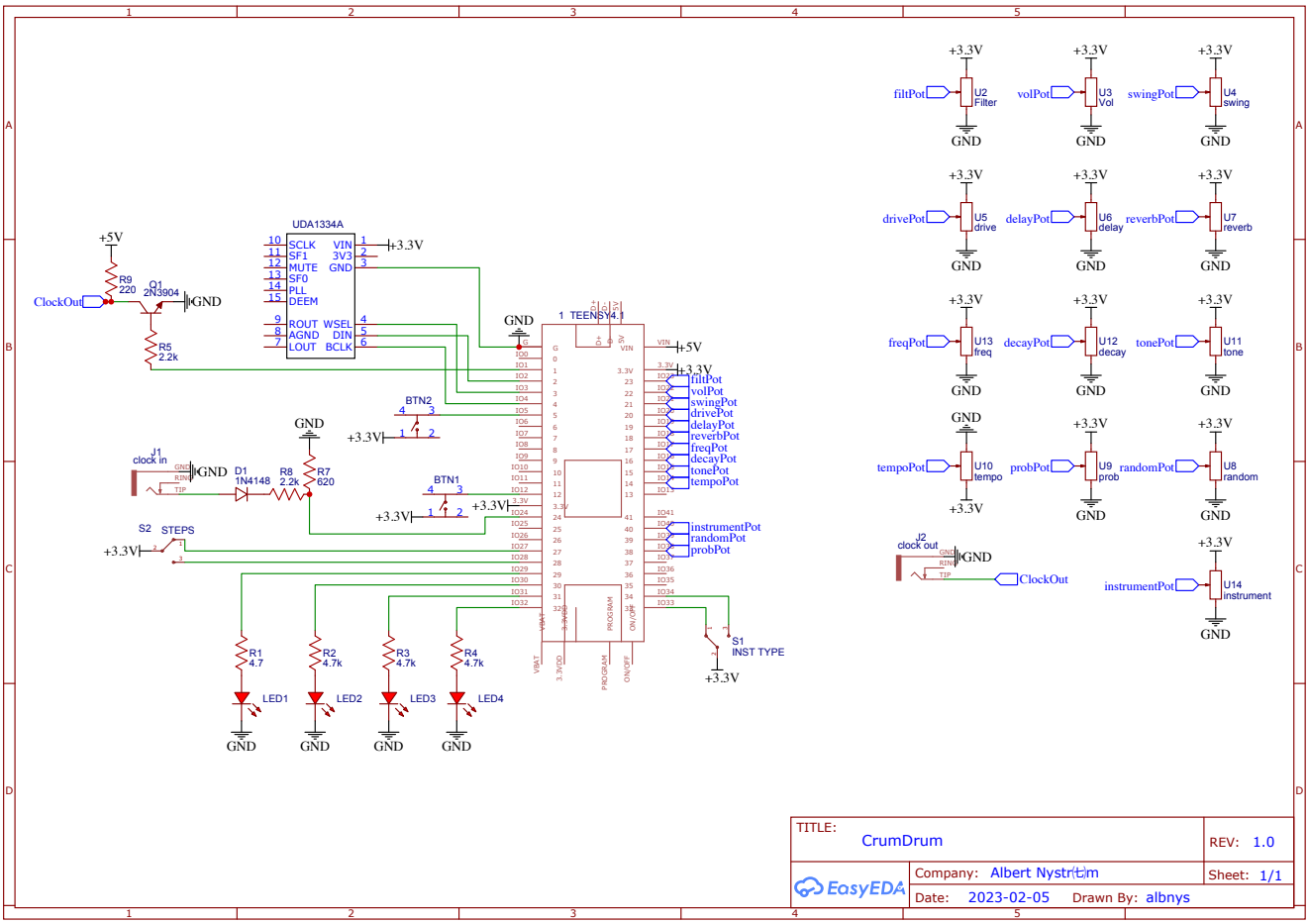
    If the PCB does not sit flat against the mini standoffs, you may need to use side cutters to trim down any large solder joints in the way.

    It's not crucial, but you might want to check the back panel and PCB are oriented correctly with the panel text facing the same way before moving to the next step.

17. With the PCB sat flush on top of the mini standoffs take the longer 12mm standoffs and screw onto the four screws of the PCB as pictured



18. For the final step replace the front panel lining up all components and securing in place with the 4 x remaining 6mm black screws. Secure all pots and switches with their nuts and washers, and finally add the knobs and yellow switch caps. The build is now complete!


UDA1334A
TEENSY4.1
+5V
+3.3V
GND
ClockOut
filtPot
volPot
swingPot
drivePot
delayPot
reverbPot
freqPot
decayPot
tonePot
tempoPot
probPot
randomPot
instrumentPot
BTN1
BTN2
S1 INST TYPE
S2 STEPS
J1 clock in
J2 clock out
LED1
LED2
LED3
LED4
TITLE: CrumDrum
REV: 1.0
Company: Albert Nystr[illegible]m
Sheet: 1/1
Date: 2023-02-05
Drawn By: albnys
EasyEDA