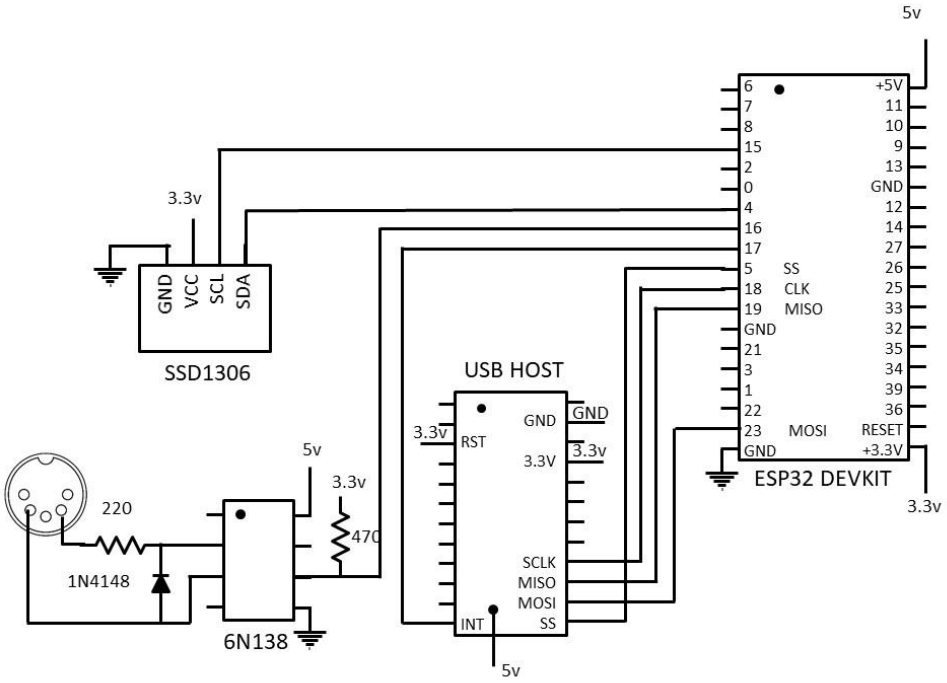
Spark MIDI Construction Guide

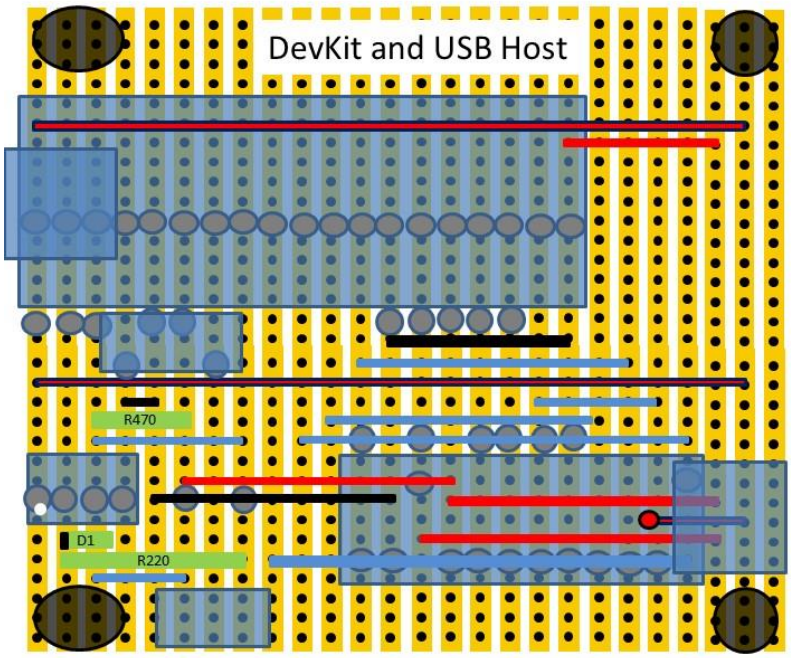
Components required

Component	Number	Example
ESP32 Dev Kit board	1	A-Z Delivery WROOM Dev Kit
SSD 1306 0.96” 128 X 64	1	
USB Host MIDI	1	
6N138	1	
Veroboard	1	
220 ohm resistor	1	
470 ohm resistor	1	
1N4148 diode	1	
MIDI DIN socket, panel mount	1	
1591XXSSBK enclosure	1	

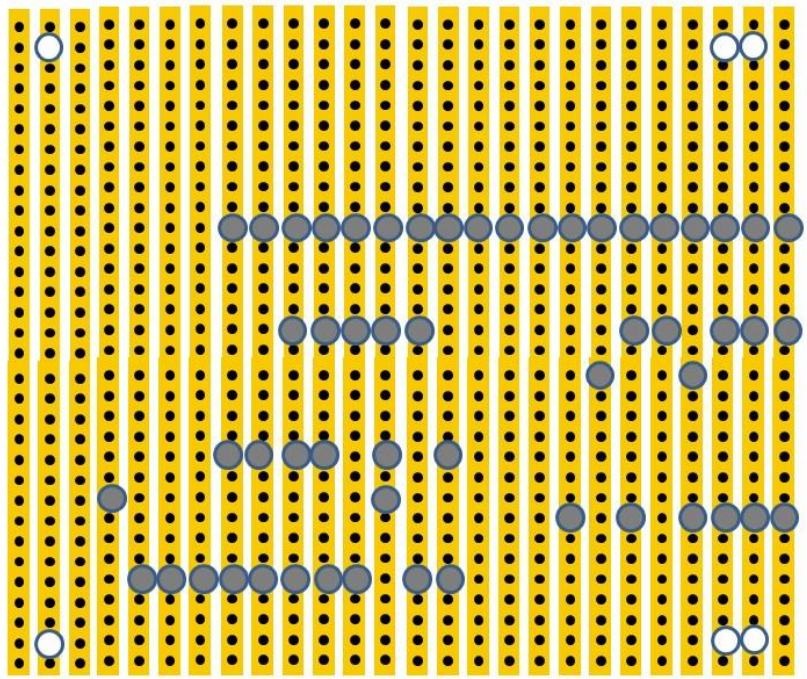
Circuit diagram



Veroboad layout (seen from top)

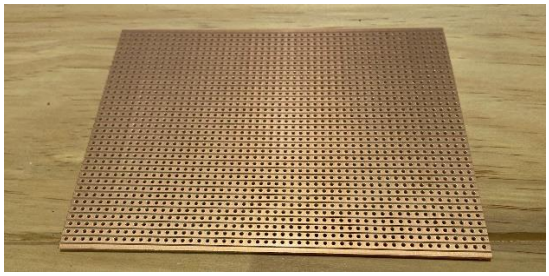


Track-side Veroboard view (from underneath, showing where to cut tracks)

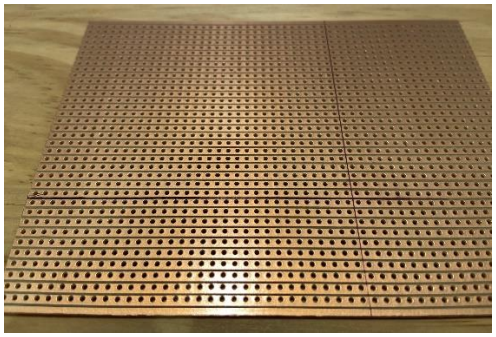


View of tracks
26 tracks x 32 holes

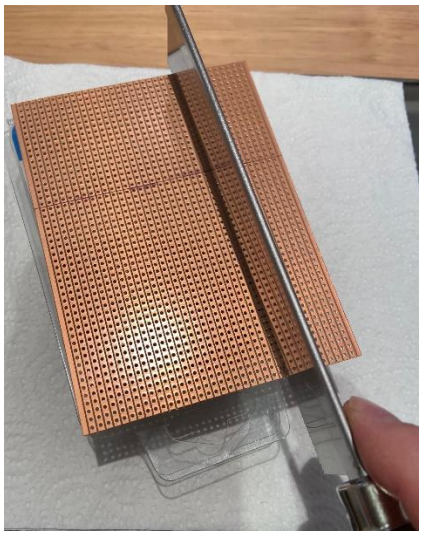
1. Get your Veroboard and prepare to cut to size. You can score the board and snap it, but I prefer this craft saw

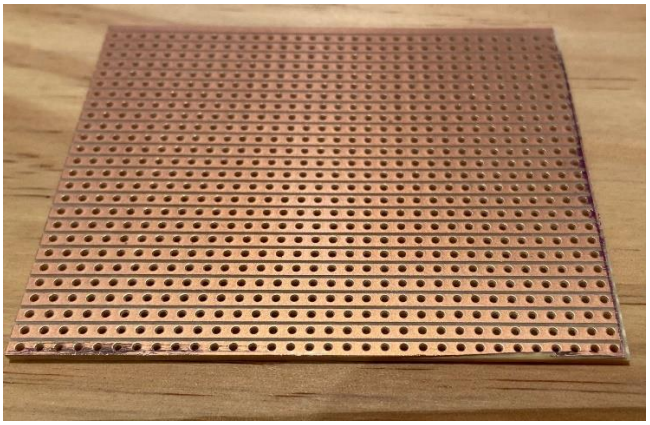


2. Mark out 26 tracks and 32 holes

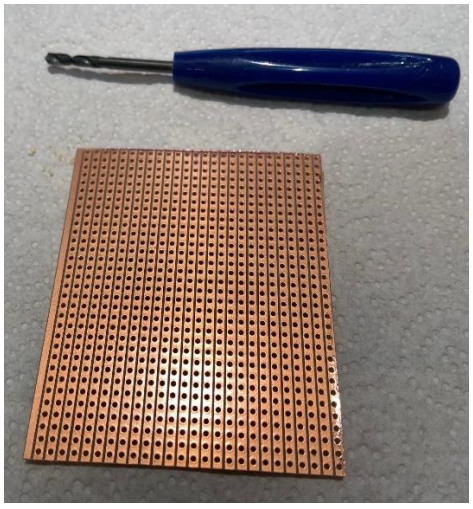


3. Cut with the saw (this saw cuts on the pull) – be careful and you will get a nice straight cut

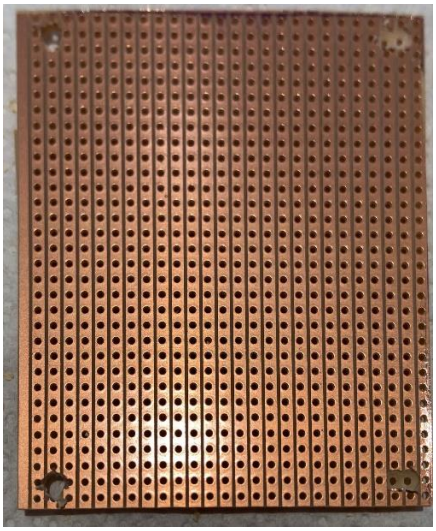




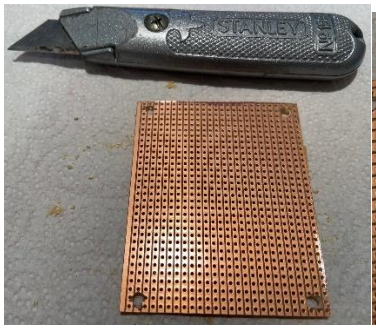
4. Now prepare to cut the tracks with the track-cutting tool

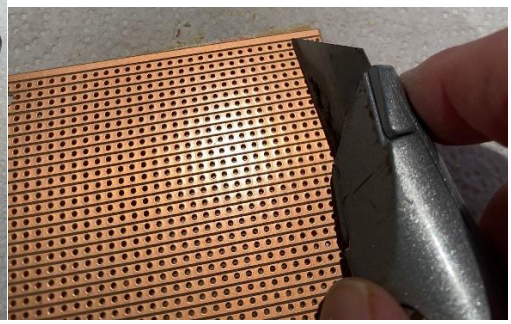


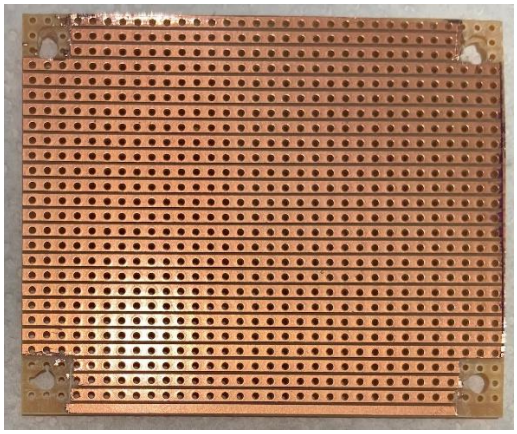
5. Cut all the way through for the mounting holes – note that two sets of holes are double width to match the posts in the case. Cut both holes gently until they merge into a single oval.



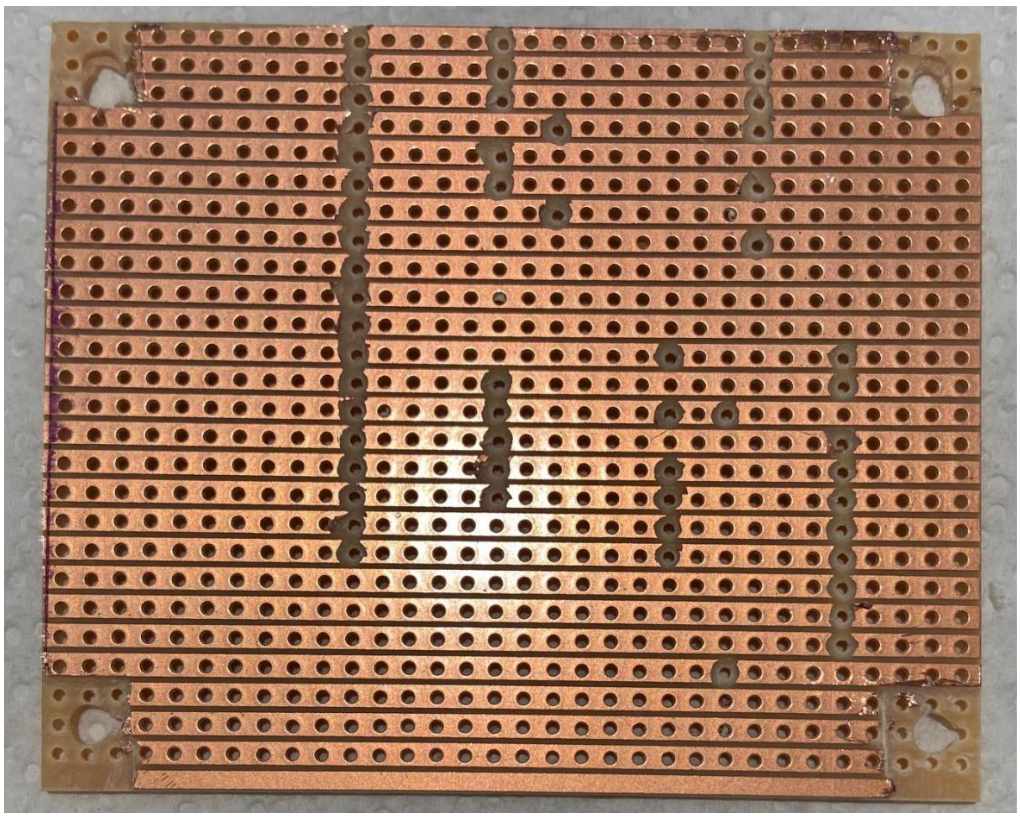
6. And use a craft knife to remove all the track from around the holes -just scrape it away



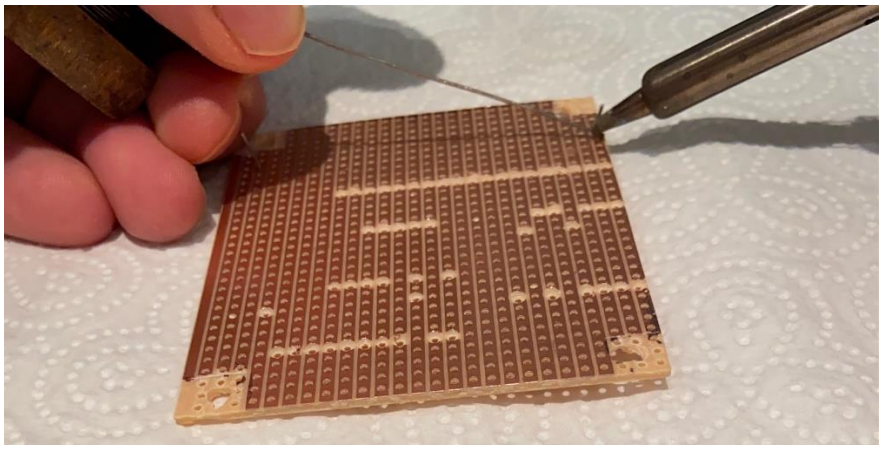




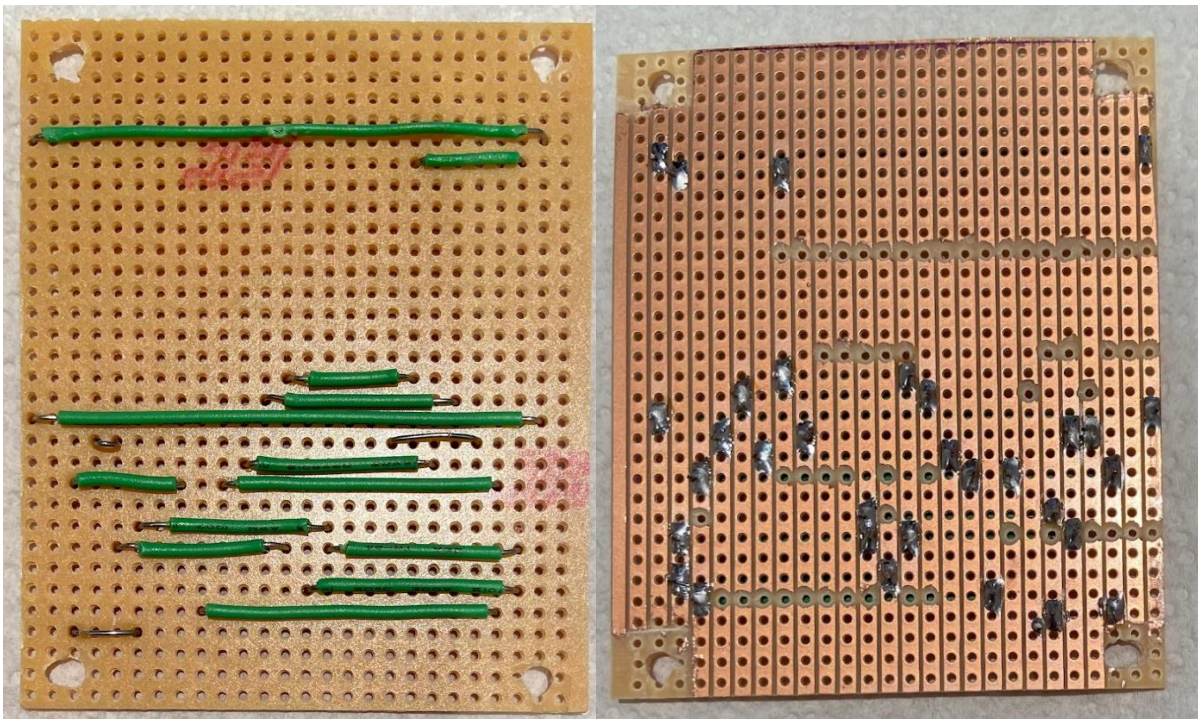
7. Then cut all the remaining tracks. Check for shorts with a multi-meter (there is one in the picture – you can see it if you look really carefully - this made the ESP32 reboot continuously until I fixed it – I was lucky it wasn't anything worse)



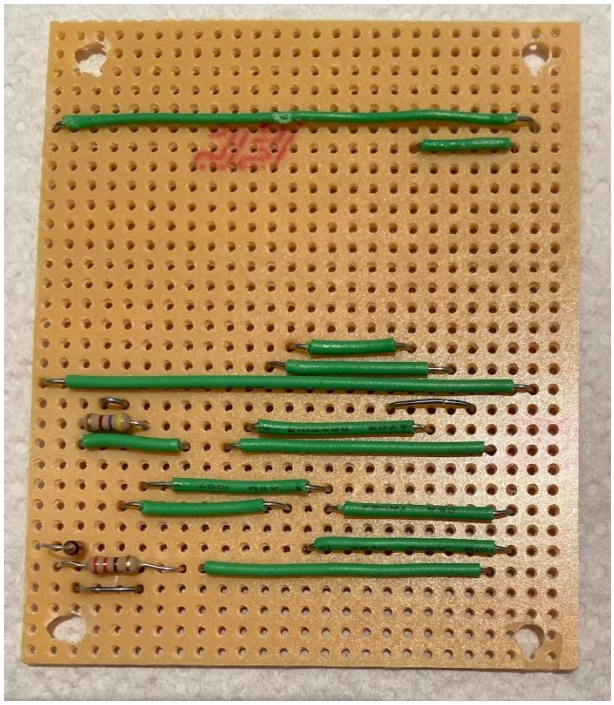
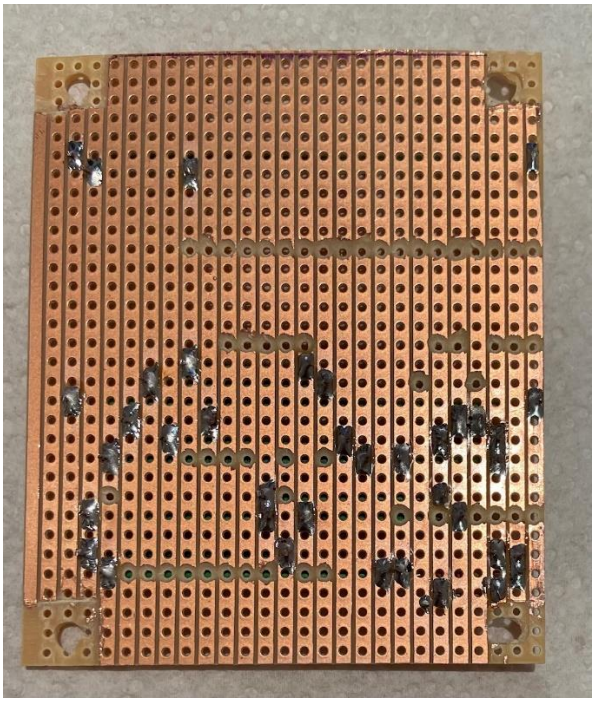
8. Then start the soldering of the connecting wires



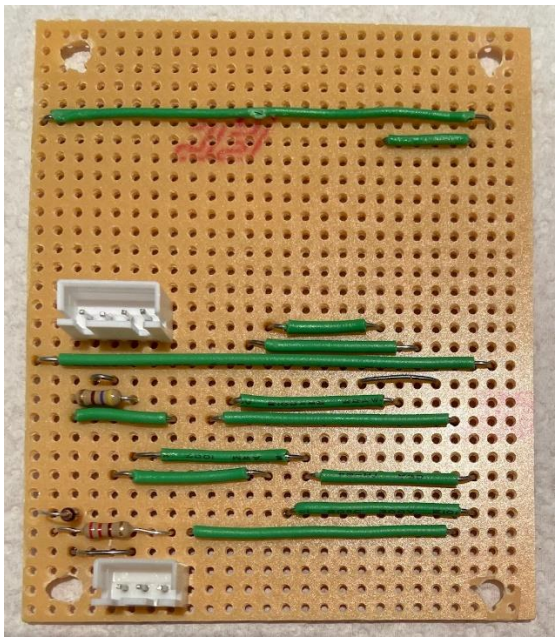
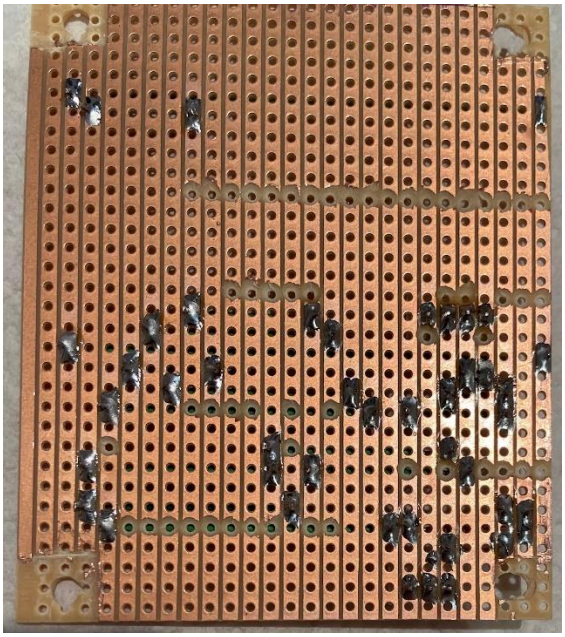
9. Don’t miss the two wires without green plastic (I melted the plastic with the soldering iron)



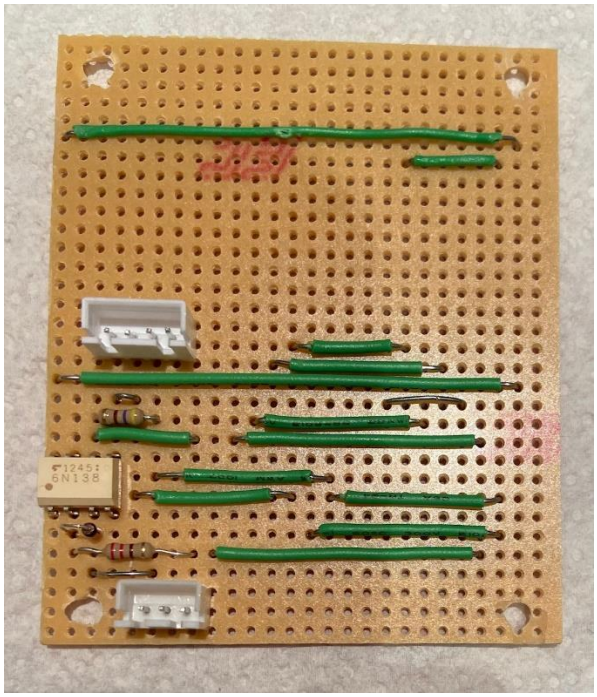
10. Then add the diode and resistors

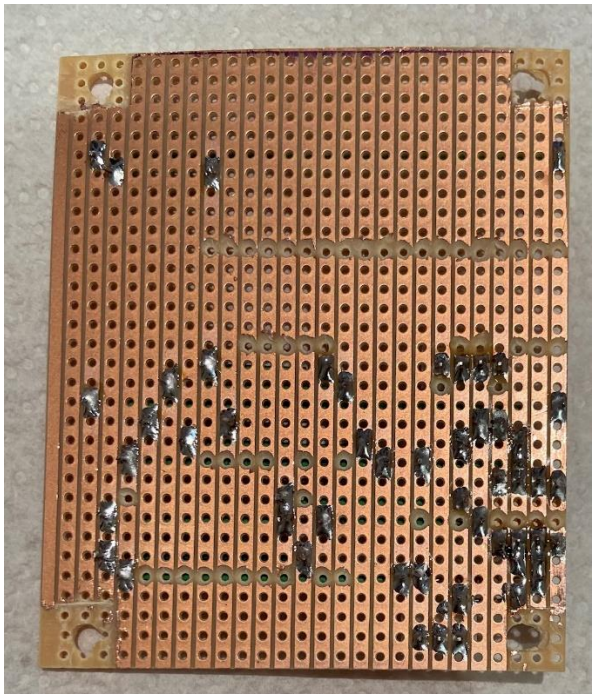



11. Then add the sockets for the SSD and MIDI DIN connectors. Not the orientation of the sockets – if the are not this way round then your wiring will have to change in later steps.

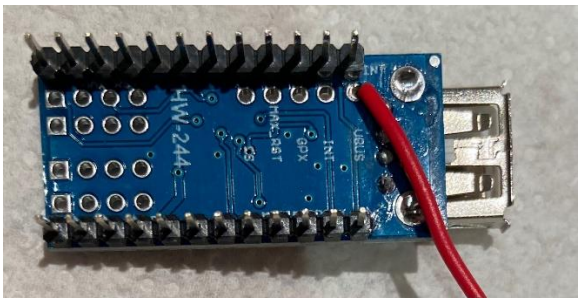



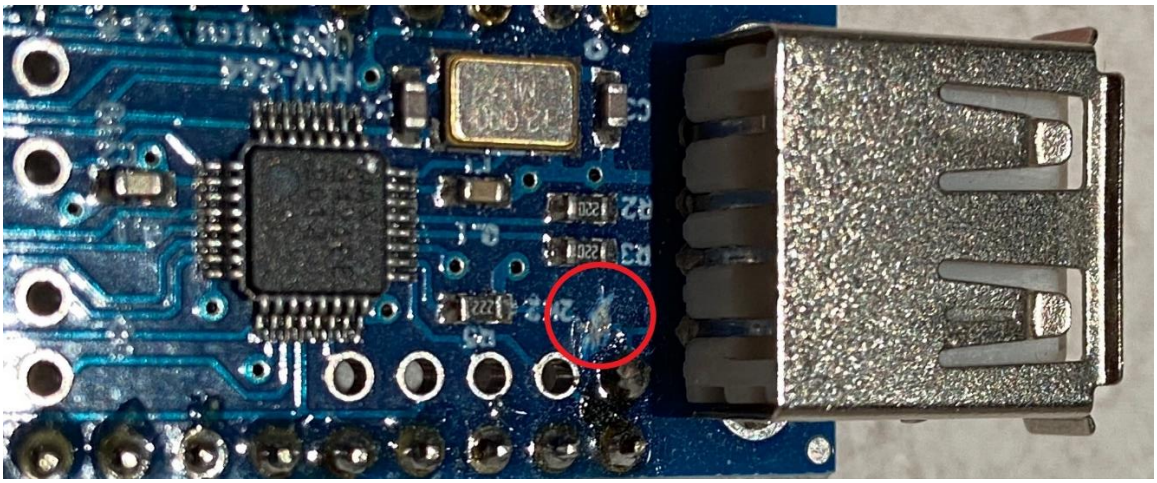
12. Then add the 6N138 isolator chip



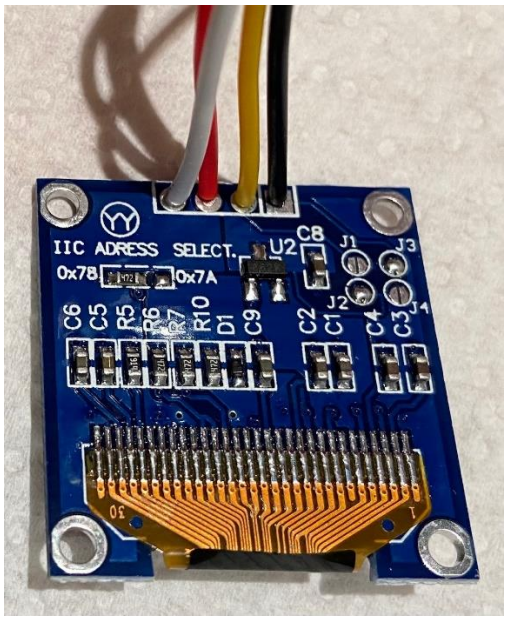


13. The USB Host MIDI board needs to have a connector cut and a wire soldered to the 5v input – this is so it can drive a 5v USB peripheral. You should be able to see the cut in the bottom photo – just scratch at the surface where the red circle is. until it looks cut, then use a multi-meter to check. Then solder a wire as shown.

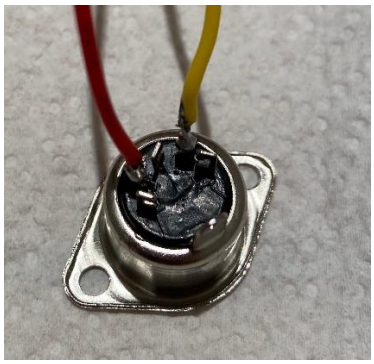


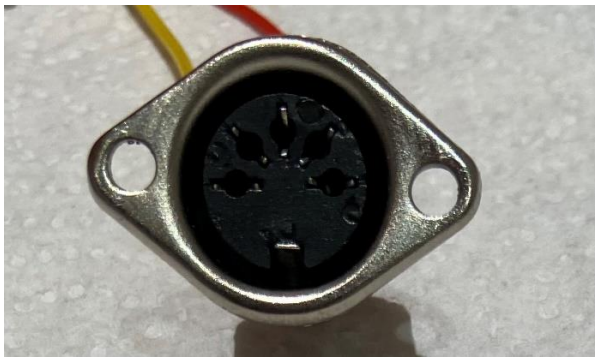


14. Solder a 4 wire connector to the SSD as shown.

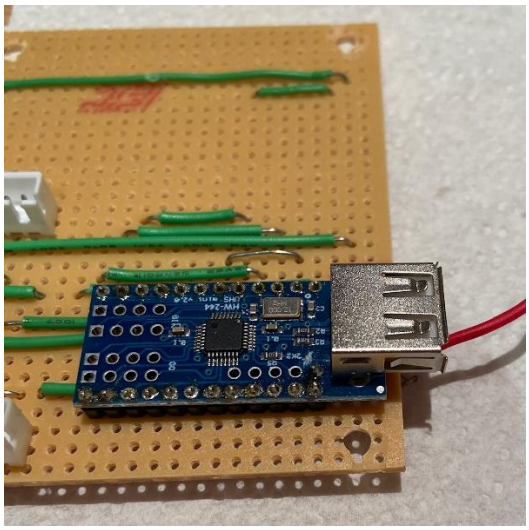


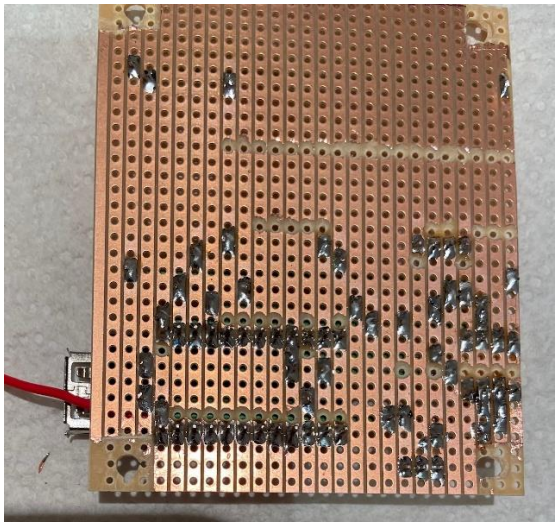
15. Solder a three wire connector to the MIDI DIN socket. Cut the middle wire at the connector end – it is not needed.



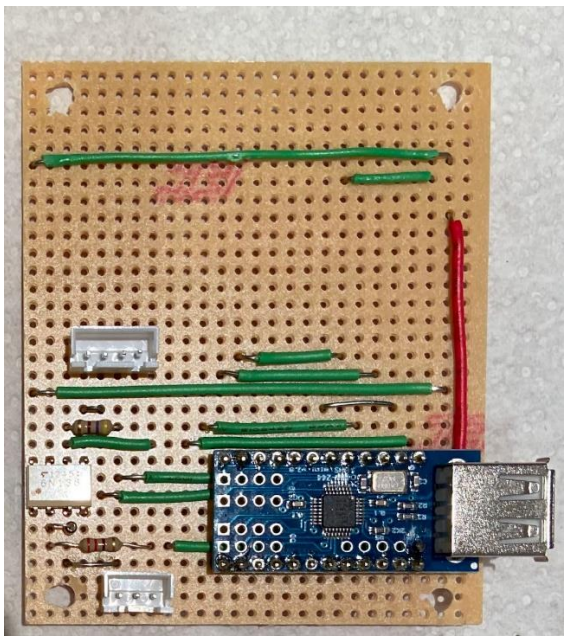


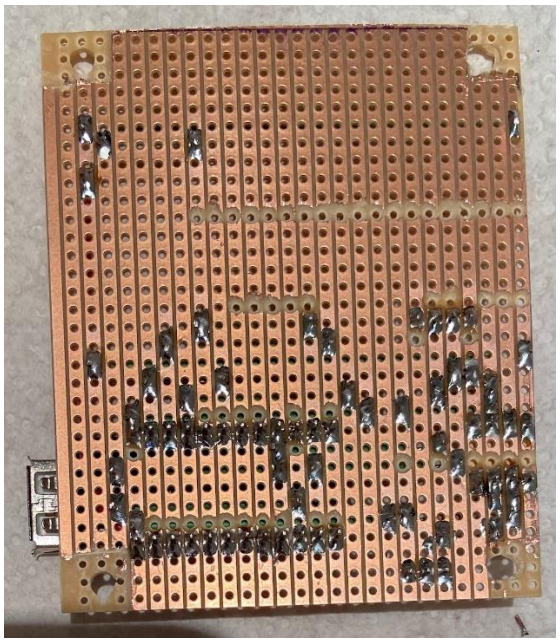
16. Solder the USB Host MIDI board onto the vero board



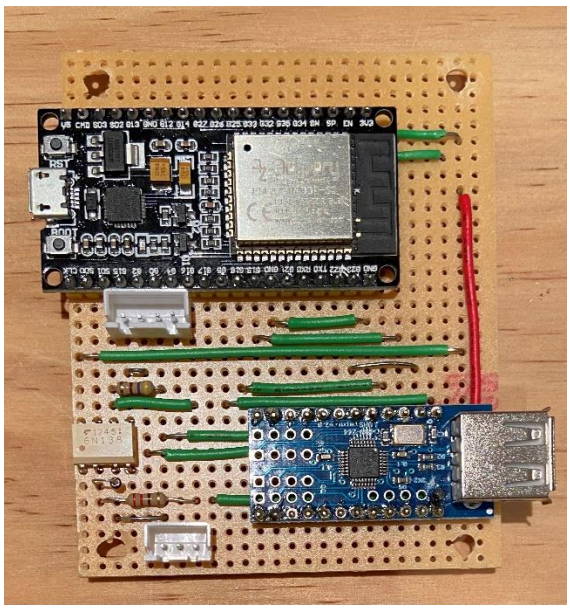


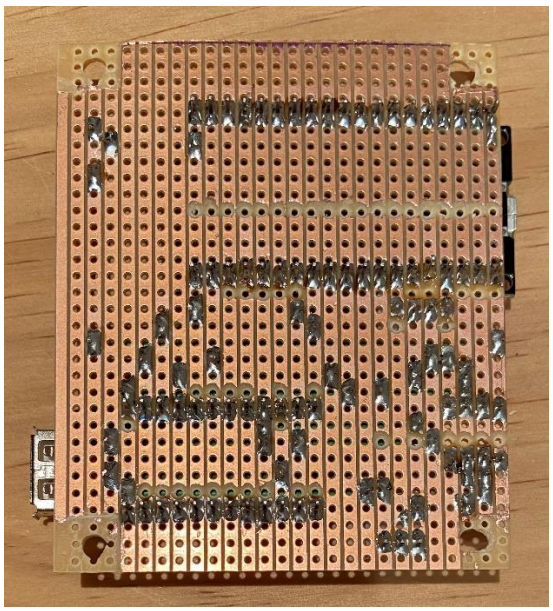
17. Solder the 5v wire to the Veroboard.



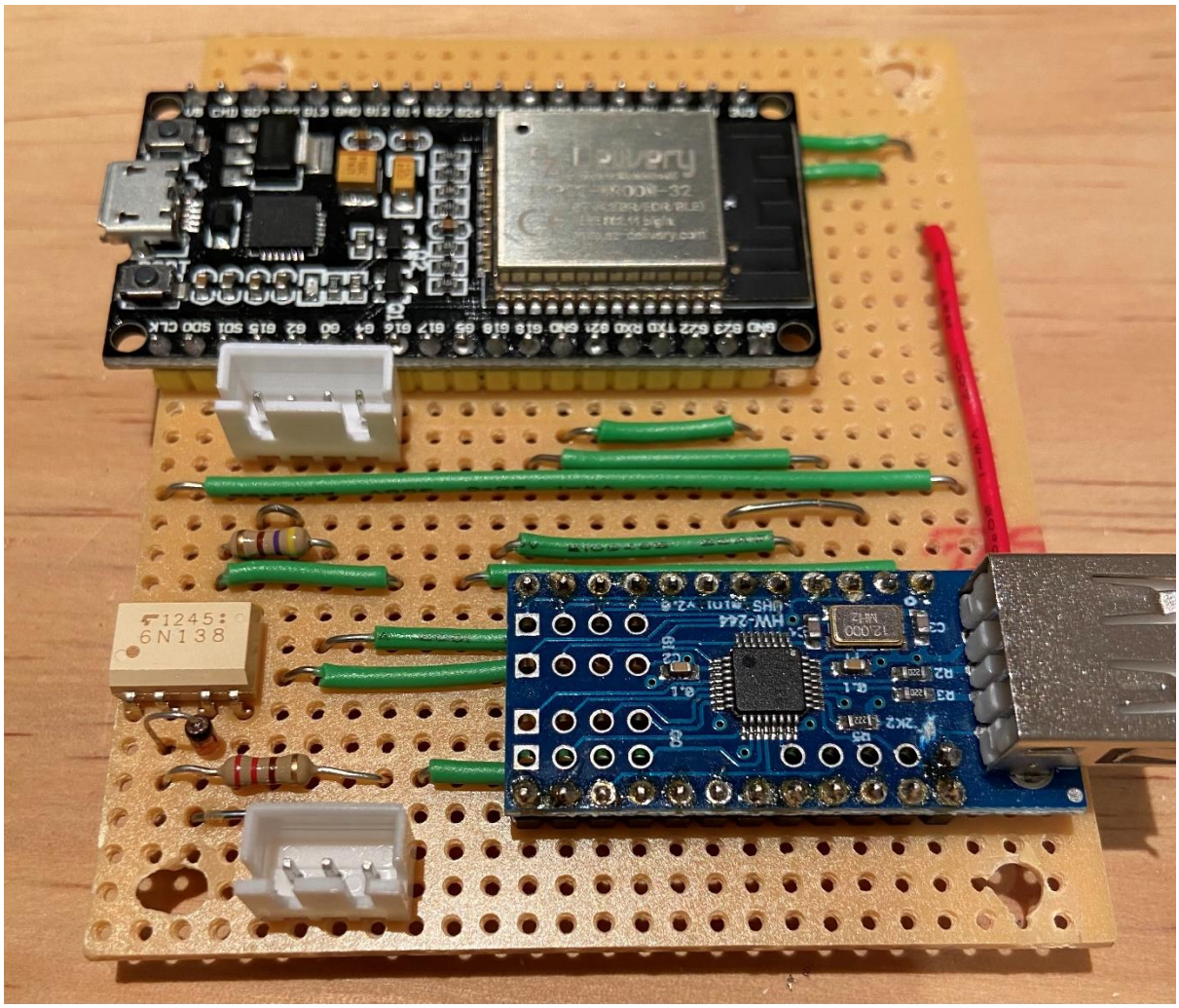


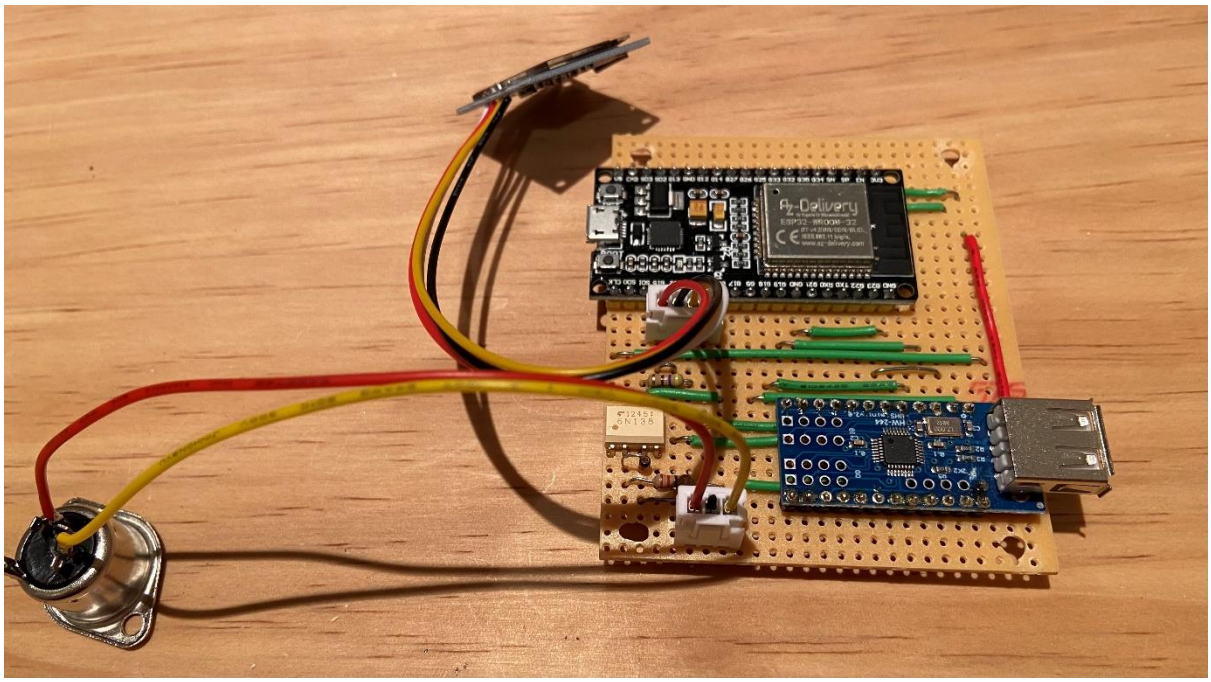
18. Solder the ESP32 onto the Veroboard.





19. And the final board should look like this.





Enclosure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