MICROBE v1.2

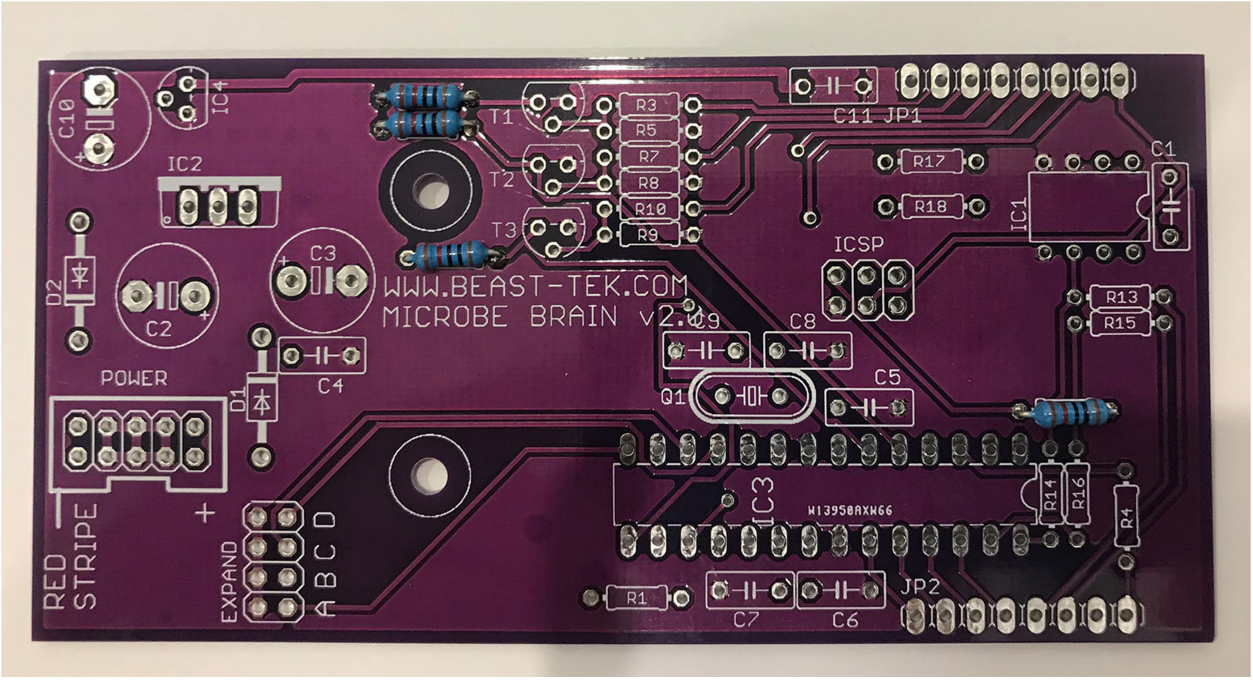
BUILD GUIDE

www.beast-tek.com

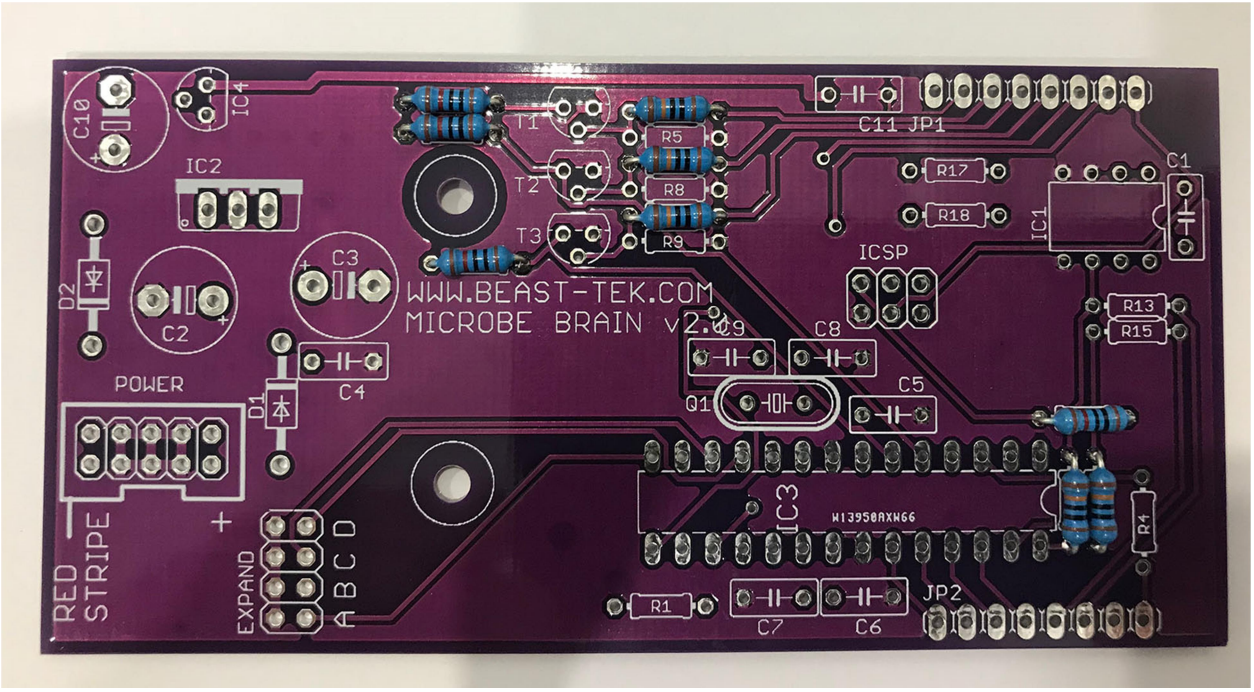
Microbe Main (CPU) Board BOM			
IC1	MCP602/MCP6022 High precision op-amp		1
IC2	ATMEGA328P-PU		1
IC3	7805 5v 1A Voltage Regulator	7805	1
IC4	79L05 -5v 0.1A Voltage Regulator	79L05	1
D1, D2	IN4004 Power Diode	IN4004	2
T1, T2, T3	2N3904 Transistor	2N3904	3
C2, C10	100uf Electrolytic LOW ESR Capacitor	100uf	2
C3	22uf Electrolytic LOW ESR Capacitor	22uf	1
C1, C4, C5, C6 , C7, C11	100nf Blue Monolithic Capacitor	104	6
C8, C9	22pf Ceramic Capacitor	22	2
Q1	20mhz Crystal		1
R1	100uH Inductor R.F. Choke		1
R4	1K Ohm Resistor 1%	Brown-Black-Black-Brown-Brown	1
R2, R6 ,R11, R12	10K Ohm Resistor 1%	Brown-Black-Black-Red-Brown	4
R3, R7, R10, R14, R16	100K Ohm Resistor 1%	Brown-Black-Black-Orange-Brown	5
R13,R15,R17,R18	200K Ohm Resistor 1%	Red-Black-Black-Orange-Brown	4
R5, R8, R9	1M Ohm Resistor 1%	Brown-Black-Black-Yellow-Brown	3
JP1, JP2	8 Way Pin Header Single Row FEMALE		2
EXPAND	4 Way pin header dual Row MALE		1
ICSP	ICSP - do not populate		
POWER	Shrouded 10pin (2x5) IDC Header (Eurorack Power)		1

Microbe IO Board BOM			
R5, R6, R7, R8, R9, R10, R11, R12	1K Ohm Resistor 1%	Brown-Brown-Black-Black-Brown	8
R13, R14, R15, R16, R17, R18, R19, R20, R21	1K2 Ohm Resistor 1%		9
C1, C2	100nf Blue Monolithic Capacitor	104	2
IC1, IC2	74HC595		2
LED9	10mm High Brightness White Led		1
LED1-LED8	3mm High Brightness White Led		8
R1, R2, R4	9mm Round shaft 10KB Potentiometer		3
R3	9mm T18 shaft 10KB Potentiometer		1
JP1, JP2	8 Way Pin Header Single Row MALE		2
	PJ301BM "Erthenvar" 3.5mm Mono Jack		13

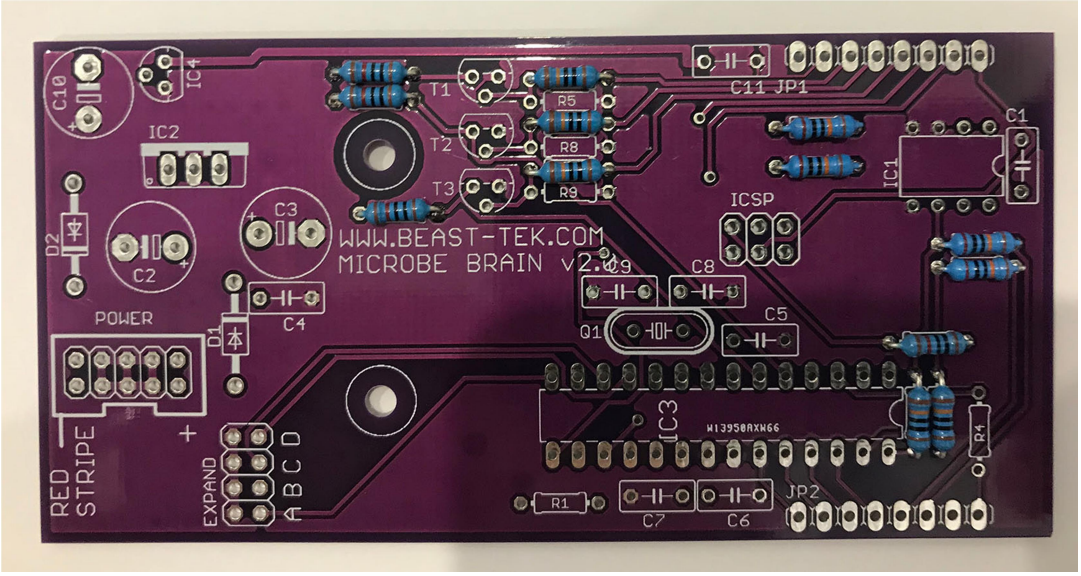
1. Install and solder 10K resistors R2, R6, R11 and R12



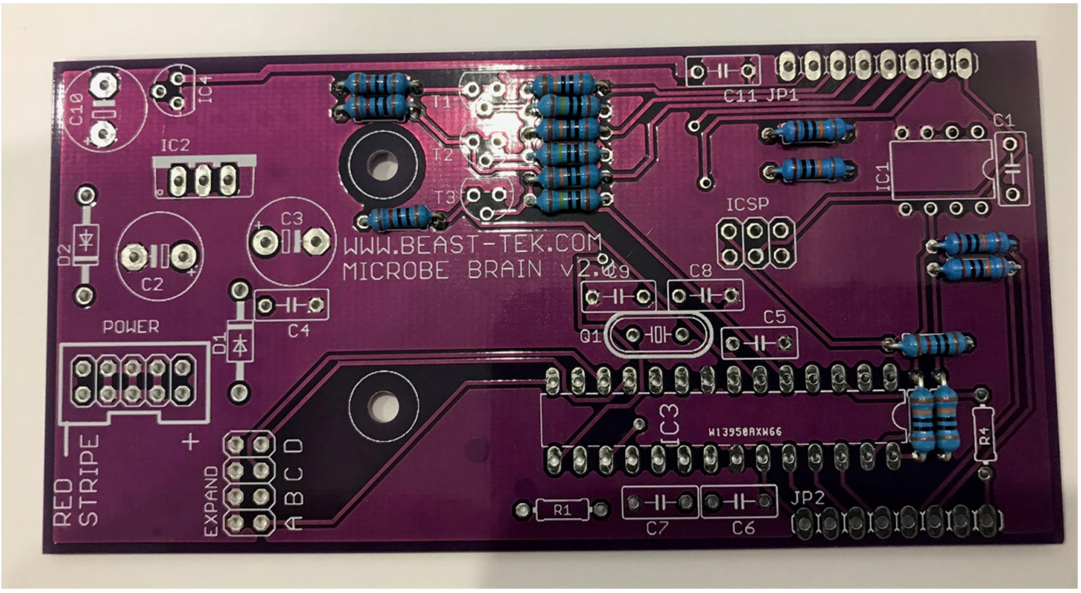
2. Install and solder 100K resistors R3, R7, R10, R14, R16



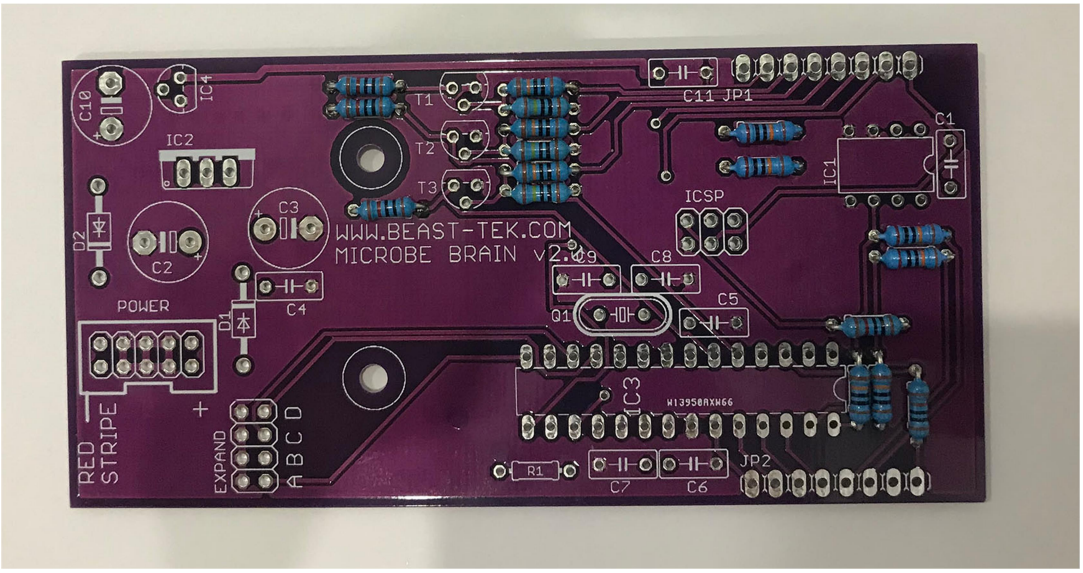
3. Install and solder 200K resistors R13, R15, R17, R18



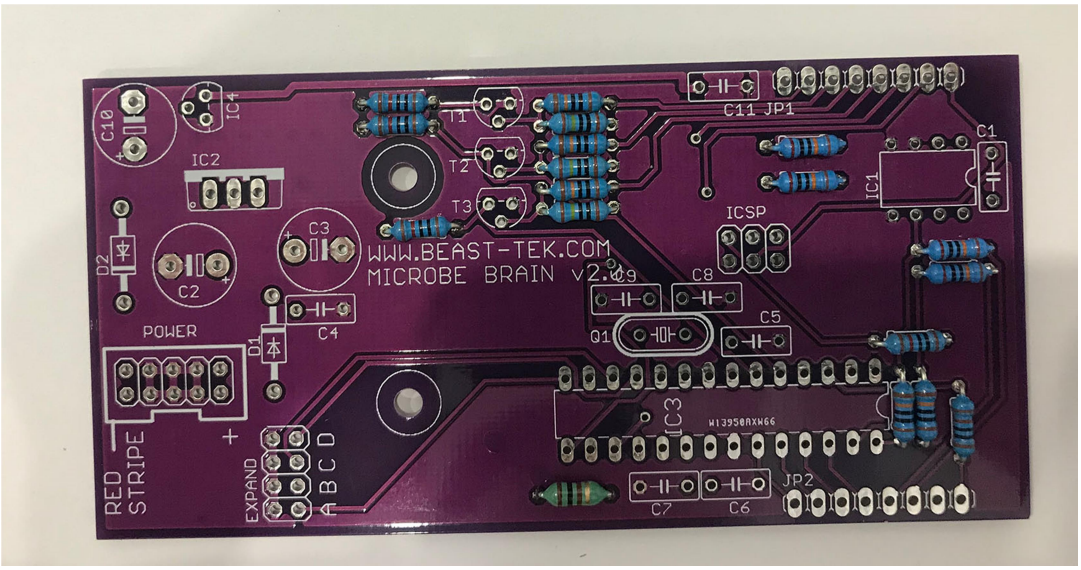
4. Install and solder 1M resistors R5, R8 and R9



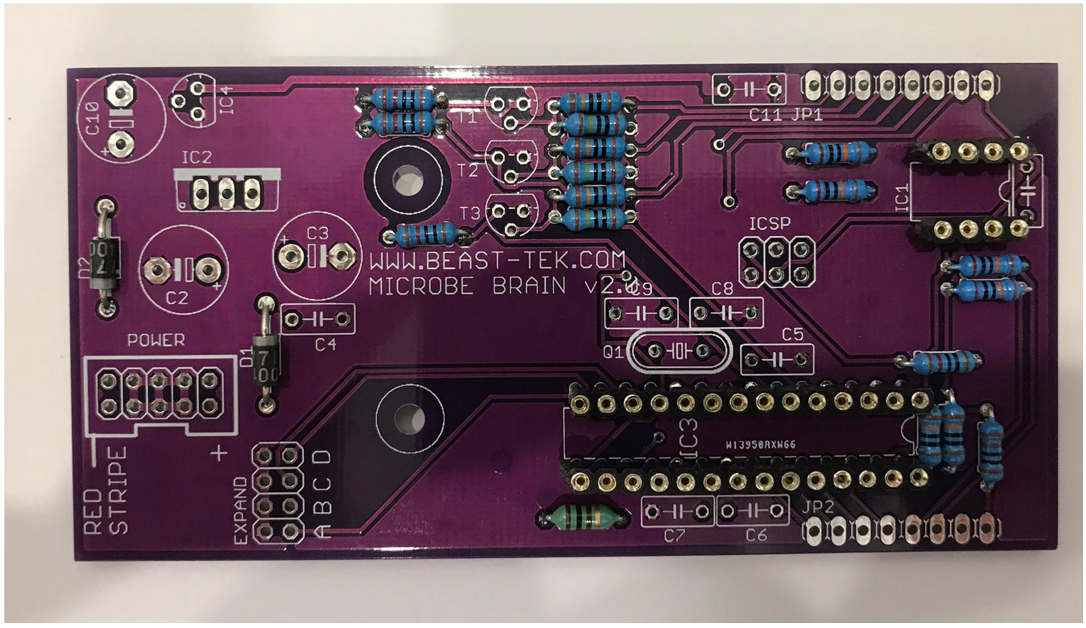
5. Install and solder 1K resistor R4



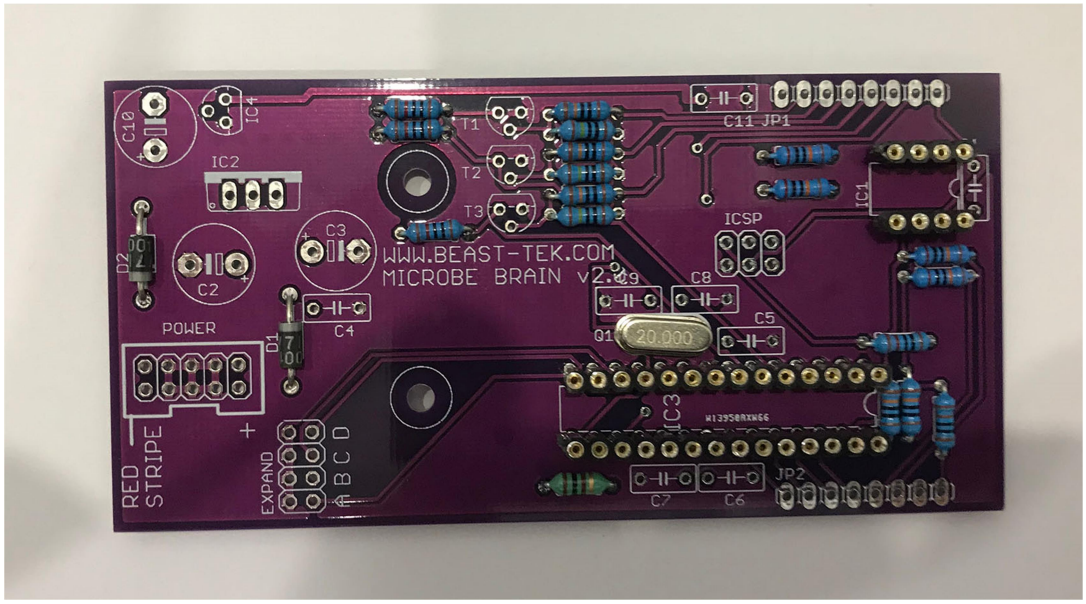
6.Install and solder the inductor R1



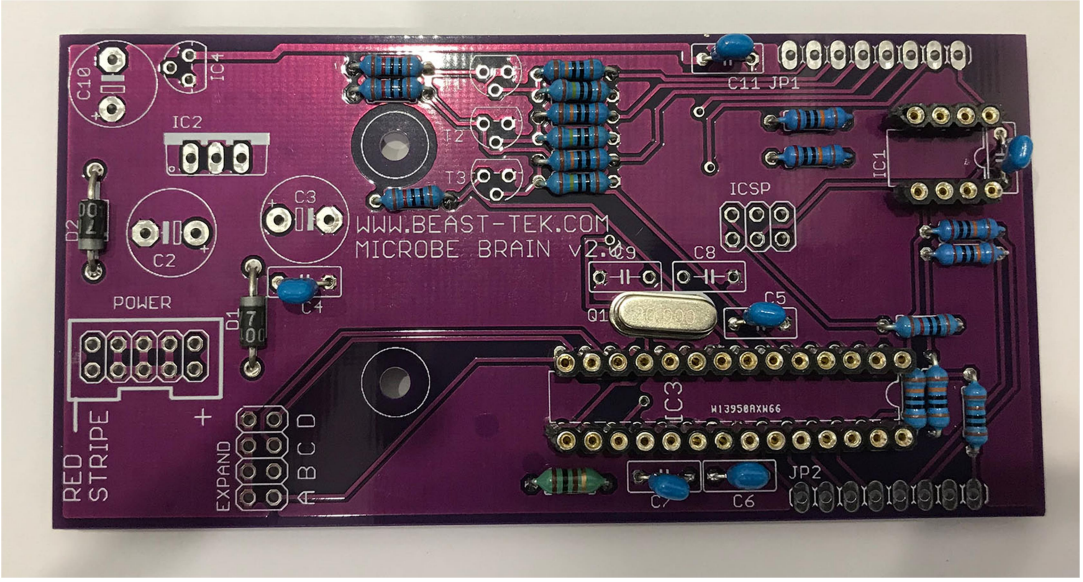
7. Install and solder power diodes and IC sockets (cut sockets from machine pin strips using a sharp craft knife or side cutters)



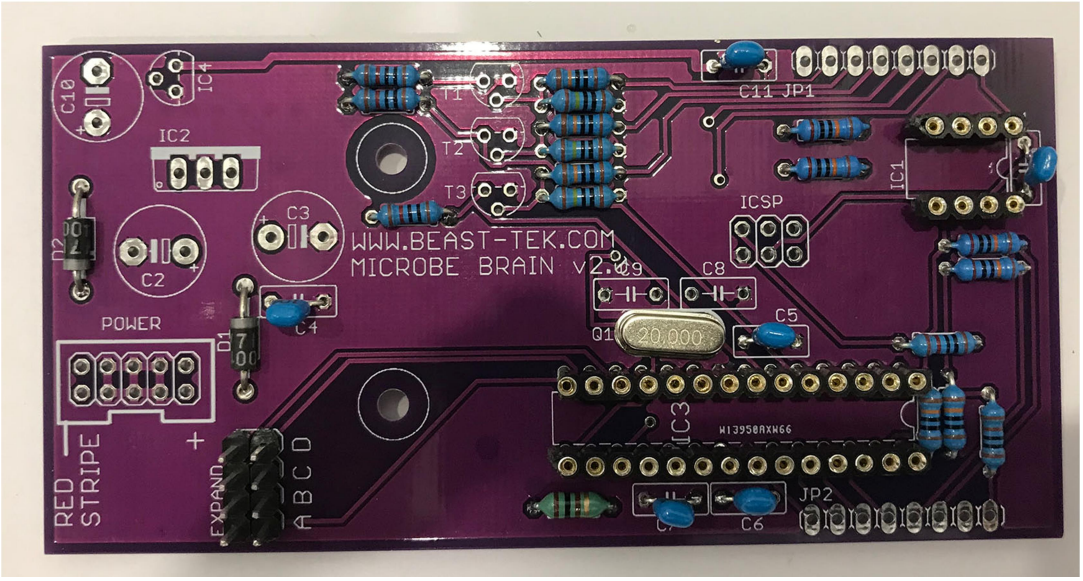
8. Install and solder 20 mhz crystal Q1



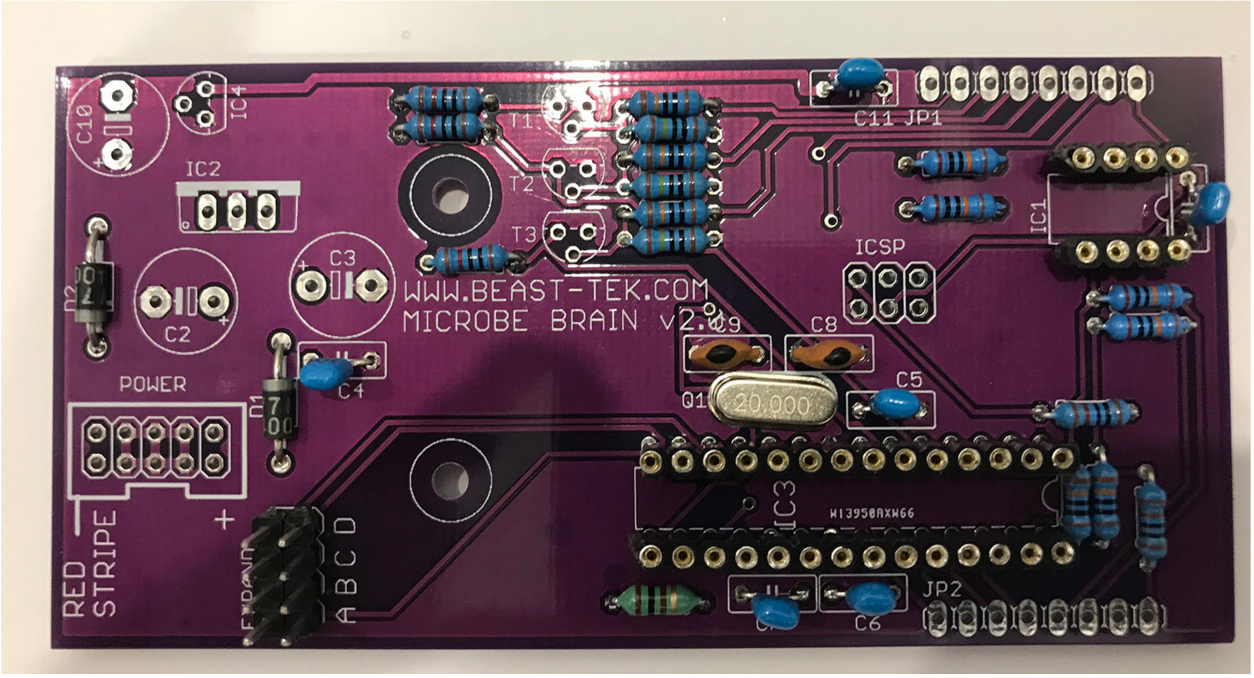
9. Install and solder 100nf capacitors C1, C4, C5, C6, C7, C11



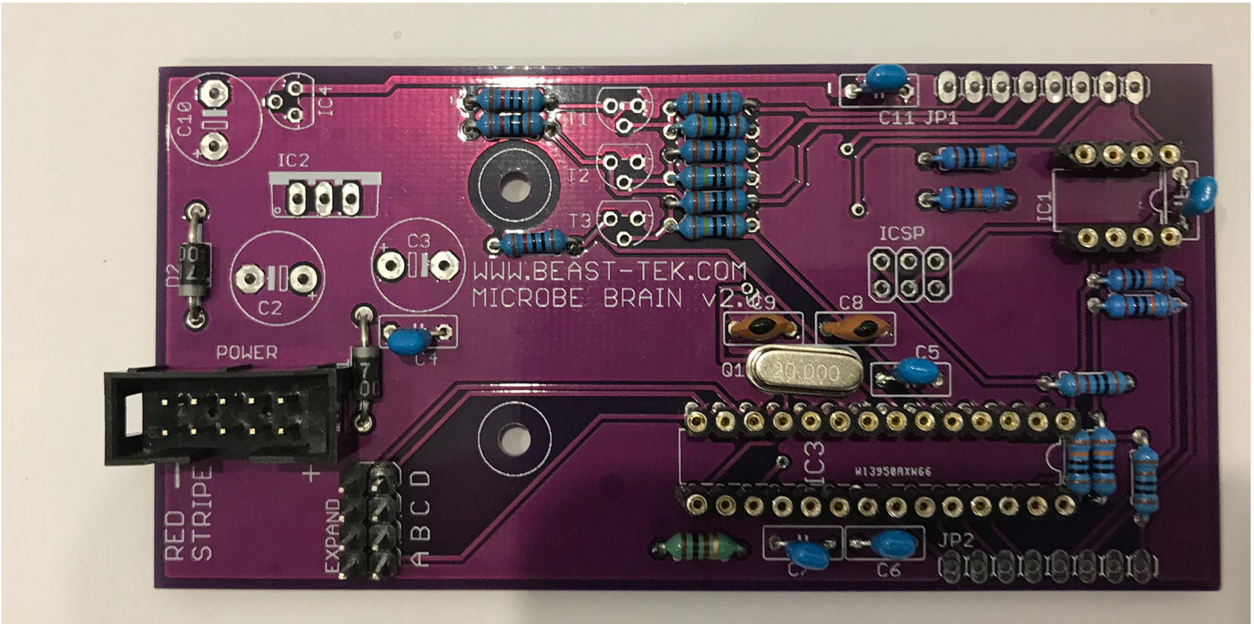
10. Cut 2 x 4 pins from the male pin header strip and solder into the expand header



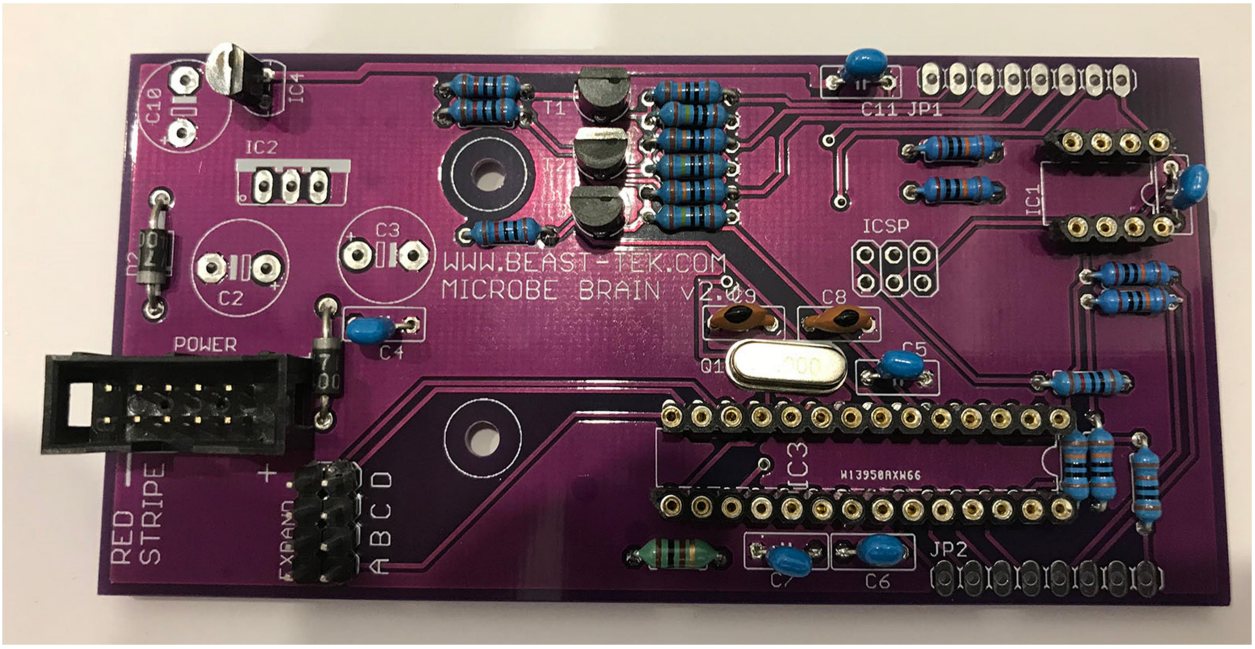
11. Install and solder 22pf capacitors C8, C9



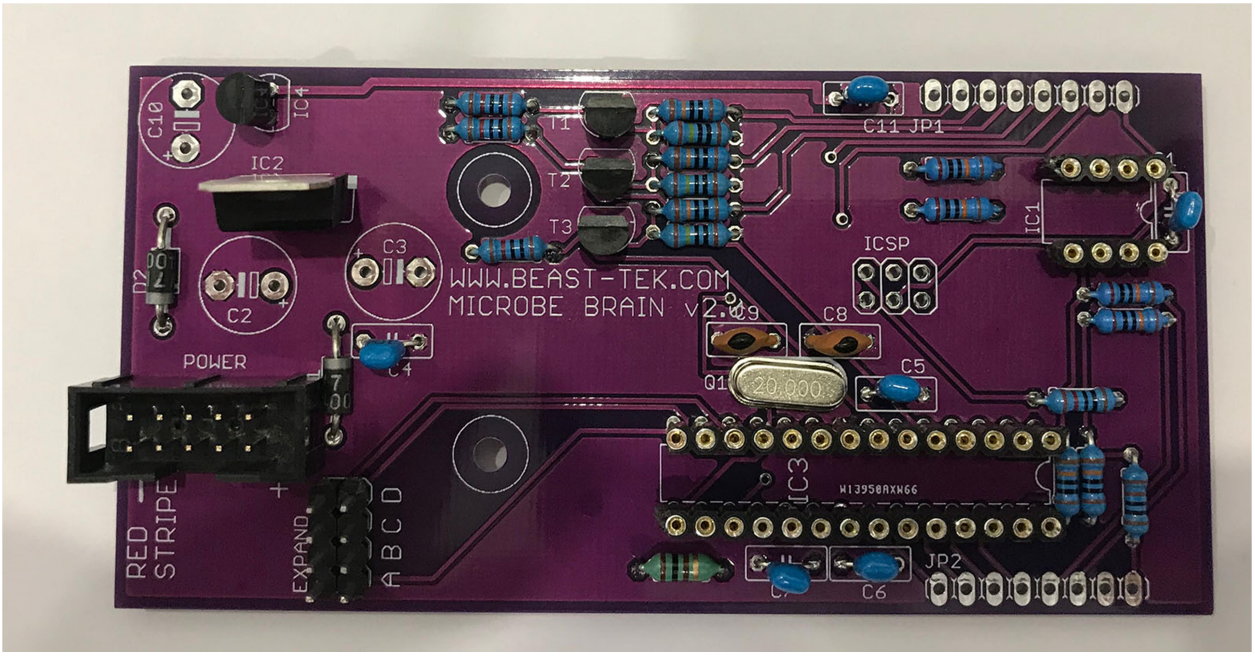
12. Install and solder 10 pin IDC header (Eurorack power)



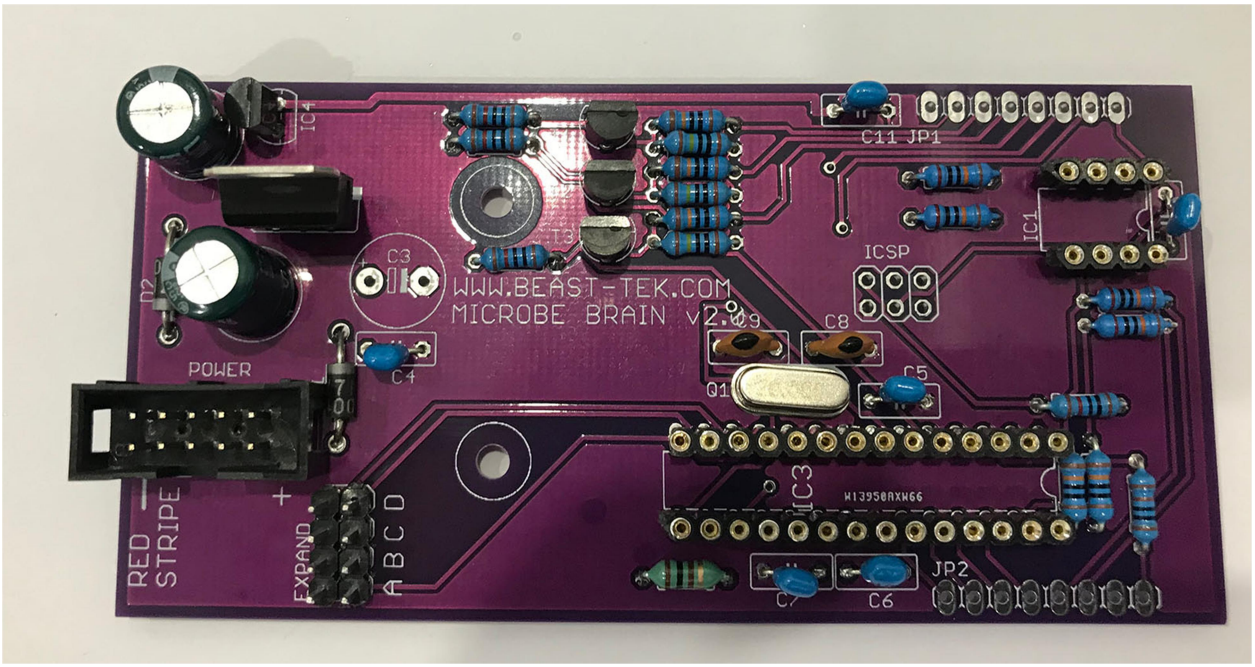
13. Install and solder IC4 79L05 and the 3 x 2n3904 transistors. IMPORTANT – make sure you sort the 79L05 from the transistors before installation and soldering!!!!



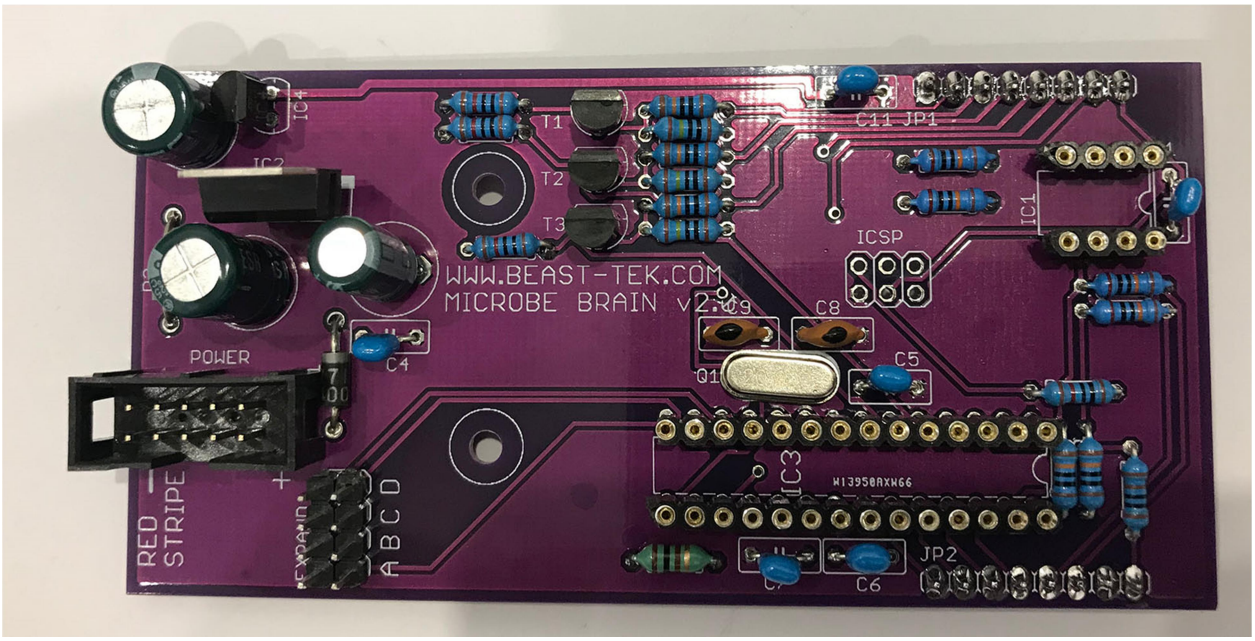
14. Install and solder IC2 7805 voltage regulator



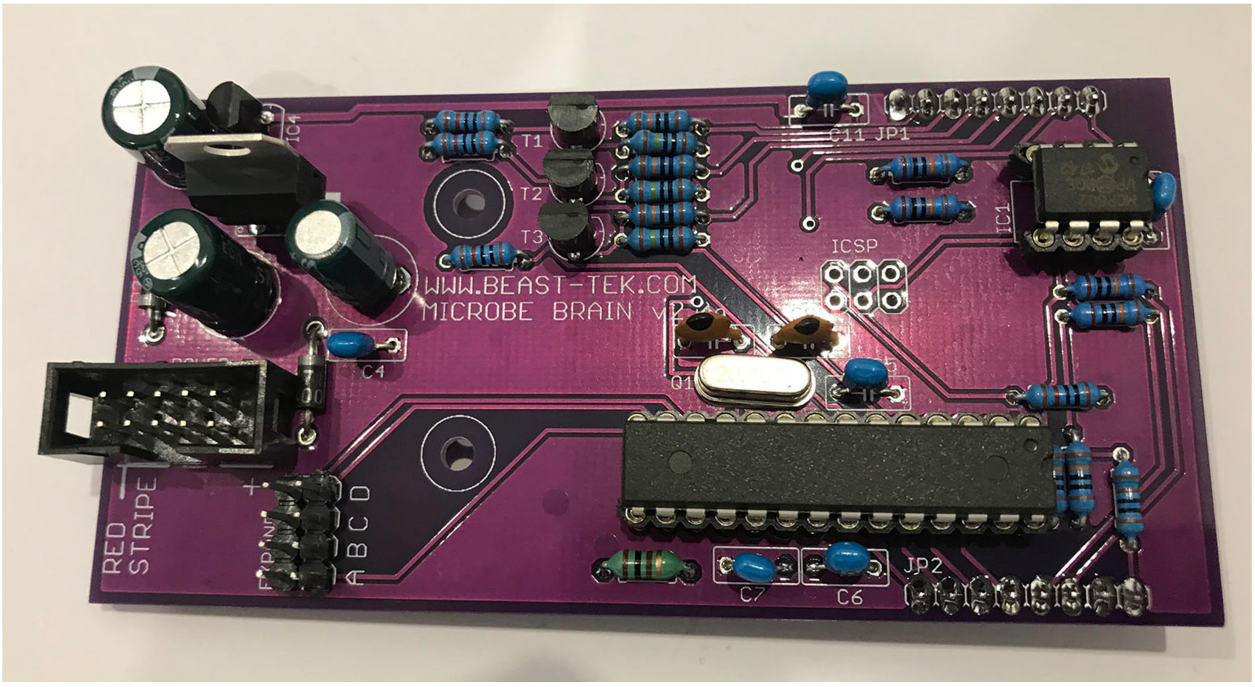
15. Install and solder 100uf capacitors C2 and C10



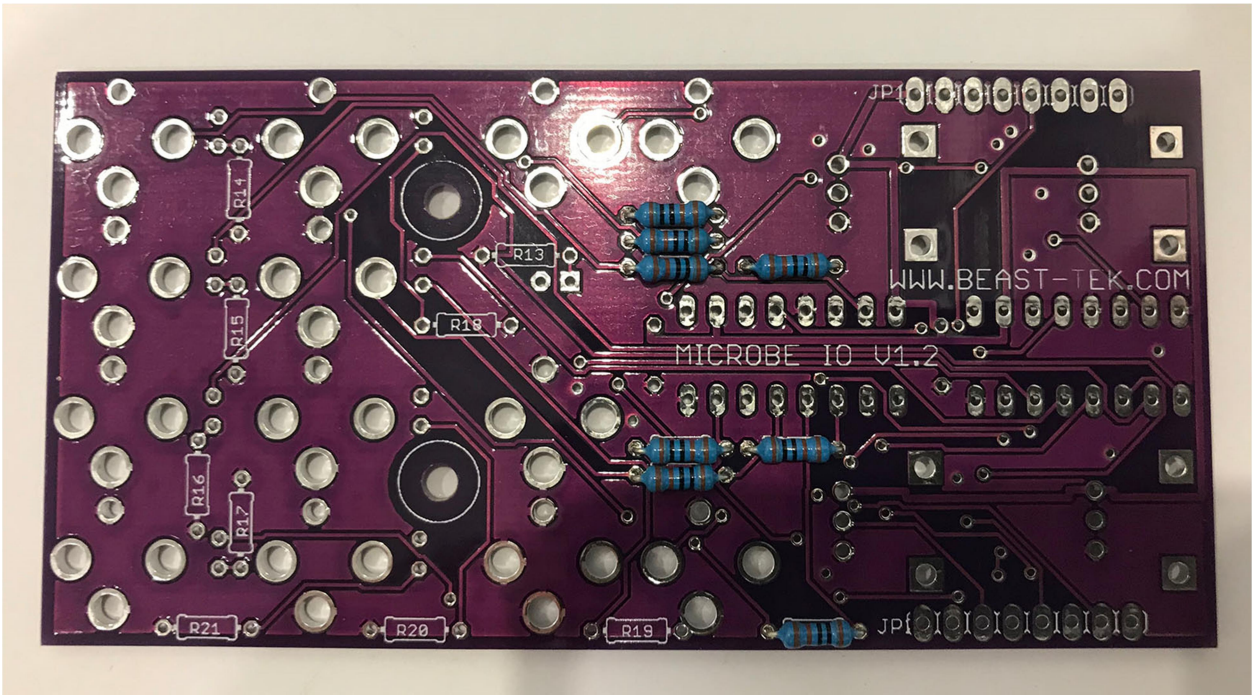
16. Install and solder 22uf capacitor C3. Cut 2 x 8 pin sections from the MALE header pin strip and solder in place on reverse side of board.



17. Insert the ATMEGA328p and the MCP602 .. be careful to make sure they are installed in the correct direction!!

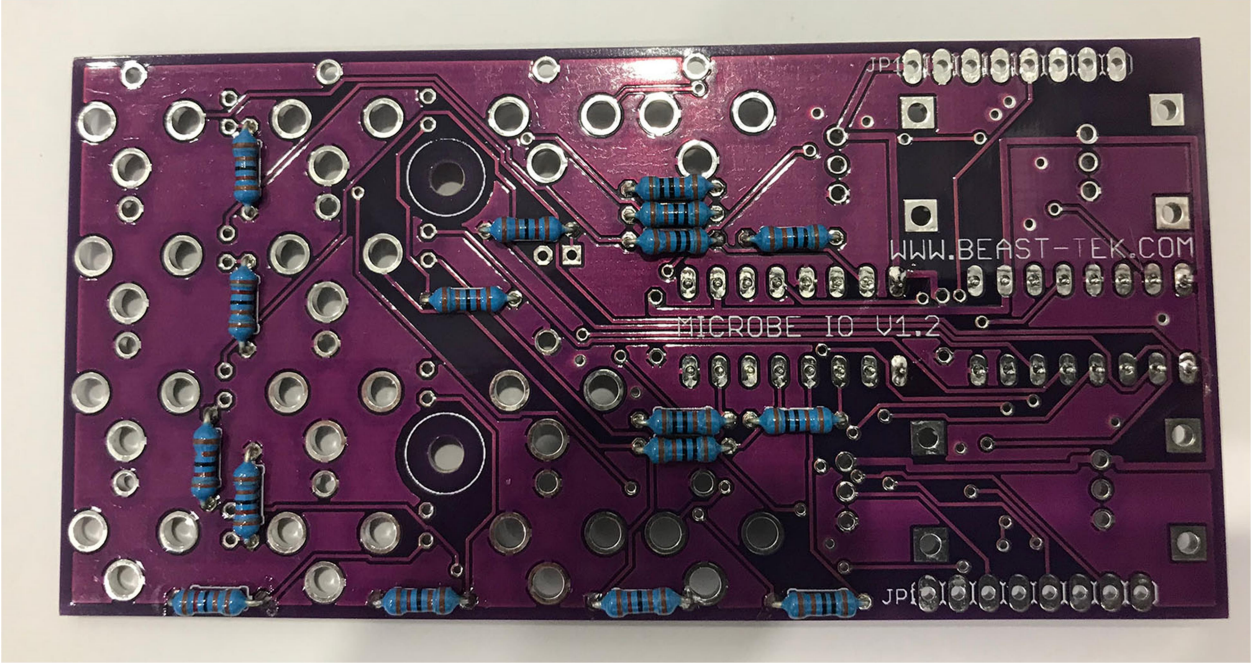


18. Install and solder the 1K resistors R5, R6, R7, R8, R9, R10, R11 and R12

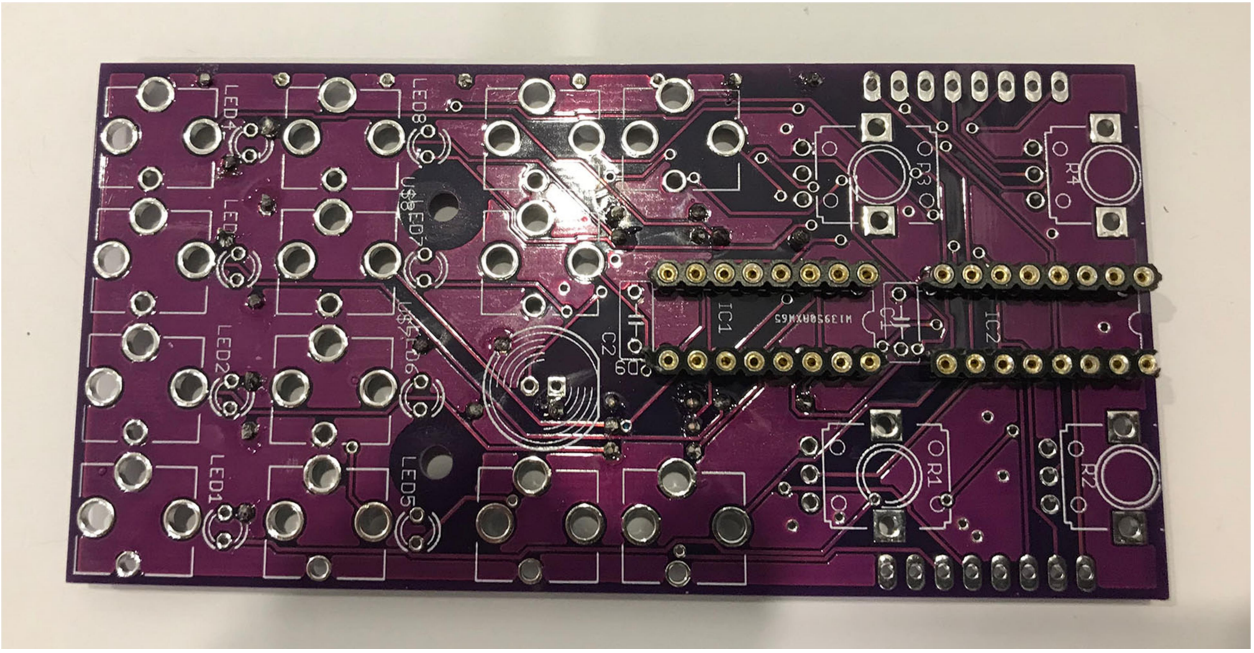


19. Install and solder the 1.2K resistors R13, R14, R15, R16, R17, R18, R19, R20, R21

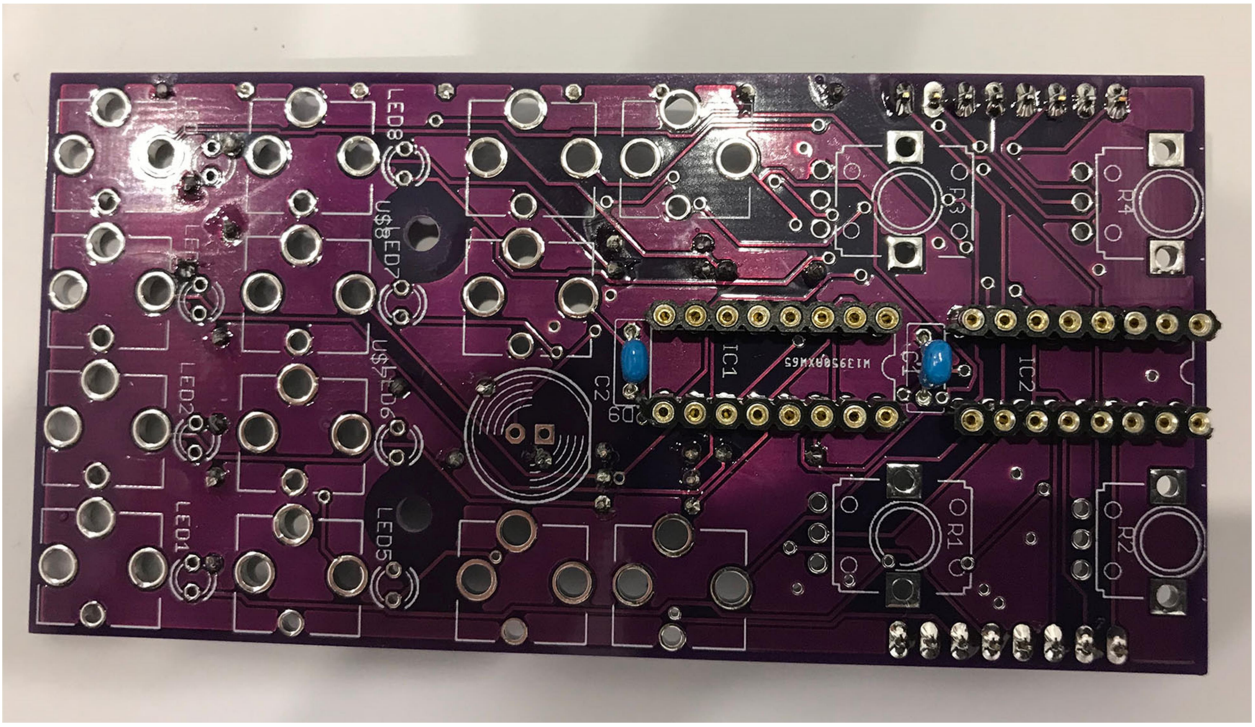
IMPORTANT!!! – Resistors R19, R20 and R21 are positioned extremely close to some of the jacks. To prevent short circuit from these resistors to the metal body of the jacks make sure you solder R19, R20 and R21 from the TOP of the board, so the entire leg can be clipped off on the bottom

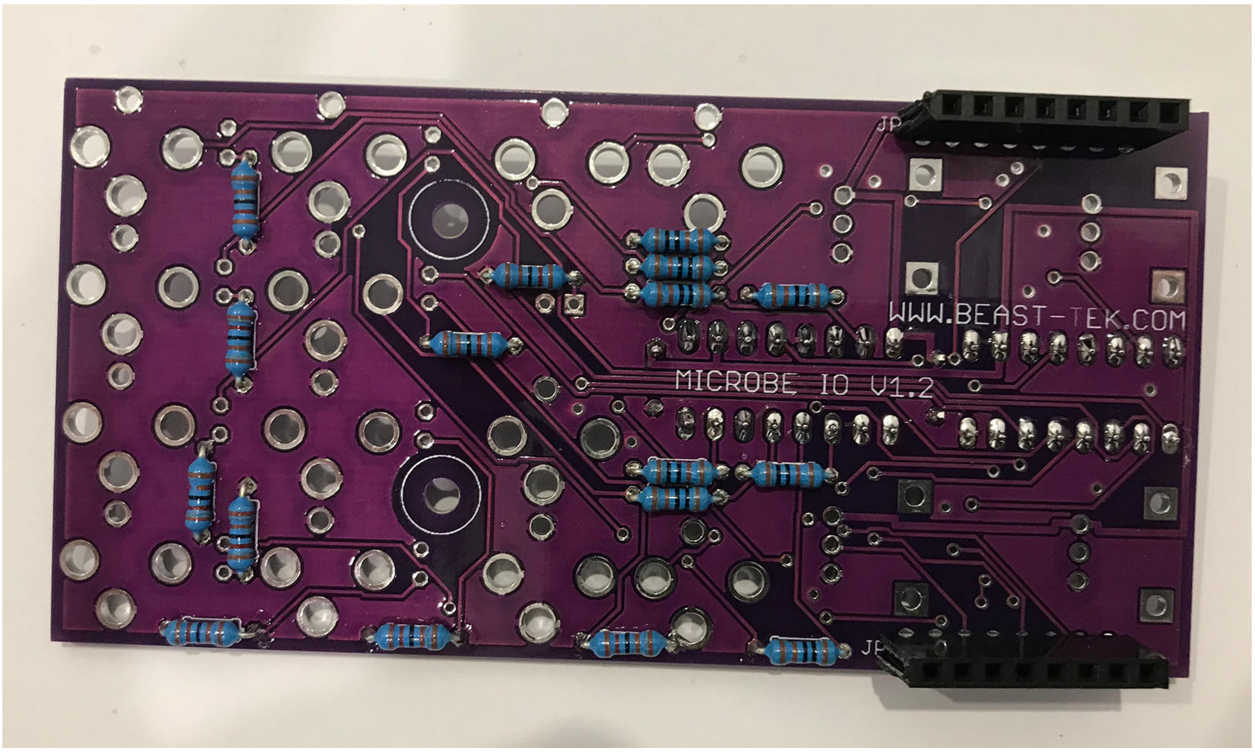


20. Install and solder the IC sockets (cut from machine pin strips)

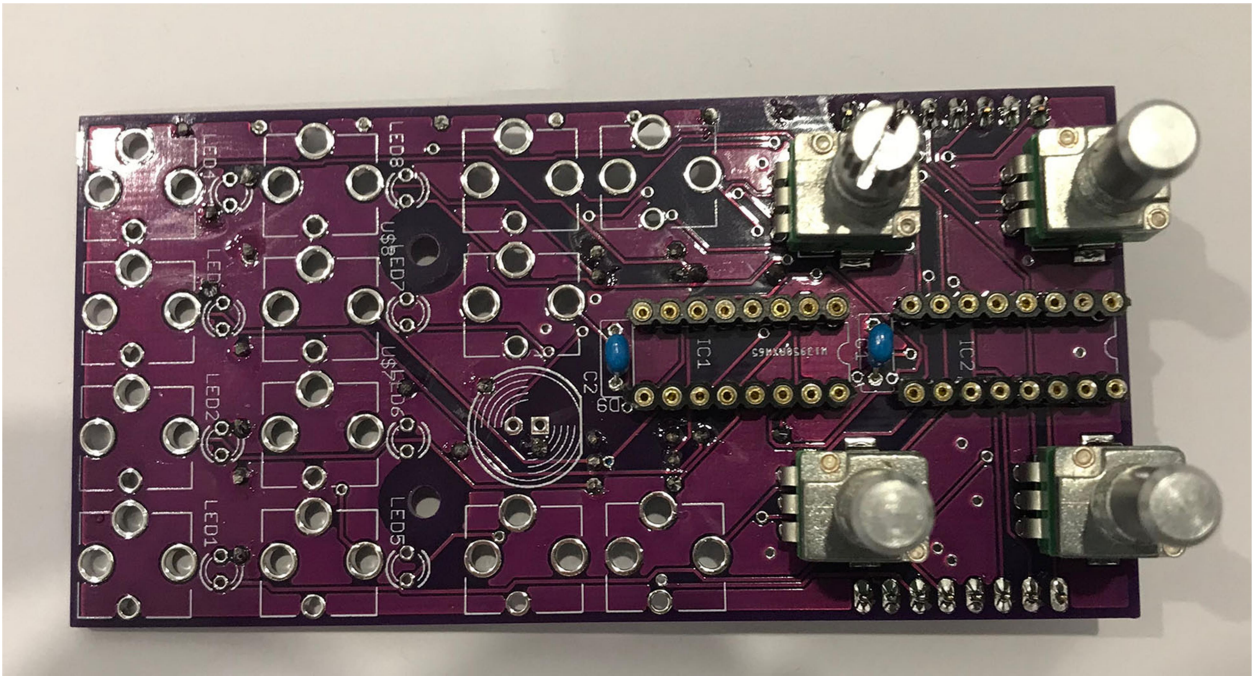


21. Install the two 100nf capacitors C1 and C2. Cut two 8 pin strips from the FEMALE header pin strip and solder into place.

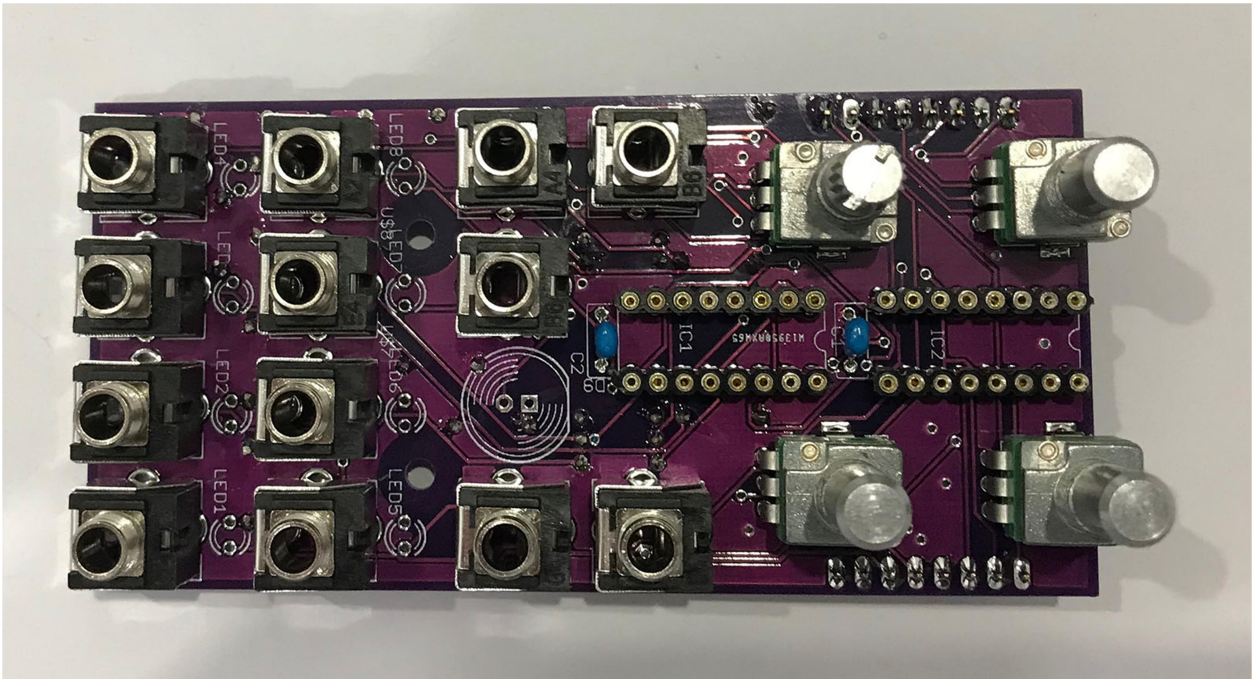




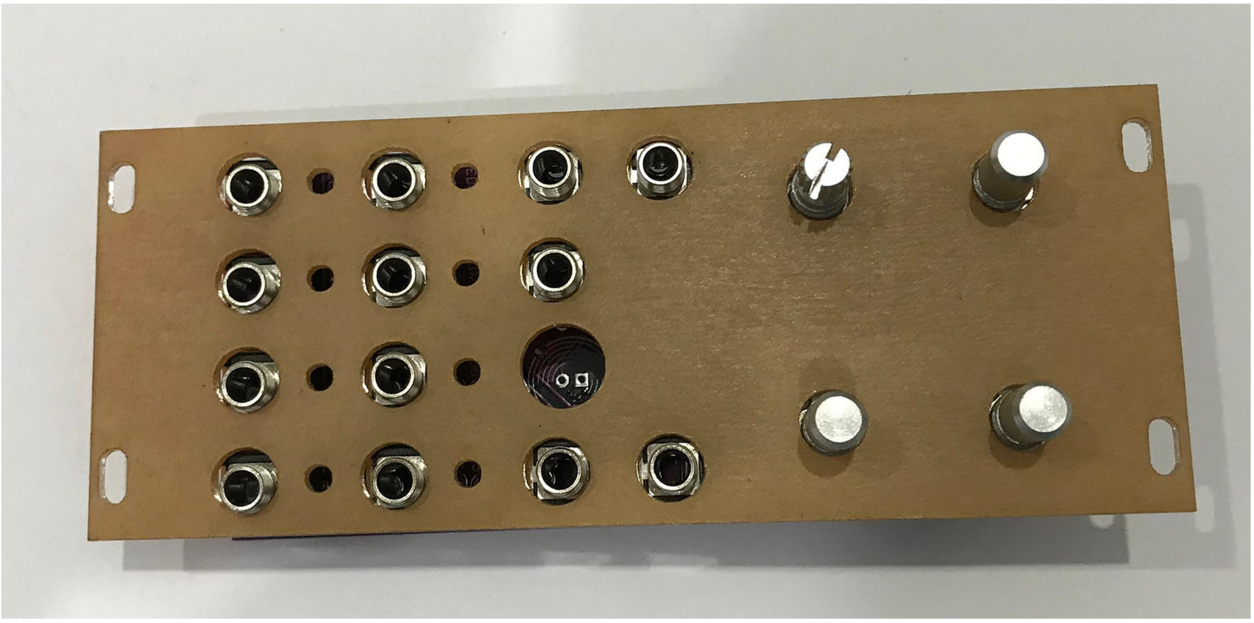
22. Install the potentiometers being careful to place the T18 knurled shaft to the correct location. IMPORTANT!!!! – DO NOT SOLDER THE POTS they will sit happily in place for now.



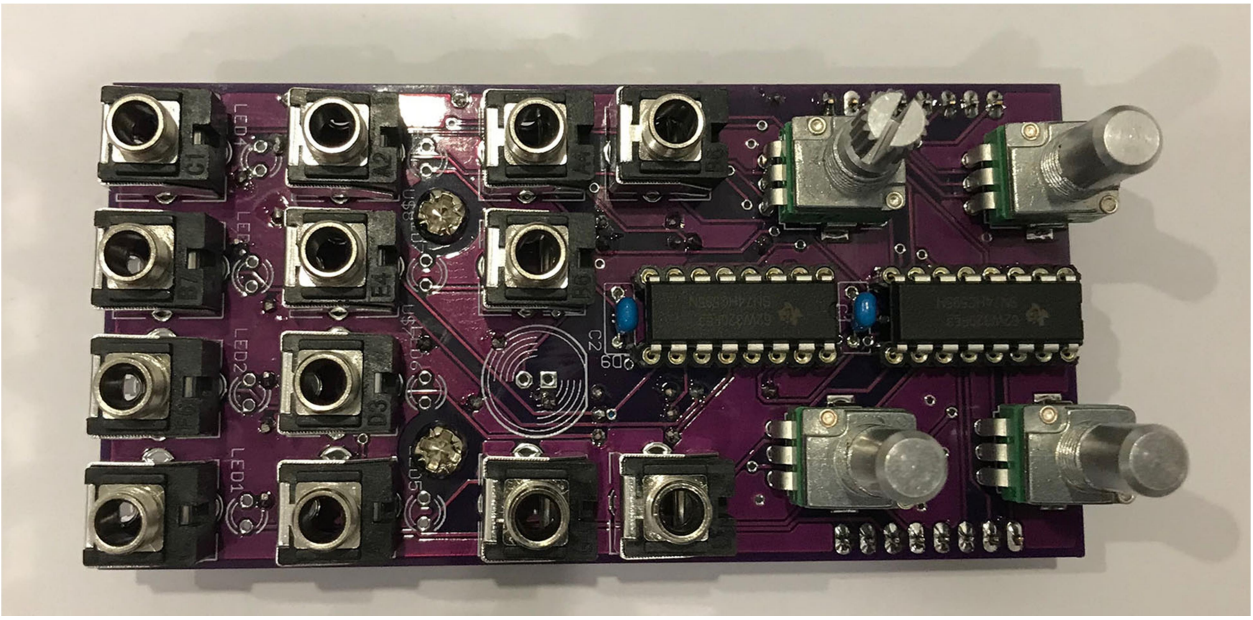
23. Install the thirteen jacks. DO NOT SOLDER YET!!!



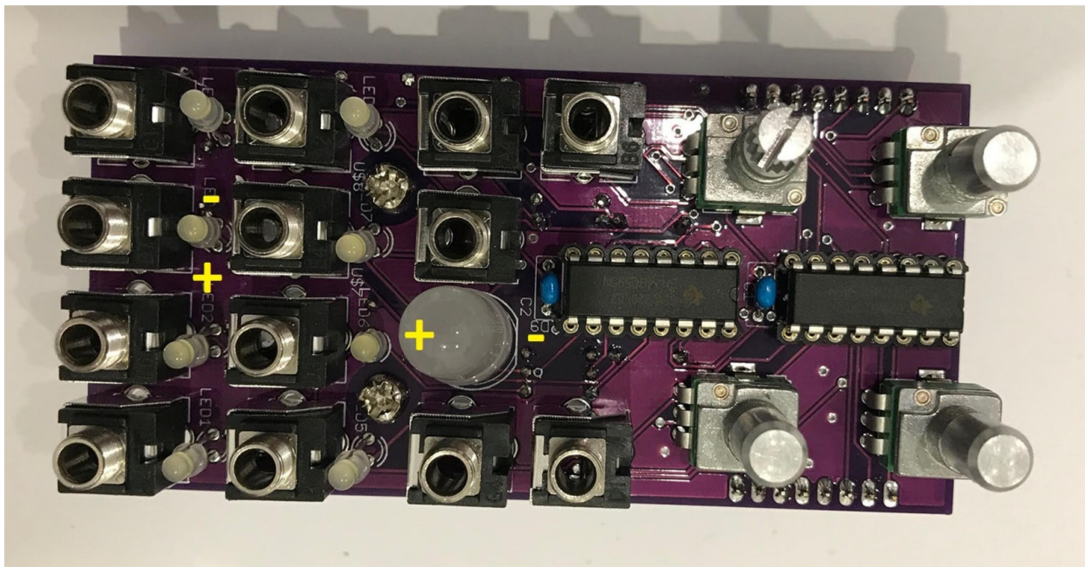
24. Place the clear acrylic panel over the top of the pots and jacks and wiggle it around so that the jacks and pots sit neatly. CAREFULLY flip together then solder ONLY THE GROUND PIN of the jacks to hold them in place!! DO NOT solder the other jack pins AND DO NOT solder and of the pots YET!



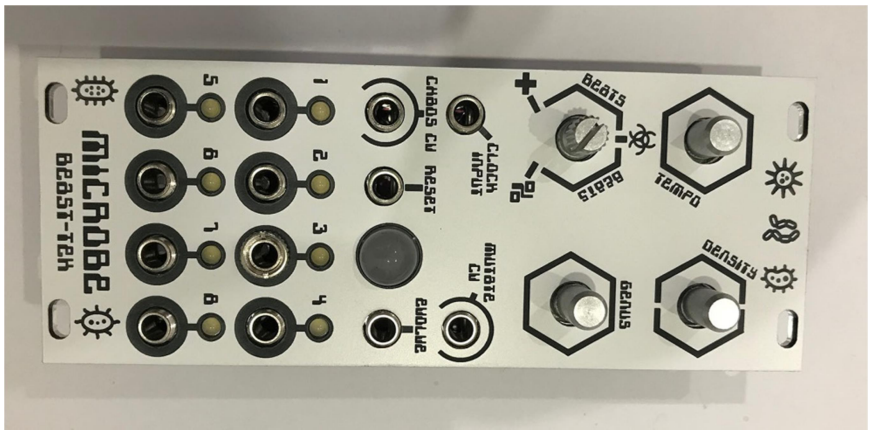
25. Once one pin of the jacks has been soldered, they will stay in place. Remove the clear acrylic panel and install two of the 6mm M3 screws and attach the 11mm brass stand offs on the other side. Install the two remaining IC's.



26. Install the nine leds. The eight 3mm leds are all oriented the same direction. Orientation is shown in the diagram below. Remember the shorter lead is negative and the longer lead is positive.



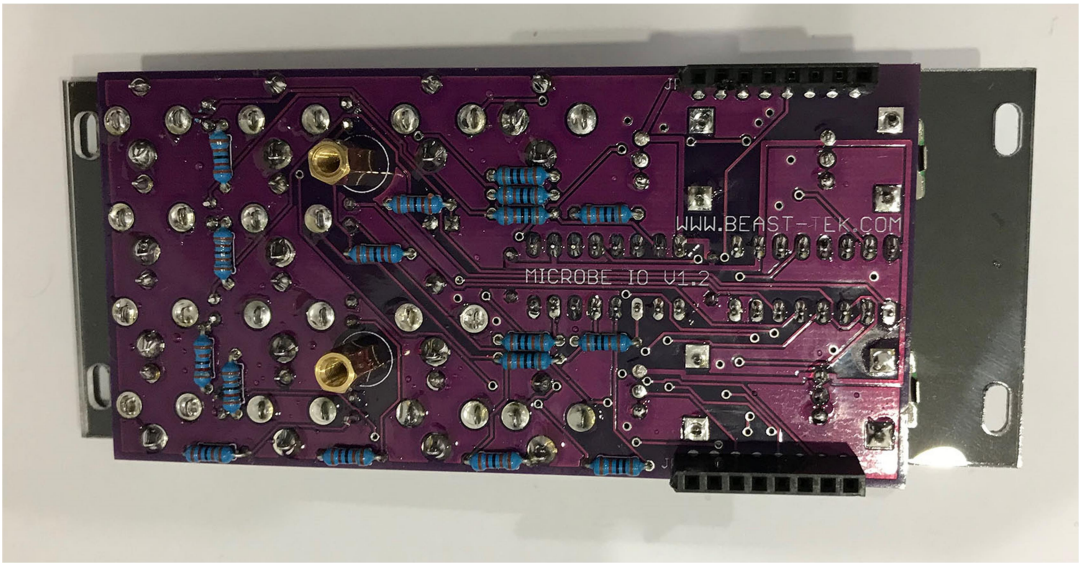
27. Peel the protective coating from the clear acrylic sheet. Place the front panel on top of the clear acrylic panel. Now place over the jacks and pots and wiggle things into place so the panel sits nicely. DON'T put any nuts on the jacks or pots yet. First push the big 10mm LED via its leads through the panel. Next work through the eight 3mm leds pushing them through one by one so they are flush with the panel. If you put any nuts on the jacks or pots, you will need to remove them so that the LEDs can be pushed through the panel without issue. Once all LEDs and pushed through and sitting nicely in the panel, install one jack nut and finger tighten it to hold the panel loosely in place.



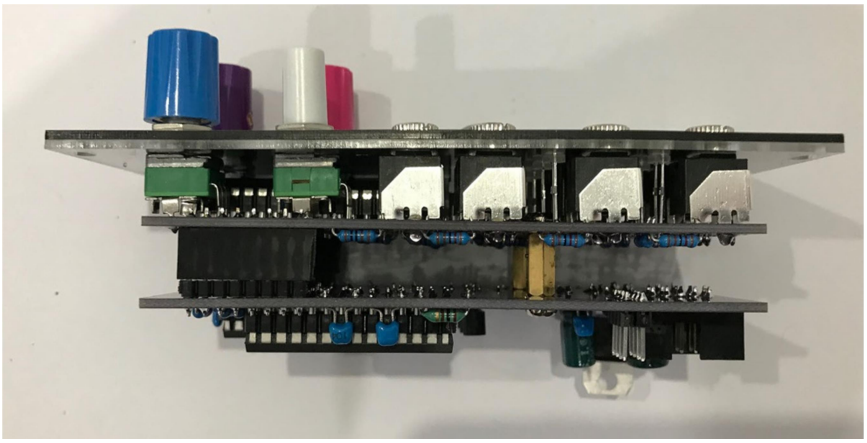
28. With the jack nut holding the front panel in place, give everything a wiggle around so that everything is sitting nicely. Take time and inspect that all the jacks and pots are sitting nicely. Now install washers and nuts on the four potentiometers and tighten (but don't over tighten, the pots aren't soldered and if you tighten them too much the pot leads will bend).

Now install the remaining nuts on all of the jacks, giving each one a wiggle as tightening up so that they all sit flush. Give everything a final wiggle and make sure everything is seated well. The panel and sockets are still reasonable flexible until everything is soldered in.

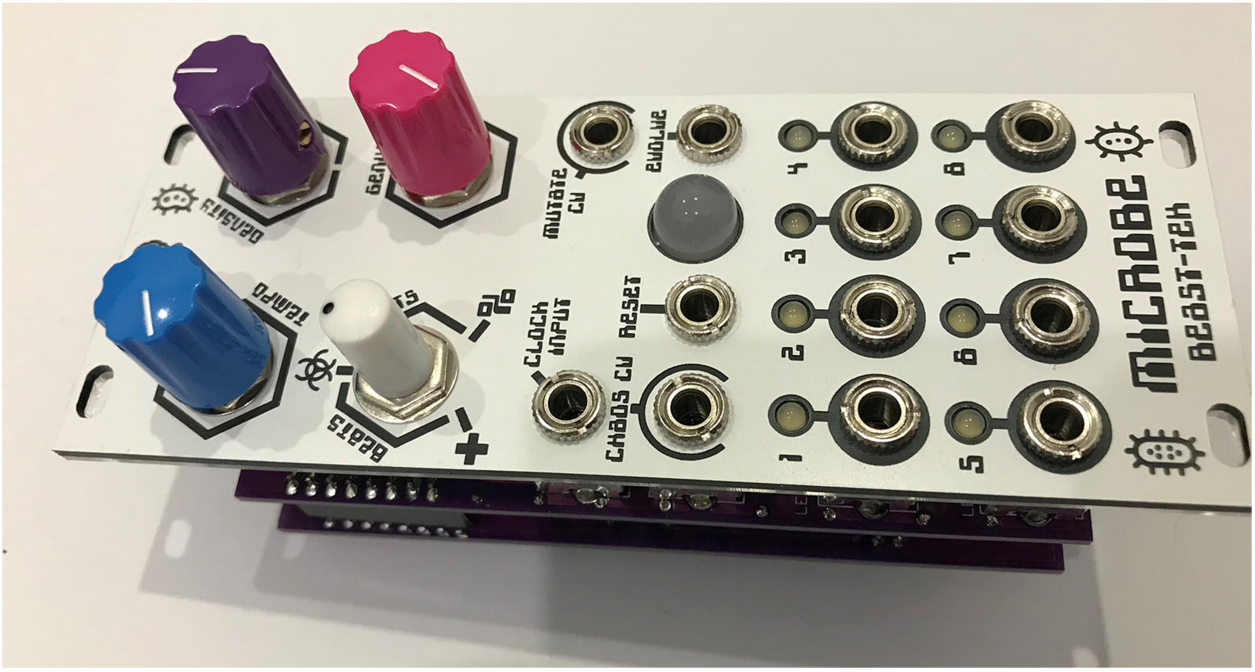
Once you are happy that everything is seated correctly and flush, flip the panel over and solder all of the remaining jack pins and the pots and LEDs into place.

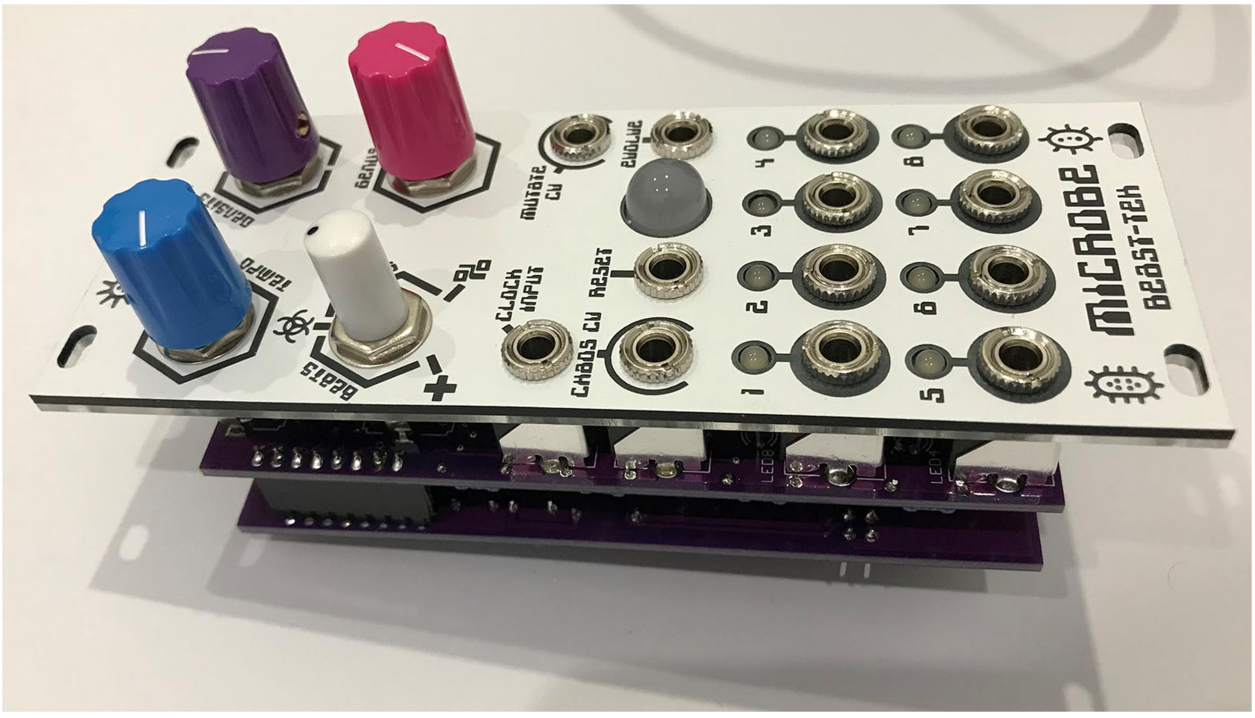


29. Take time to check both boards for missing solder joints or sloppy solder joints. If everything looks okay, its time to join them together. Join the two boards together via the pin headers and use two 6mm M3 screws to secure them together (via the brass stand offs).



30. Double check and make sure everything is correct and looks right. Once you are happy its time to power on and test!


MICROBE
BEAST-TEK
MUTATE CW
EVOLVE
CLOCK INPUT
RESET
CHAOS CW
TEMPO
BEATS
1
2
3
4
5
6
7
8


MICROBE
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