4U CLEE Orgone Accumulator

Resistors 1% film

3	200K
17	100K (There are 18 on the board silk)
1	51K (Labeled 100K see note)
4	33K
1	30K
6	20K
1	18K
5	10K
1	6K8
2	3K9
2	3K0
2	2K2
1	2K0
1	1K8
1	1K2
9	100R
8	47R
1	22R
4	RLED (appropriate for LED type and brightness) I used 1K

Capacitors

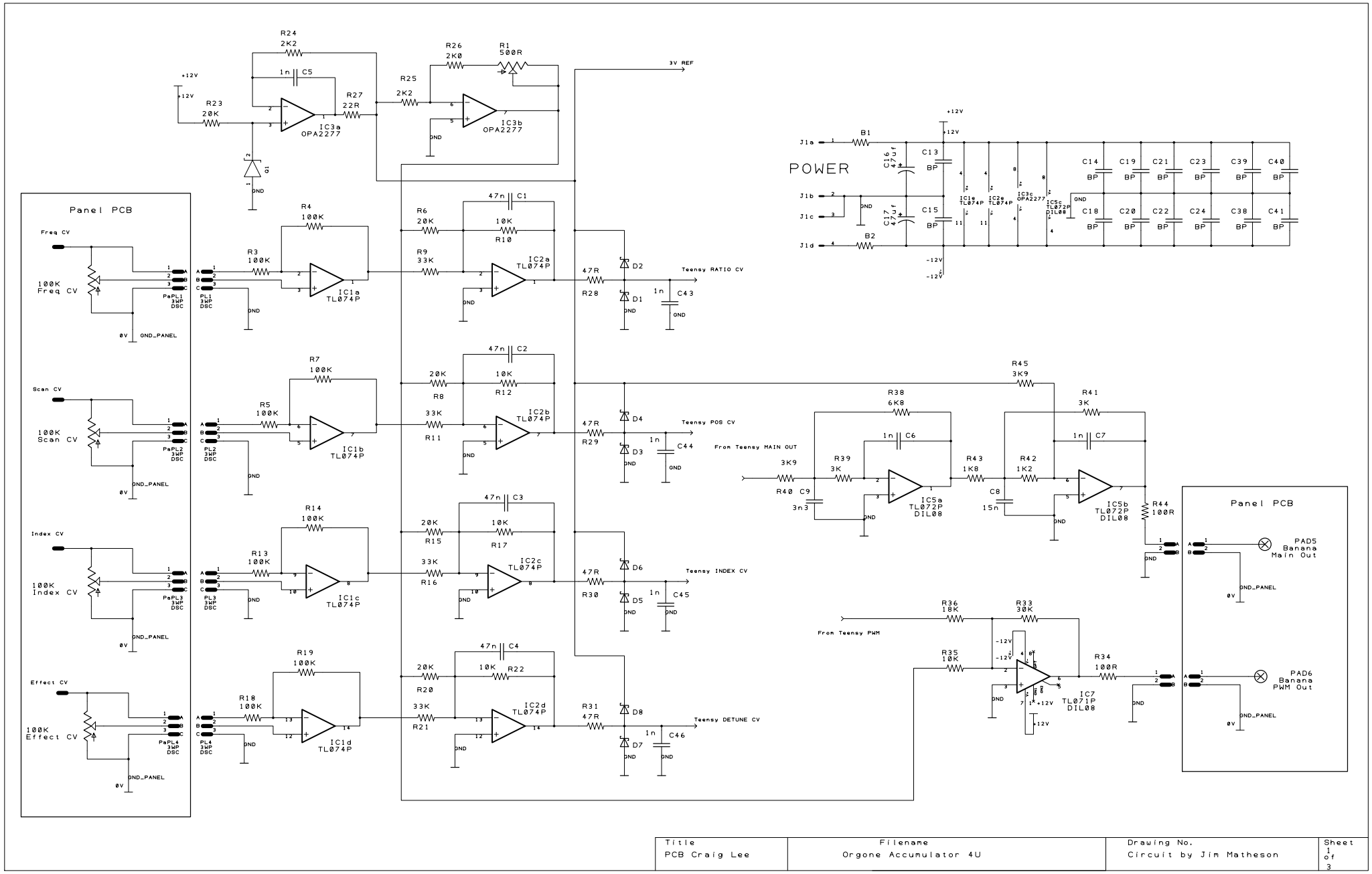
3	47ufd Electrolytic
1	330n Film
4	47n Ceramic
1	15n Film
1	3n3 Film
2	1n Film
17	100n Ceramic bypass
17	1n Ceramic
3	100pfd Ceramic

Silicon

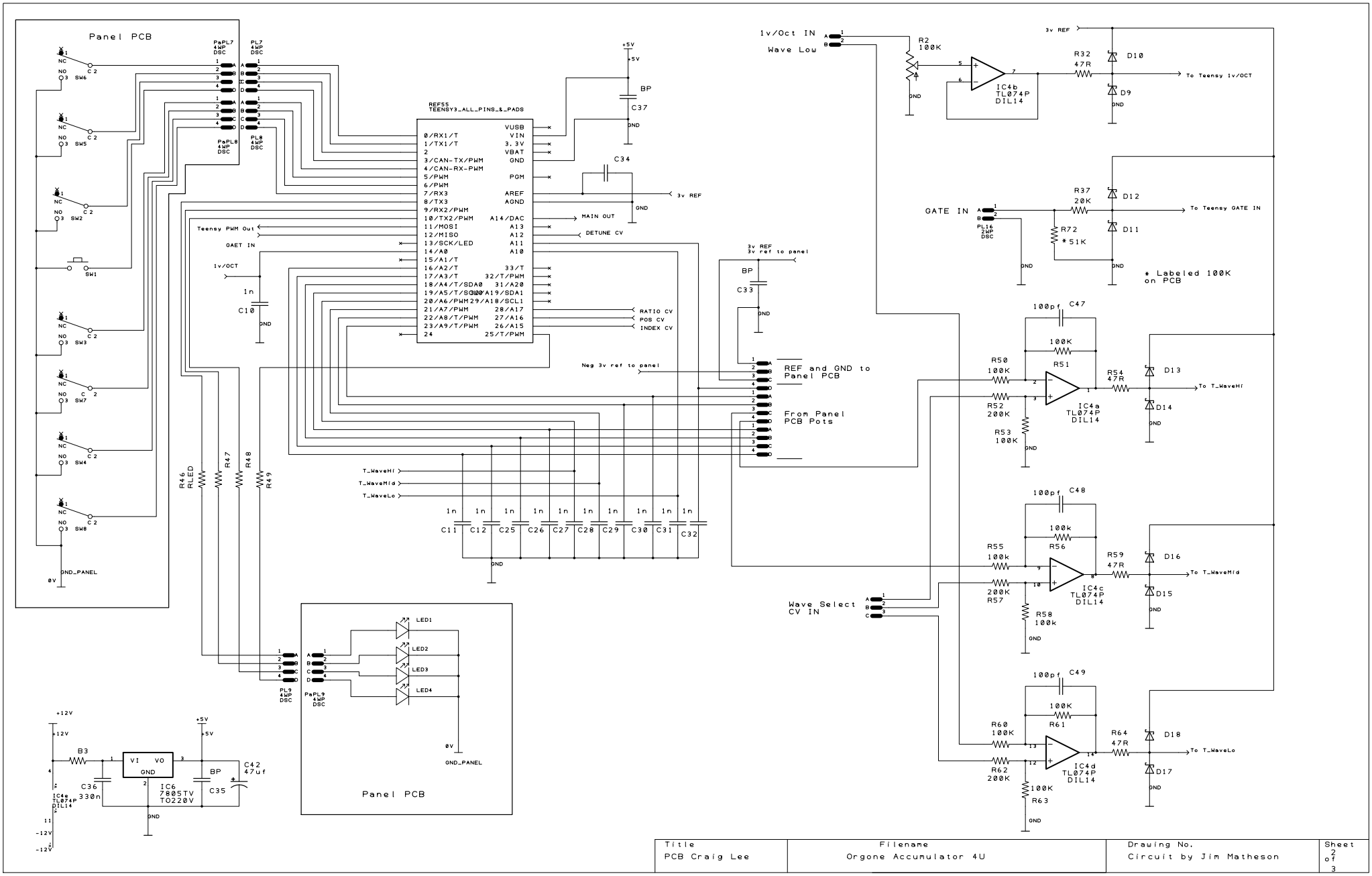
18	1N5817 Schottky Diode
1	LM4040 3V Reference Diode
3	TL074
1	TL071
1	TL072
1	OPA2277
1	TEENSY 3.1 board
1	7805 Positive VOLTAGE REGULATOR

Hardware and Misc.

4	3mm LEDs
3	Ferrite Bead
1	100K Trimmer
1	500R Trimmer
3	14 Pin DIP Socket
3	8 Pin DIP Socket
3	40 position .1" Male Header (you need 90 points)
3	40 Position .1" Female Header (you need 90 points)
1	male surface mount header (you need 7 points)
1	4 Pin .156 power connector
10	10K Linear PC Mount POT
4	100K Linear PC Mount POT
1	C&K D6R Momentary contact switch
7	SPDT PC Mount Switch C&K Miniture PC Mount
8	Blue Banana Jack
1	Black Banana Jack
2	Red Banana Jack

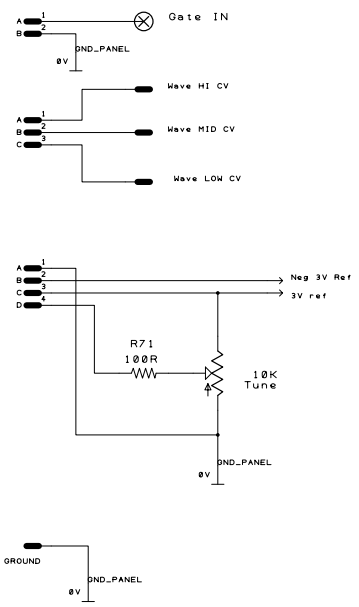


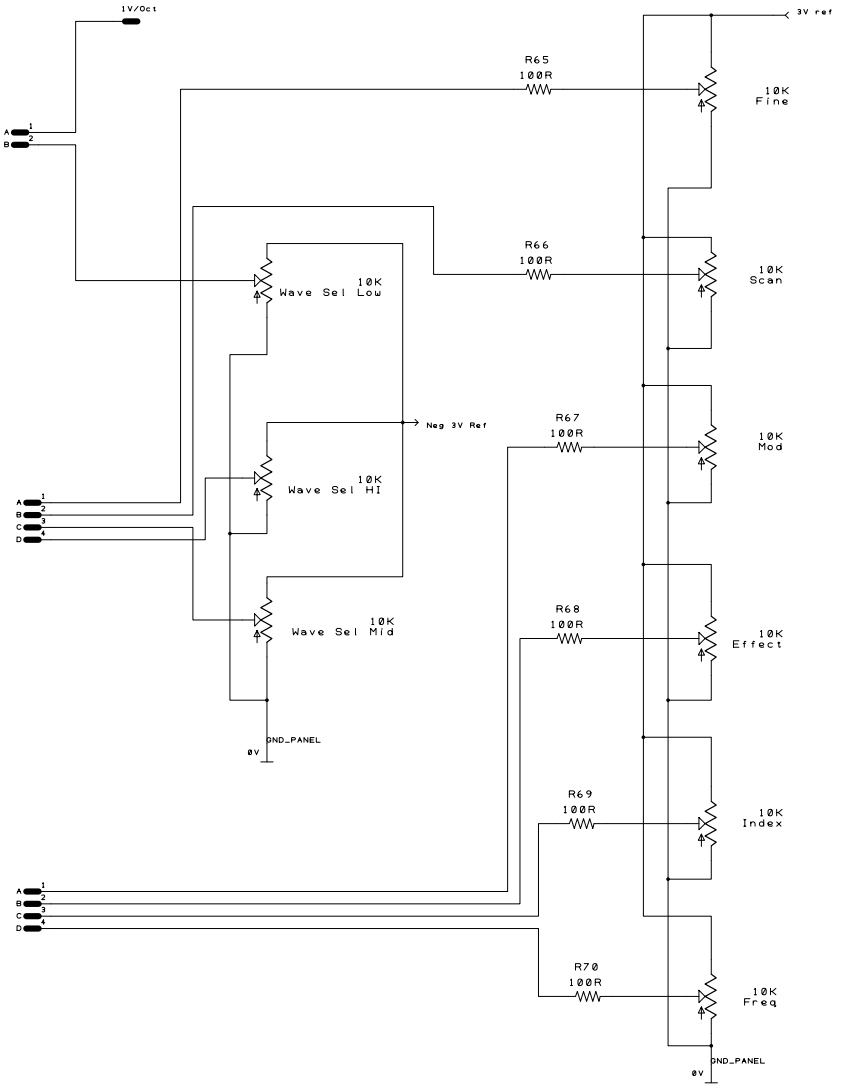
Title	Filename	Drawing No.	Sheet
PCB Craig Lee	Orgone Accumulator 4U	Circuit by Jim Matheson	1 of 3



Title	Filename	Drawing No.	Sheet
PCB Craig Lee	Orgone Accumulator 4U	Circuit by Jim Matheson	2 of 3

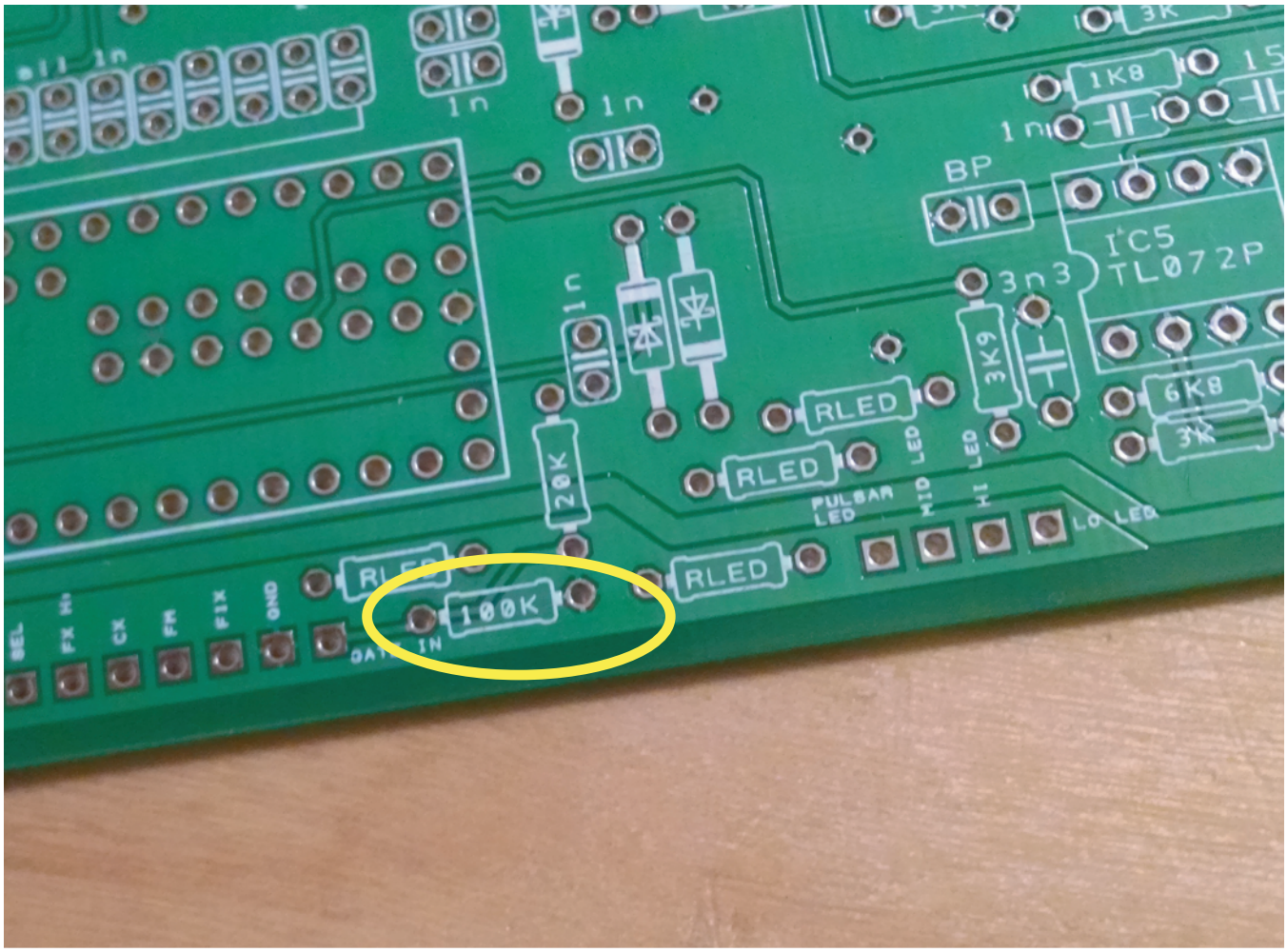
All Components
Panel PCB





Title	Filename	Drawing No.	Sheet
PCB Craig Lee	Orgone Accumulator 4U	Circuit by Jim Matheson	3 of 3

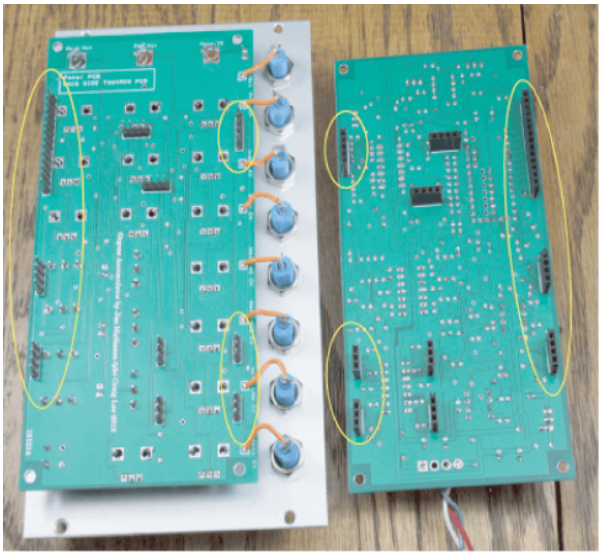
CLee 4U Orgone Accumulator resistor substitution



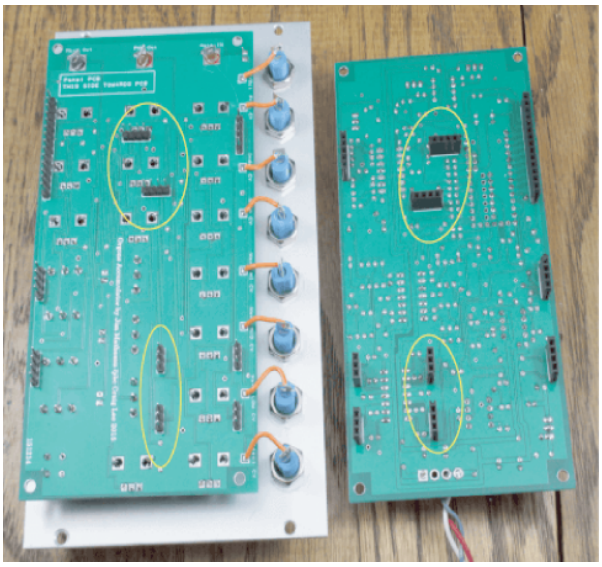
Install a 51K resistor here

With a 100K resistor here the RESET LED can sometimes latch on when nothing is plugged into the RESET jack, or if the jack is pulled while a high signal is present.

Installing the header connectors between boards



Install these first:
Tack the headers in with a small amount of solder on 1 pin.
Fit the boards together enough to align the headers and solder all the pins.



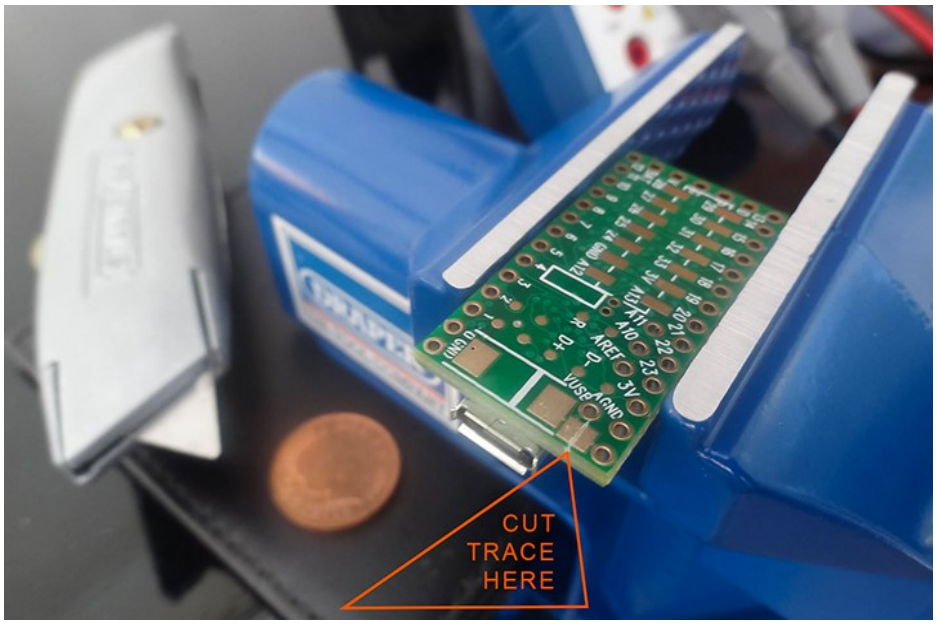
Install these after:
Do each, one at a time, tacking and fitting together to align the headers each time.

The following guide to soldering the headers for the Teensy board is from the Neutron 7 build guide for the Euro Orgone Accumulator

SUBSECTION A: Teensy Hardware.

Cut the trace:

You should have programmed the Teensy by now with at least the blink program to make sure you know how to operate the software, and that the Teensy is working. Now you need to separate the 5V VIN from the power supplied by USB. Make the cut between the two rectangular pads. If you have a multimeter, check that the two pads no longer make an electrical connection.



Cutting this trace still allows the Teensy to be programmed via USB while it is connected to the synthesizer power, however, the Teensy will no longer work on USB power alone.

If the trace is not cut, your synthesizers 5v and the computers USB power will be connected together, which could break something.

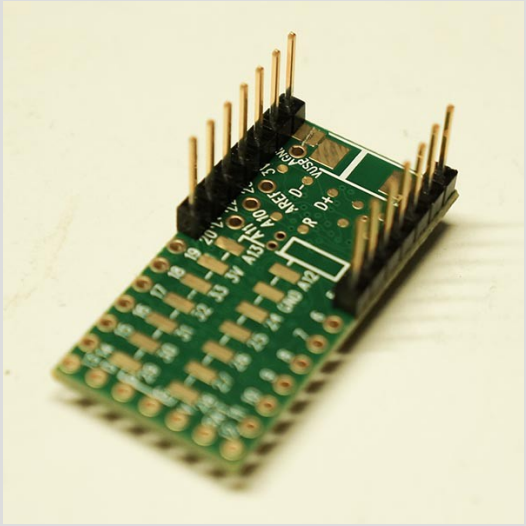
*advanced option in appendix 1

Mounting the pins on the teensy:

The Teensy needs to have pins along both long sides, along the short side, a group of three near one edge, and a special set of 14 pins in the middle which use a SMD connector. Lining these all up correctly can be tricky, so proceed as follows.

Warning! be careful not to get any solder on any of the pins long ends, even the tiniest blob of solder makes it impossible to insert the pins in to the headers, and it is hard to clean off without a vacuum desoldering tool.

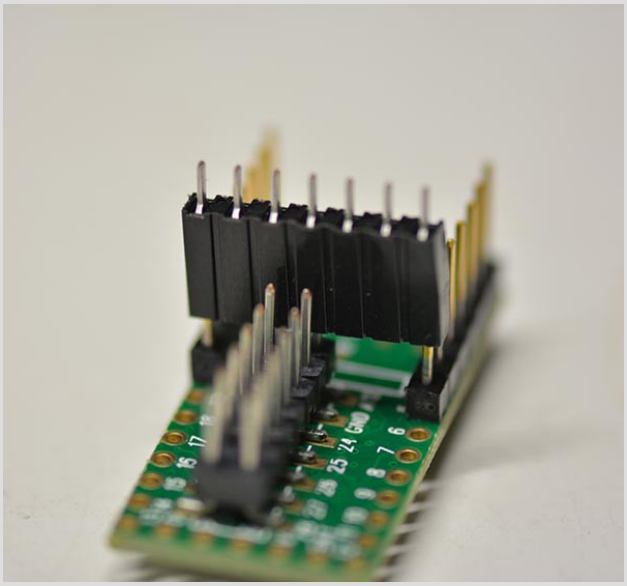
Instead of the 14 rows you might expect for the two long sides, break off 2 rows of seven from the breakaway pin strip. These will cover half of each long side, nearest the USB connector. This makes getting at the SMD pins easier, while also giving you an alignment point.



Get the 7 pin female board header, we are going to use that as an alignment tool, we will call it “alignment tool” for now.

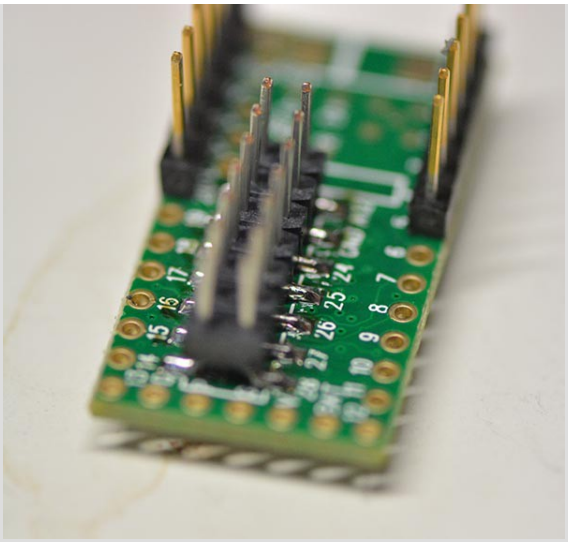
Solder in 2 of the 7 pin rows, at the USB end of the Teensy. Just solder one pin for now. Make sure they are vertical and flush to the teensy (you can use “alignment tool”)

Now place the alignment tool over the rows you soldered, and also the SMD header,



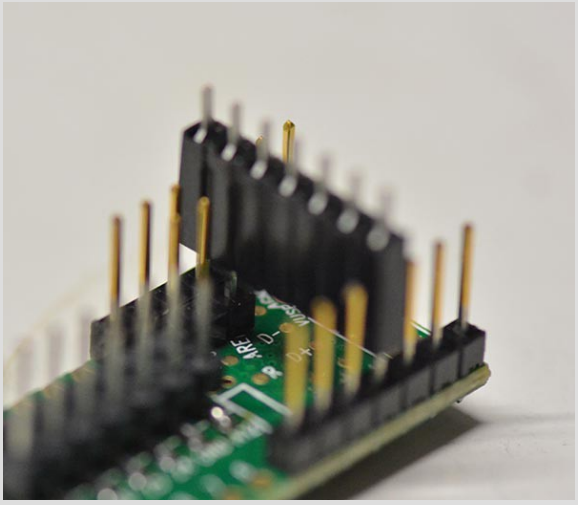
Solder a couple of the SMD pins, and then remove the “alignment tool”

Now you can solder the rest of the SMD pins fairly easily.



Now break off 3 pins from the breakaway header and use the alignment tool to hold them in the 3 holes marked AREF A10, and A11 on the Teensy.

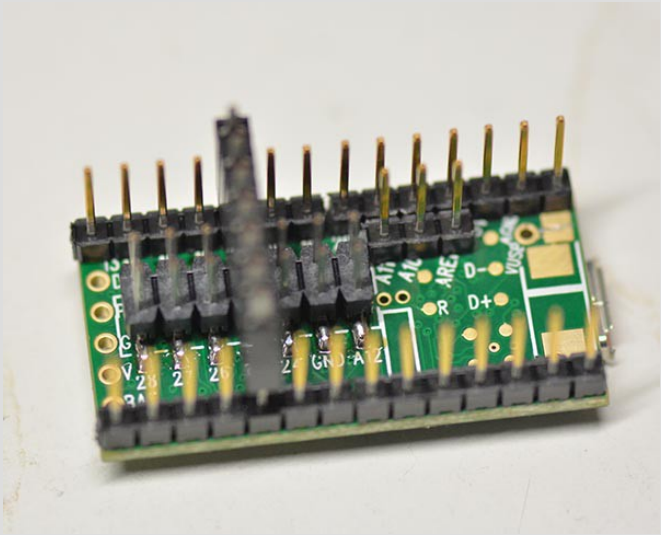
And solder one pin, to hold them in place.



Now you can break off 2 more strips of 7 pins and place them along the remaining side holes. The alignment tool can be used again

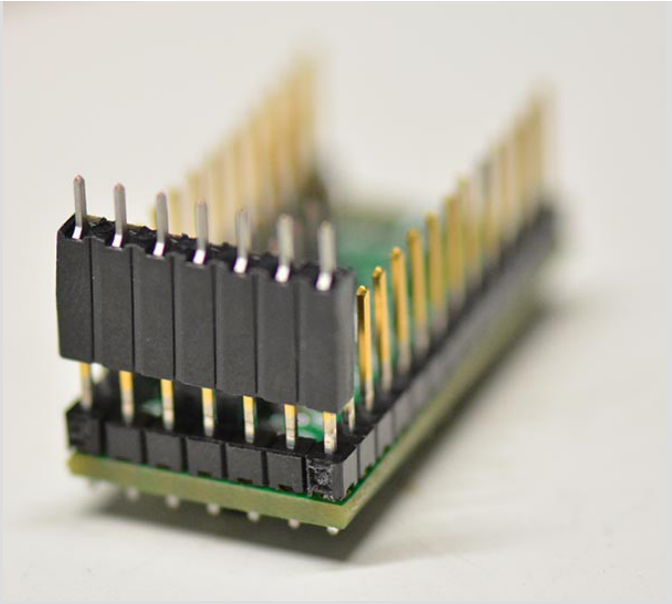
You may need to file or sand the ends of the strips you cut, if they interfere with the strips already in place.

Just solder 1 pin on each for now.



Now utilize the alignment tool yet again for the remaining 5 pins at the short end of the Teensy. You may now retire the alignment tool and call it a board header again.

Again solder only 1 pin.



Mounting the Board Headers

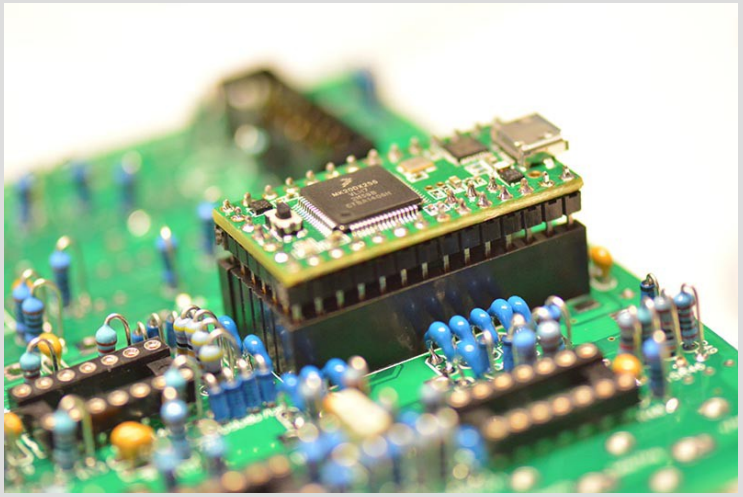
You can put all the headers on their respective pins, to align them all. You will not be able to push them all the way down though; this is fine.

Press the 7 pin one on the middle row of the SMD pins first and use that as a guide for how far to press the others.

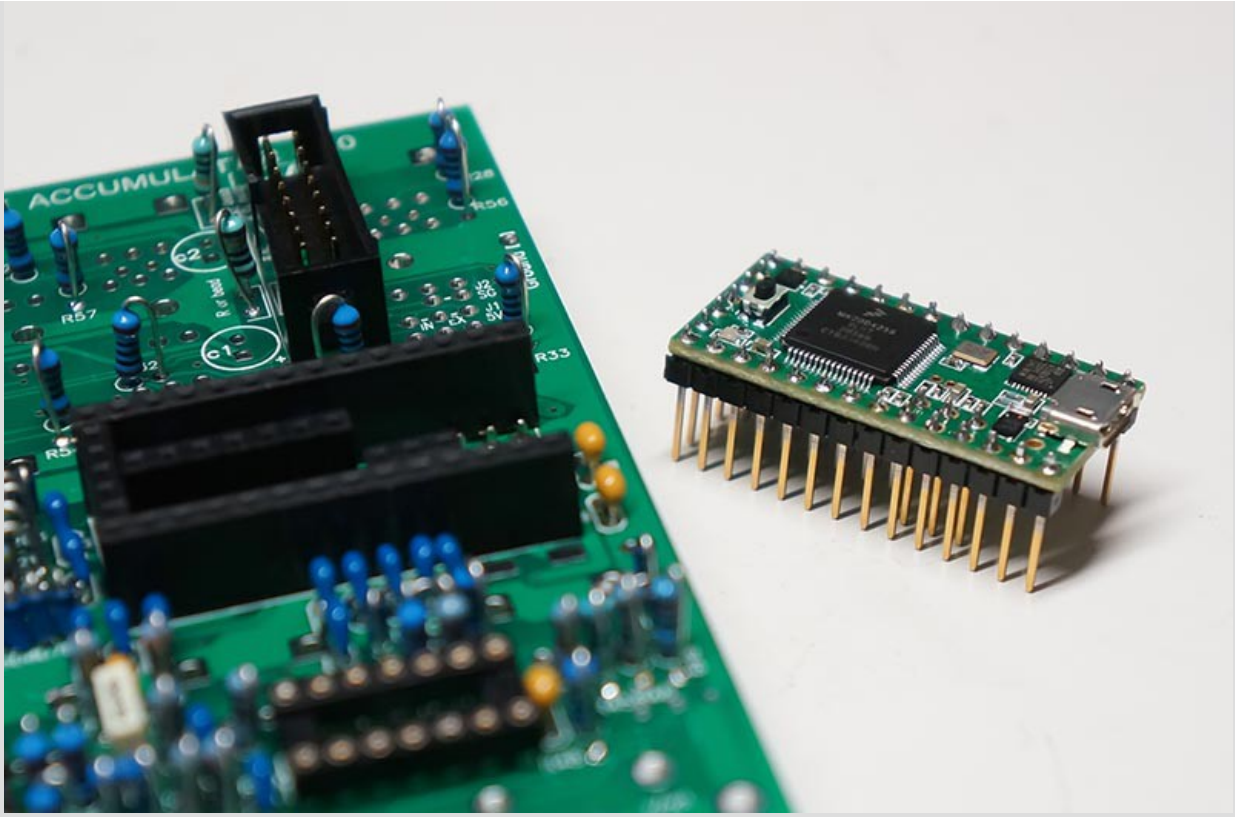
Note that only the “middle” row is used on the SMD header. It is the row that goes down the middle of the Teensy. The other row is just to add stability to the SMD contacts if you have to remove the Teensy.

It can be a bit tricky to get all the header pins in to the Orgone Accumulator board, and you may need to move the pins/header a bit to make if work nicely. This is why you only soldered one pin on each (Idea thanks to hexinverter).

Solder all the board headers to the PCB, then all the Teensy pins to the Teensy. Be careful not to get any solder on any Teensy components.



At this point, If you are not using a Panavise or other PCB clamp, remove the Teensy. You should be able to pry it out quite easily by going around it bit by bit with a screwdriver. Don't rush it and bend pins.



That's it for the Teensy for the time being.