

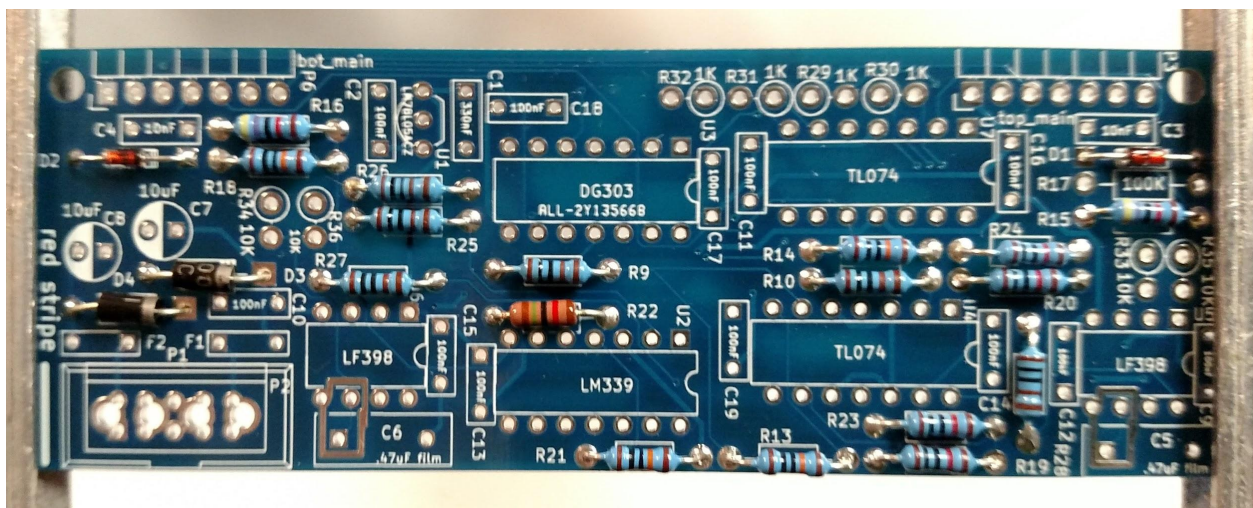
The Selective Sample & Hold is a fairly basic dual S&H based on the LF398 S&H chip, but with a twist -- there are two possible inputs, and the Select input determines which one is sampled. With nothing in the Select input, it acts as a standard S&H on input A. The two output jacks are both the single sample, but separately buffered.

NOTE: this module does NOT have its own noise source. You will have to have some external signal to sample for it to be of any use. Nor does it have its own clock, so again, you need an external clock/trigger to use it as well as some gate or other signal for the "select" input.

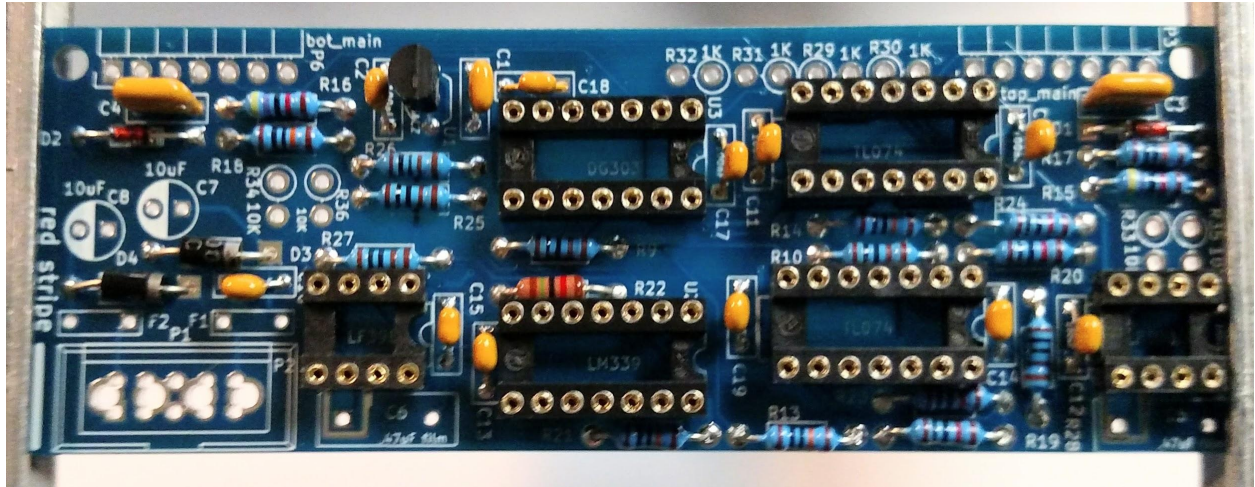
The sample signal should be a relatively square waveform, but it is converted to a trigger pulse, so this will not act as a track & hold. Anything over about 1.5V with a sharp enough leading edge should cause a sample to be taken. The select input doesn't need any particular edge, once it is over the threshold of the DG303 chip (about 4V) it will switch the signals so that B is being sampled by the S&H.

BUILD

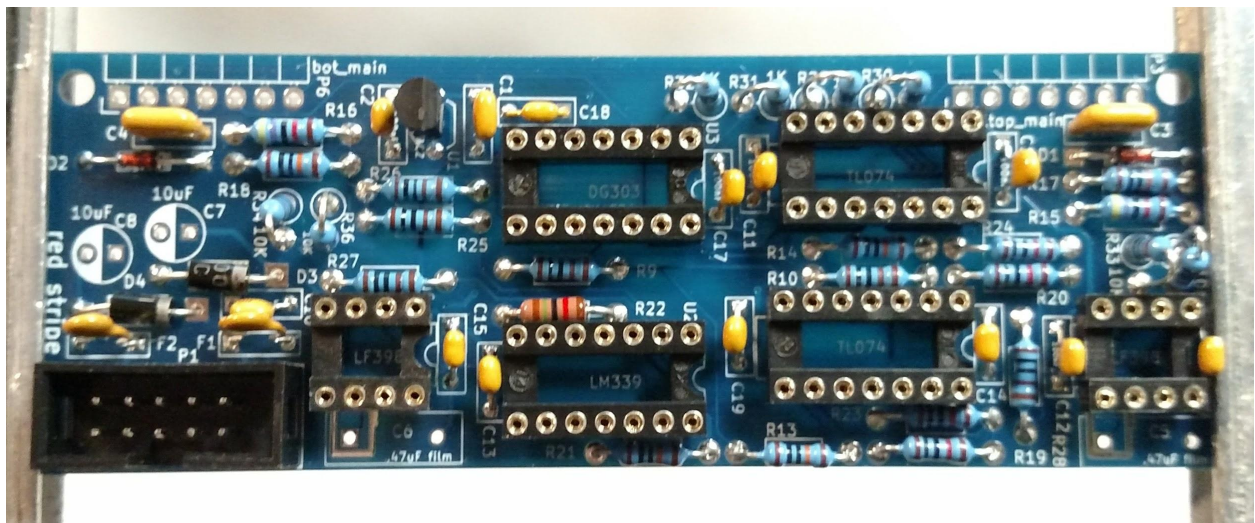
Build the main PCB first. Start with the diodes (pay attention to orientation, they do not all point the same way) and the flat resistors



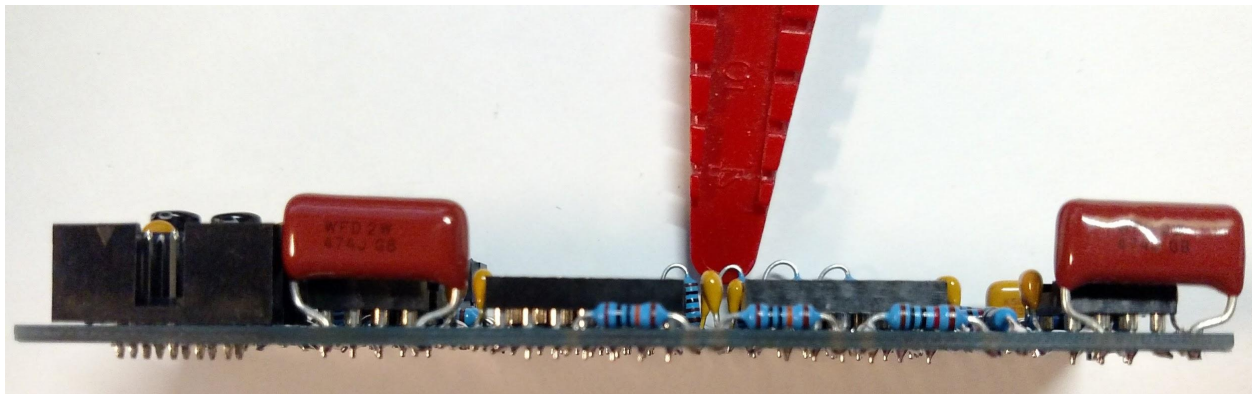
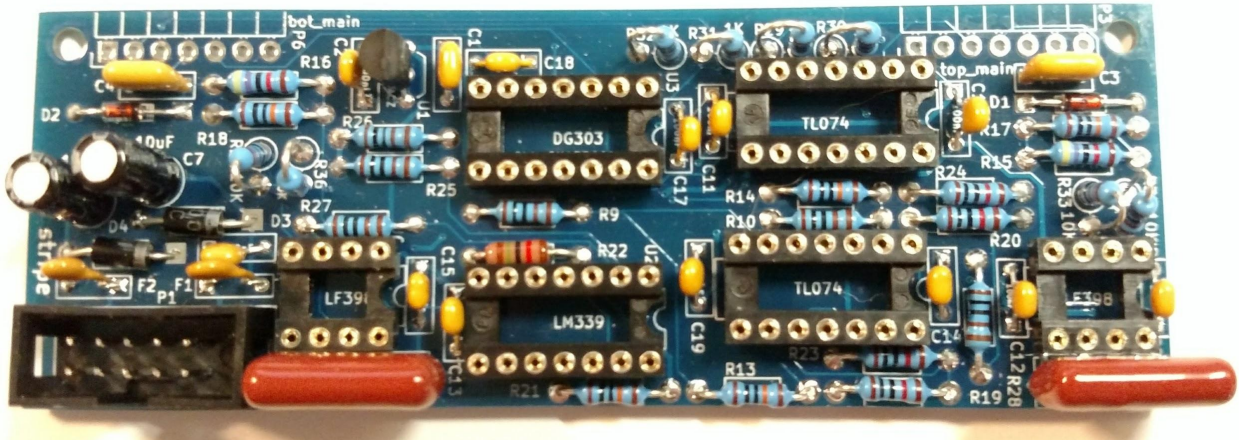
Then do the IC Sockets (if you use them, otherwise the chips themselves), then the 78L05 regulator and the bypass caps (the .1uF/100nF caps) as well as the other regulator cap (.33uF/330nF) and the 10nF caps,



Then the fuses, the vertical resistors, and the power header. At this point, if you're using solder with water soluble flux, wash the board thoroughly and let it dry. You'll use no-clean solder for the remaining components.

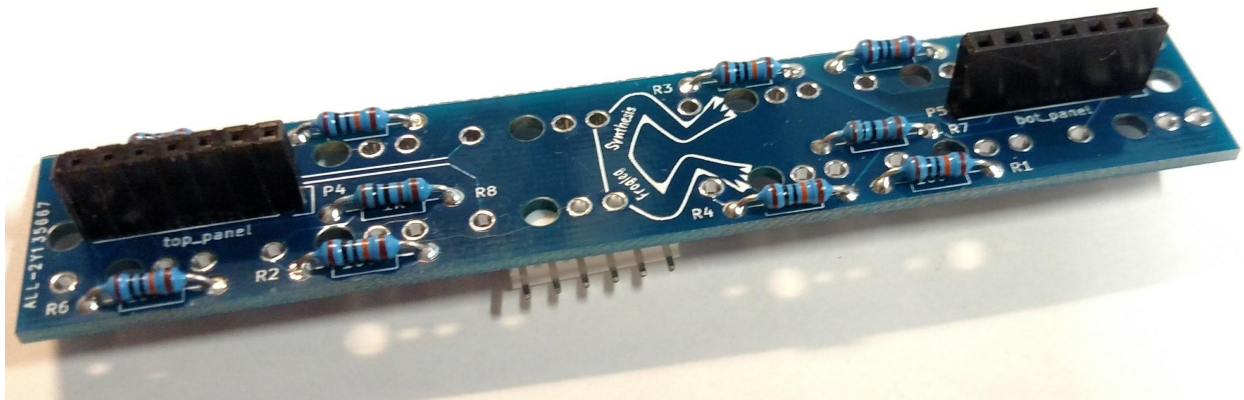
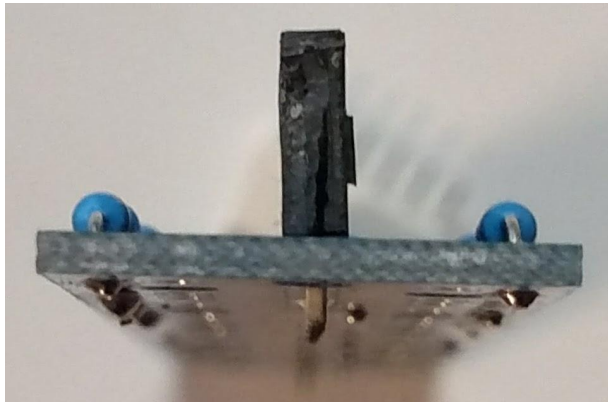
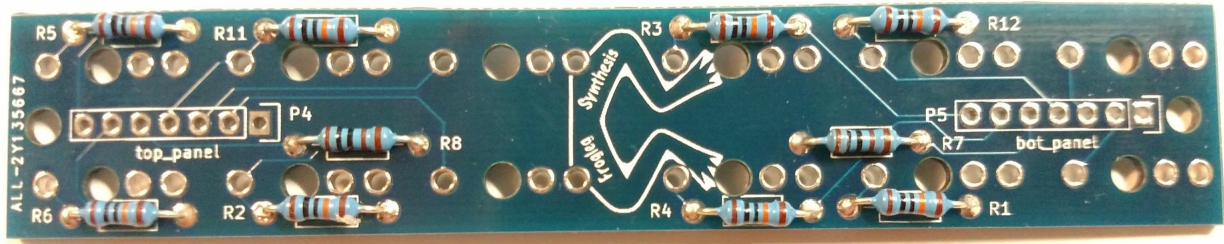


Solder in the two electrolytic bypass caps and the large hold caps. For the electrolytic caps, the “filled in” half of the circle is the negative side of the cap, and the positive side (long lead) goes into the square pad in the other half of the circle. Make sure the bent legs of the hold caps do not touch the guard ring on the top layer, and take care not to create a solder bridge with the guard ring when soldering them.



Now for the panel PCB.

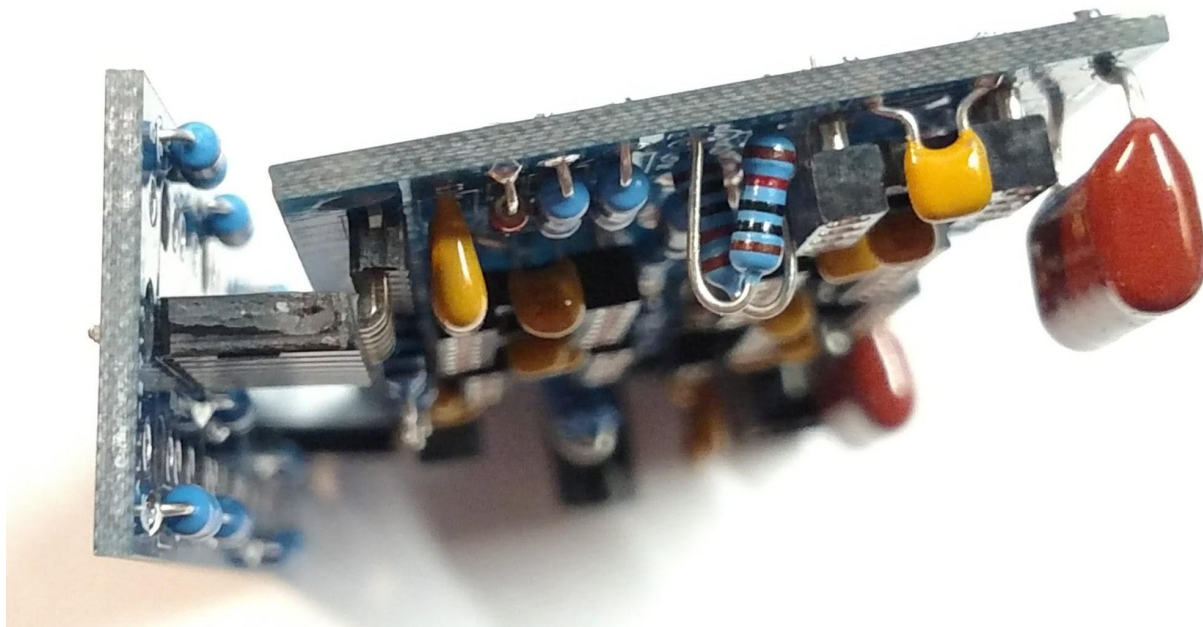
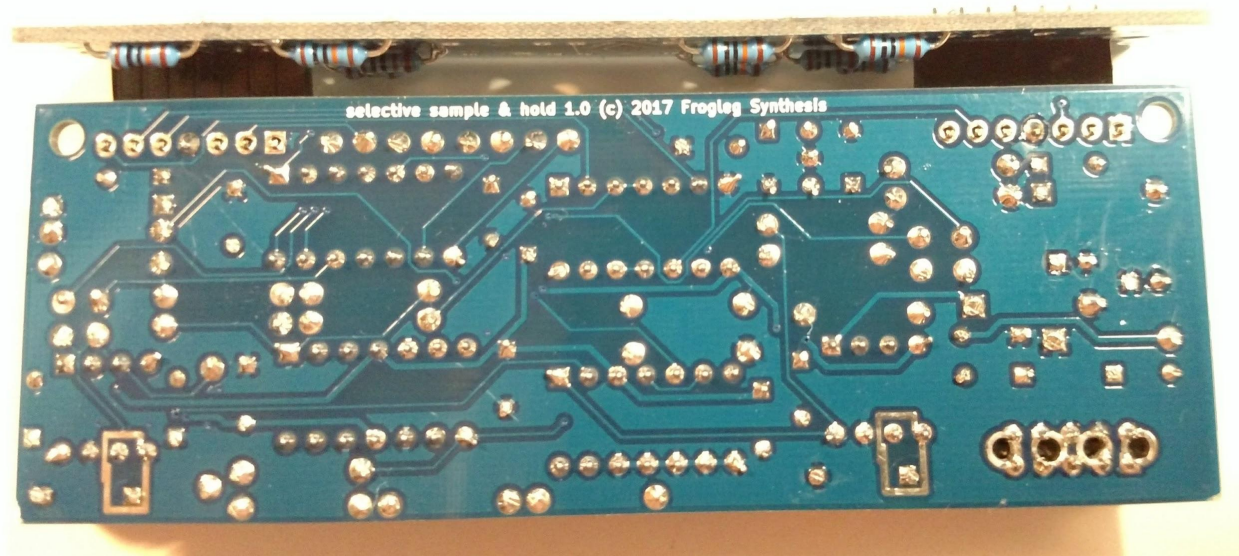
Because of the way the panel PCB goes together, the order of parts on it is fairly important. Do the resistors on the back side first. Then solder a single pin on each of the 7 pin SIP sockets, and align them vertically while heating that pin. Make sure both sockets are in the same vertical orientation.



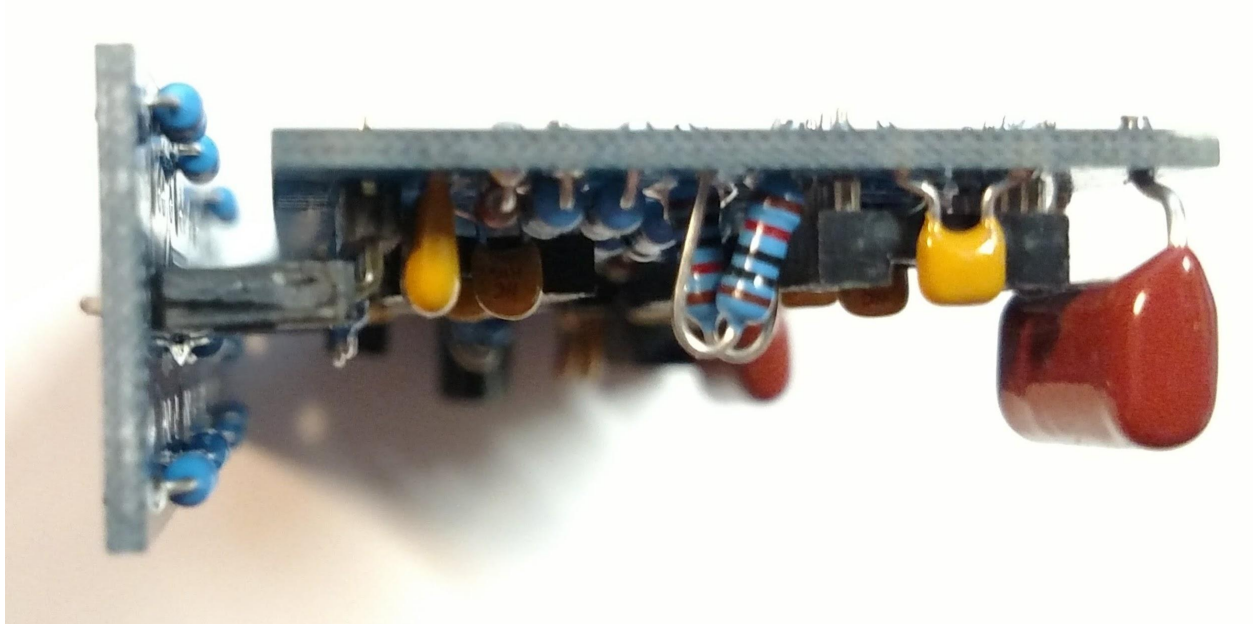
Insert the right angle pin strips into the sockets you just soldered to the panel PCB, so that if you turn the board upright the angle strips point to the right.



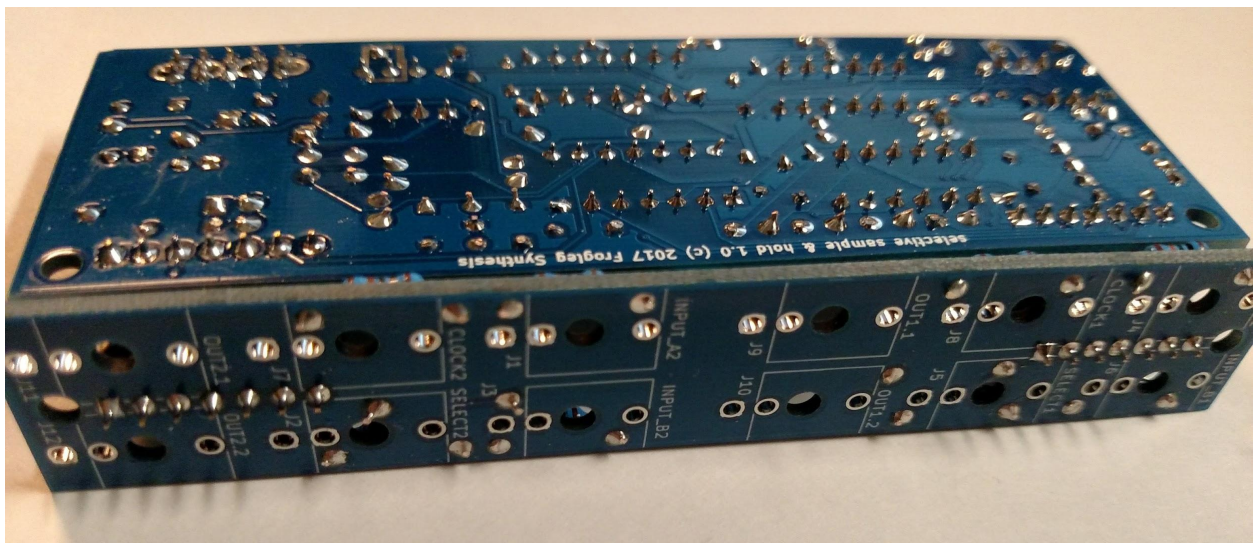
Insert the other ends of the pin strips into their holes in the main PCB, and solder a single pin of each of the right-angle pin strips at the edge of the main PCB. initially this will be crooked, but we will fix that shortly.



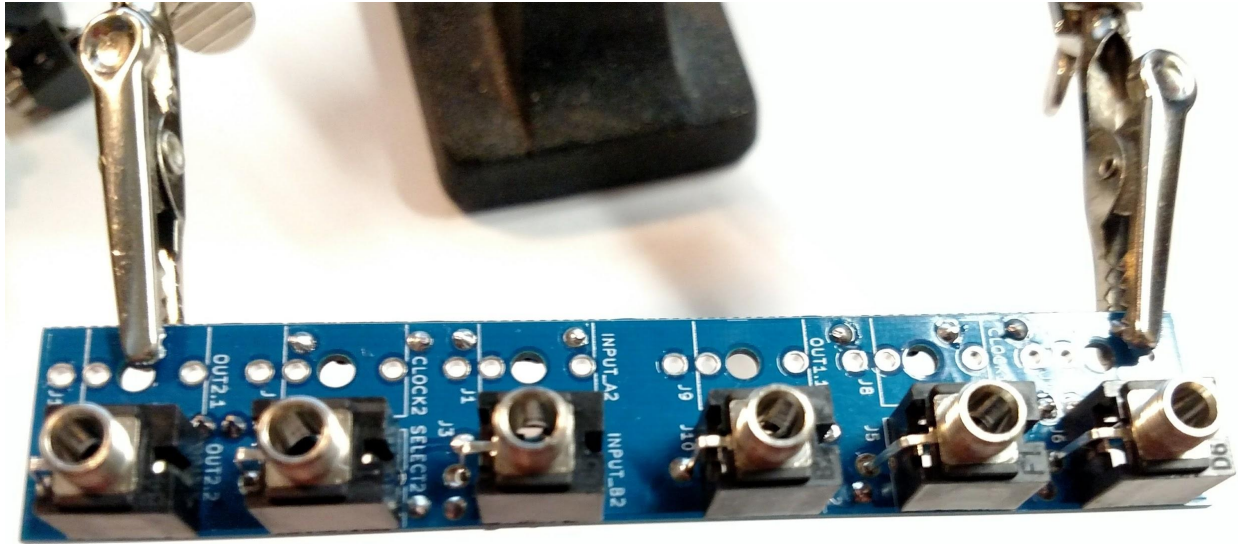
Re-heat each of the pins on the pin strips and twist the main board so the headers straighten out and hold the boards perpendicularly. Since there are two solder points, this will take a little bit of back and forth between the two pins you soldered. Heat the pins on the two sockets, on the panel board, one last time to ensure they are also perpendicular and aligned with the pin strips.



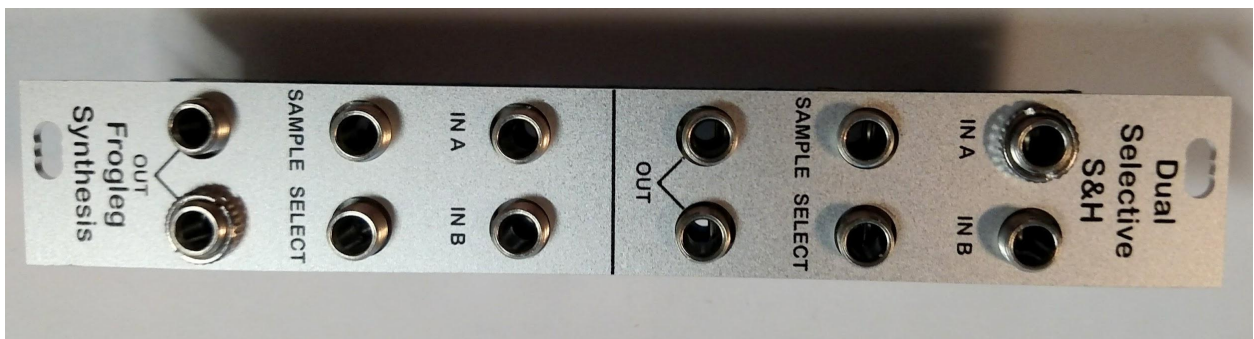
Then solder the rest of the pins on both sockets and pins. DON'T pull the boards apart before you've soldered ALL the socket pins, or you WILL pull the sockets apart. The goal is to have the two PCBs as nearly perpendicular as possible. Once everything is soldered, pull the two PCBs apart and ensure you can put them back together again easily.



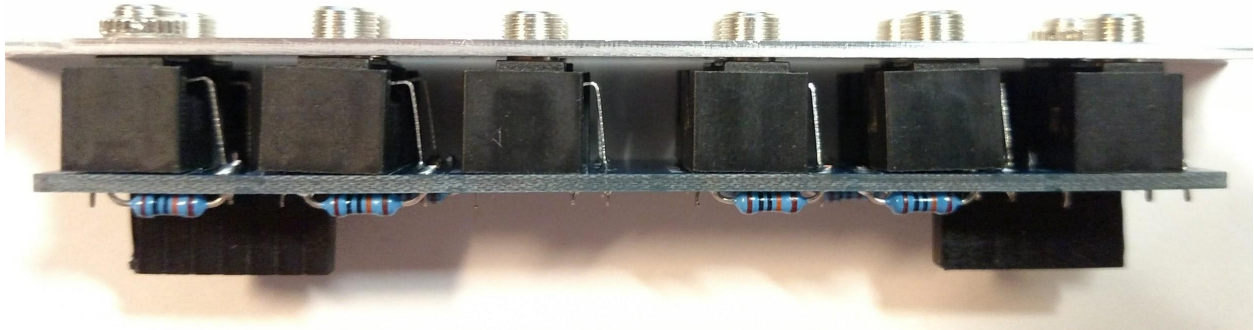
Pull the two PCBs apart again, and set the thonkiconn jacks onto the front side of the panel PCB. The PCB will require some support so it doesn't fall over while you're doing this. Put a drop of solder on each of the ground connections from the top to hold them in place. I find it easiest to do them one column and then rotate the board and do the next column, but do what works best for you. Take care as you do it not to rest your soldering iron against an adjacent jack body.



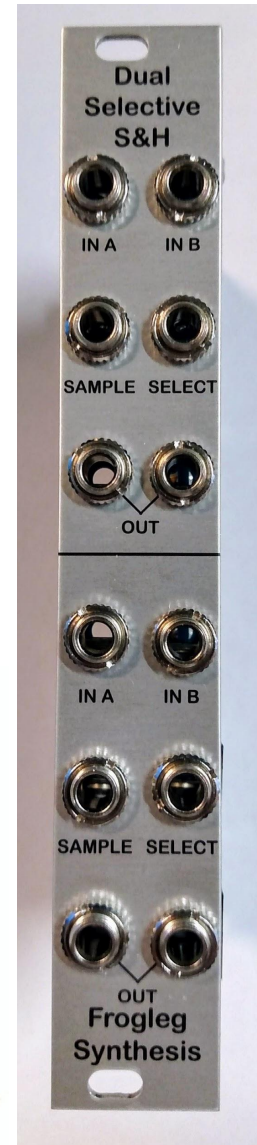
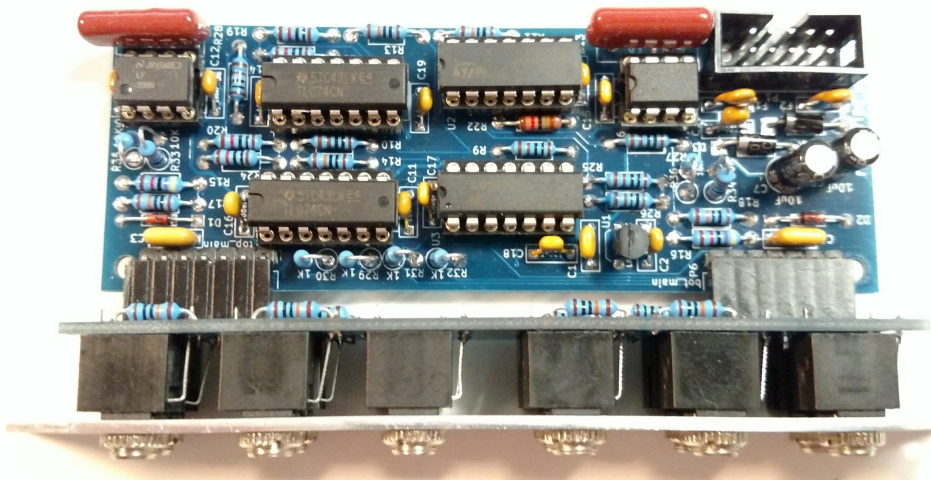
Slip the panel over the jacks and ensure they all fit well. Put a couple of jack nuts on to hold the panel in place, but just snug them up a bit (finger tight) for now. If for some reason any of them are extremely mis-aligned, heat the solder for those jacks and get them to line up well enough to get them into the panel.



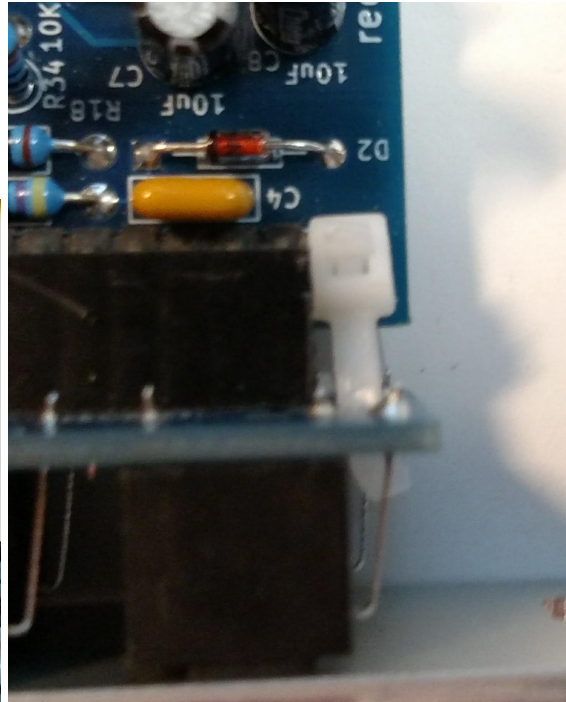
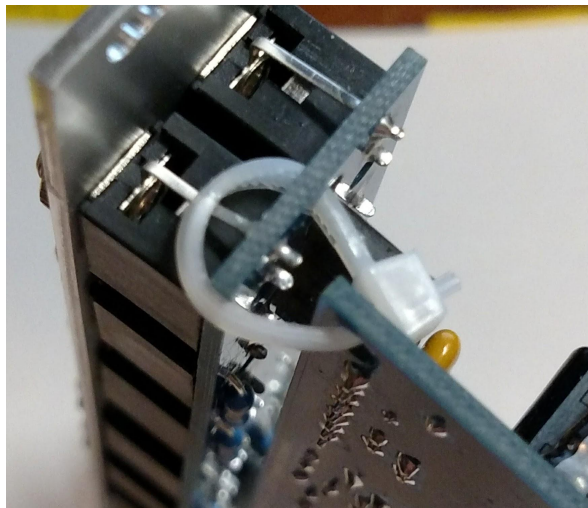
From the back side heat each of the ground pins in turn so the jack seats well against the back of the panel, then go back and solder the other two pins of each of the jacks. If necessary tighten the jack nuts holding the panel on to help make sure things align well.



Go ahead and put the rest of the nuts on the jacks. If you haven't done so yet, insert the chips into their sockets on the main board, making sure that the U shaped cutouts or the dot indicating pin 1 are all toward the top of the board (the power header is at the bottom of the board). Insert the main PCB pins back into the sockets on the panel PCB, making sure that "top_panel" and "top_main" plug into each other, and "bot_panel" and "bot_main" do as well.



IF this module is going to be bounced around/jarred/gigged with, you should take a couple small 4" tie wraps and run them through the holes at the corners of the main PCB and the top and bottom center of the panel PCB to ensure the two boards do not separate. Be careful that the head of the tie wrap doesn't interfere with your ability to put the module between your rails.



USAGE

Run two different signals into each of A & B on one of the S&H units. Run a sample clock (at a fairly high rate) into the “sample” input, and a slow gate into the “select” input. One possibility is noise into A (so the output is random) and a slow LFO into B. Connect one of the “Out” connections to the CV of an oscillator and listen to the output. When the “select” input is low, you’ll get random pitches, and when it’s high, you’ll get stepped pitches following the pattern of the LFO into B (a saw will give rising pitches, a triangle or sine will give rising & falling pitches).

The sample input expects a signal with a fairly sharp rising edge (a square waveform), but converts the incoming gate into a trigger pulse. If you would prefer to use either or both of the units as a track and hold rather than sample and hold, you should be able to omit the 1N4148 diode(s) and replace C3 (for the top) and/or C4 (for the bottom) with jumper wire (resistor leg cutoffs or what have you). The purpose of those caps and diodes is to convert any incoming gates into short pulses of about 1ms, but if you don’t do that, then while the “sample” input is high, the output should track the selected input. THIS HAS NOT BEEN TESTED. But this is DIY, you can do it how you want.

Schematic: https://drive.google.com/open?id=1EwKmr7hYazRpqggZPGBQ2no_nX0xSxqi

BOM:

https://drive.google.com/open?id=1vkqwF_aXV_-d_-nPMY_AJXHRPOg9NLrdeRYGacdvKyM

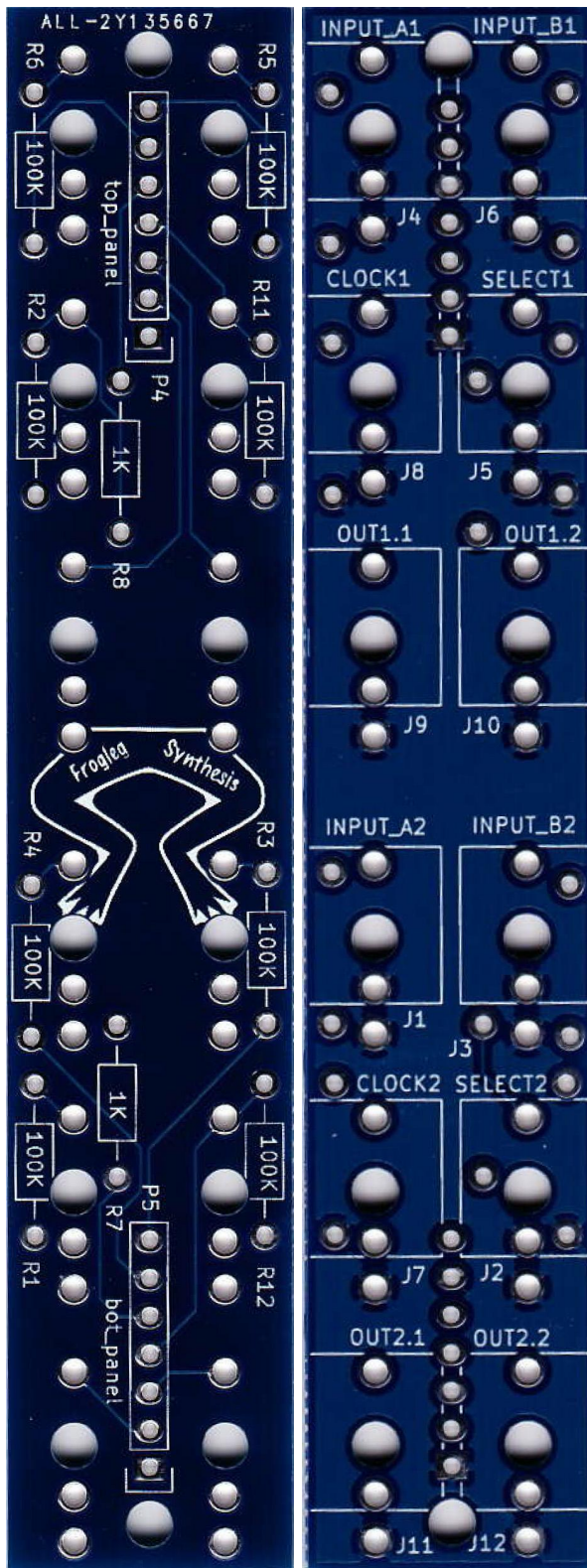
Mouser BOM: <https://www.mouser.com/ProjectManager/ProjectDetail.aspx?AccessID=b6822abb79>

Scans:

Panel PCB

Back

Front



Bottom



Panel

