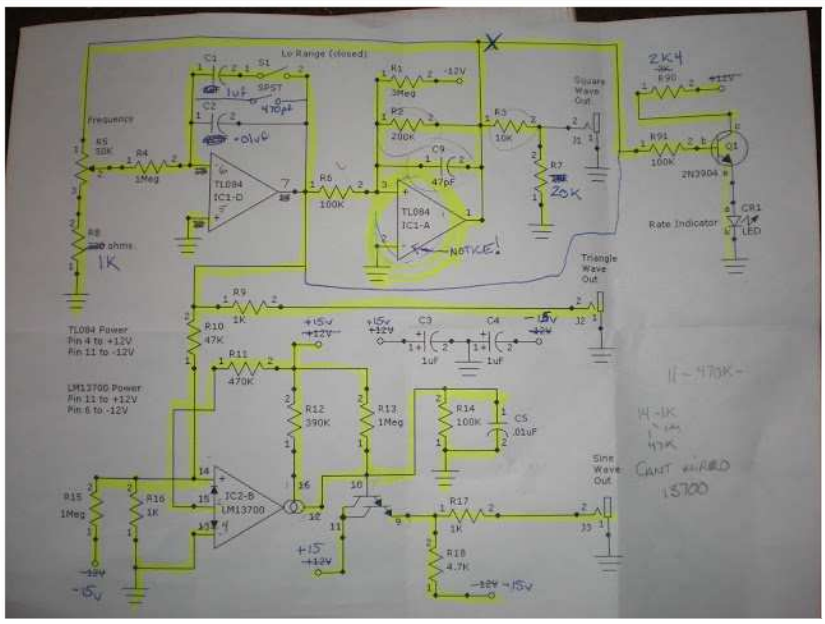
Simple MFOS LFO & Acid Etched Front panel

After all the trouble I was having with the 8038 Chips, I decided to build a new LFO module based on a different design. Early on, I tried building the MFOS super simple dual LFO but I couldn't get it to work. I decided to try it again, now that I'm better with electronics and it worked fine. In retrospect, the mistake I made the first time-was most likely my interpretation of the schematic. Notice the inverting and non-inverting inputs on IC1-D and IC1-A are flipped, so if you are not looking carefully, you may wire them incorrectly.



I always breadboard my projects first and especially when they might need to be modified because they supply voltages are different. This schematic worked well but I changed a few of the values based on what kind of components I had around. I changed out R7 with a 20k resistor to bring the square wave output up to +/-10v, so I can use it as a clock signal. I changed R90 to a 2k4 resistor because I didn't have any 3k resistors. I also changed out R8 with 1K resistor because when the frequency knob was at it's farthest left point, the wave would stall out, I don't know if this had something to do with using +/-15v vs +/-12v.

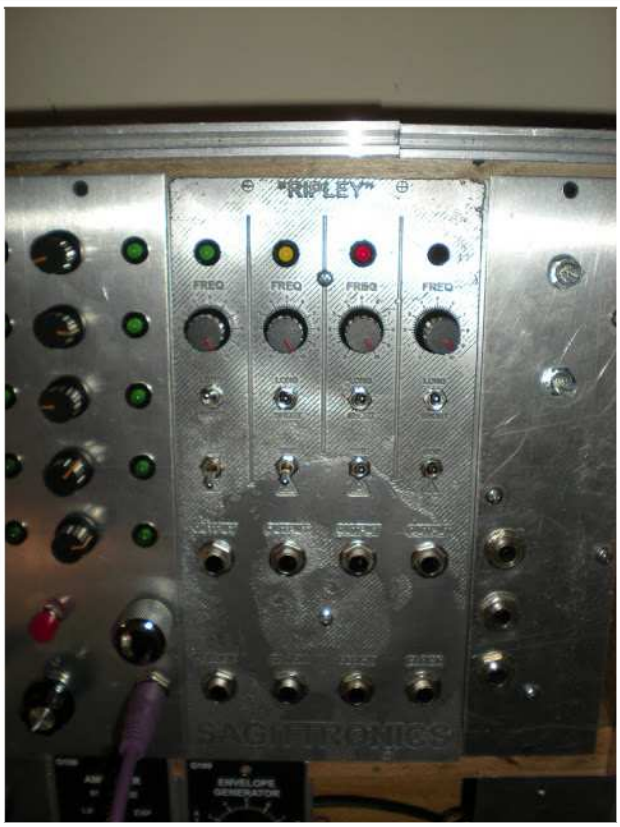
I made my own PCB for it, but I'm not going to share it because the one on MFOS works perfectly well. I only did mine because I like the challenge of creating PCB layouts and I wanted to use a 1m and 2m resistor in series instead of a 3m because I didn't have any around. I also wanted the LEDS to be connected to the triangle wave because I think it looks cooler to have LED's fade on and off instead of just be on or off.

There was another thing I really wanted to try with this project. I've been acid etching PCBs for a while now, and it seems like a cool idea to acid etch a front panel too. If you're only creating one or 2 modules, the idea of going through the whole process of creating a silk screen seems like a waste of time and money. I made the layout in photoshop just like I do my PCBs. I did a nice halftone of Sigourney Weaver from Alien.

I used steel wool on the aluminum panel before I did the transfer. The transfer process was extremely painstaking, I had to go back with the iron several times and reapply the transfer. I also burned my fingers trying to pick up the panel in order to hold it against my window (a method I use to rapidly cool it off).

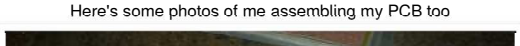
I put it in a nice big tub and went all willy nilly with Ferric Chloride. One thing I learned was that Ferric Chloride works a hell of a lot faster on aluminum than copper. It kinda freaked me out the way it starting fizzing and spewing out(probably poisonous)gas. The container got really hot too. I found that if I ran around my yard with it, shaking the tub back and forth, it kept the bubbling down-and it seemed like it might not explode into flames. After about a minute, or at least I assume, I dumped the whole thing out in my yard and sprayed it off with hose.
I was almost positive that it didn't work, but after I washed it off and rubbed it with steel wool again, I realized, IT LOOKED AWESOME!!!

I think next time, I will thin out the acid with a little water and leave it in the acid for a shorter amount of time, like 45 seconds or something. Down near the bottom, it over etched a little, but it still turned out really cool.



I drilled all the holes and put the parts on and it looks great!

Here's some photos of me assembling my PCB too



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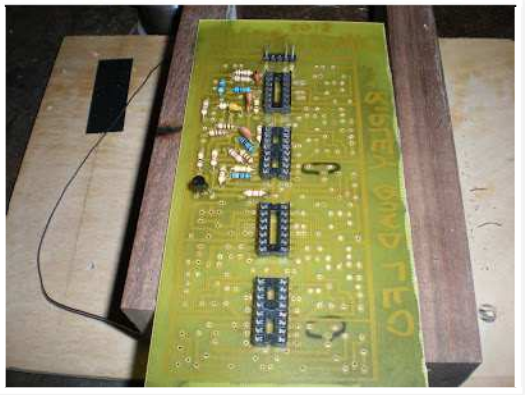
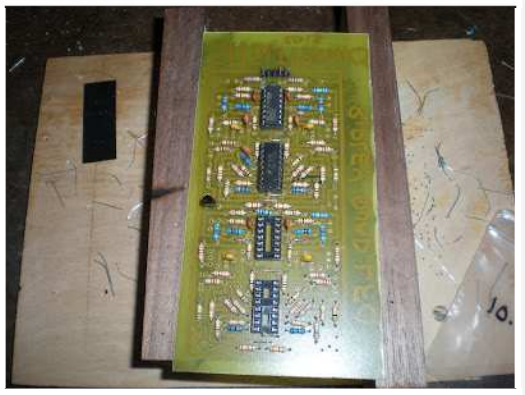
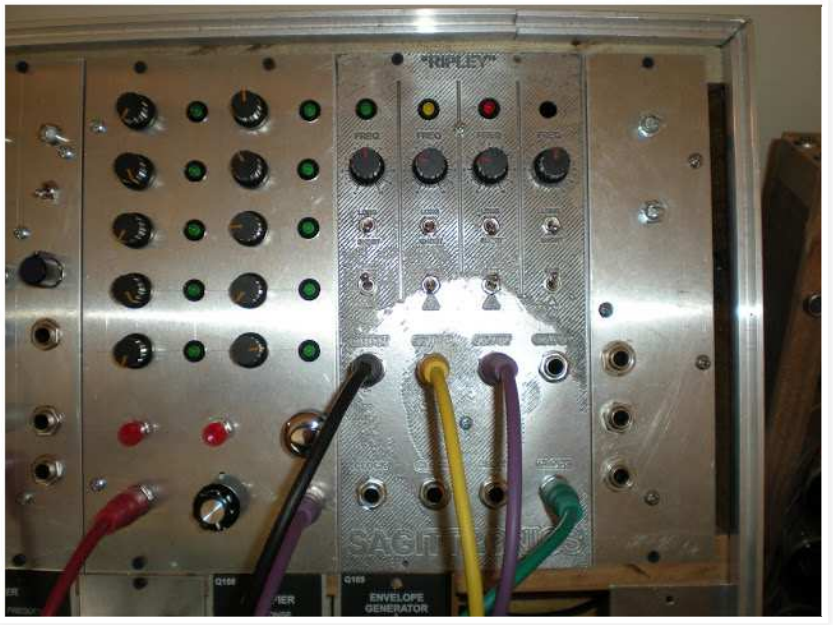


Those two circled points are mistakes I made in my PCB design. Luckily I noticed them early on and it didn't take much to fix them.



I use angled aluminum for my mounting bracket. I had to cut and file this one down a bit in order to make it fit between my components.



Here's a video. It's the module on the top right.