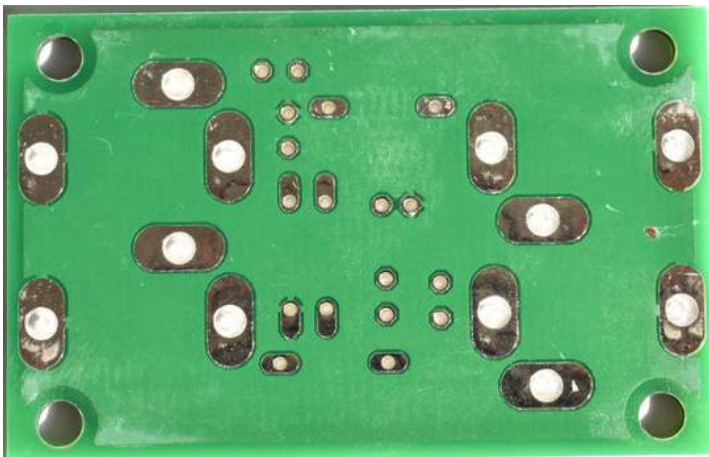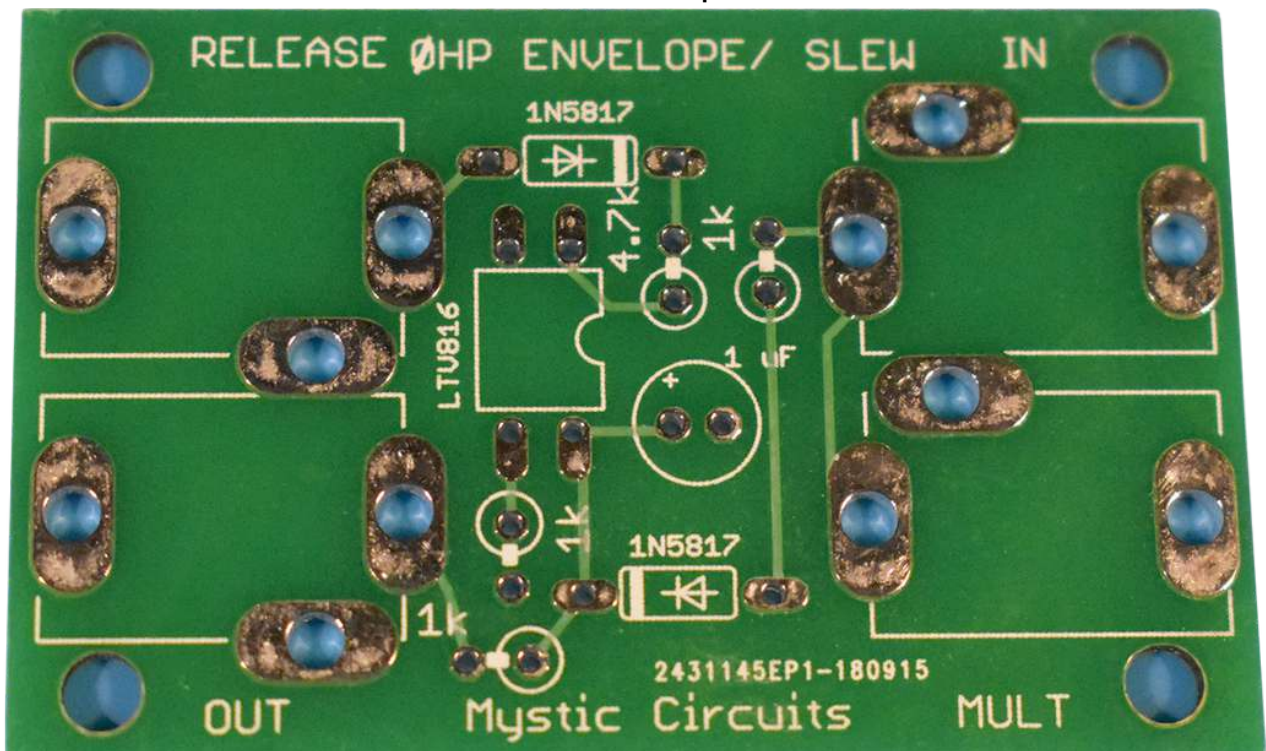# Build Guide Envelope

Thank you for purchasing this 0HP DIY kit from Mystic Circuits. This build guide is intended to help take you through the steps in order to make a full functional 0HP module. You should have a soldering iron, solder, pliers, snippers, and a small screw driver in order to complete the build.

Start by verifying that you have all necessary parts for the kit. Packing kits is the kind of monotonous task that is very easy to make mistakes with, we have multiple methods to verify that the correct parts make it into kits but mistakes still happen. If you are missing any of the parts below please contact us through our contact page and we will remedy the situation. You will have to open all of the bags in your kit.
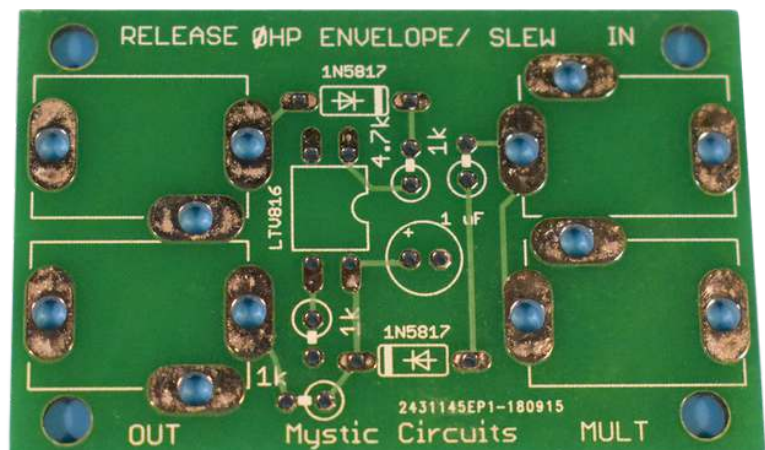
3x 1K Resistor
1x 4.7K Resistor
1x 10uF Capacitor
2x 1N5817 Diode
1x LTV816

Actives Bag:
1x LTV816
2x 1N5817 Diode

Envelope Full Kit

1k resistor x3

4.7k resistor x1

10 uF capacitor x1

Actives:
LTV816 x1

1N5817 x2
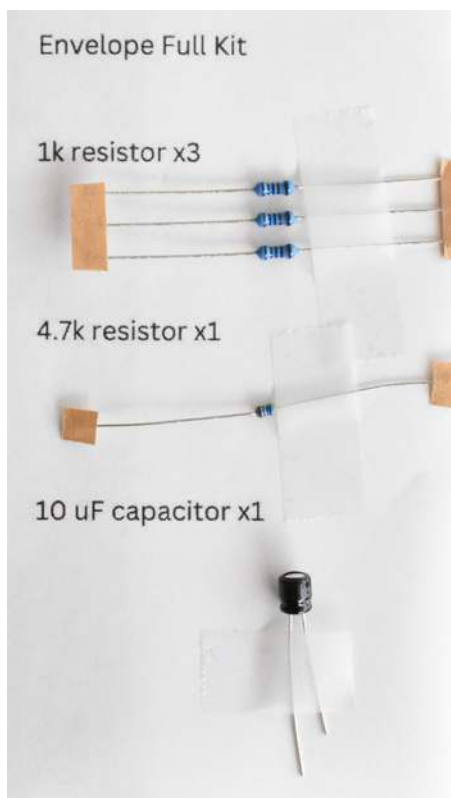
1x Main PCB

4x Rubber Feet
4x M3 Hex Nuts
4x M3 23mm Bolts
4x 3.5mm Mono Jacks
2x Short PCB Case Sides
2x Long PCB Case Sides
1x Generic PCB Case Bottom
1x Envelope PCB Case Lid
(Case lids are dual side so you might have to flip the lid over to see the correct design)

Resistors: Bend each resistor in half into a "U" shape in order to install it in the PCB.

Bend the legs away from each other underneath the board in order to secure the part to the board.

Flip the board over and solder each resistor leg into the board, if the joint is done correctly the solder blob on the board will not move around at all after the leg has cooled down. Ideally the solder blob will be shaped like a silver "hersheys kiss". Solder all resistor legs in the same fashion. Once you have verified that all of the solder joints are good use your snippers to gently remove all of the resistor legs sticking through the bottom of the board.
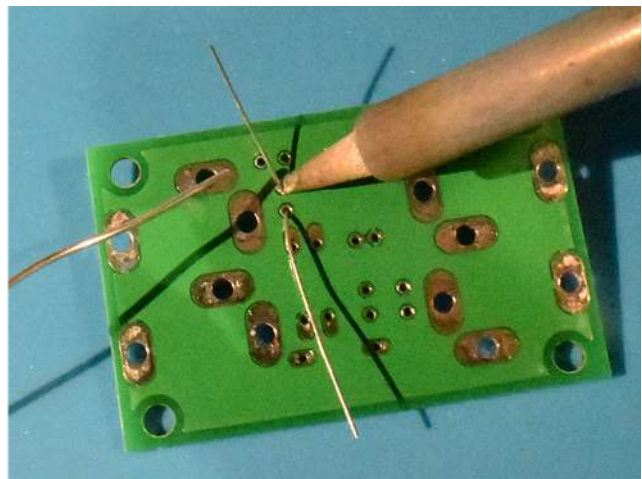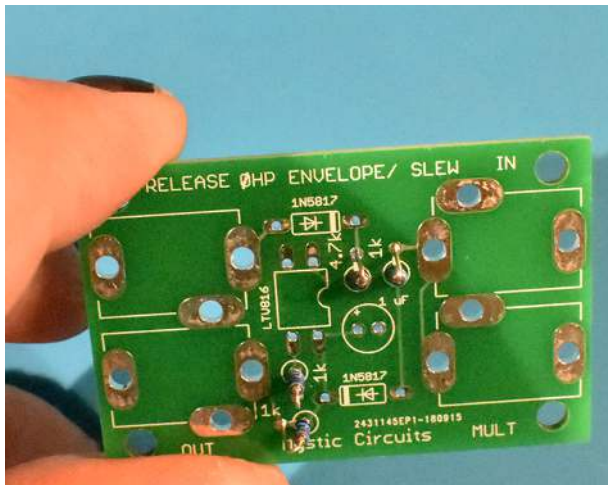

 Once you have verified that all of the solder joints are good use your snippers to gently remove all of the resistor legs sticking through the bottom of the board.
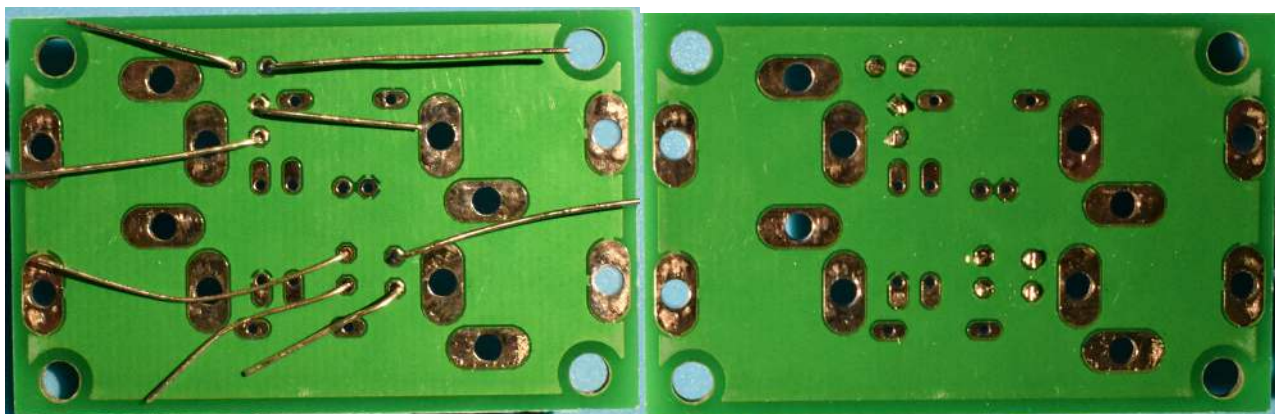
DIODES: Pay attention to the orientation of the diode, installing backward will cause the module to not function correctly. The line on the diode should correspond to the line on the PCB silkscreen. Bend the legs, solder, and snip legs.
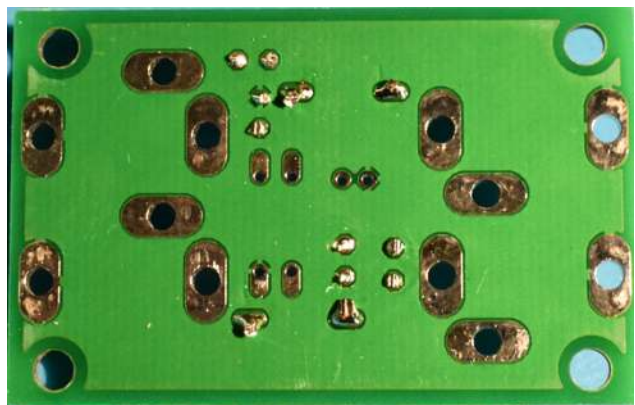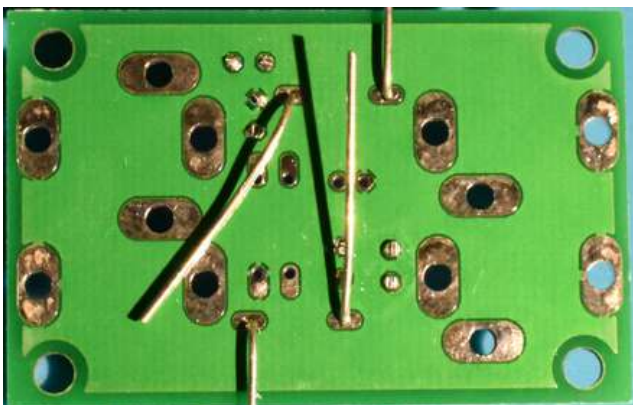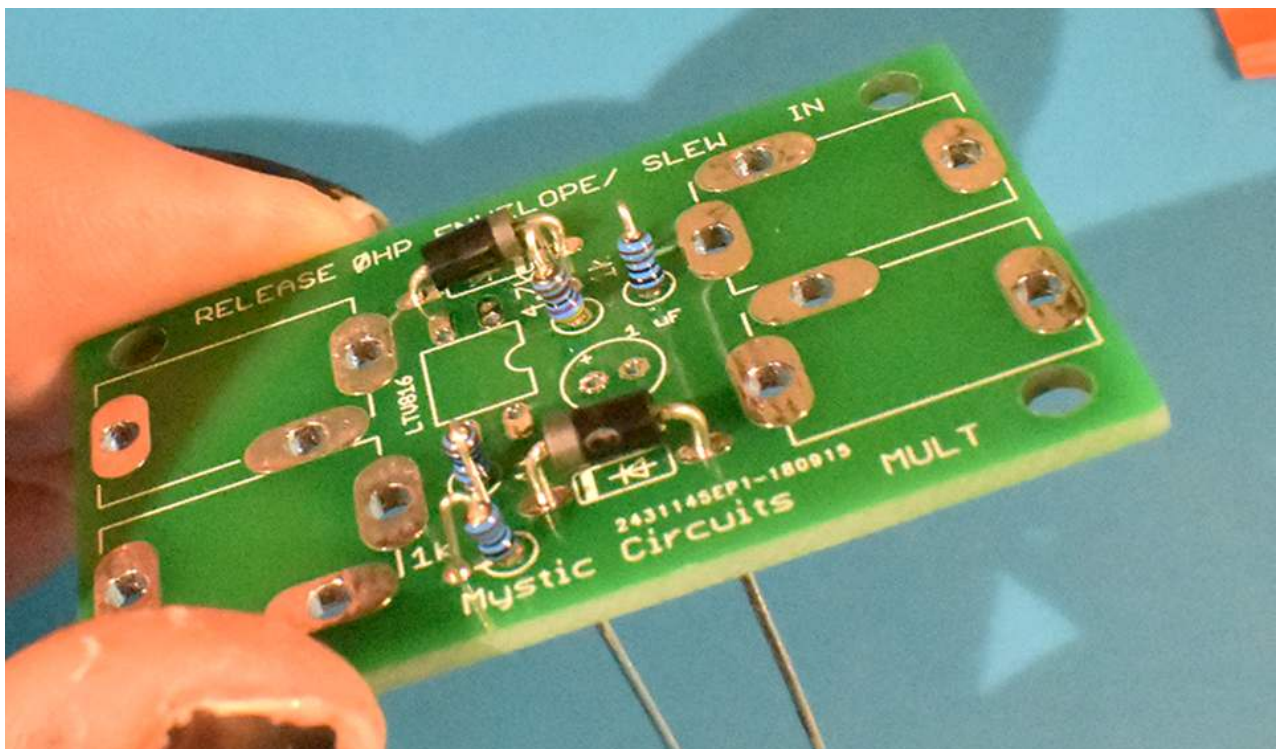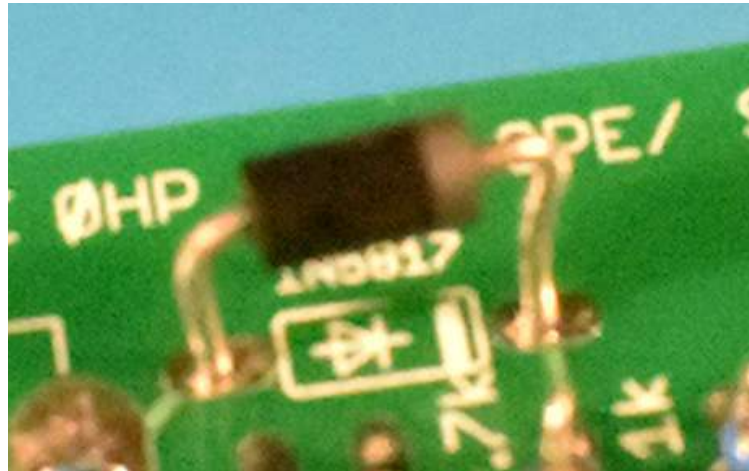
IC: this 0HP module includes an IC or integrated circuit. Like polarized components like LEDs and diodes, you must pay attention to the orientation of the IC. The notch on the silkscreen should match with the top of the IC. Pin 1 on the IC is indicated by a small dot and should be on the top left of the IC. You may have to bend the legs of the IC slightly in order for it to go through the PCB holes. Be gentle with the legs as they may become overly bent or break with too much force. Once the chip is in the board, hold the chip down with one finger and solder a corner pin to hold the chip in place. Make sure that the chip is flat against the board and then solder the rest of the pins, you don't need to hold the chip down any more.
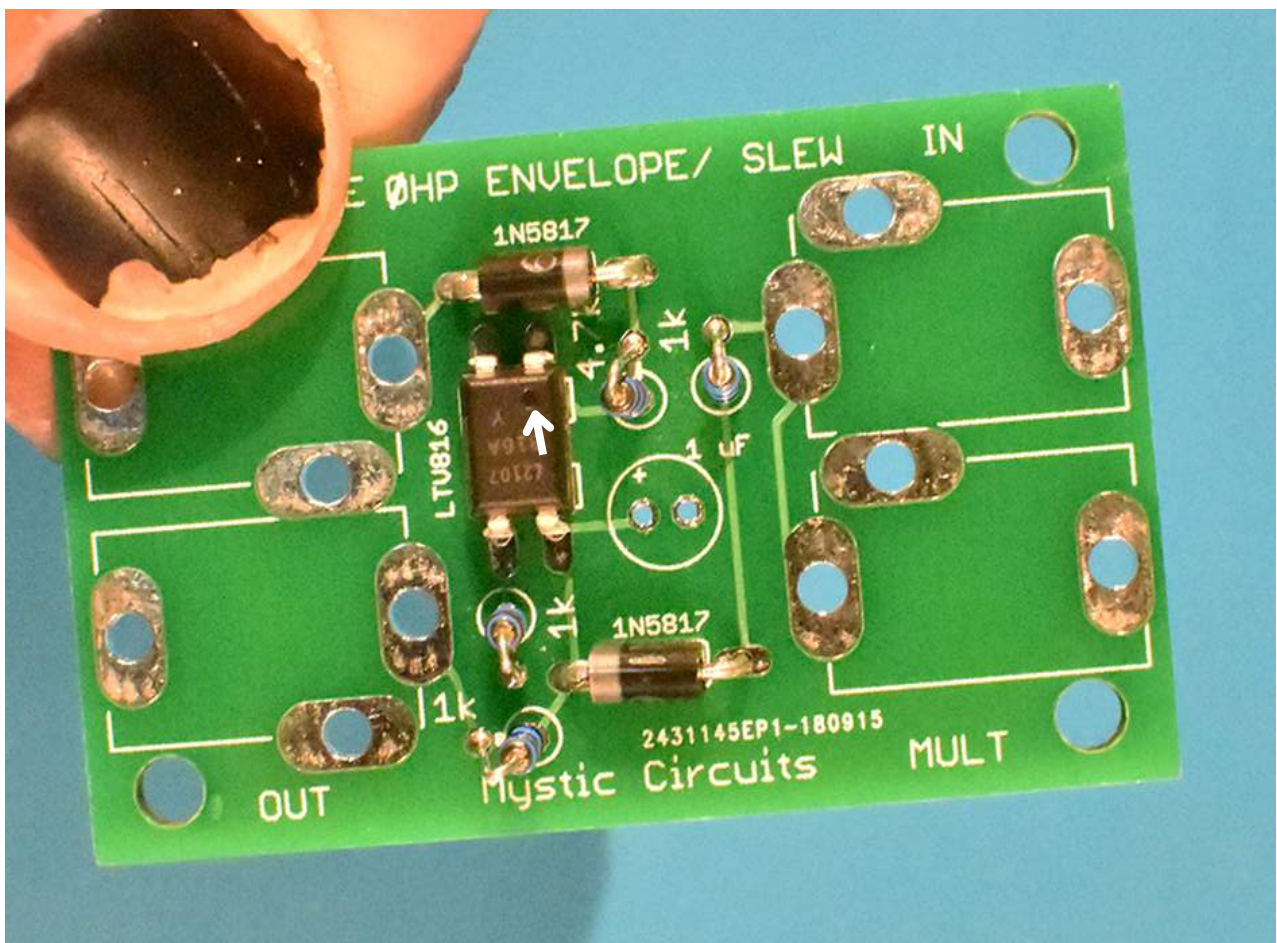
Jacks: Place jacks through the holes, push them flat into the board and then flip the board over. You may have to press on the top of the jacks for them to sit flush with the PCB. Solder each of the four jack lugs closest to the PCB edge, you may have to increase your soldering iron's heat slightly for this joint. Flip over to check the jacks are still flat against the board, if a jack is not flat then reheat the solder while pressing the top of the jack in order to readjust it. Be careful to not touch the metal part of the jack as it can get pretty hot while soldering. Once all jacks are secure and flat on the board solder all of the other jack pins.
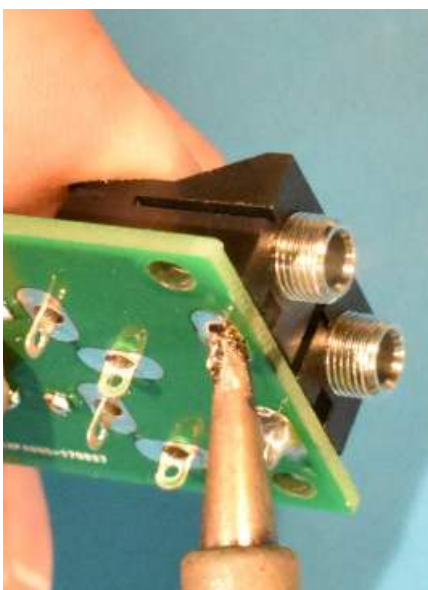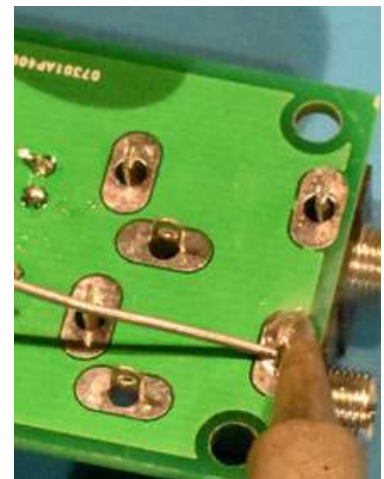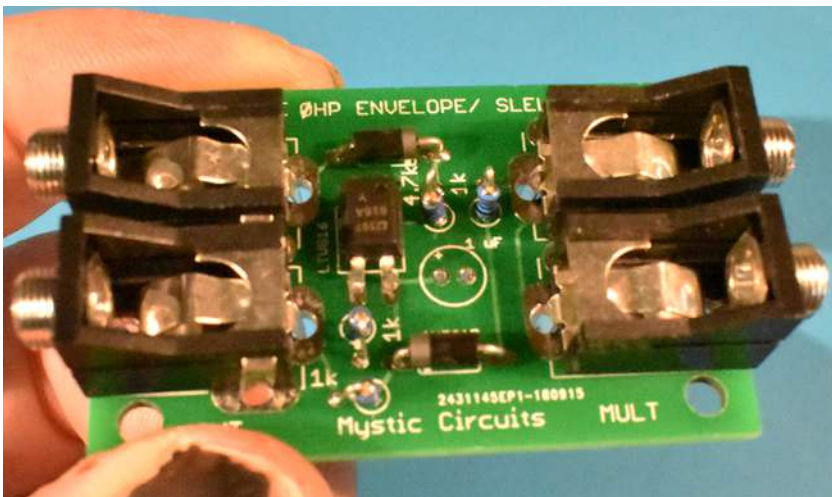
Polarized capacitor: the polarized capacitor has a longer positive (anode) and shorter negative (cathode) leg. The black housing on the polarized capacitor should also have a white stripe to indicate the negative leg. The silkscreen on the PCB indicates the orientation of the positive leg on the capacitor, annoyingly only the negative leg is marked on the actual capacitor. Basically the long leg goes to the '+' sign on the PCB and the short leg with the white stripe goes in the other direction.

We solder this part last because if you are not using our kit or have an older version of the kit you will need to make sure that the cap is flat enough to the board that it doesn't stick up above the top edge of the jacks. If you put the cap upright on the board it will stick up too far for the PCB case top to fit on. If you have a tall cap you should bend it over diagonally to sit comfortably on top of the diode next to it so that the cap sits as flat as possible.

Also be aware that we swapped the cap value from 1 uF to 10 uF, a 1 uF will still work but I like the timing better with 10.
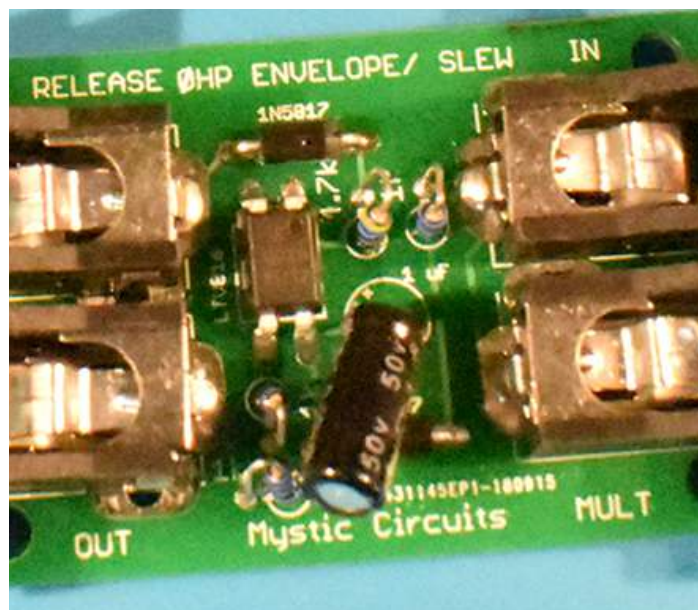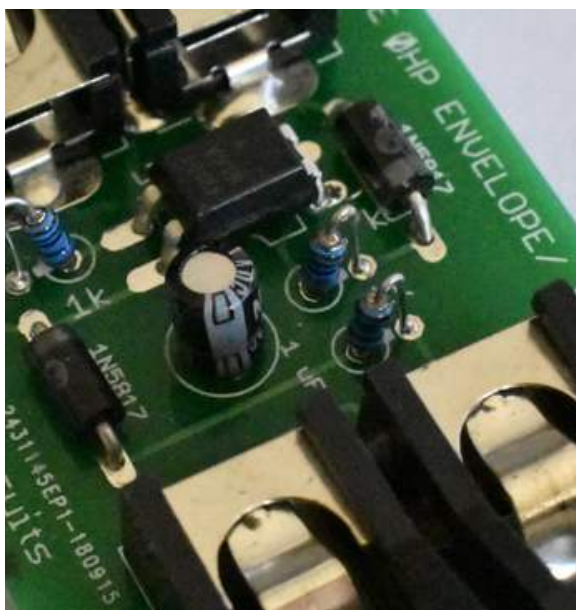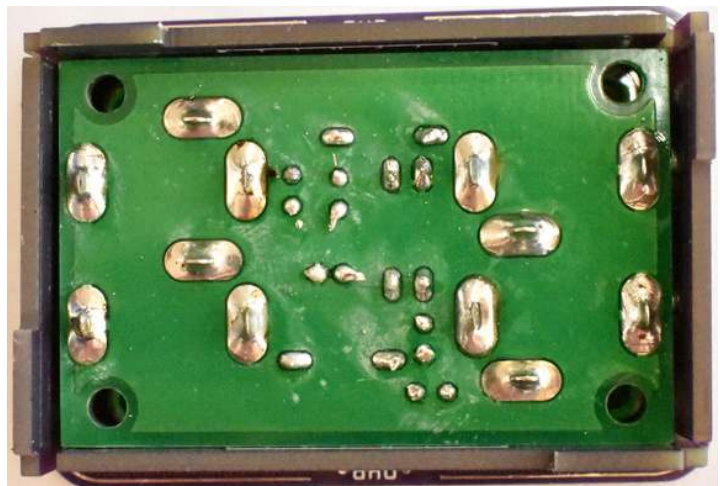
CASE ASSEMBLY: First place the jack sides onto the jacks, making sure they line up correctly. Then place the top of the case onto the sides, lining up the slots.
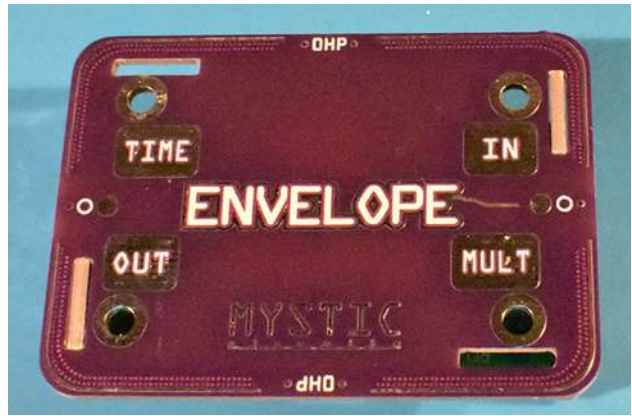
Next, slot the longer sides so they line up with the top and jack sides. Once all the sides are secured to the top, flip the case over.

Line the bottom of the case up with the side slots and push to install. Make sure the slots on the top and bottom of the case line up correctly and there are no gaps.
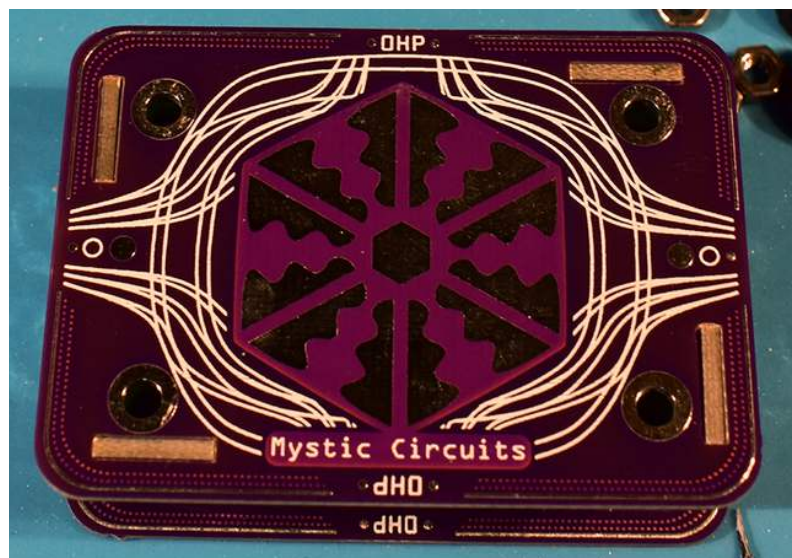
SCREWS: Place one screw in one of the corner holes, but don't push all the way through. Place the nut in the rubber feet and place that over the hole. Place your index finger over the rubber foot so it keeps the nut from moving. Push and rotate the screw so it lines up with the nut and attaches securely. You may have to remove the screw and try again if it is not lined up with the nut correctly. Repeat this step for each of the feet.

You are done! Go make some tunes!