

MN-50 Smash Compressor Colour for the DIY Recording Equipment Colour 500-series format

Assembly Guide

Thank you for purchasing a **Smash Compressor** kit! Before getting started, if this is your first DIY project, please read the DIYRE Getting Started Guide (<http://www.diyrecordingequipment.com/pages/getting-started>) Also, be sure to download the Bill of Materials (**AA-MN-50SmashCompressorColourTH-BOM.xls**) from the product page documents tab. All the necessary parts for this kit can be ordered from Mouser Electronics, **www.mouser.com** and the necessary quantities and mouser part numbers are listed on the provided BOM.

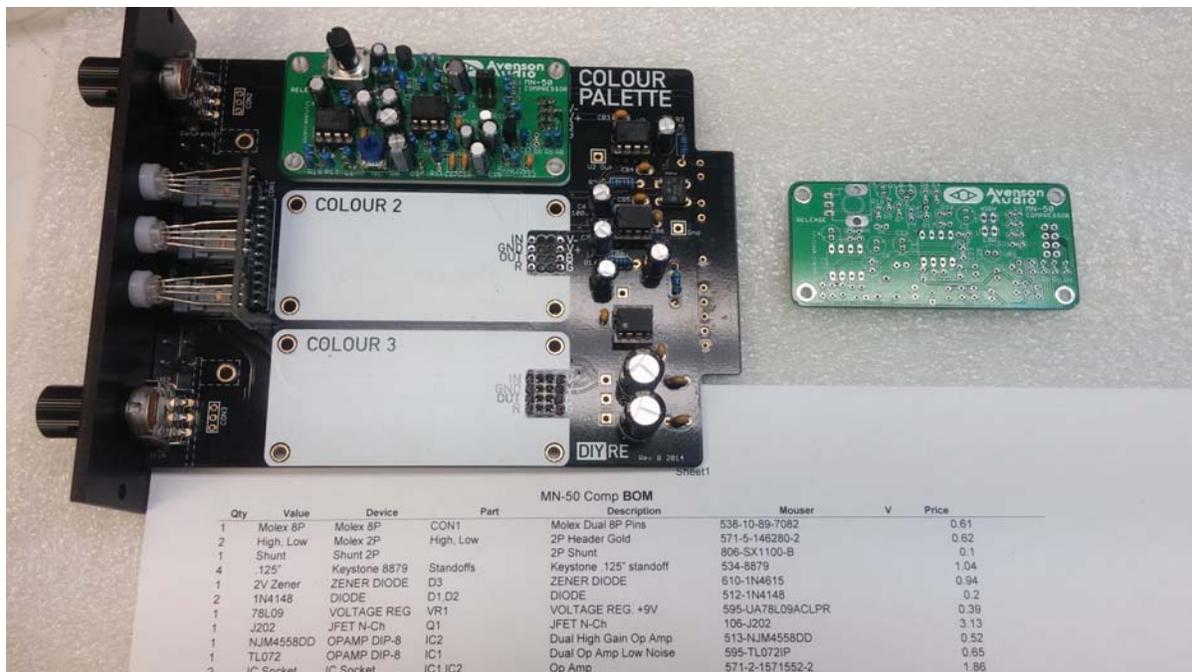
The Avenson Audio **Smash Compressor Colour** is a simple FET compression circuit based off the built in 6:1 ratio compressor in the MN-50 Mixer made by Fostex Corporation in the 80s. This cheapo mixer/compressor combo unit is much loved in the inexpensive gear world for it's ability to acheive some explosive, trashy, and dirty drum compression sounds. We decided it would be a great idea to redesign this circuit for the Colour 500-Series format with a few small improvements for ease of use in the modern recording enviornment. Thanks to the format, the unit is easily implemented in an XLR balanced line level system, unlike the original which used unbalanced RCA ins/outs. We also fixed an overall volume loss on the output by adding a set makeup gain stage in our circuit. The final addition was an input pad selectable via a 2 pin jumper (High & Low) for getting more range of compression out of this unit.

Assembly Steps:

1. Prep tools, unpack parts.

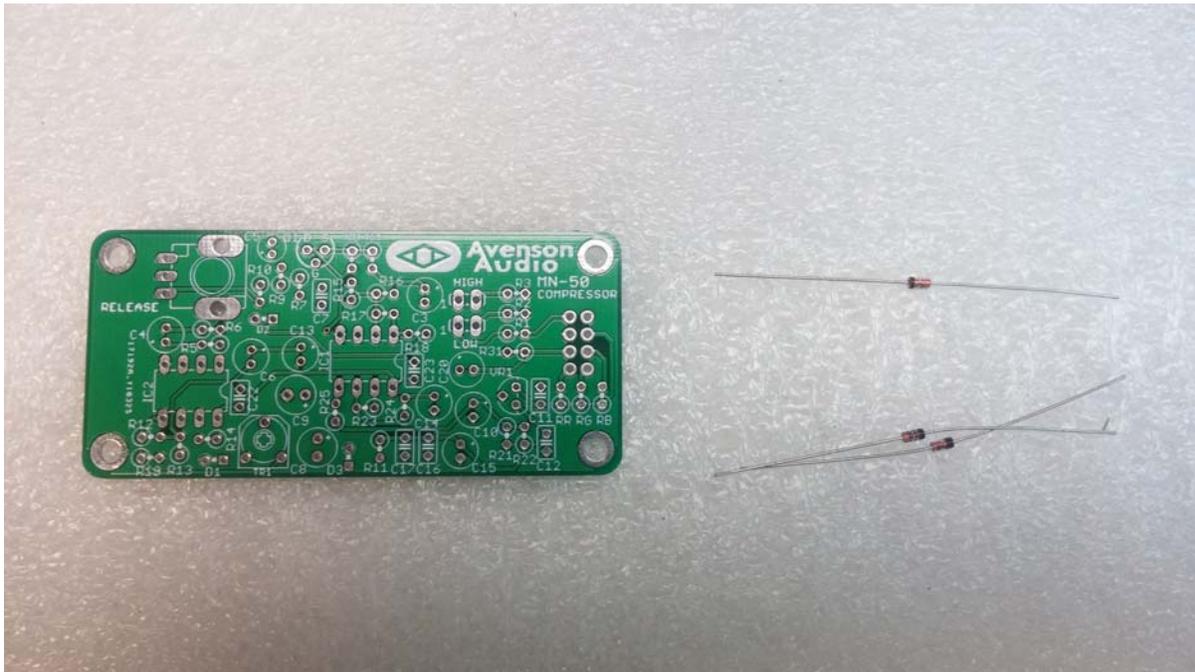
All you need to build the Smash Compressor is a soldering iron, solder, and wire clippers. A multimeter is nice too have if you can access one but isn't completely necessary.

Unpack the parts from your Mouser order. Included in your parts order should be all resistors, capacitors, diodes, transistors, opamps, sockets, potentiometer, trimpot, and Molex headers, which you ordered using our BOM.



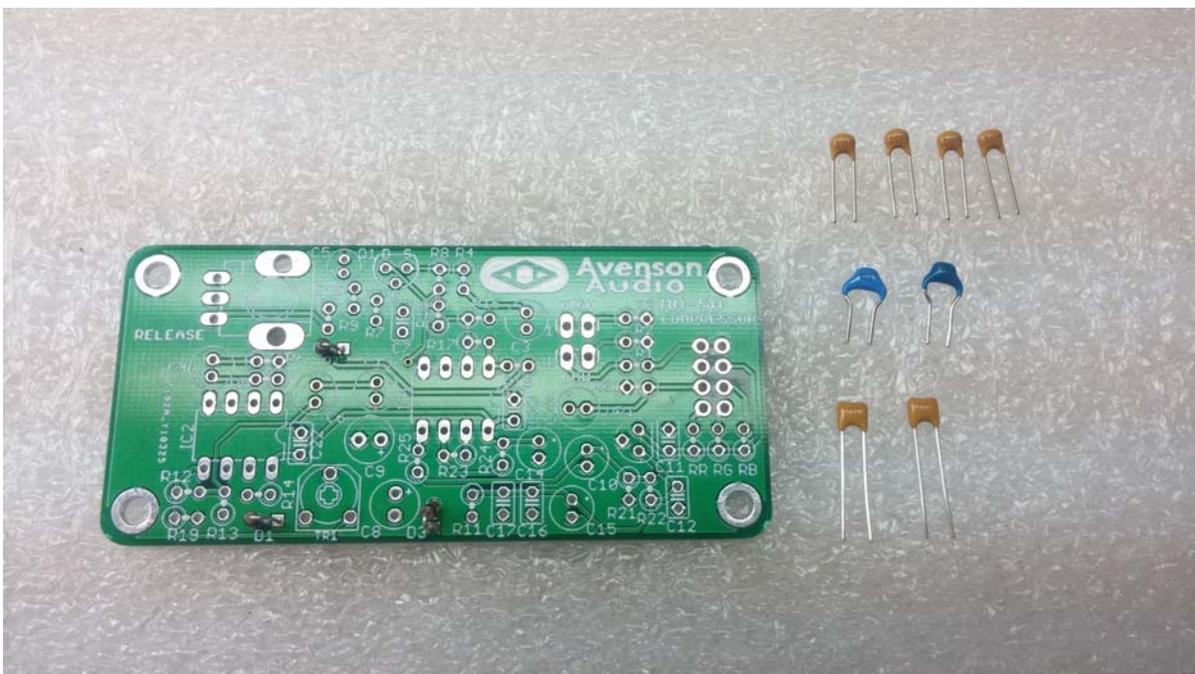
2. Solder Diodes.

Place diodes D1,D2 (1N4148) and D3 (1N4615) in their respective locations while paying attention to their orientation. The black line on the diode should align with the line on the side of the arrow symbol on the white silkscreen on the printed circuit board in those locations.



3. Solder ceramic (MLCC) Capacitors.

Place the ceramic capacitors C7,C11,C12,C16,C17,C22, and C23 in their respective pads on the pcb and solder them. These are non-polarized capacitors so orientation doesn't matter here.



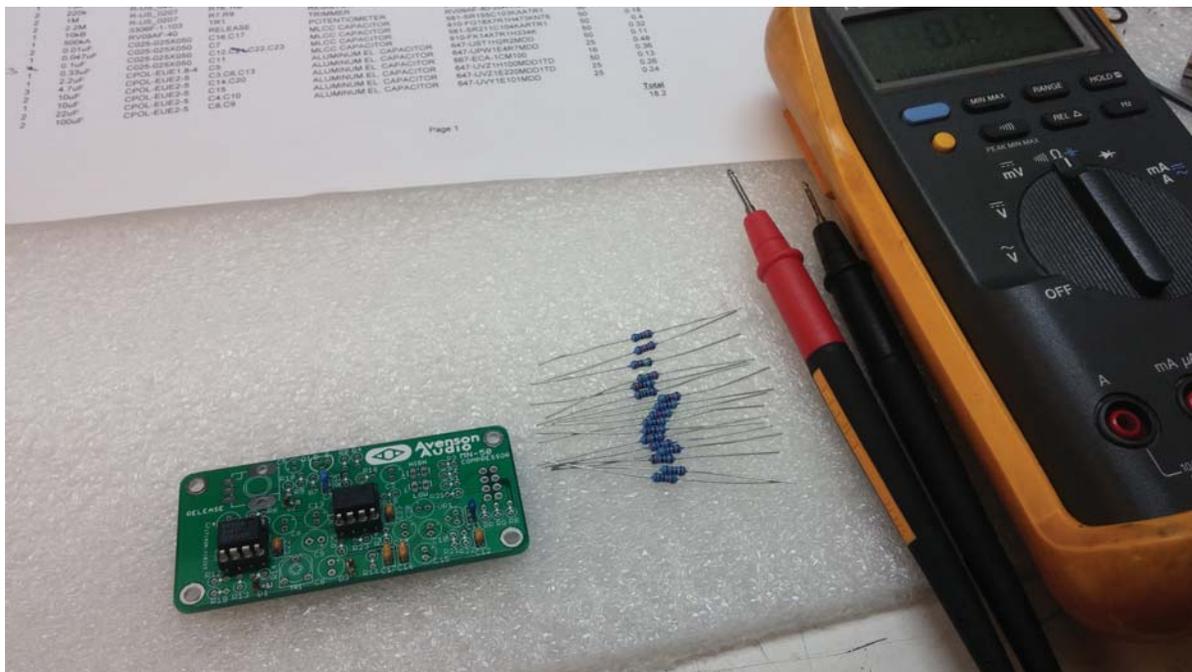
4. Solder IC sockets and push Op-Amps into sockets.

Place the IC sockets in the locations marked IC1 and IC2. The socket orientation doesn't matter but convention would suggest you align the small notch (pin 1 marking) with the corresponding notch in the IC socket. Then push the ICs into their respective sockets, IC1 (TL072) and IC2 (NJM4558DD), being sure that the pins go into each pin socket and don't bend any pins out of place.



5. Solder Resistors.

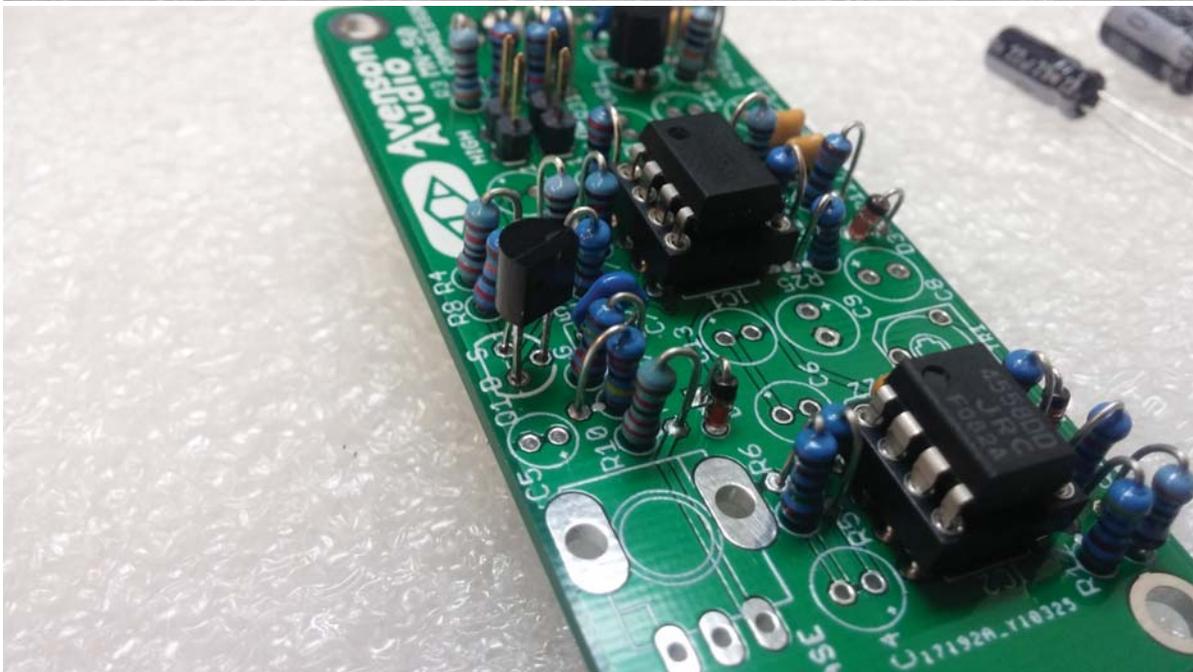
Bend one lead on each resistor close to its package and place them in their respective pads and solder. Notice that even though resistors are non-polarized, the silkscreen is marked with a circle for the pad best suited for the board layout to hold the resistor package side. In other words, the pad without the silkscreened circle should be the pad used for the wire lead side of the bent resistor. Check the next step photos for more clarity on this. Make sure not to touch leads of resistors that are next to each other, leave enough space between them so they don't accidentally make contact and short the circuit somewhere that it shouldn't. You may also find it easier to measure each resistor with a multimeter to make sure you are putting the proper value in its correct location, or you can simply read the resistor color bands and look up a resistor color band chart online.



6. Solder Molex pins, 9-volt regulator transistor, and JFET.

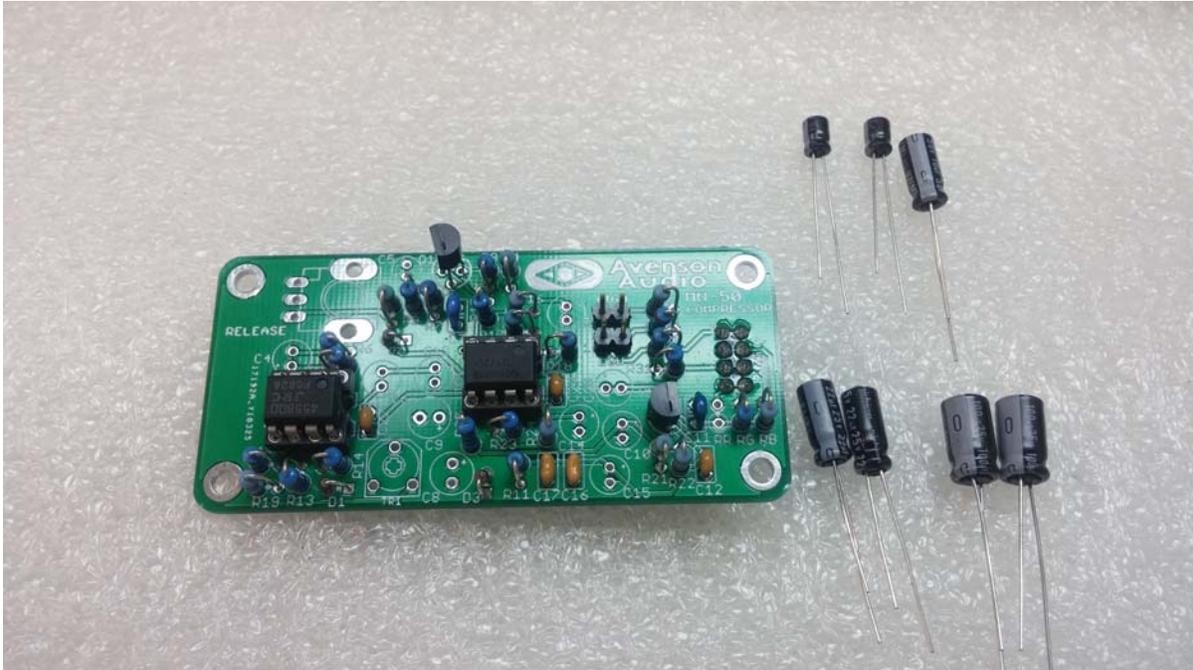
Place the 2 pin molex headers in their pads on the pcb and solder them in place. I would recommend using a heat pad or cloth to hold the pins in place while soldering as the pins will conduct the heat from your soldering iron through to the side you're holding and potentially burn your finger. Just be careful and mindful of how long you leave your soldering iron on the pad to solder (should not take more than 1-2 seconds for solder to flow). Place 8 pin molex header in the opposite side of the board (side that has the silkscreen box around it) and solder in place similarly. Solder the 78L09 9V Linear Voltage Regulator in it's pads at VR1 and orient it exactly as shown by the silkscreen.

For the JFET, pay close attention to the silkscreen orientation and notice that we labeled the G (Gate), D (Drain), and S (Source) of the JFET for you. If you order the exact J202 part we've provided for in our BOM, the JFET will be oriented as shown in the 2nd photo below, which is not aligned with the silkscreen package layout. This silkscreen package is according to the original 2SK117 Y-3 JFET found in the original Fostex unit. These JFETs are harder to source and we found the J202 to be an equivalent replacement, but for those wishing to have the original JFET, this silkscreen package will align with the 2SK117 perfectly. For multi-pin parts such as this, it is always good practice to check the datasheet for pinout.



7. Solder Electrolytic Capacitors

Place the electrolytic capacitors in their corresponding location on the PCB and pay attention to the silk-screened positive (+) sign on each location, designating the polarity orientation of the capacitor on the circuit board. Each cap will be marked on its on package with the negative side having a white line and negative (-) symbols running along its side. Solder each electrolytic capacitor in place.



8. Solder Potentiometer (Release) and Trimpot (TR1)

Place the Release potentiometer and Trimpot TR1 in their respective locations on the PCB and solder them into their pads. A good starting point to set the trimpot to which will bias the JFET in circuit is setting the notch on the trimpot to face about 11 o'clock. Use a screwdriver to rotate the trimpot to this setting. If you'd like a more exact measurement you can use a multimeter to measure resistance (ohms) between the single top pin on TR1 and the Left Bottom Pin. This should measure around 3.83k ohms. This doesn't mean you must keep this trimpot set at this location, this is simply approximately where the JFET is biased to in the original Fostex units. In fact some pretty cool distortion and less or more compression can be obtained by setting this trimpot to different locations in its rotation, effectively altering the bias to the JFET and changing the character of the compressor, it is in fact a 'Colour' compressor after all. Use the In and Out controls on the Colour Palette, and the Release pot and Trimpot TR1 and most importantly your ears to dial in the appropriate compression for the source in your mix. For the Release potentiometer, the fastest release times should be all the way clockwise, and the slowest will be counter-clockwise.



9. You're done!

After getting the Release pot and trimpot soldered in, the circuit is complete. Simply snap in the white standoffs in the corners of the board as shown in the pictures and connect your Smash Compressor Colour into a Colour Palette and get on with smashing some tracks with your newly built compressor.

