

Build Your Own Clone Super 8 Kit Instructions



Warranty:

BYOC, Inc. guarantees that your kit will be complete and that all parts and components will arrive as described, functioning and free of defect. Soldering, clipping, cutting, stripping, or using any of the components in any way voids this guarantee. BYOC, Inc. guarantees that the instructions for your kit will be free of any major errors that would cause you to permanently damage any components in your kit, but does not guarantee that the instructions will be free of typos or minor errors. BYOC, Inc. does not warranty the completed pedal as a whole functioning unit, nor do we warranty any of the individual parts once they have been used. If you have a component that is used, but feel it was defective prior to you using it, we reserve the right to determine whether or not the component was faulty upon arrival. Please direct all warranty issues to: sales@buildyourownclone.com This would include any missing parts issues.

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BYOC, Inc. accepts returns and exchanges on all products for any reason, as long as they are unused. We do not accept partial kit returns. Returns and exchanges are for the full purchase price less the cost of shipping and/or any promotional pricing. Return shipping is the customer's responsibility. This responsibility not only includes the cost of shipping, but accountability of delivery as well. Please contact sales@buildyourownclone.com to receive a return authorization before mailing.

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BYOC, Inc. makes no promises or guarantees that you will successfully complete your kit in a satisfactory manner. Nor does BYOC, Inc. promise or guarantee that you will receive any technical support. Purchasing a product from BYOC, Inc. does not entitle you to any amount of technical support. BYOC, Inc. does not promise or guarantee that any technical support you may receive will be able to resolve any or all issues you may be experiencing.

That being said, we will do our best to help you as much as we can. Our philosophy at BYOC is that we will help you only as much as you are willing to help yourself. We have a wonderful and friendly DIY discussion forum with an entire section devoted to the technical support and modifications of BYOC kits.

www.byoelectronics.com/board

When posting a tech support thread on the BYOC forum, please post it in the correct lounge, and please title your thread appropriately. If everyone titles their threads “HELP!” then it makes it impossible for the people who are helping you to keep track of your progress. A very brief description of your specific problem will do. It will also make it easier to see if someone else is having or has had the same problem as you. The question you are about to ask may already be answered. Here is a list of things that you should include in the body of your tech support thread:

1. A detailed explanation of what the problem is. (more than, “It doesn’t work, help”)
2. Pic of the topside of your PCB.
3. Pic of the underside of your PCB.
4. Pic that clearly shows your footswitch/jack wiring and the wires going to the PCB
5. A pic that clearly shows your wiring going from the PCB to the pots and any other switches(only if your kit has non-PC mounted pots and switches)
6. Is bypass working?
7. Does the LED come on?
8. If you answered yes to 6 and 7, what does the pedal do when it is in the "on" position?
9. Battery or adapter (if battery, is it good? If adapter, what type?)

Also, please only post photos that are in focus.

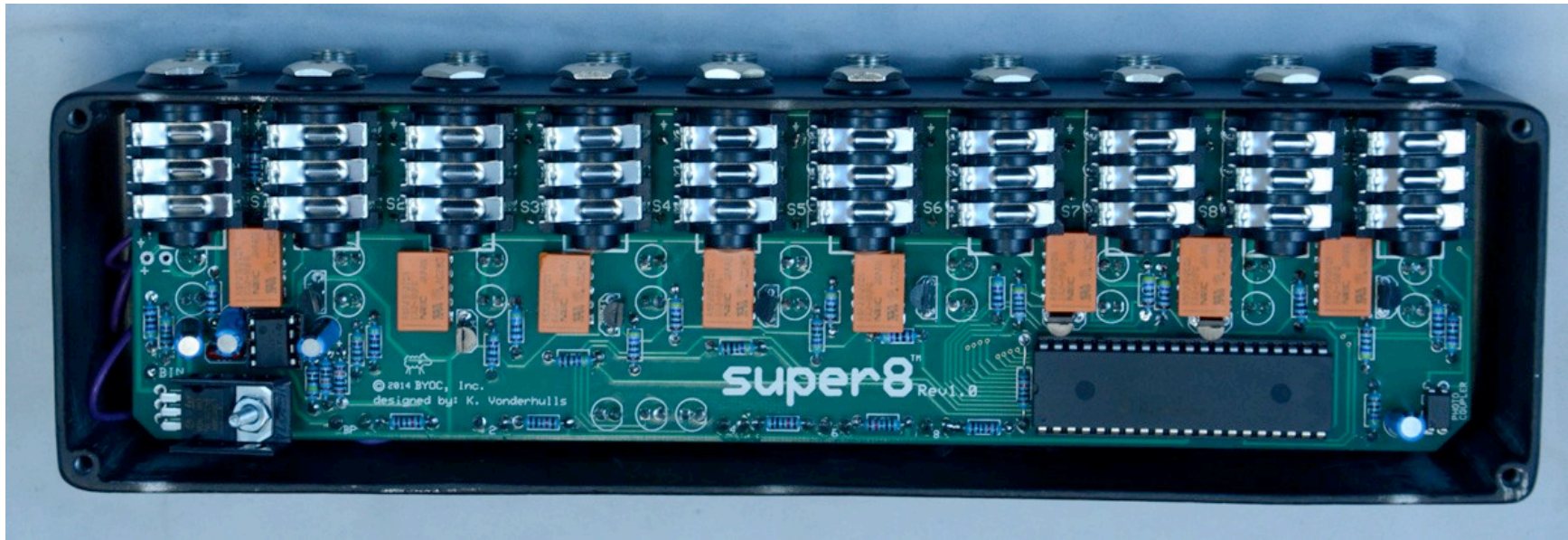
REVISION NOTES: Rev1.0 is missing a trace. See Step 13 on how to fix this.

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Study this for a few minutes before you begin. This is what your kit should look like when it's complete. If you come to a step that is confusing, come back to this picture and take a look. It may help. Your kit may come with different color capacitors, switches, relays, etc. Don't be alarmed by this. They all still do the exact same thing.

Parts Checklist for Super 8 Kit

Resistors:

- 23 – 470 (Yellow/Purple/Black/Black/Brown)
- 6 - 10k (Brown/Black/Black/Red/Brown)
- 3 - 100k (Brown/Black/Black/Orange/Brown)
- 1 – 1M (Brown/Black/Black/Yellow/Brown)

Visit www.byocelectronics.com/resistorcodes.pdf for more information on how to differentiate resistors.

Capacitors:

- 1 - .01uF or 10n film cap (may say “103” on the body)
- 1 - .1uF or 100n film cap (may say “104” on the body)
- 1 - 10uF Aluminum Electrolytic
- 3 - 47uF Aluminum Electrolytic

Visit www.byocelectronics.com/capcodes.pdf for more info on how to differentiate capacitors.

IC's:

- 1 - DIP 40 Socket
- 8 - DPDT 2 Form C non-latching relays
- 1 - Dip 8 Socket
- 1 - TL072, 4558, or similar dual op amp
- 1 - pre-programmed 16F887 microcontroller

Diodes:

- 1 - 4.3v Zener diode

Transistors:

- 8 - 2N3904, 2N5088, 2N2222 or other similar transistor with EBC pinout.
- 1 - 78M05 Voltage Regulator
- 1 - TO-220 heat sink w/ screw & nut
- 2 - BS170

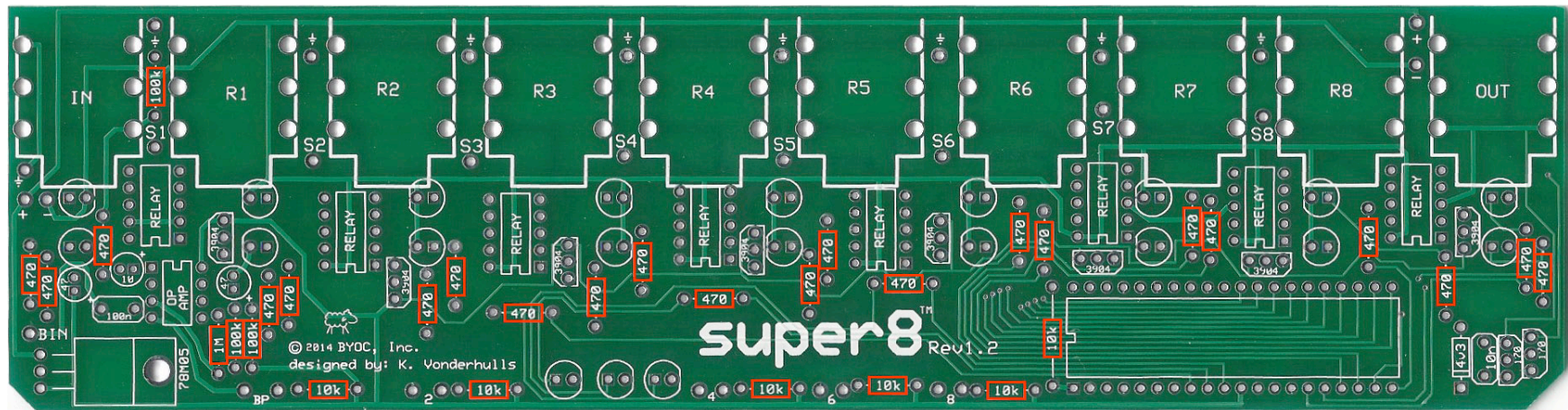
Hardware:

- 1 - predrilled enclosure w/ 4 screws
- 1 - Super 8 circuit board
- 5 - momentary SPST foot switches

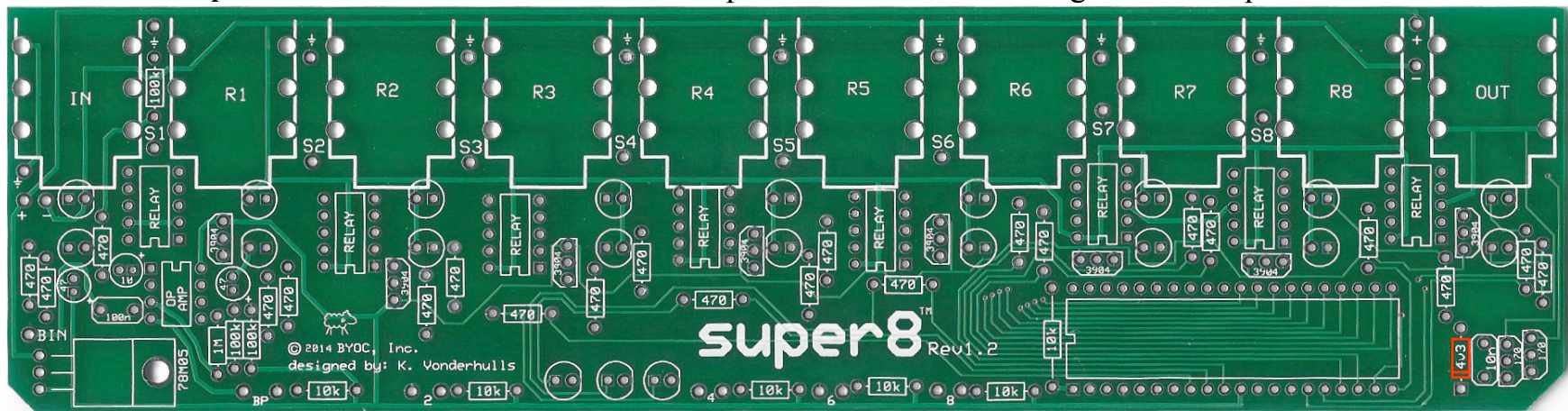
1 - AC adaptor jack
10 - ¼" stereo PC mount jack
9 - ¼" enclosed stereo or mono panel mounted jack
9 - Red LED
9 - Green LED
3 - Yellow LED
4 - rubber bumpers
hook-up wire

Populating and Wiring the Circuit Board

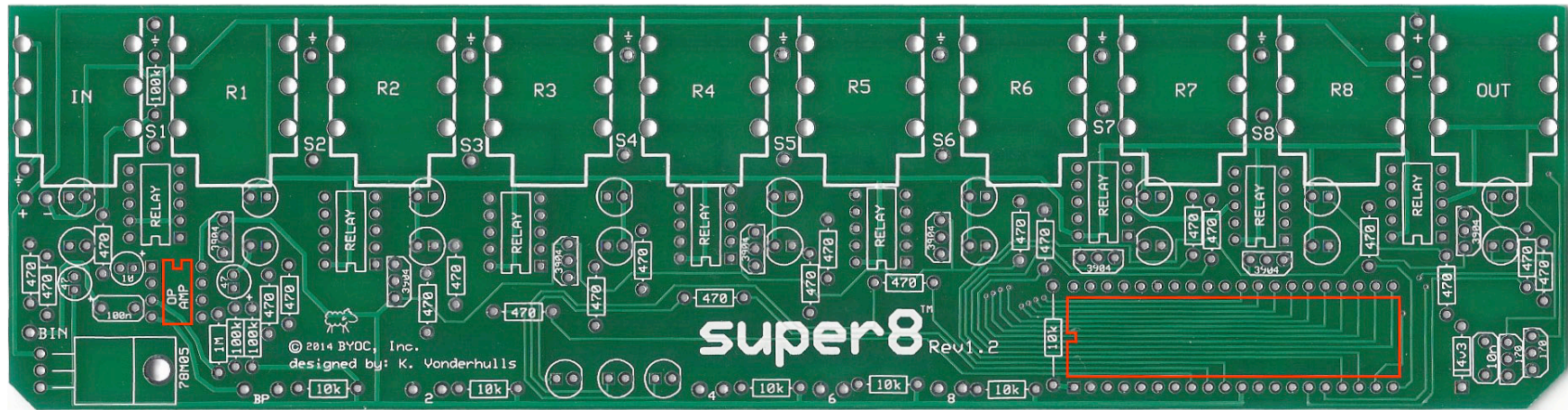
Step 1: Add all the resistors. Resistors are not polarized and can be inserted in either direction.



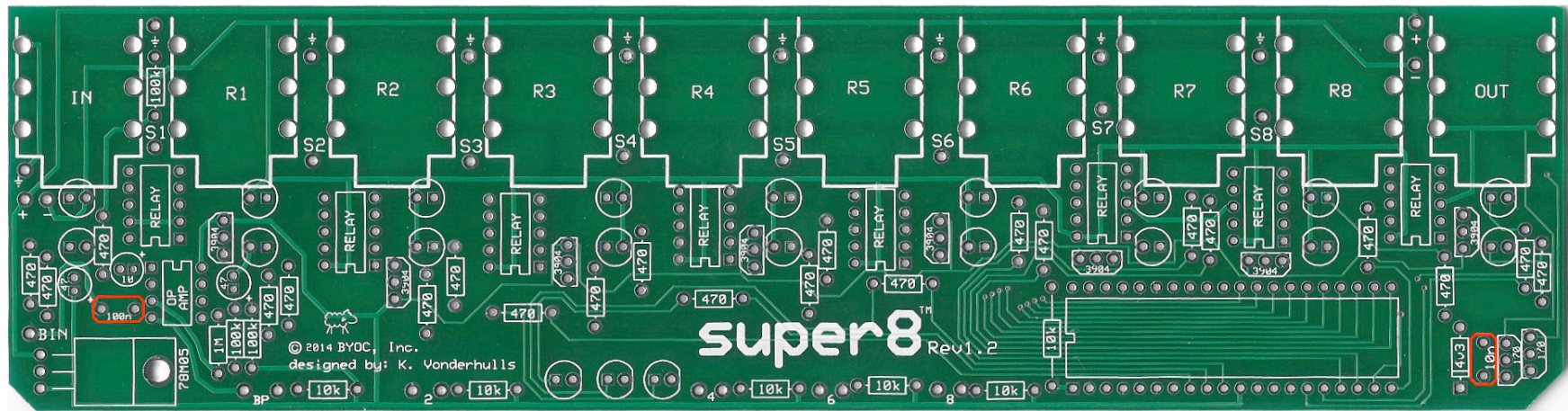
Step 2: Add the 4.3v zener diode. The striped end of the diode will go into the square hole.



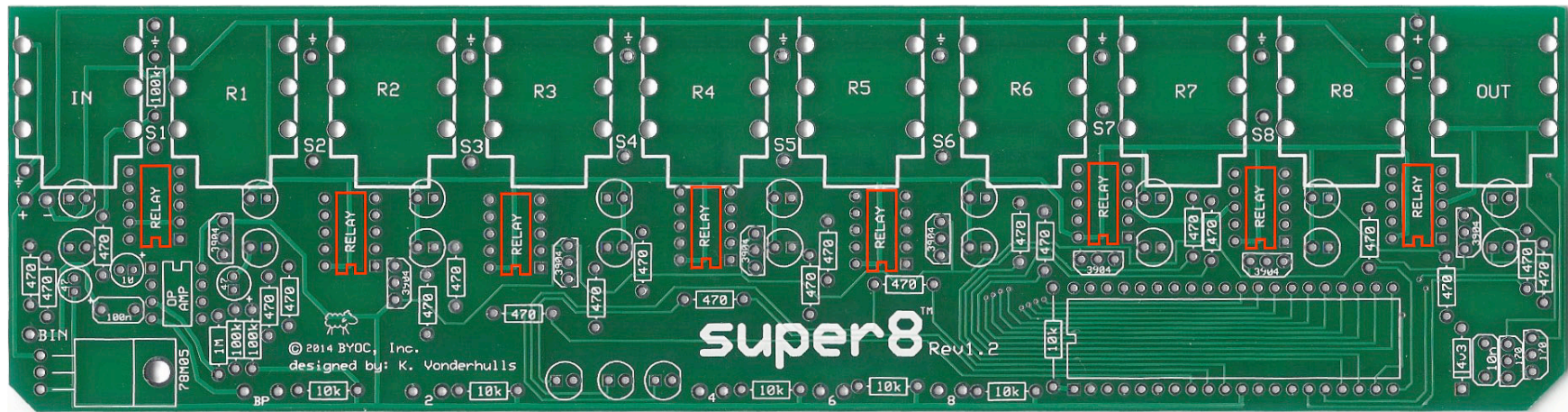
Step 3: Add the IC sockets. The sockets will have one end that has a notch in it. Be sure to orient the sockets so that the side with the notch matches up with the notch on the PCB layout. **ONLY SOLDER THE SOCKET! NOT THE ACTUAL IC!** This is a socket. The sockets get soldered to the PCB. The ICs get inserted into the sockets. The actual IC chip itself, never gets soldered. You will insert the IC into the socket at a later point in the build process.

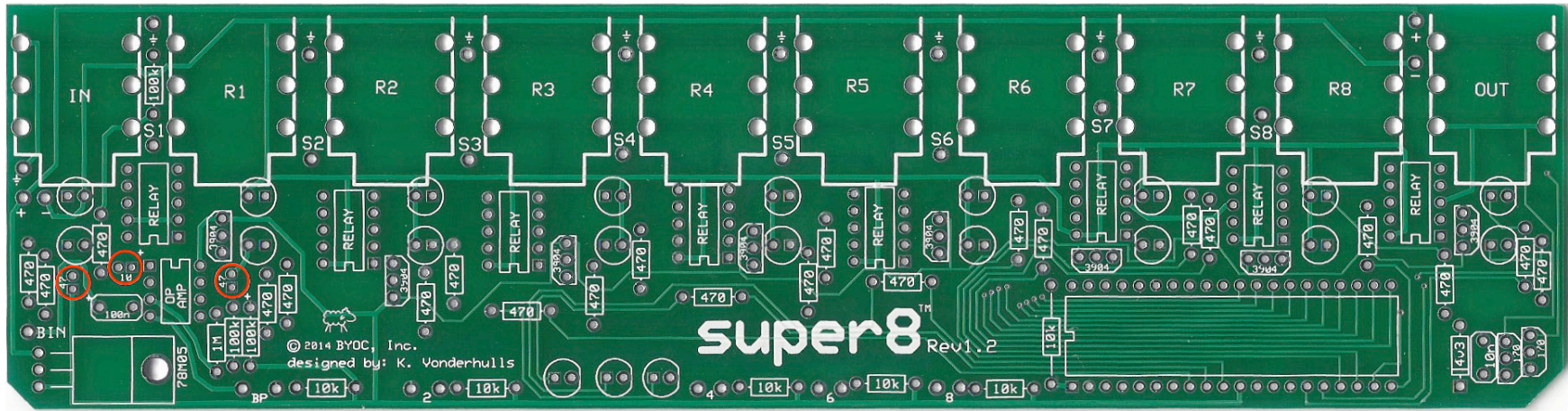


Step 4: Add the film capacitors. Film caps are not polarized and can go into the PCB in either direction.



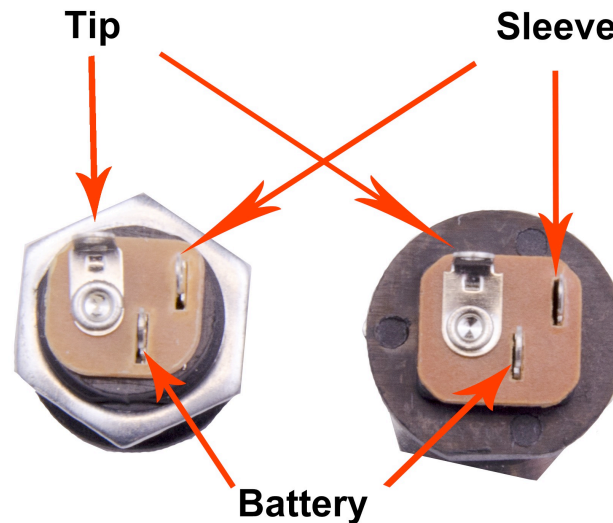
Step 5: Add the relays. Orient them so that the line that is printed on the relay is pointed towards either the square solder pad or towards the notch in the outline of the relay printed on the PCB layout. These do not need a socket. You will solder them directly to the PCB.





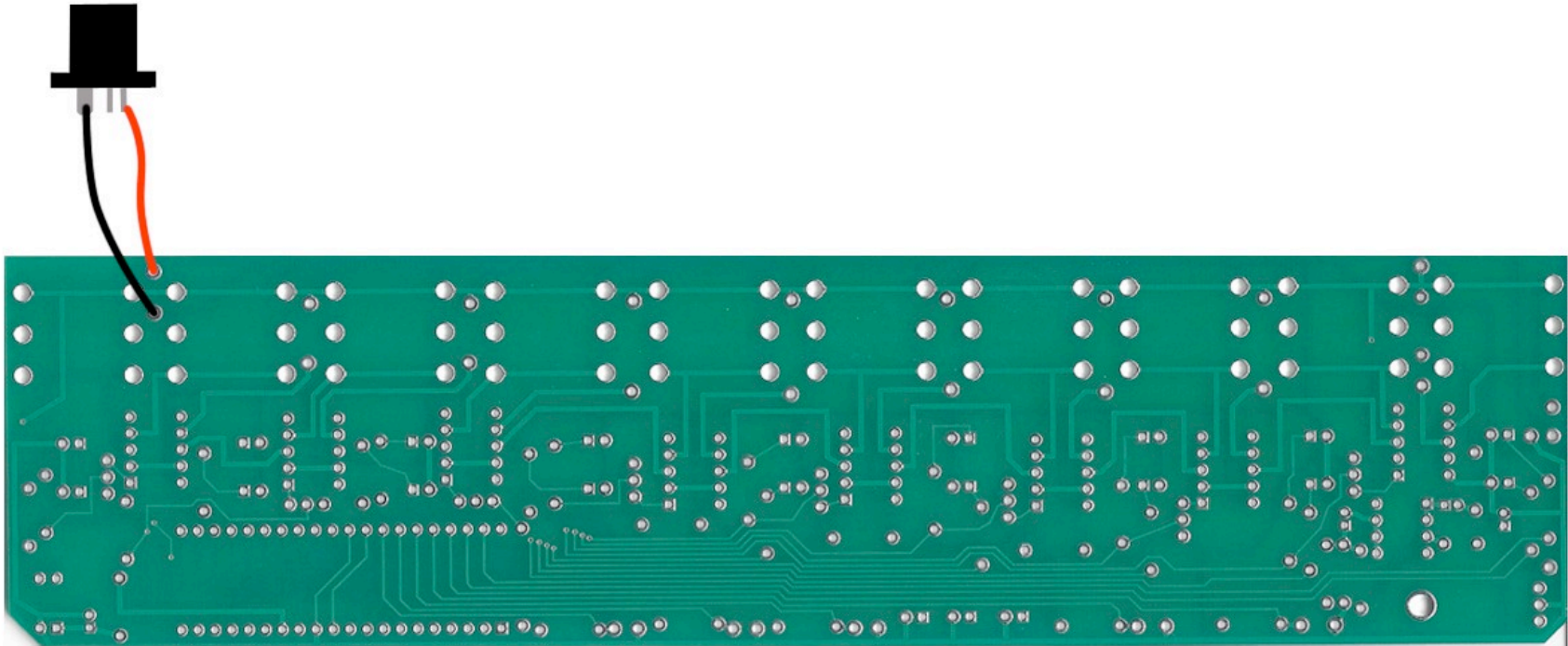
IMPORTANT NOTE BEFORE PROCEEDING: It is important that you cut your wires to the lengths specified. Obviously, you don't want to end up with a wire that is too short. But with this build in particular, you don't want to use more wire than is necessary. This is because the excess wire can make the final step more difficult.

Step 8: Add the DC adapter jack. Use two 2.5" (6,5cm) pieces of wire. Strip one eighth of an inch (3mm) off each end. The super8 does not use battery power, so there's no need to connect the battery terminal of the adapter jack.



see wiring diagram on the next page

Flip the PCB over and insert the wires into the back of the PCB. Solder on the top side. Connect the tip of the DC JACK to the “-“ (negative) eyelet. Connect the sleeve to the “+” (positive) eyelet.

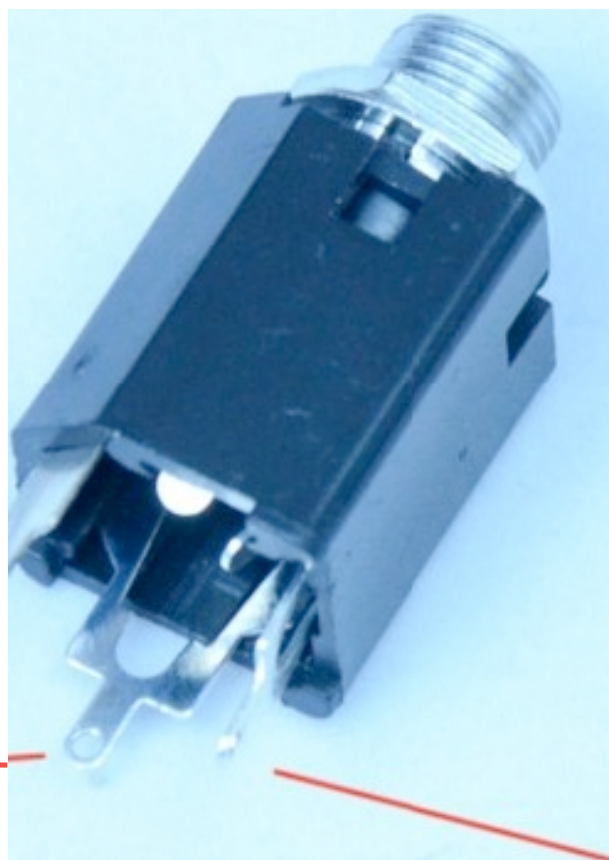


Step 9: Add the enclosed panel mounted jacks.


sleeve

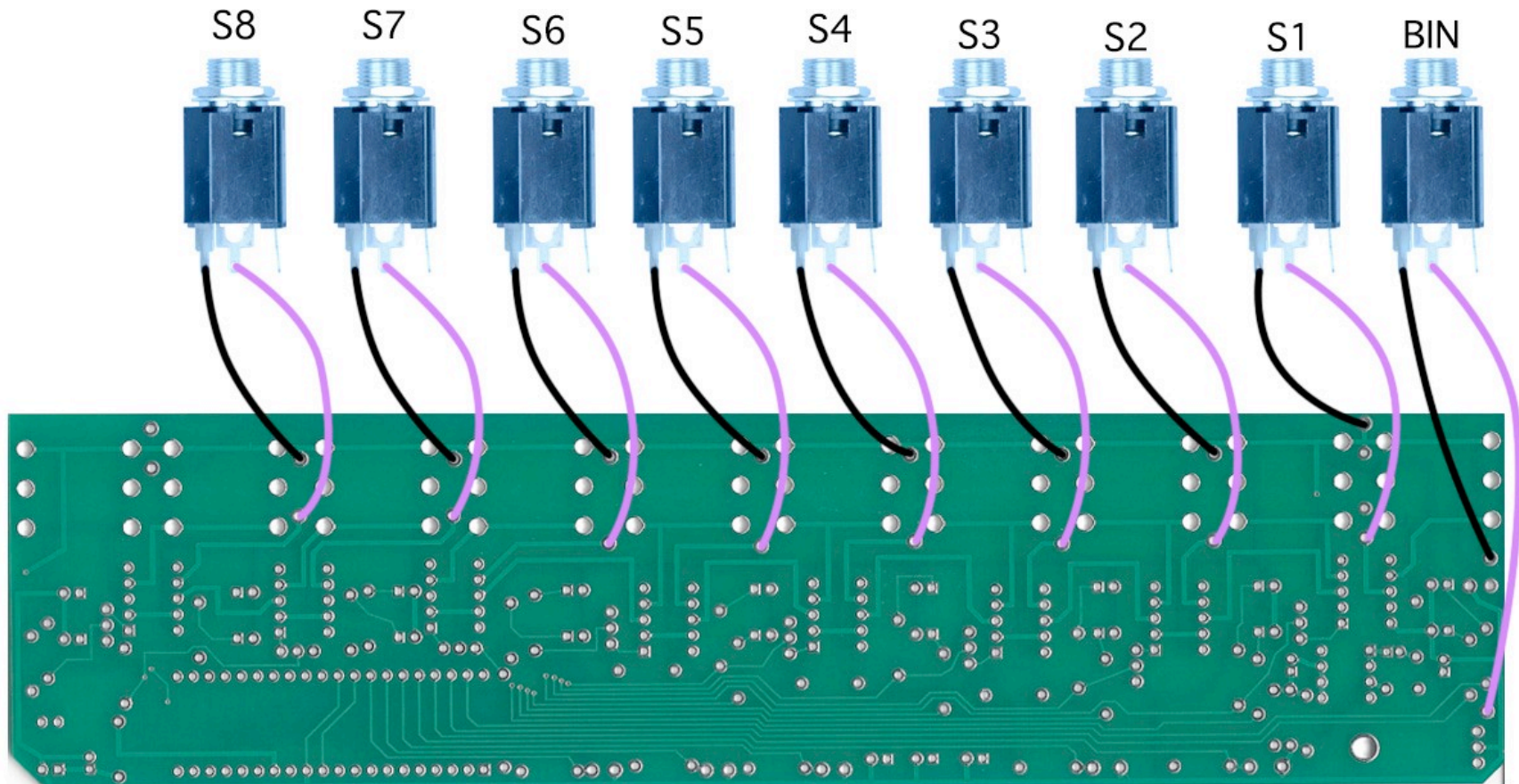


tip



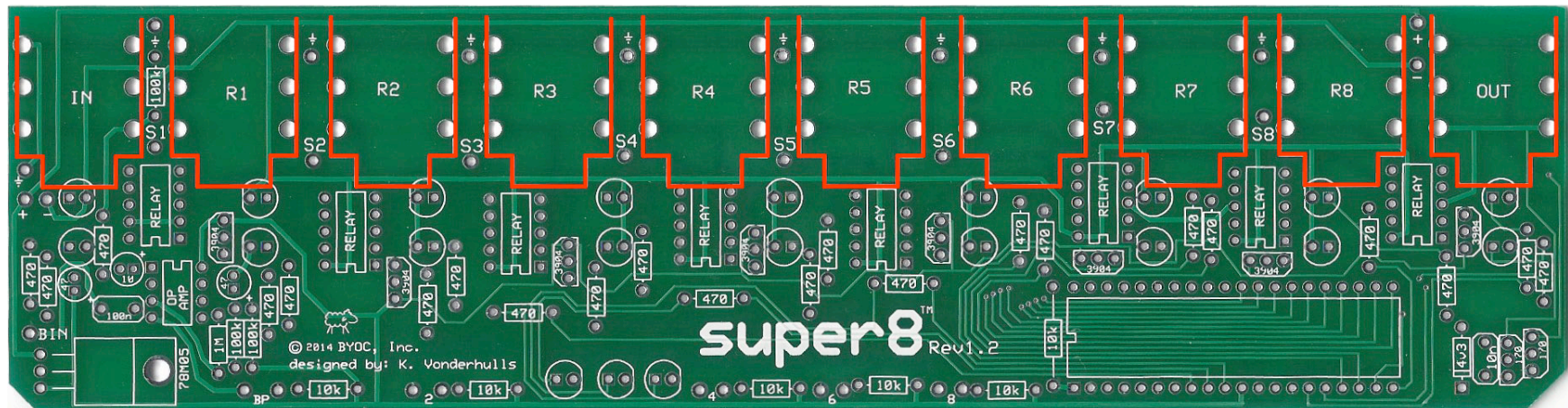
Ring

In this diagram, the sleeves are shown being connected by a black wire and the tips are shown being connected by a purple wire. This is only for illustrative purposes. Your kit will only come with one color. These are stereo jacks, but we do not need the ring terminal, so nothing will be connected there. Use 4.5" (11,5cm) of wire to connect the tip of the buffered input jack to the "BIN" eyelet on the PCB. Keep in mind that you will be inserting the striped end of the wire into the back of the PCB and soldering on the top. The labels for the eyelets are located on the top side of the PCB. Use 3.5" (9cm) of wire to connect the sleeve of the buffered input jack to its ground eyelet shown by the  symbol. Use 3.5" (9cm) of wire to connect the sleeves of all the rest of the SEND jacks to there respective ground eyelets. Use 3.5" (9cm) of wire to connect the tips to there respective "S" eyelet. "S" is for SEND. The tip of the SEND 1 jack will go to the "S1" eyelet. The tip of the SEND 2 jack will go to the "S2" eyelet...and so on.



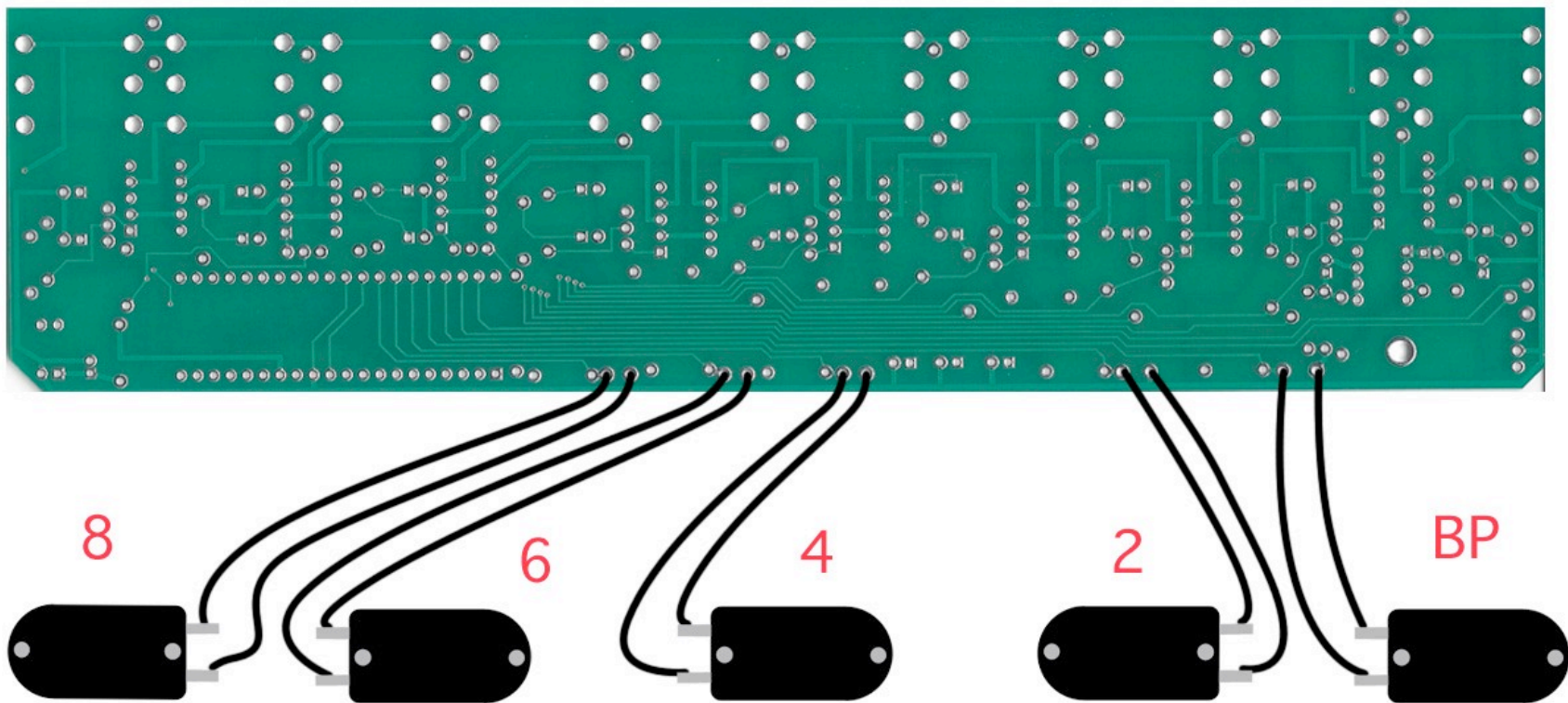
Step 10: Add the PC mounted jacks. These go on the top side of the PCB. These jacks probably come with 3 plastic washers (depending upon the brand). There is one beveled washer that goes on the outside. There are 2 flat washers/spacers that go on the inside. You will only need to use 1 of these flat washers/spacers per jack. Be sure to remove the extras if your kit comes with them.

TIP: It may be helpful to only solder 1 pin on each of the PC mounted jacks just to hold them in place. Then insert the assembly into the enclosure to insure that you have a good fit before soldering all 6 pins on each jack.

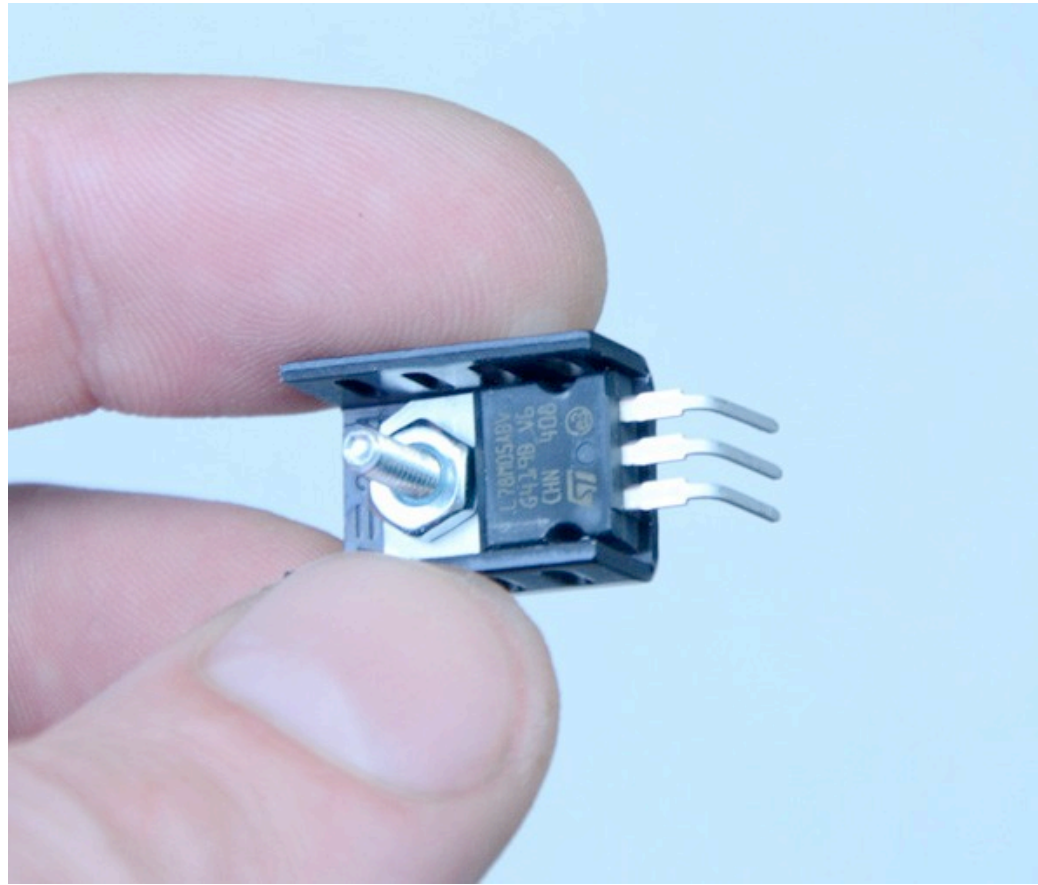


Step 11: Connect the foot switches to the bottom side of the PCB as shown in the diagram below. Use 2.5" (6,5cm) wire to connect foot switch BP and 2. Use 3" (7,75cm) wire to connect foot switch 4 and 6. Use 4" (10,25cm) wire to connect foot switch 8.

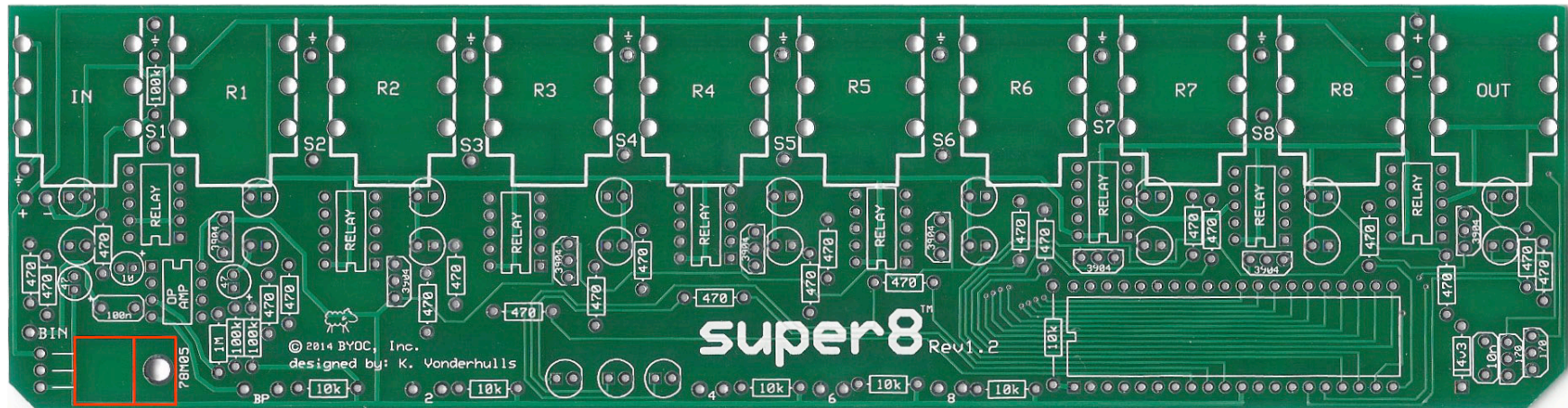
NOTE: When you install the footswitches into the enclosure, be sure to orient them as shown in the diagram below, i.e., the solder lugs of BP and 8 should be pointing away from the inner walls of the enclosure and the solder lugs of 2 and 4 should be pointing away from the 3 yellow "bank" LEDs (you haven't install the LEDs yet).



Step 12a: Mount the 78M05 voltage regulator to its heat sink with the provided screw and nut. Then bend its legs at a 90 degree angle.

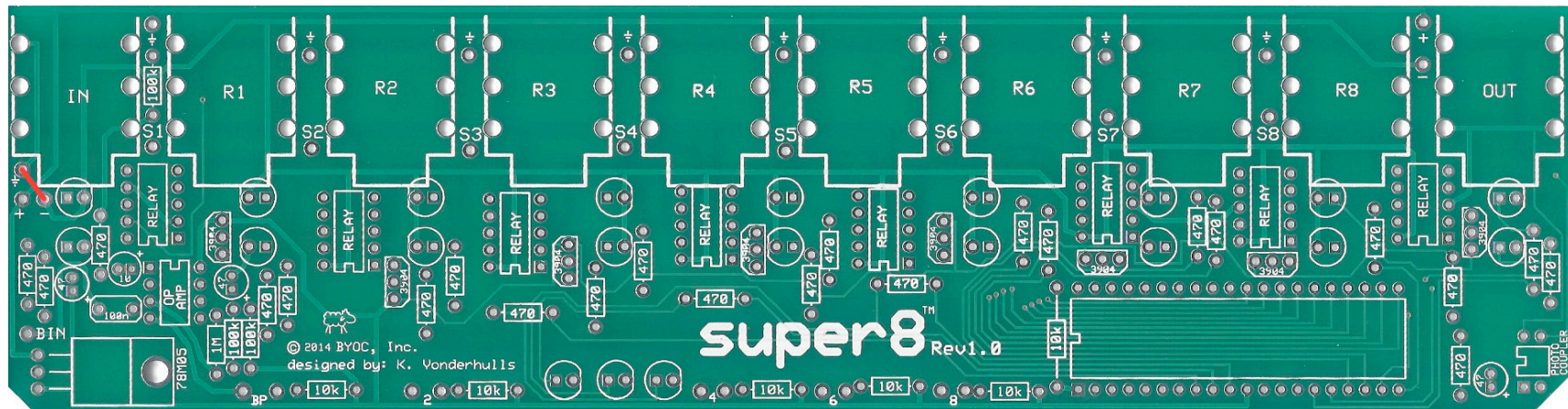


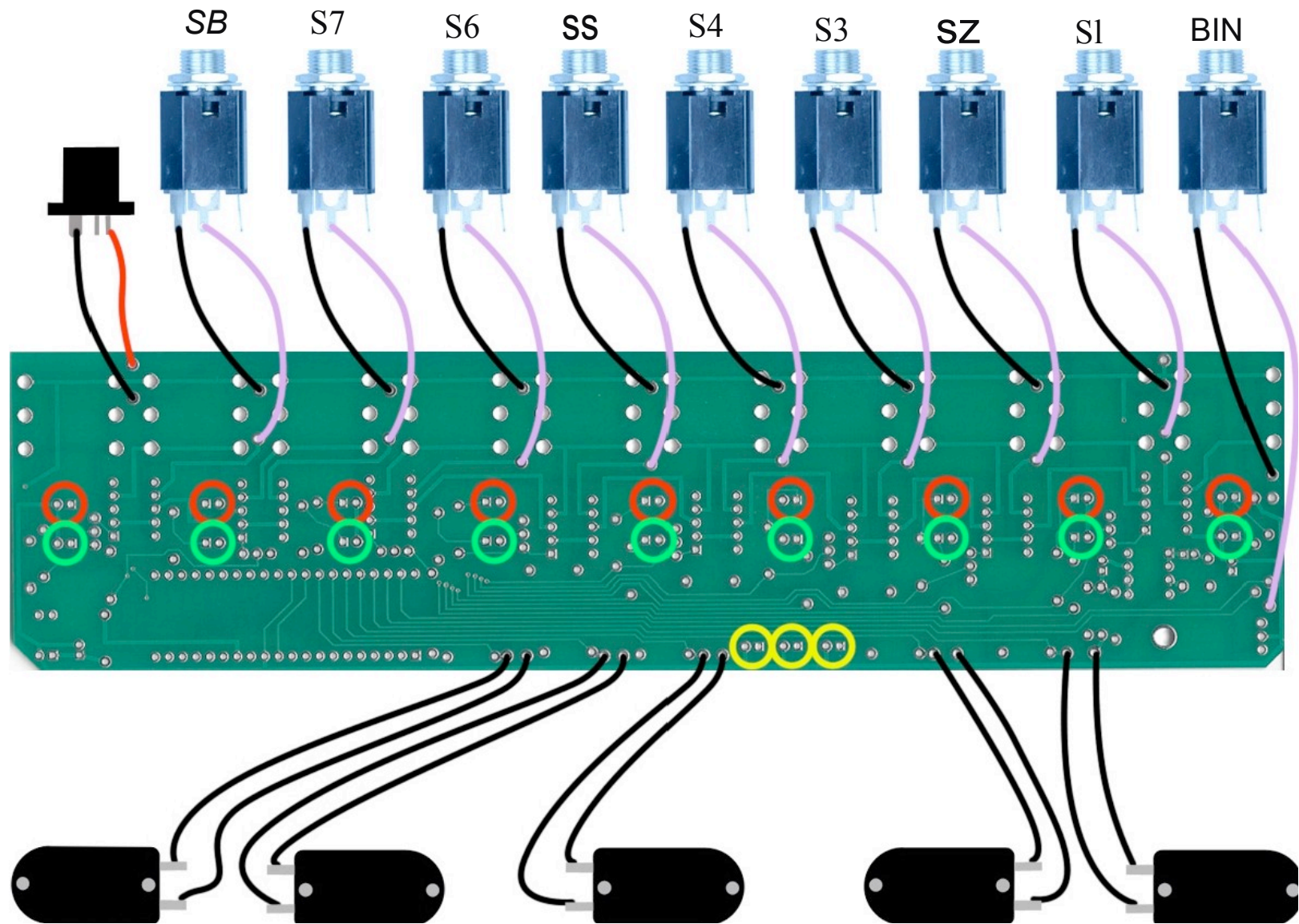
Step 12b: Solder the voltage regulator to the PCB. The PCB will have a hole to mount the voltage regulator. Do not mount it to the PCB. The voltage regulator will get quite warm when the super8 is on, more so when using 12V instead of 9V, so be careful when touching it.



Step 13: REV1.0 only!!! Add a jumper. We forgot to add a trace on the PCB, so you'll need to make a jumper. You can use a very short piece of wire or you could even use a left over piece of clipping from one of the resistors. Connect the empty “-“ eyelet on the left of the top side of the PCB to the closest ground eyelet.

If you have a Rev 1.1 or later PCB, this connection will already be made and you do not need to do this step.





Step 14: Insert the ICs into their sockets. Don't forget to orient the ICs so the end with the notch matches up with the end of the socket that has a notch as well.

Step 15: Install the LEDs and test all functions of the super8. DO NOT SOLDER ANYTHING AT THIS POINT!!! We recommend you watch this video before proceeding. It will help with the next stage of the build.

<http://youtu.be/4HEaZz0107o>

On the back-side of the PCB, insert the longer LED leads into the square solder pad hole. Insert the shorter LED leads into the round solder pad holes. After you insert an LED bend the leads apart just a little so that the LED will stay in place when you flip the PCB over. Keep in mind that not all the LEDs are oriented in the same direction so pay very close attention to the square solder pads.

TIP: When guiding the LEDs into their respective holes in the enclosure, it may be helpful to have a flashlight and a small screwdriver (or some long slender poking device) to move some of the wires out of the way.

Once you have installed all the LEDs, you will want to test all the functions of the super8. It is very important that you thoroughly test your super8 prior to installing the PCB assembly into the enclosure and soldering the LEDs in place. If you need to trouble shoot anything later, it will be extremely difficult.

First test all the foot switch functions and their corresponding LED reactions. Plug a 9 or 12 VDC power supply into the DC Adapter Jack. Keep in mind that some LEDs may not come on because they are not soldered. Move them slightly till they come on or flicker so that you know they work. Check the Operating Overview for an explanation of how the super8 functions. Another thing to take note of is that the LEDs will behave oddly the first time you plug in your super8. The super8 has "immediate memory". This means it will remember your settings

when you switch modes and/or bypass so that when you come back to that mode or out of bypass, you will return to your previous settings. Until each of these immediate memory banks are filled, the default setting will be on. This is the same for the programmed presets. Until you program as preset and save it in one of the 4 banks, the default for that preset will be “all loops on”. So for example, if you have never programmed and saved a setting for BANK C LOOP 7, all the loops would come on if you called BANK C LOOP 7.

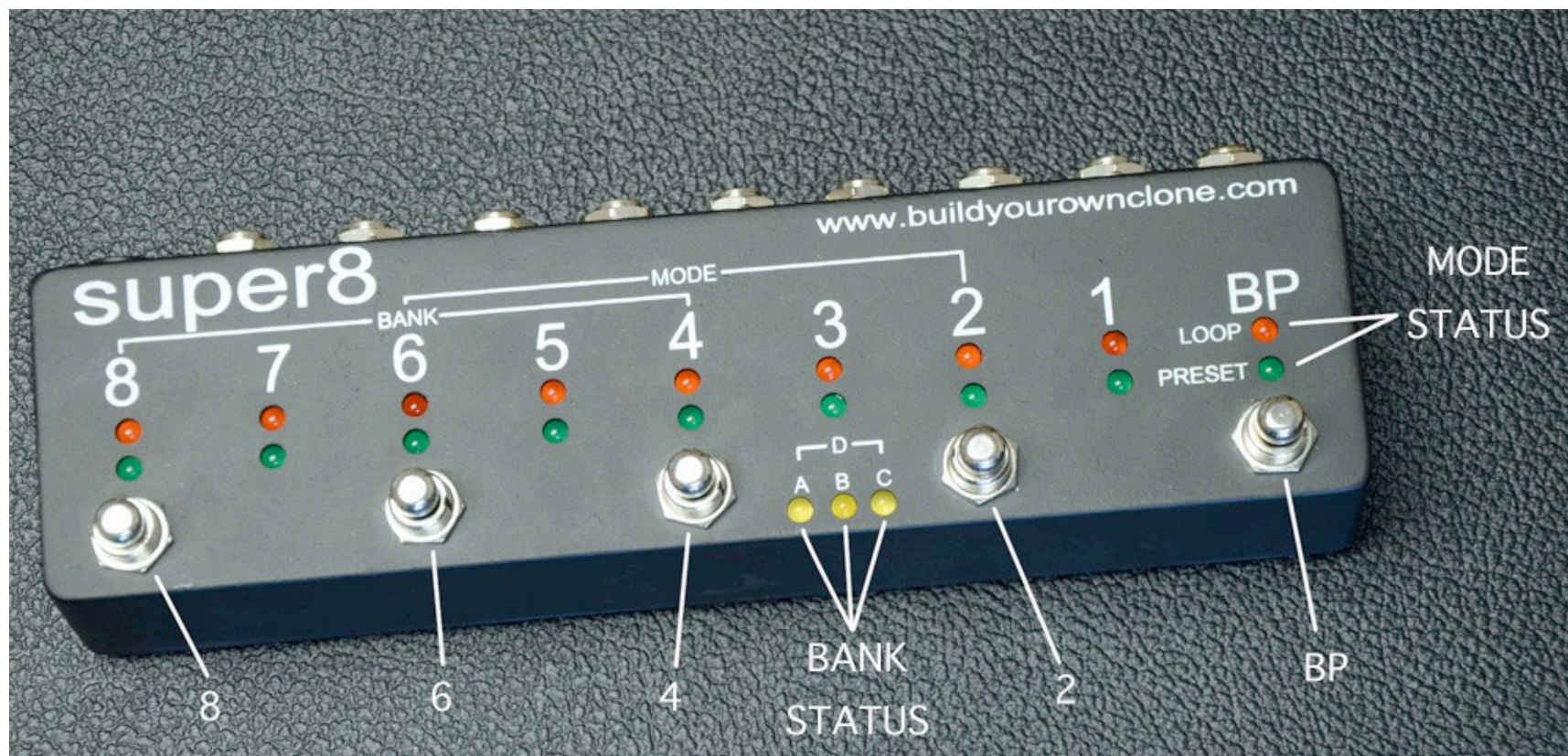
After you have tested all the foot switch functions, test the actual signal path. First plug the output into an amplifier. Then plug a guitar into the regular non-buffered input. Make sure the super8 is in LOOP MODE and in BYPASS (BP), i.e., none of the 1 through 8 red loop LEDs should be on, but the red LOOP MODE LED should be on. You should have your straight guitar signal. Now plug your guitar into the buffered input. You should hear clean guitar signal. Next you need to test each of the loops. You do this by taking a patch cable and plugging one end into the send jack and the other end of the cable into the corresponding return jack. Do this for loop 1 first. Plug your patch cable into SEND1 and RETURN1. Turn LOOP1 on by pressing the BP and 2 footswitch buttons at the same time and releasing. You should hear your clean guitar signal. If you don't, you know you have a problem somewhere with the components involved in LOOP1. If everything works with LOOP1, move on to LOOP2, and so on and so on till you've tested all 8 loops.

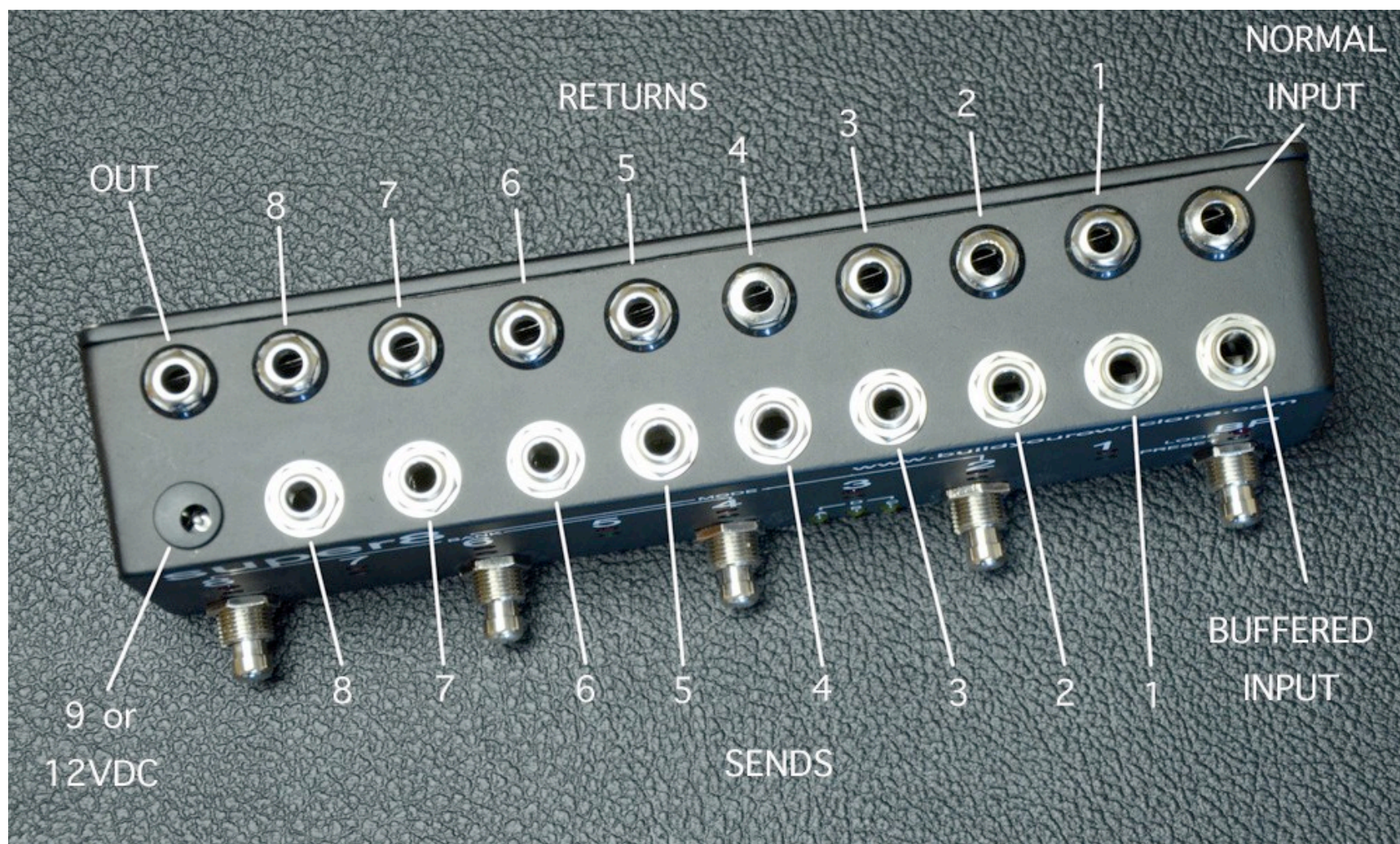
Step 16: Install the PCB assembly into the enclosure. Secure the SEND jacks and foot switches first. Be sure to orient foot switch BP and 8 so that the solder lugs are pointing away from the inner walls of the enclosure and so that the solder lugs of 2 and 8 are pointing away from the BANK STATUS LEDs. Some of the solder terminals of the SEND jacks may be overlapping the RED LED holes. If this is the case, then simply (but gently) bend them so that they are no longer in the way. Then mount the PCB to the enclosure by inserting the RETURN jacks into their holes. Once you have the PCB mounted to the enclosure, carefully guide each LED into its hole. This part can be tricky. A small screwdriver or V.U.P.D. (very useful poking device) can come in handy to push stray wires out of the way. Once you have all the LEDs in place, it would probably be a good idea to test your super8 out one more time. If everything works, solder the LEDs in place and clip off any excess lead sticking out.

Congrats! You are done!

Operating Overview

NOTE: The example below has been painted and screen printed. Your enclosure will not look like this if you ordered a kit with a bare enclosure.





IMPORTANT!!!! Because of space constraints, you need to use patch cables that have straight plugs, or you need to use cables that have a small right angle plug, such as George L, Lava, Evidence, Chandler, or other brands that use a similar “solderless” right angle plug. A cheaper alternative would be to use plastic molded right angle cables. But you cannot use the typical *ALL* right angle plugs from Switchcraft, Neutrik, Amphenol, etc. You also cannot use *ALL* “pancake” style plugs. We put emphasis on the word *ALL* because you can use some of these style plugs, but how many you can use and where you can use them depends on how much room the neighboring plugs are taking up and what style pedal board you are using.

POWER SUPPLY: You can use either 9VDC or 12VDC. We recommend using a supply with at least 300mA of current, but you could use a 200mA supply (see notes about current draw). Use a standard 2.1mm negative tip plug.

CURRENT DRAW: 225mA maximum. 25mA minimum. The super8 requires 25mA when all loops are in bypass. Each loop you turn on requires an additional 25mA. You could get away with using a power supply with only 200mA, just try to avoid turning all 8 loops on at once for more than a few seconds. After all...do you really need 8 pedals on all at once? If your super8 seems to be working for the most part, but cuts out and resets when you turn on more than a few loops, this probably means that your power supply does not have enough current.

NORMAL INPUT: Plug your instrument into this jack if you do not want a signal buffer at the beginning of your chain

BUFFERED INPUT: This input offers an active buffer circuit at the very beginning of the super8’s signal path.

BUFFERED vs. NORMAL INPUT: In most cases, you will want to use the normal input. A buffer circuit is usually only needed to help drive signal and/or correct impedance if your signal needs to travel long lengths of cable when you have all your FX in bypass. Since the super8 eliminates this problem, you probably won’t need it. When you are using things like distortions, overdrives, or boosts that drive your signal or other effects that have a buffer built into the circuit (which most do) there really is no point to using the buffered input. It really depends on the pedals you have in your signal path. Still, there is a good length of PCB trace that your signal must traverse while in bypass, or you may set up one of your loops with multiple FX pedals in it, so maybe you will notice a benefit to using the buffered input. Just plug into both (one at a time of course) and decide for yourself which sounds best, or if you can hear any difference at all.

SENDS: Use these jacks to connect to the inputs of your various FX

RETURNS: Use these jacks to connect to the outputs of your various FX

MODE: the super8 has two modes – loop and preset. Loop mode lets you control each of the 8 loops individually. Preset mode lets you call your programmed loop settings. When the red LOOP MODE STATUS LED is lit, that means you are in LOOP MODE. When the green LOOP MODE STATUS LED is lit, that means you are in PRESET MODE

How to CHANGE MODE: Press the 6, 4, and 2 foot switch buttons at the same time and release.

How to SELECT LOOPS: First you must be in LOOP MODE. Then press the foot switch button of the loop you want to turn on or off.

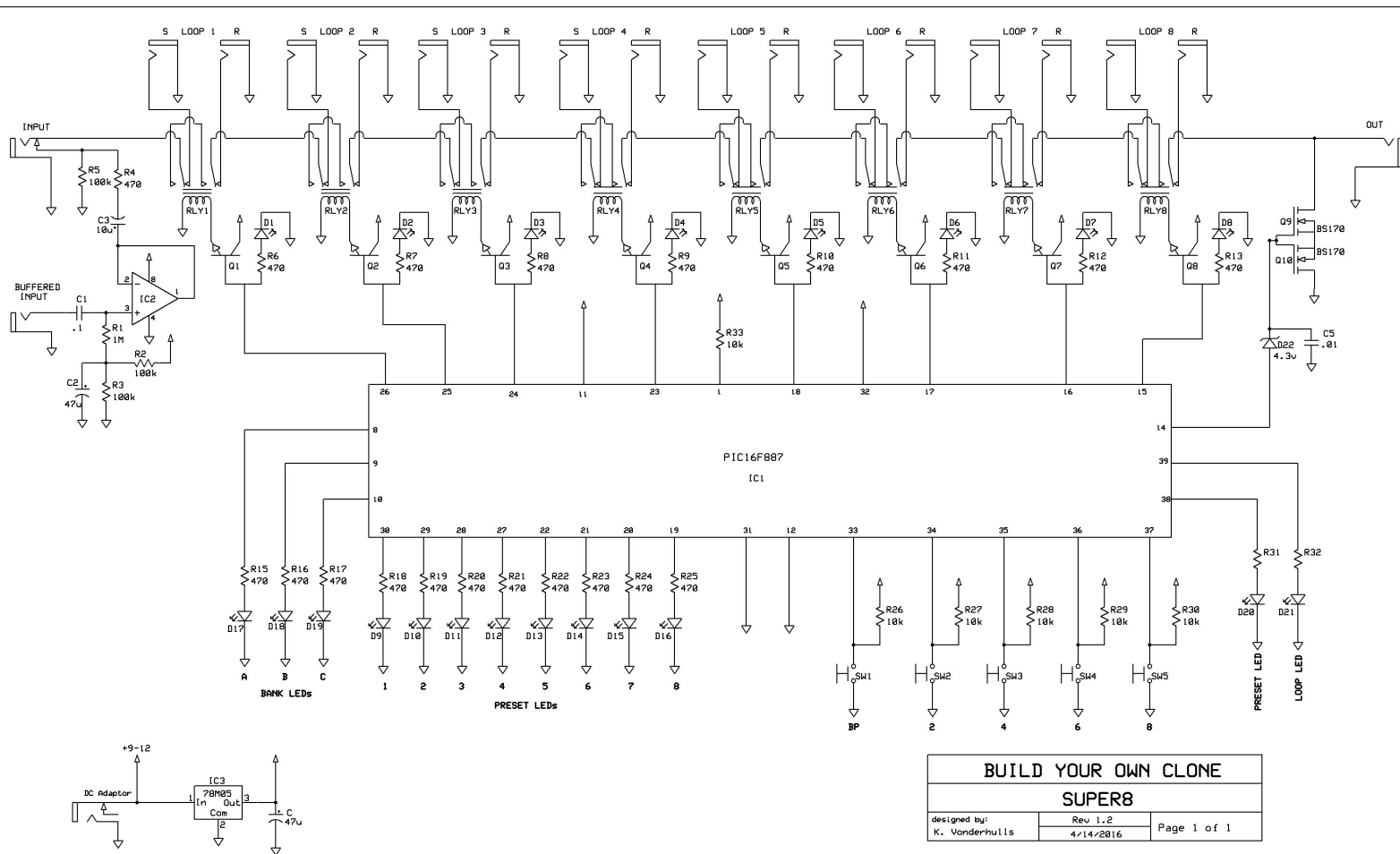
To turn loops 2, 4, 6, and 8 on or off, simply step on and quickly release the corresponding foot switch button. The relays don't actually switch until you release the button, but if you hold the switch in too long, it will save a preset. To turn loops 1, 3, 5, and 7 on or off, you will need to step on and quickly release two footswitch buttons at the same time. For LOOP1, press BP and 2. For LOOP3, press 2 and 4. For LOOP5, press 4 and 6. For LOOP7, press 6 and 8.

How to BYPASS: Simply step on and release the BP footswitch button. This will bypass all loops regardless of what mode you are in. It will also remember what loops you had on last so that if you press the BP button when the super8 is in complete bypass, it will recall your previous settings. It actually has 2 memory banks. It can remember settings for both LOOP MODE and PRESET MODE, so that if you are in LOOP MODE first, press BYPASS, and then go to PRESET MODE, when you come back to LOOP MODE again, you will be in bypass. If you step on BYPASS again, it will turn on all the loops you had on the last time you pressed BP in LOOP MODE. It will do the same if you start out in PRESET MODE. You can also use it as a "short term" or "on the fly" memory bank when in LOOP MODE. This is because BP will recall your last settings at bypass any time you press the BP button when all of the loops are already in bypass. So if you turn off all of the loops individually with their respective foot switch buttons, and then press the BP button, it will recall your last setting the last time you pressed BP despite whatever loops you turned on and off in the meantime.

How to SELECT BANKS: Press the 4, 6, and 8 foot switch buttons at the same time and release. The yellow BANK STATUS LEDs will tell you which bank you are in. It should be obvious which banks are A, B, and C. You are in bank D when both the bank A and C lights are on. When you are in LOOP MODE, the BANK STATUS lights will tell you which bank you are writing to if you save a preset. When you are in PRESET MODE, the BANK STATUS lights tell you which bank you will be reading your presets from.

How to PROGRAM: To program a new preset, you must first be in LOOP MODE. Turn on the loops that you want and bypass the loops that you don't want. Then select the bank you want to program to. Finally, to save a preset, press and hold the foot switch(es) of the corresponding loop number that you want to save the preset under for 3 seconds. When a preset is saved, the green preset LED of the corresponding loop number will begin to blink. You can now release the foot switch. NOTE: You can save a preset while you are in PRESET MODE. This can be useful if you want to save a pre-existing loop to a new address.

How to CALL A PRESET: First you must be in PRESET MODE. Select the BANK where the preset you want is saved. Then press and quickly release the foot switch(es) of the corresponding loop number of the preset that you want.



Please visit
<http://byocelectronics.com/board>
for any technical support

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