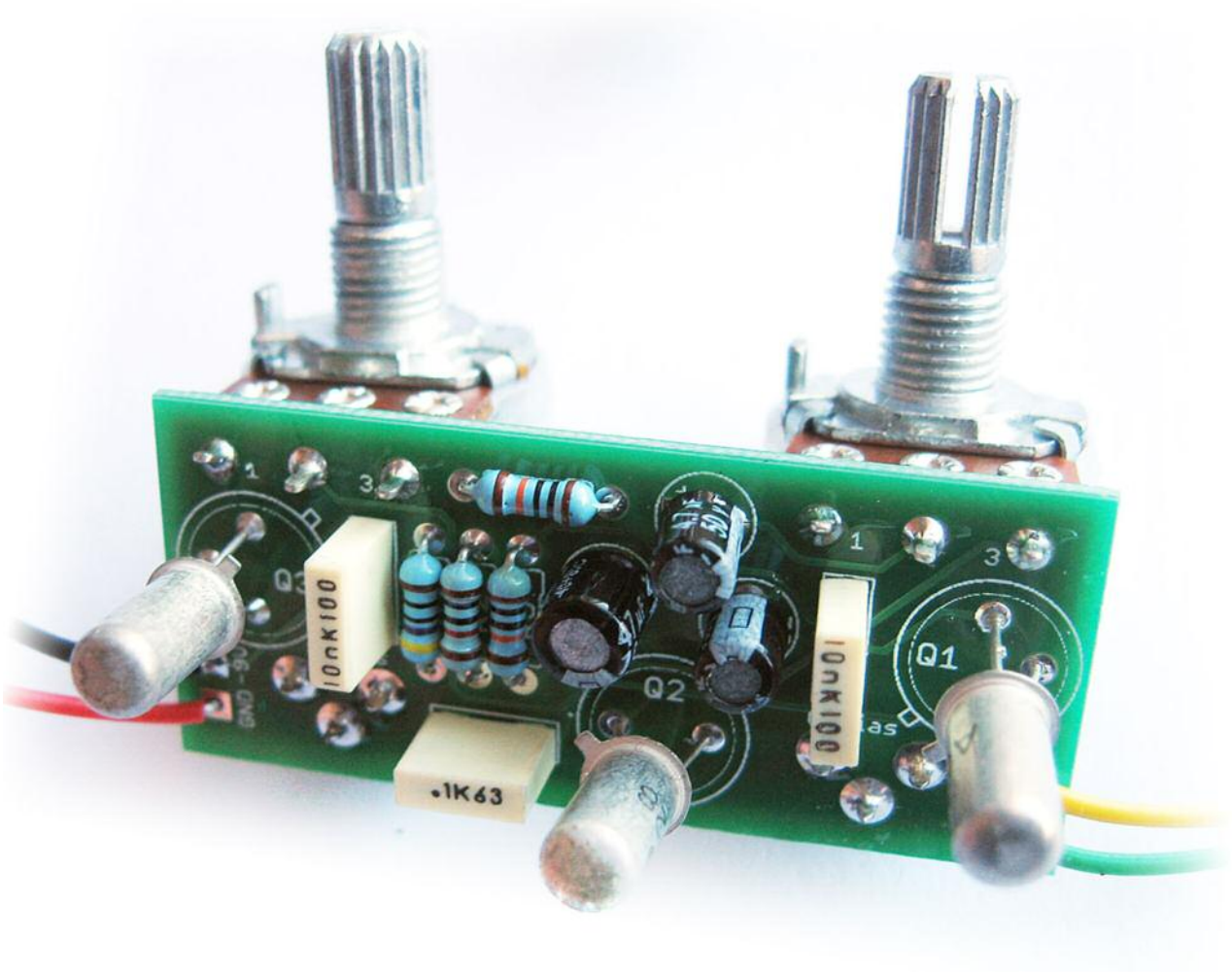

Tone Bender

Smooooth fuzz for y'all.

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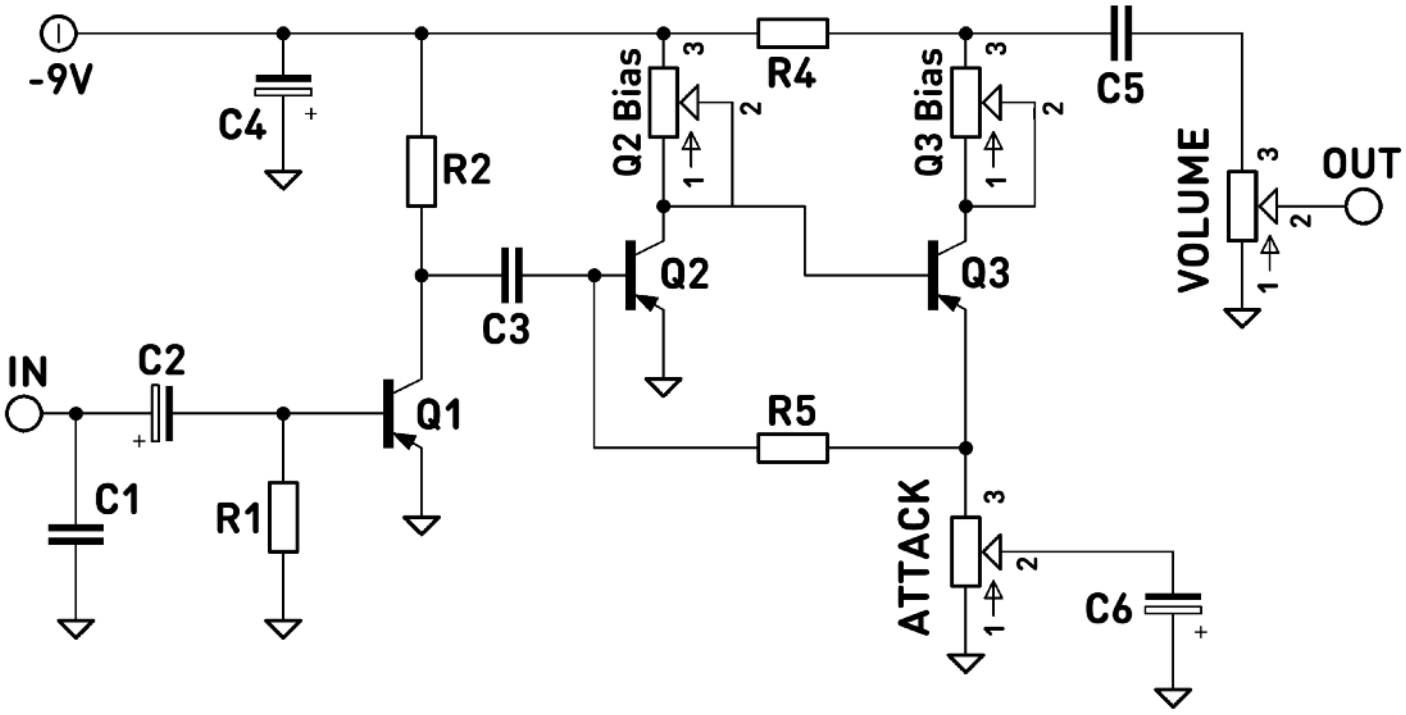
Schematic



BOM

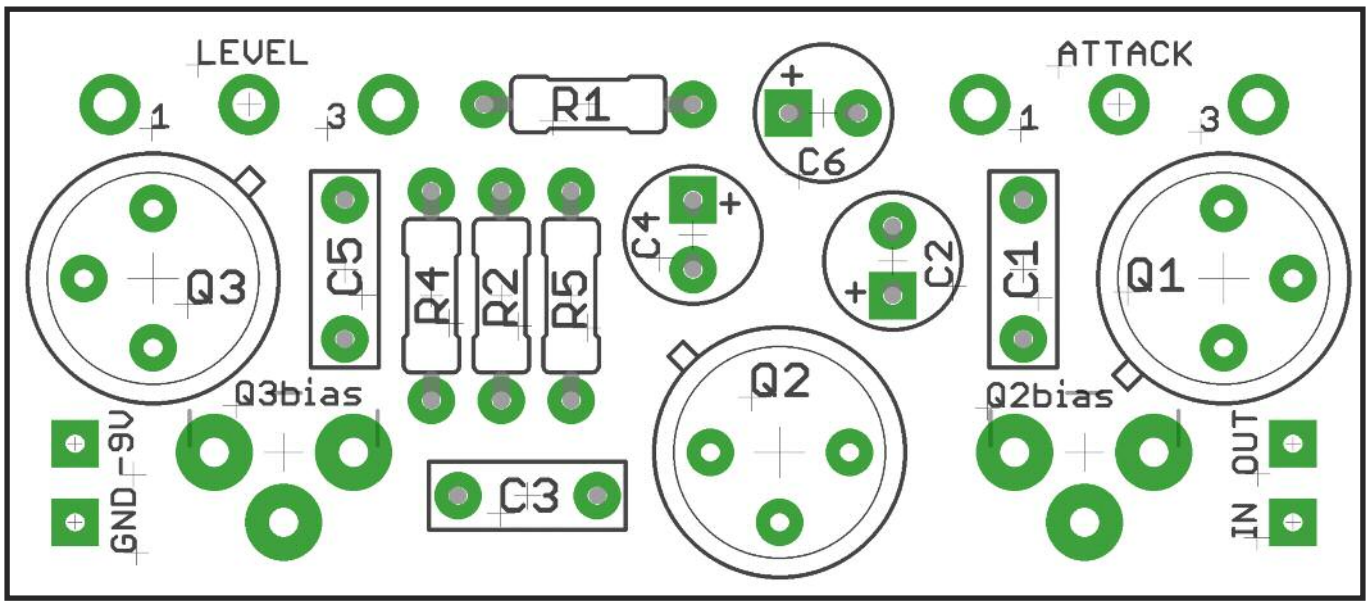
Tonebender Pro MkII
Marshall Superfuzz
Vox Tone Bender MkII

R1	100K / 10K
R2	10K
Q2Bias	100K preset
R4	470R
R5	100K
Q3Bias	10K preset
C1	10n / 15n
C2	4.7u / 10u
C3	100n
C4	47u
C5	10n / 15n
C6	4.7u / 10u
Q1,2,3	So Many Options!!!
ATTACK	1KB
VOL	100KA

The schematic above shows the original PNP - Positive-Ground layout, which is also how the PCB is designed. What does that mean? Well, basically it means it won't play nicely with 'normal' pedals if you try to daisy chain them on the same power supply. Don't do it. The world will implode and we'll all look at you.

It's perfectly simple to make a NPN - Negative-Ground version. Use NPN transistors, flip the orientation/polarity of C2, C4 and C6, then follow the appropriate wiring diagram later in these instructions. The -9V connection becomes +9v.

Q1-3 are supplied as AC128 for PNP versions, AC176 for NPN versions.



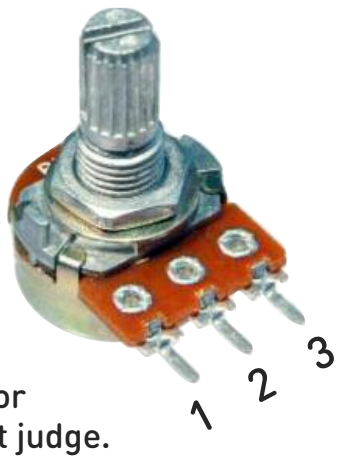
Wiring shown overleaf will disconnect the battery when you remove the jack plug from the input, and also when a DC plug is inserted.

Snap the little metal tag off the pots to mount them flush in the box. Pots mount on the back side of the board, the opposite side to the rest of the components.

You should use some kind of heat sink on the legs of the transistors when soldering (crocodile clip, self-closing tweezers). They aren't keen on heat. Any more than 3-4 seconds of iron and they're toast.

Recommended assembly order:
Resistors, Caps, Transistors, Wires, Pots

As stated on the previous page, this is labelled for PNP builds. Flip the orientation of the polarised caps if making an NPN version.



I recommend adjusting the Q3Bias preset to 8K2 before soldering it in. Give it a small nudge when tuning the circuit by ear if you think it isn't quite right.

Adjust Q2Bias until you hit the sweet spot. Not too fizzy, but not too clean.

There's a lot of debate around the 'correct' voltage measurements for this circuit. Truth is, there isn't a definitite guide. Your ear is the best judge.

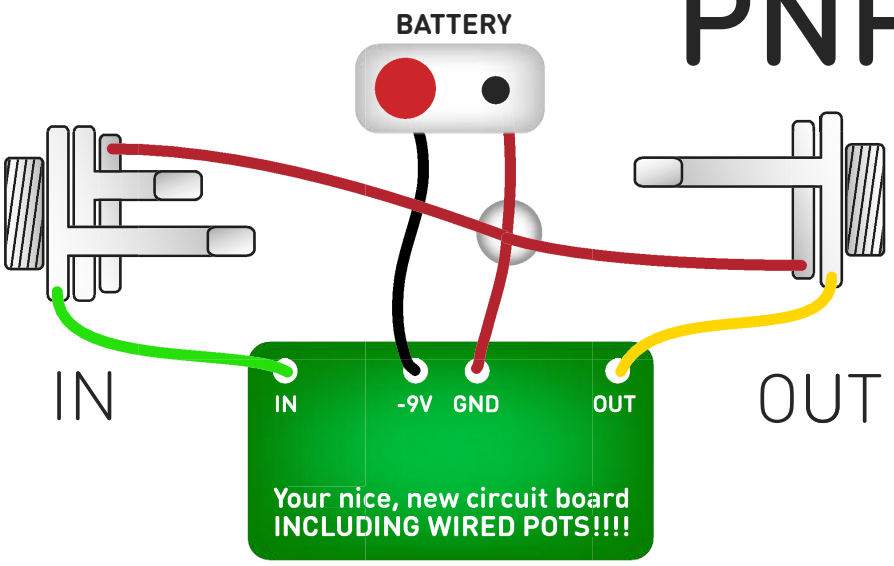
As a rough idea, the Collectors of the transistors should hover around these ranges:

Q1 - 8 - 8.5V
Q2 - 0.75 - 1.5V
Q3 - 4.5 - 8V

(All the above will read as negative voltages on a PNP build).

Test the board!

PNP

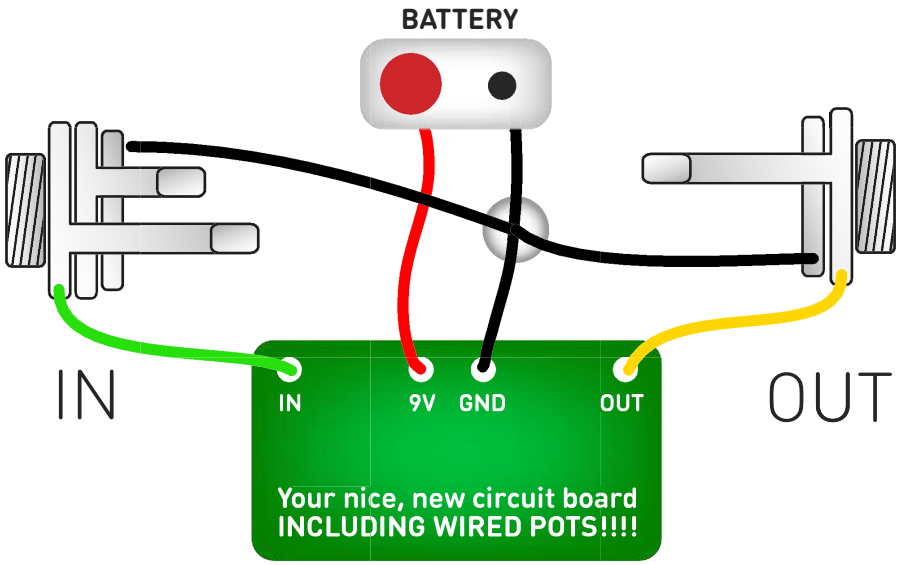


Once you've finished the circuit it makes sense to test is before starting on the switch and LED wiring. It'll cut down troubleshooting time in the long run. If the circuit works at this stage, but it doesn't once you wire up the switch - guess what? You've probably made a mistake with the switch.

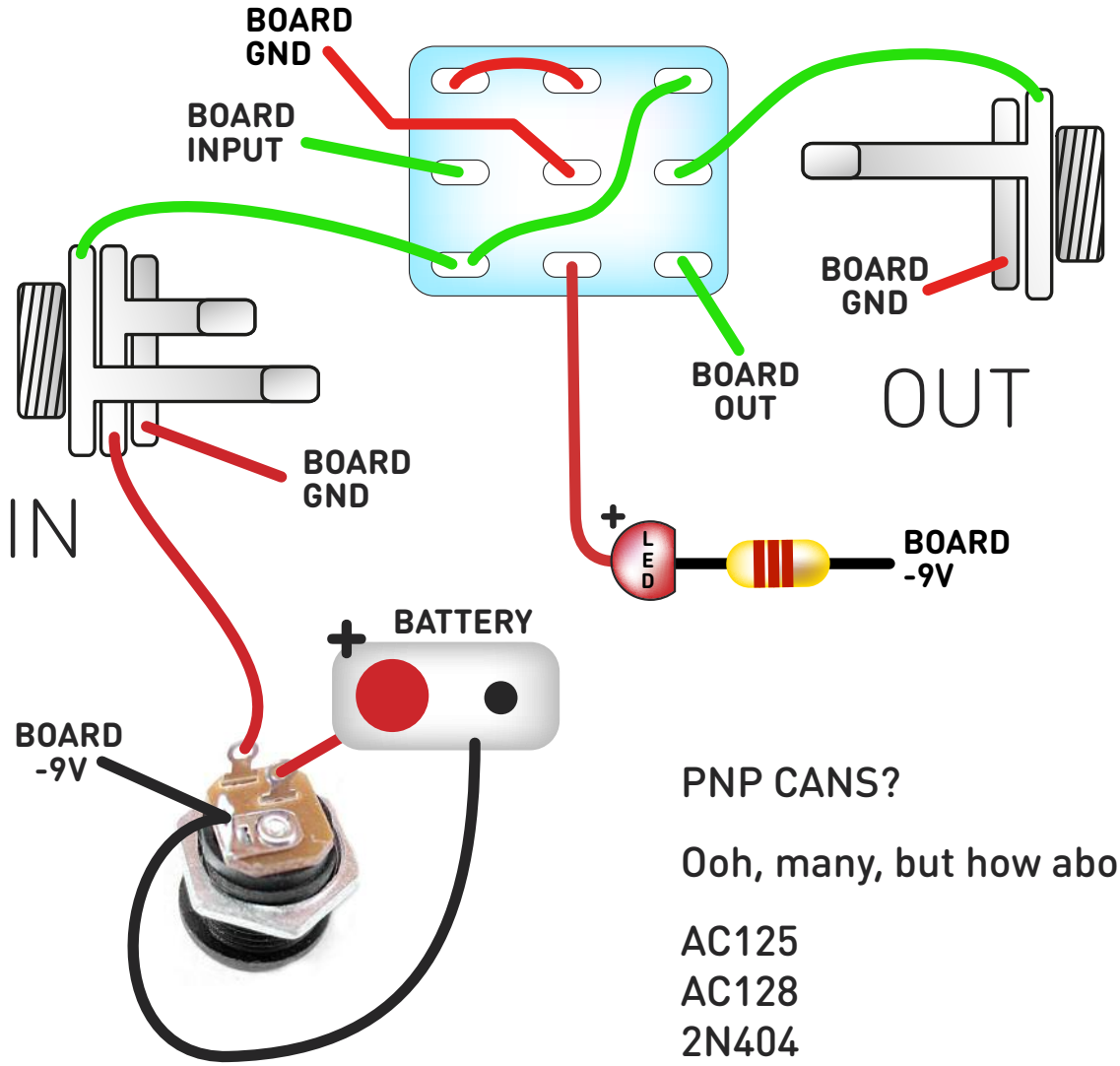
Refer to the appropriate diagram depending on the polarity of your build. Solder some nice, long lengths of wire to the board connections for 9V, GND, IN and OUT. Connect IN and OUT to the jacks as shown. Connect all the GNDs together (twist them up and add a small amount of solder to tack it). Connect the battery + lead to the 9V wire, same method. Plug in. Go!

If it works, crack on and do your switch wiring. If not... aw man. At least you know the problem is with the circuit. Find out why, get it working, THEN worry about the switch etc.

NPN



PNP cans? Follow this.



PNP CANS?

Ooh, many, but how about:

AC125
AC128
2N404

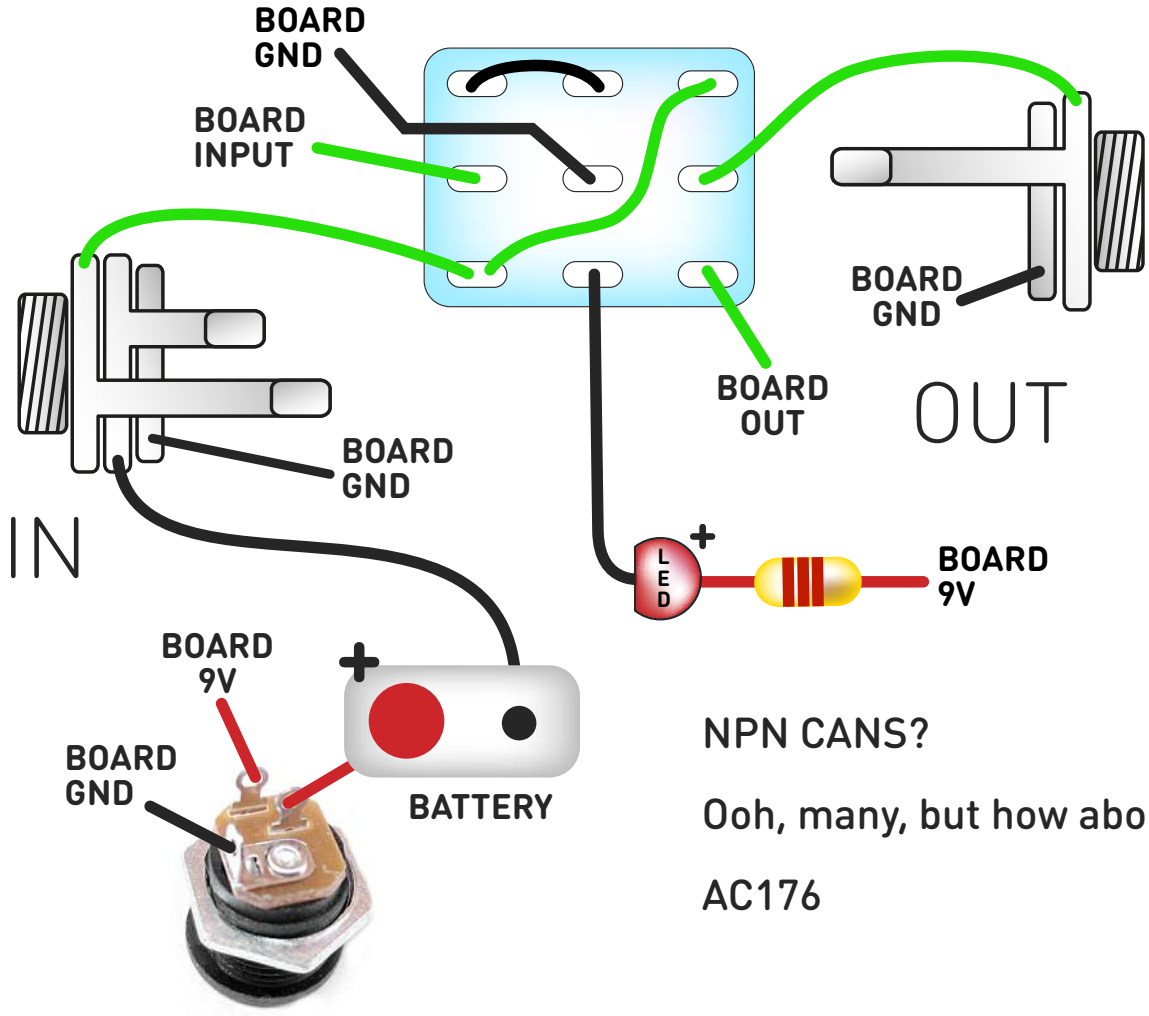
The Board GND connections don't all have to directly attach to the board. You can run a couple of wires from the DC connector, one to the board, another to the IN jack, then daisy chain that over to the OUT jack.

It doesn't matter how they all connect, as long as they do.

This circuit is non-standard, Positive GND. Your power supply should be Tip Negative / Sleeve Positive, but strange things happen when the juice hits the circuit. DO NOT daisy-chain your supply to this pedal with normal, negative ground pedals. Bad things WILL happen.

Now... GO GET FUZZY!

NPN cans? Follow this.



NPN CANS?

Ooh, many, but how about:

AC176

The Board GND connections don't all have to directly attach to the board. You can run a couple of wires from the DC connector, one to the board, another to the IN jack, then daisy chain that over to the OUT jack.

It doesn't matter how they all connect, as long as they do.

The NPN version of this circuit may require an anti-pop resistor. If you get an audible pop when switching the circuit, solder a 1M resistor onto the switch from BOARD INPUT to BOARD GND lugs. (Middle-Left and Middle-Centre)

This circuit is standard, Negative GND. Your power supply should be Tip Negative / Sleeve Positive. That's the same as your standard pedals (Boss etc), and you can safely daisy-chain your supply to this pedal. Now... GO GET FUZZY!

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