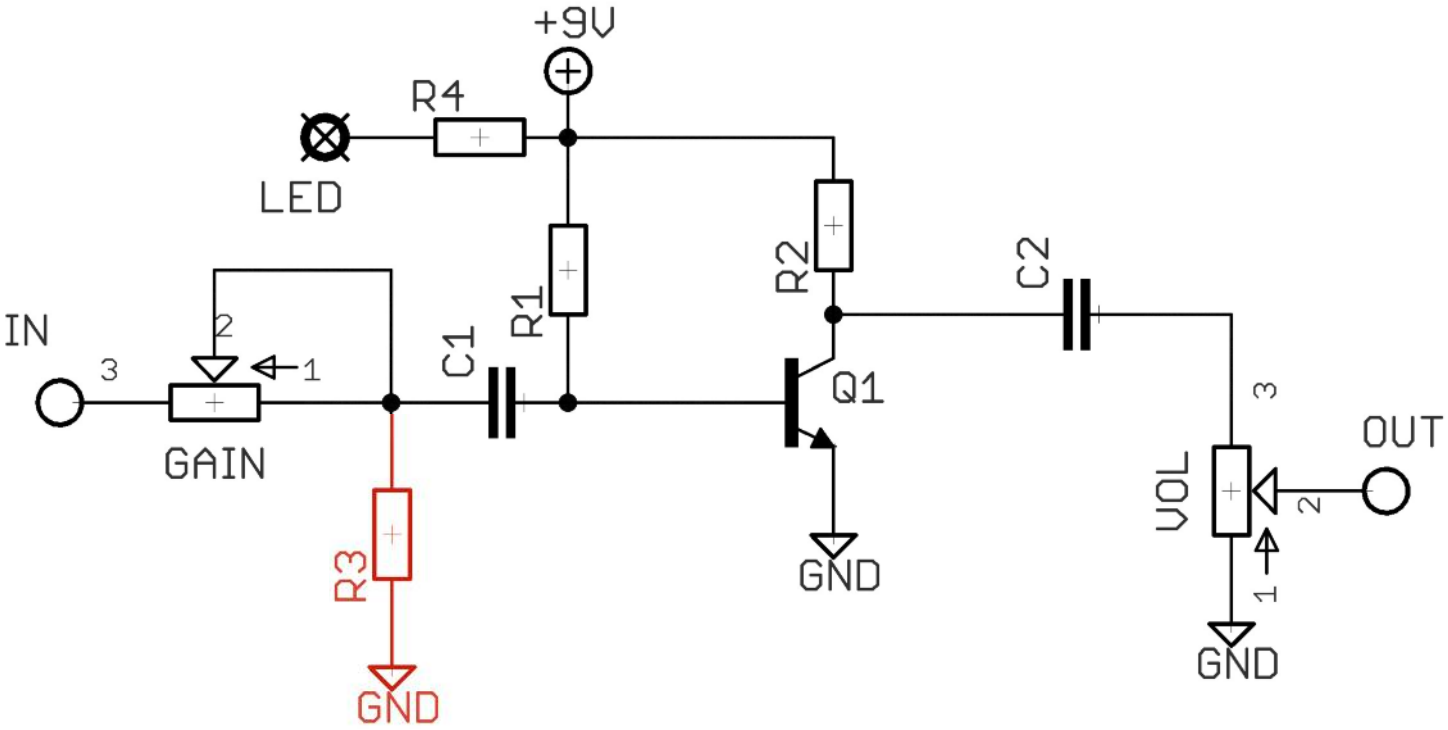
Empathy Driver

Super-simple boost/
low-med gain OD

PedalParts.co.uk

Schematic



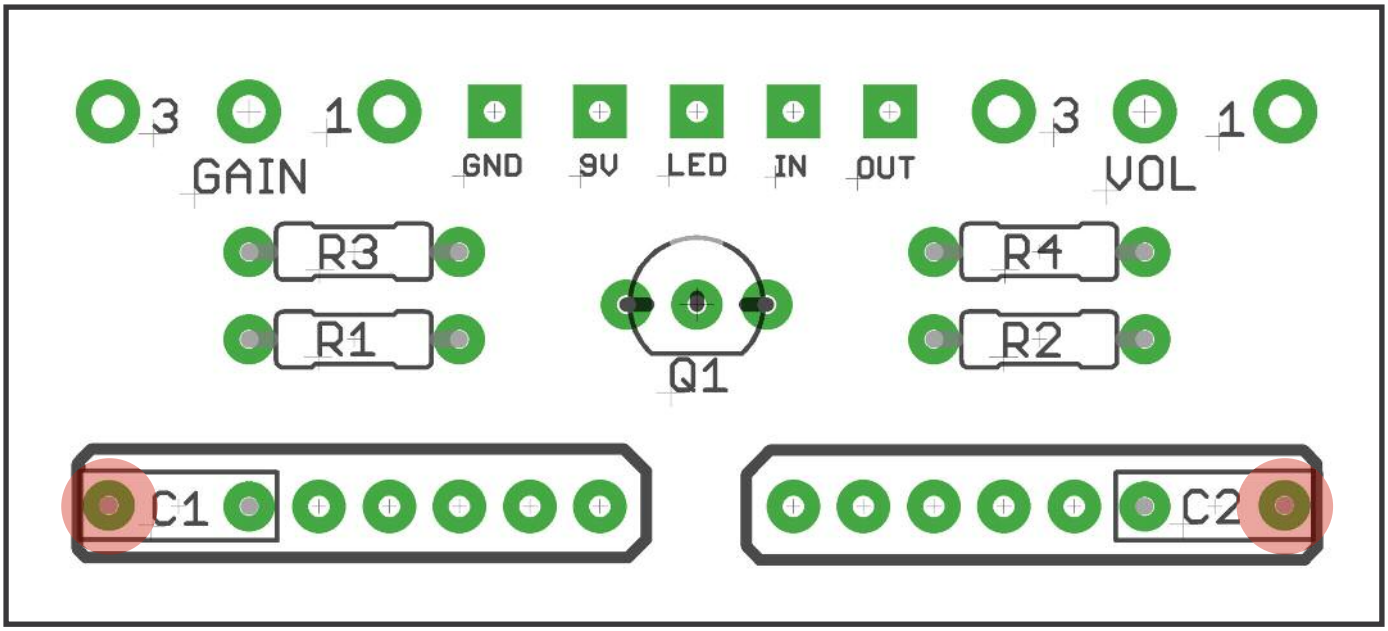
BOM

R1	2M
R2	4K7
R3	1M*
R4	2k2 (CLR)
C1	100n**
C2	100n**
Q1	2N5088
GAIN	250KB
VOL	250KA

It doesn't get much simpler than that!

*R3 is an optional anti-pop resistor - I'd advise putting it in to avoid nasty noise when engaging the circuit.

**The caps could be increased if you want lower frequencies to get through there, or decreased if you want to cut some bass. I'd leave well alone... it sounds great as-is.



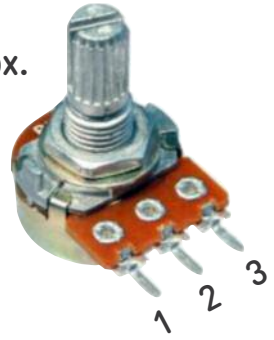
The PCB has extra pads for C1 and C2 to allow different sized caps to be used with ease. As long as one leg of each cap goes into the shaded holes shown above, the other leg can go into any of the other pads belonging to each cap.

If you want to use massive Paper-In-Oil (PIO) caps, you have to be a little creative. You'll need to put one each side of the board and bend the legs. Be careful not to let the bent leg touch any of the pads of the other capacitor, as shown below.

Woah! That's some fat military-grade 250v PIO caps right there! >>>

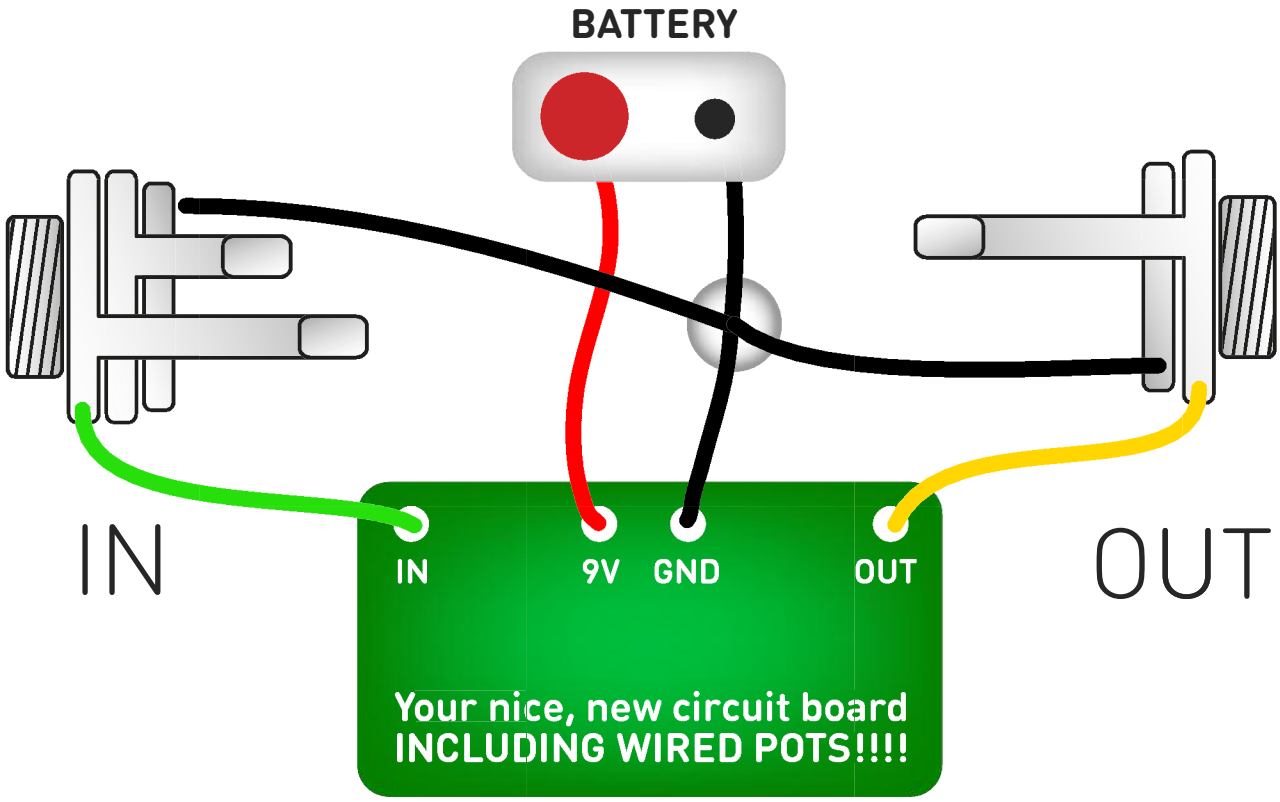
Wiring shown overleaf will disconnect the battery when you remove the jack plug from the input, and also when a DC plug is inserted.

Snap the little metal tag off the pots to mount them flush in the box.



You should use some kind of heat sink on the legs of the transistor when soldering. They aren't keen on heat. Any more than 3-4 seconds of iron and they're toast.

Test the board!

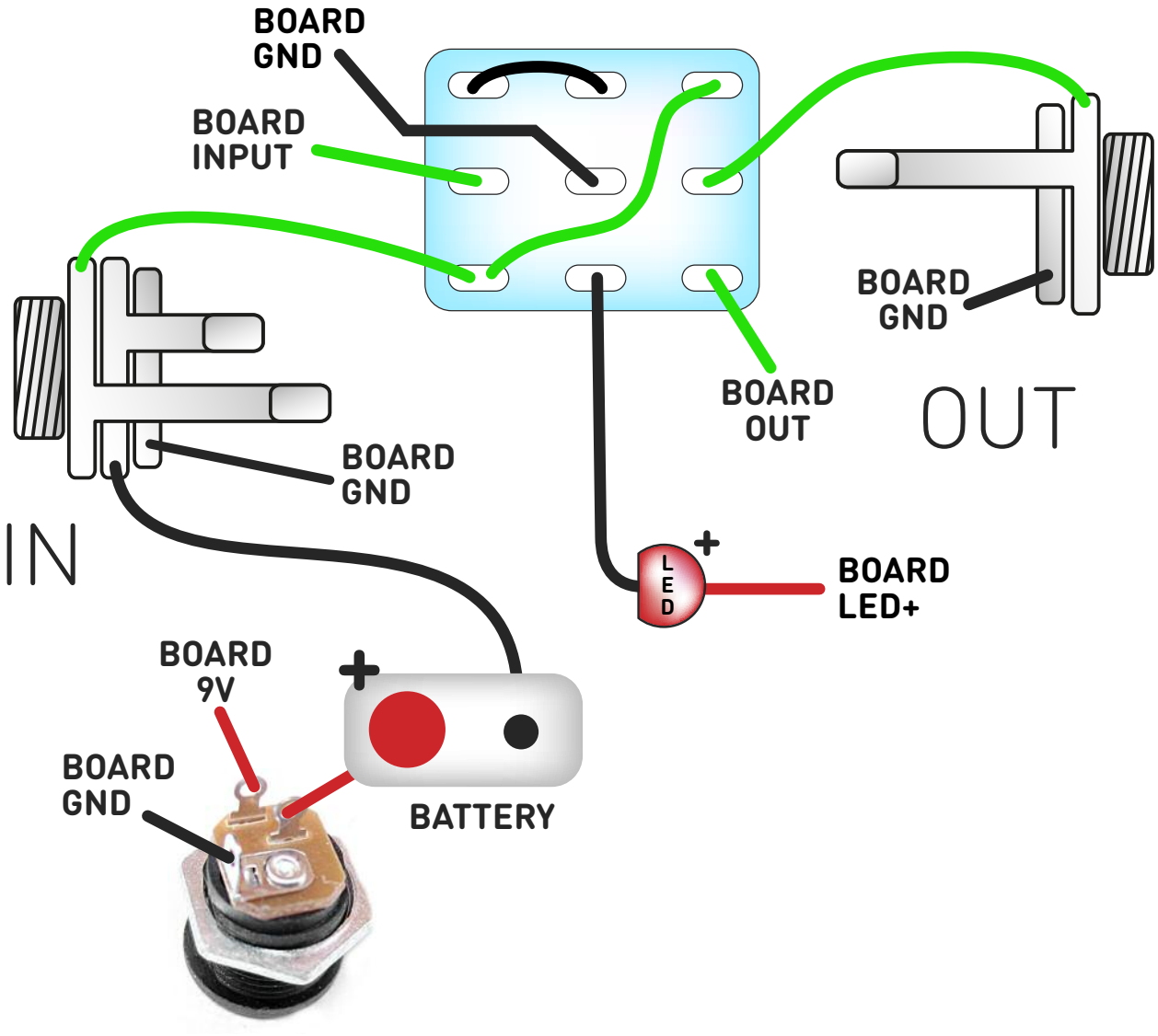


Once you've finished the circuit it makes sense to test is before starting on the switch and LED wiring. It'll cut down troubleshooting time in the long run. If the circuit works at this stage, but it doesn't once you wire up the switch - guess what? You've probably made a mistake with the switch.

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.

Wire it up



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 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.

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