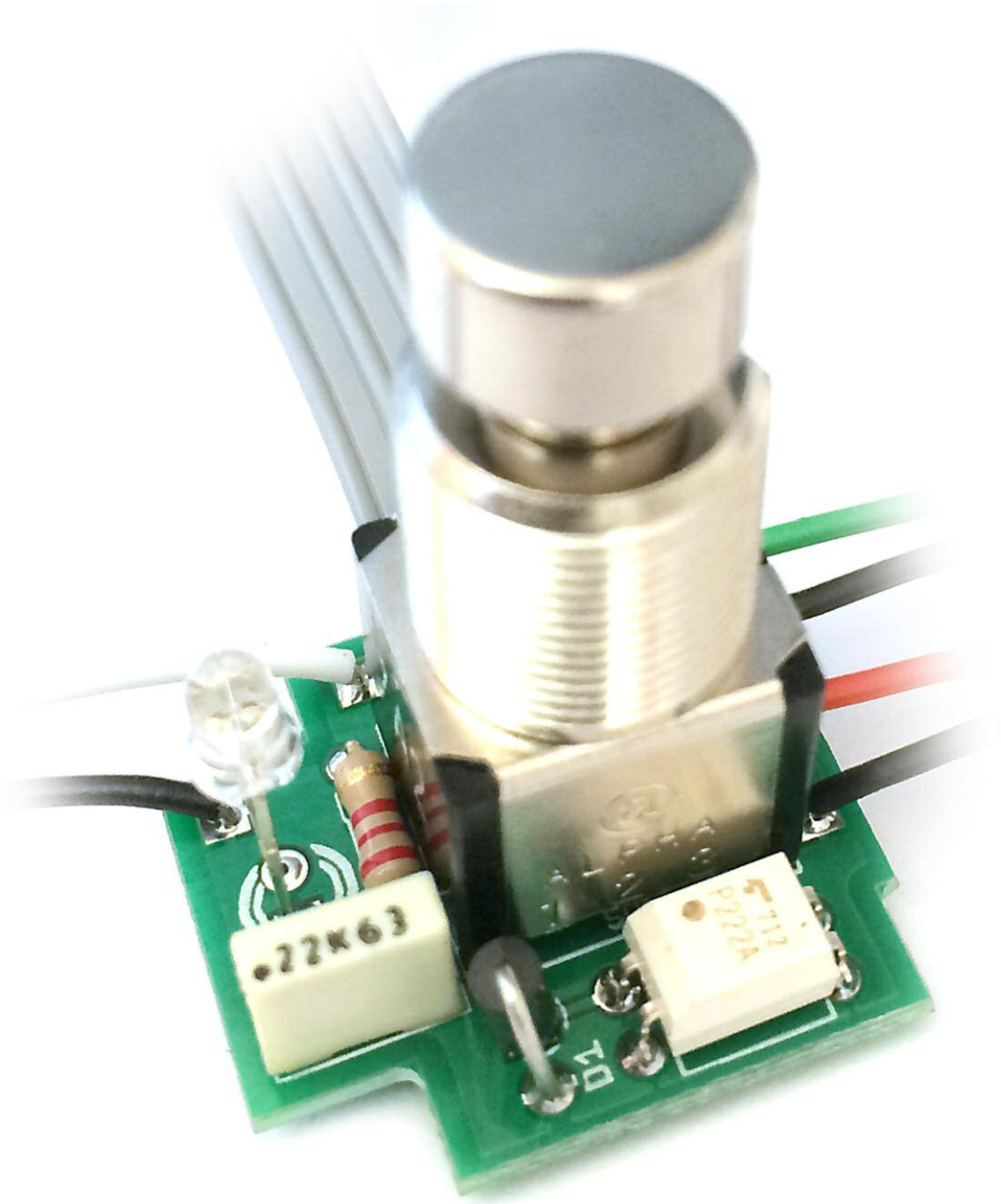


OptoPuss Optical Bypass

Less clunk on your funk

First things first..

DO NOT SOLDER YOUR 2K2 CURRENT LIMITING RESISTOR TO THE MAIN PCB OF THE PROJECT.

It must be soldered to the OptoPuss daughterboard or the bypass system simply won't work.

Second things first...

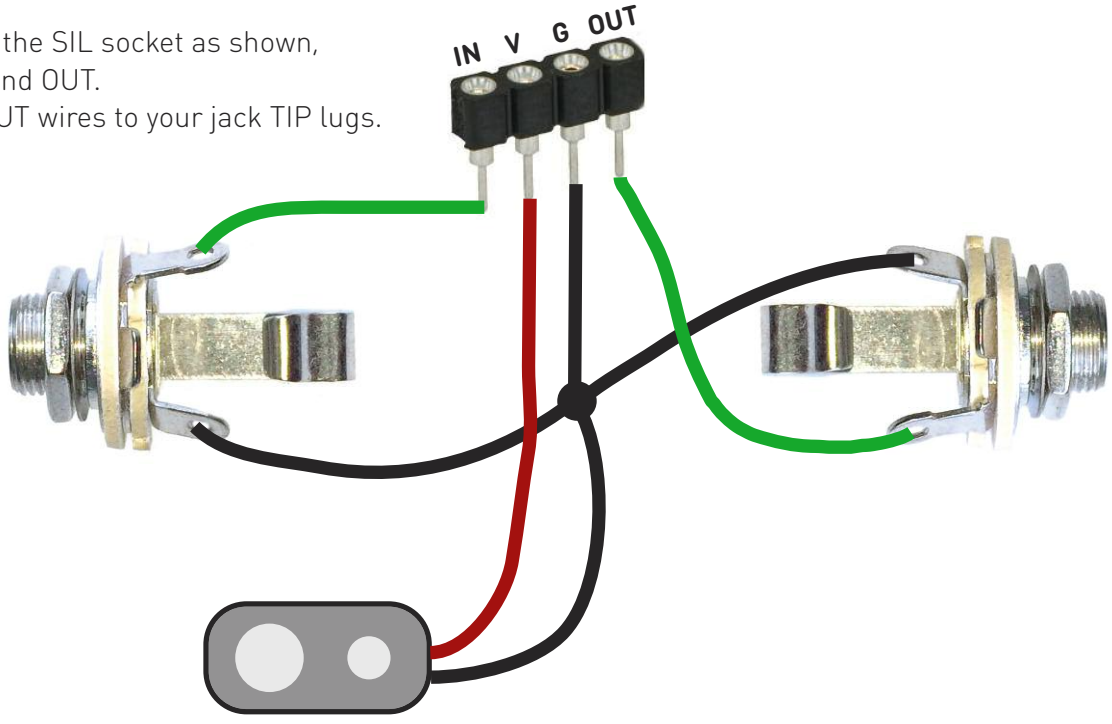
Using daughterboards for the switch wiring simplifies things, and if used with a Direct Connect compatible main circuit board and ribbon connector you'll be hard pressed to find a neater finish.

However.... that gives us a small problem when it comes to testing the main circuit board. We don't want to solder wires onto that, which will then have to be desoldered so we can then use the ribbon cable. Nor do we want to solder in the ribbon cable, then attach wires to the ends of that, which then have to be removed, etc etc.

So, here's a solution. You could set this up as a permanent wired test rig, or just keep the 4-way connector and wires together, desoldering the jacks and battery as you use them. Of course the best thing to do if you're building a lot is to have one of our test rigs, but that's up to you.

You'll need a 4-way SIL connecter (we sell them, how about that?) and some wire.

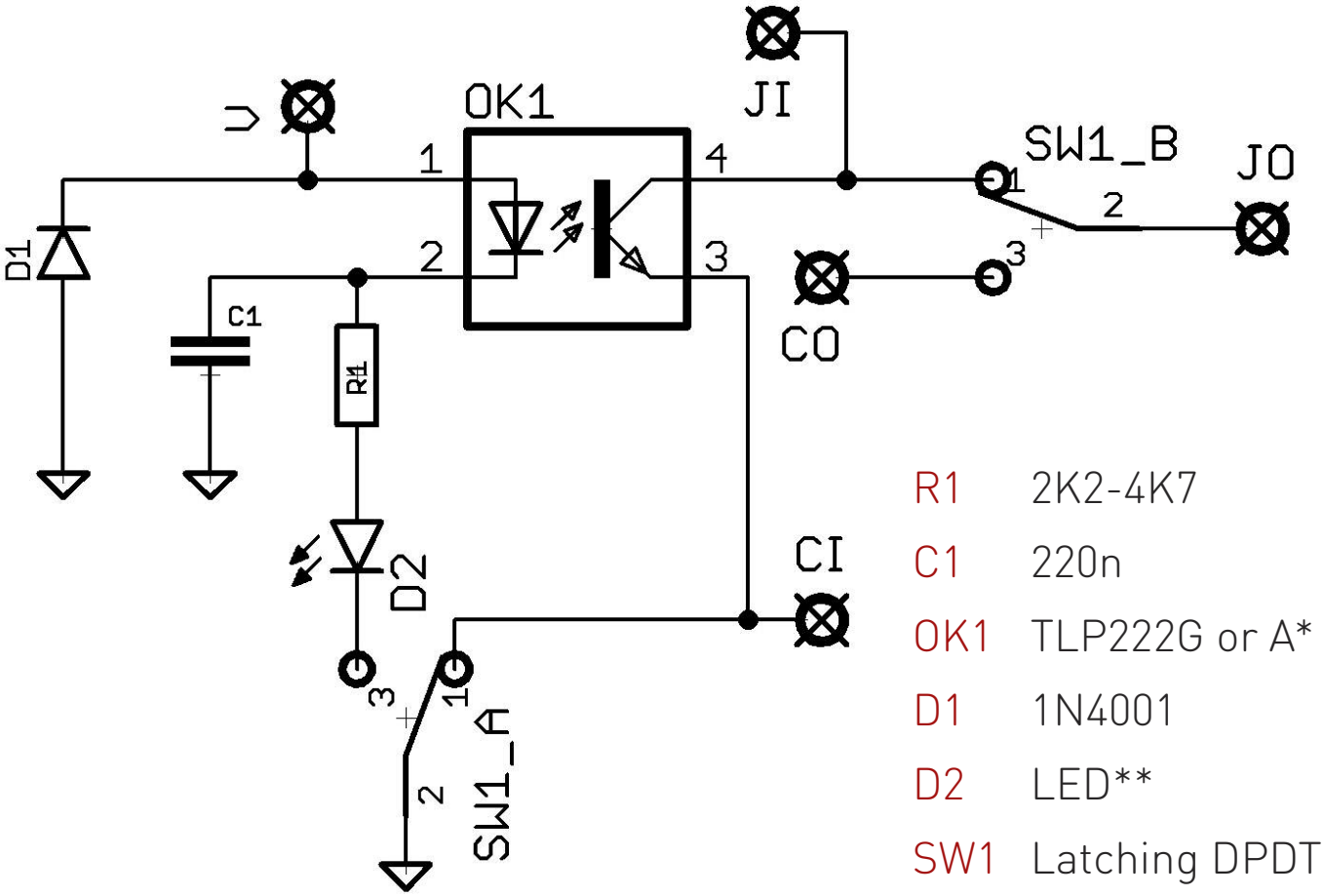
Connect four wires to the SIL socket as shown,
one each for IN, V, G and OUT.
Connect the IN and OUT wires to your jack TIP lugs.



Now for your power. ALL the ground connections have to join together. Twist together a bare end of all the GND wires - one from the SIL socket, one from each jack, and your battery negative lead. Solder that clump all together. Connect your battery positive lead to the V lead from the socket. You now have a Direct Connect tester.

You can now safely connect your ribbon cable to your main circuit board (see the following pages), and test your circuit by plugging the free end of the ribbon into the SIL socket. Make sure you get it the right way around. You don't want to reverse the power connections!

Schematic + BOM



R1	2K2-4K7
C1	220n
OK1	TLP222G or A*
D1	1N4001
D2	LED**
SW1	Latching DPDT

How does it work?

When bypassed there's no power going to the internal LED of the Optocoupler (pins 1+2). This keeps the connections between pins 3+4 (the FET) open. This means the input of the connected circuit (CI - Circuit In) is connected to ground and your signal goes from JI (Jack In) straight to JO (Jack Out).

When the switch is latched you're connecting pins 1+2 from V to GND via C1, R1 and the LED. This current flow lights the optocoupler's internal LED, causing a drop in resistance between pins 3+4 to almost nothing. Now JI is connected to CI, and CO is connected to JO - your signal goes from Jack In > Circuit In > Circuit Out > Jack Out and all is well.

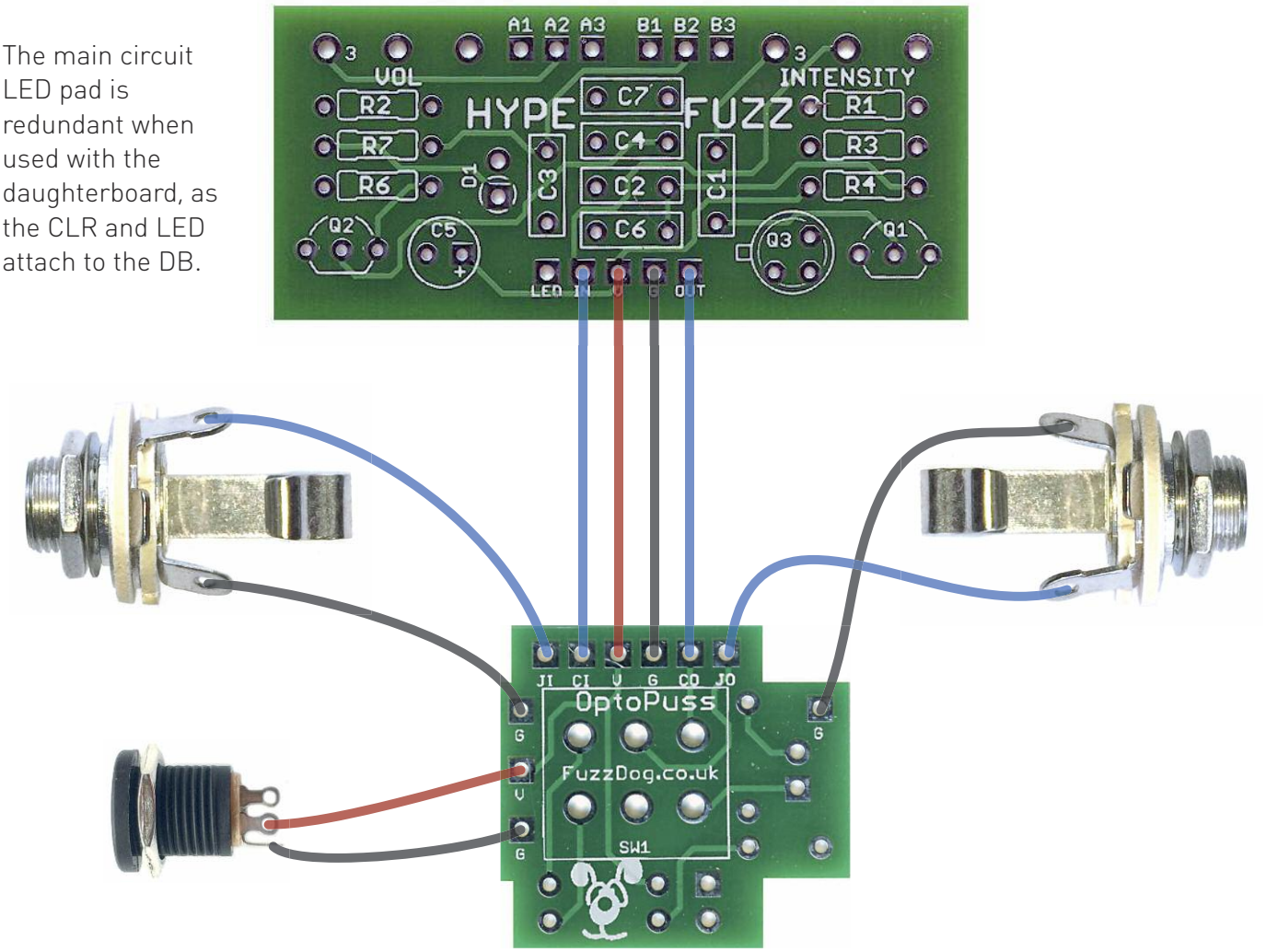
You can run this system with 9-18V, but you'll need to have R1 on the higher side at 18V to avoid burning out the internal LED on the optocoupler.

***Note orientation of OK1 on cover image. Dot indicates pin 1.**

****Cathode (short leg) of LED goes into square pad. Same for D1 (striped end).**

The board has been designed for Alpha brand footswitches. Others may fit.

The main circuit LED pad is redundant when used with the daughterboard, as the CLR and LED attach to the DB.



The daughterboards (DB) are wired for true-bypass and will ground the circuit input when bypassed.

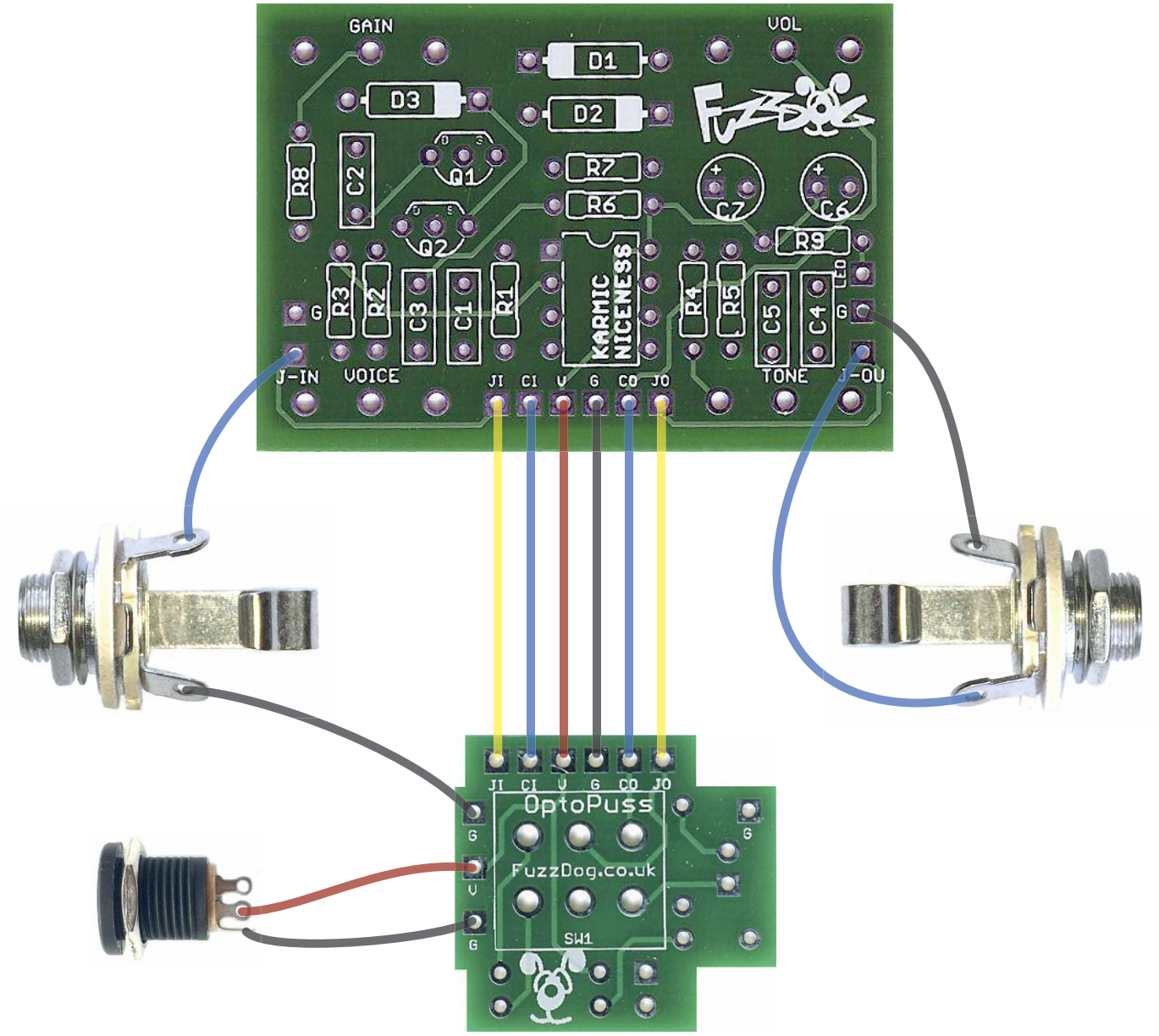
They can be used with any circuit, but will be neatest when paired with a FuzzDog PCB which has the pads in the matching configuration, enabling perfectly straight wire runs, or even 2.5mm pitch ribbon cable.

It's easiest to fit your footswitch in the enclosure and tighten it up before doing the rest of the wiring. See notes later in the document about switch hardware.

If the main circuit board has a space for a Current Limiting Resistor and an LED+ pad, ignore these and use the ones on the daughterboard instead. The LED should be fitted upright on the underside of the PCB (same side the footswitch will mount).

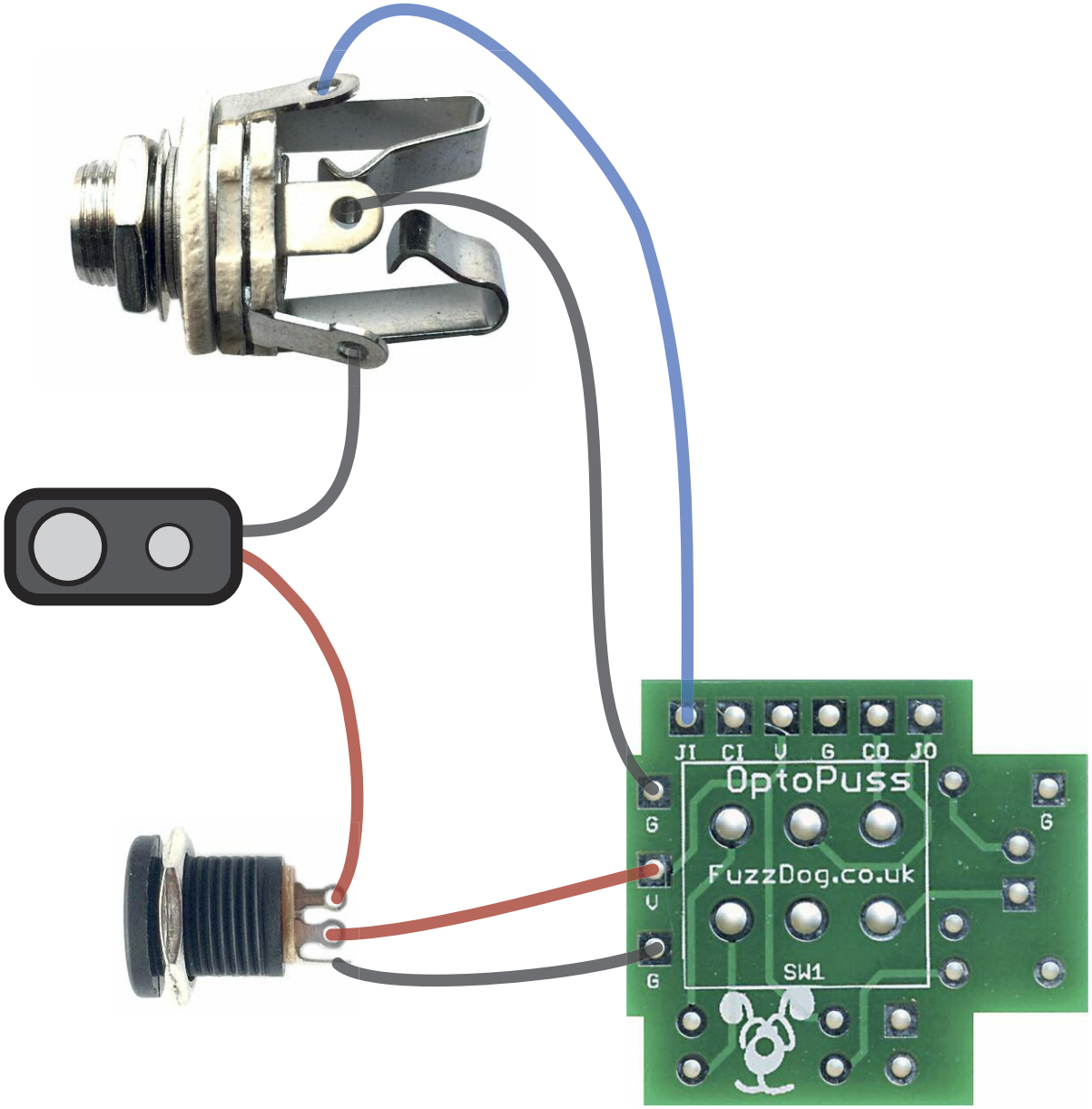
To mount the LED flush in the box without a bezel, push the legs through the board (from the bottom side) and hold while you place the board on the footswitch. The cathode (shorter) leg should go in the square pad. Now push your LED down into the hole in the enclosure. It doesn't matter if it doesn't line up exactly - just manoeuvre it into place. Once its there, get to work soldering the footswitch lugs. Once that's done, check the LED is still sitting correctly and solder it in. That ain't moving!

NOTE: If you have one of these mini DC sockets with only two pins, >>> the short one is the tip, so normally the GND connection.



In the case above the Enlightned MkII PCB has six corresponding pads with the daughterboard, including Jack In and Jack Out. It can be connected with 6 wires or ribbon cable. You then have the choice of taking the Jack GND connections from either board which can make your wiring shorter and neater.

It could still be wired as on the previous page, using only four connections between the boards and taking the Jack connections from the daughterboard.



BATTERY

There's no provision for adding a battery on the DB. Simply wire it as shown, connecting to the RING lug of a stereo jack, and the switched + lug of the DC socket.

Mounting the footswitch

This needs to be done correctly as it's very easy to pull the switch mechanism out of the body if hardware is placed incorrectly.

From top to bottom to top the order of the hardware is:

NUT

FLAT SHIM WASHER

(ENCLOSURE SURFACE)

SPLIT LOCK WASHER

NUT

Keep the bottom nut a turn or two above the switch body. This way when you're tightening the switch all the stress is kept on the same part of the switch - the threaded metal section - and away from the joint between that and the plastic body.

So... top nut and shim washer are on the outside of your enclosure, split washer and bottom nut on the inside.

Lovely.

FuzzDog.co.uk