School me on reverse polarity protection

by **Pepe** » 03 Jan 2015, 22:10

At the moment I have a new nicely painted enclosure for my kinda shabby looking Toyroom fx fuzz prototype that I got in a pedal exchange from natthu a while ago. I don't know if this fuzz likes wrong polarity. I normally don't make mistakes when using power supplies, but you never know when you're going to make that one silly mistake that fries your precious pedal. This fella works with a typical center negative power supply and a true bypass switching. What's the easiest way to build in an additional reverse polarity protection? Can I simply solder a 1N4001 (or a 1N4004 which is the only type I have at home at the moment) to the positive side of the DC input jack or does that not do the trick?

Pepe

Re: School me on reverse polarity protection

by **Laurie** » 04 Jan 2015, 04:11

Use a 12v zener rather than a 1n400x. The 1n400x fails open circuit leaving the problem voltage connected to the pedal. A 12v zener will typically fail short possibly killing the power supply but protecting the pedal. I would use a 1N4742

Laurie

Re: School me on reverse polarity protection

by **Guga Ramone** » 04 Jan 2015, 04:12

Conect the cathode to the positive and the anode to ground. Took the schematic of the MT-2 as an example. Just take a look to D006 and do the same with your pedal.

http://www.hobby-hour.com/electronics/s ... ematic.gif

AFAIK, it's just this.

Edit: Laurie, does that C041 on the MT-2 schematic has something to do with that? To avoid this voltage inside the pedal in case of reverse polarity?

Guga Ramone

Re: School me on reverse polarity protection

by **Laurie** » 04 Jan 2015, 04:18

C041 is the smoothing capacitor. D006 is the reverse voltage diode.

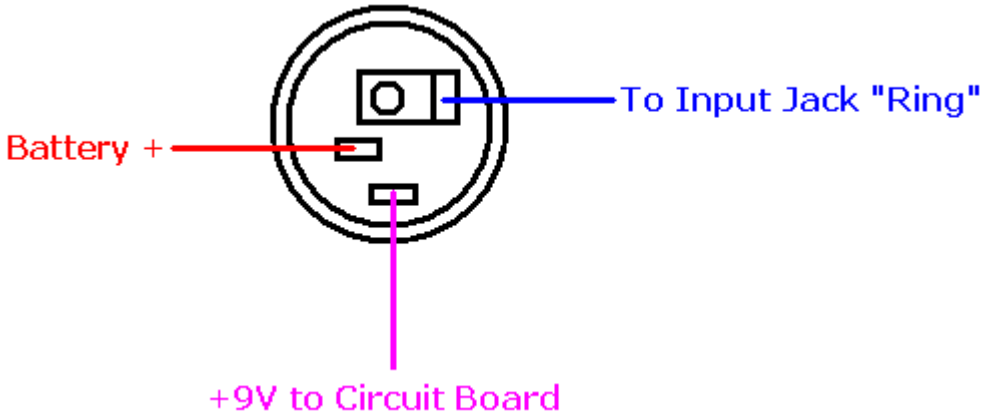
Laurie

Re: School me on reverse polarity protection

by **Pepe** » 04 Jan 2015, 18:51

So a 12V zener diode it will be!

If I understand you correctly I simply put it between the two connections of the DC input jack labelled *+9V to Circuit Board* and *To Input Jack "Ring"*? The pedal will not be powered by a battery.



Pepe

Re: School me on reverse polarity protection

by **Laurie** » 04 Jan 2015, 19:42

From +9v to ground. Put the end with the band to the +9v.

Laurie

Re: School me on reverse polarity protection

by **Pepe** » 04 Jan 2015, 20:25

Ah, sorry, I mixed up the "Ring" of the jack with the ground. So a connection to the ground of the jack is okay, right?

Pepe

Re: School me on reverse polarity protection

by **Laurie** » 04 Jan 2015, 20:44

Depends. Where does it connect to in the pedal?

Laurie

Re: School me on reverse polarity protection

by **Pepe** » 04 Jan 2015, 23:24

I just opened the pedal to check that. It leads to the ring of the input jack. Okay, then I know what to do when the parts arrive. Thanks a lot for helping an electro-noob once again!

Pepe

Re: School me on reverse polarity protection

by **Pepe** » 10 Jan 2015, 02:26

Today I received my ordered parts and I used the zener diode as suggested. Works like a charm! I tried it with reversed polarity using a battery and no harm was done to the circuit. Thanks, my friends!

Tim Green from Toyroom FX sent the enclosure with a few parts, including a bright blue LED. When I fooled around with an electronics experiments kit in my youth I was used to take a 470 Ohm resistor when powering a common red (green, yellow) LED. I opened up the Toyroom FX 8-bit (that also has such a blue LED) to check which resistor has been used there. It's a 2k Ohm resistor so I took a resistor of a similar value (2.4k) to go sure that nothing bad will happen. And it works great. Is it usual that these LEDs need 2k Ohm? In an online instruction how to install a 3PDT switch in a pedal they recommend 1k Ohm.

That's how my Toyroom FX fuzz prototype looked a few days ago:

And that's how it looks now:

The paint is very sturdy by the way. Really well done by Tim.

Pepe

Re: School me on reverse polarity protection

by **Guga Ramone** » 10 Jan 2015, 03:58

Blues LED's are very bright. The 2k ohm resistor lowers the voltage going to the LED, so it doesn't get too bright.

Guga Ramone

Re: School me on reverse polarity protection

by **Laurie** » 10 Jan 2015, 04:07

Errr... strictly, the resistor lowers the current. The LED is a constant voltage device.

Nice job!

Laurie

Re: School me on reverse polarity protection

by **Guga Ramone** » 10 Jan 2015, 04:16

That's what I meant to say! hehehe
Thanks Laurie!

Guga Ramone

Re: School me on reverse polarity protection

by **Pepe** » 10 Jan 2015, 09:50

> *Laurie wrote:*
> *Nice job!*

Thank you!

Pepe

Re: School me on reverse polarity protection

by **Dirk** » 10 Jan 2015, 10:19

Great to see the result Pepe.
I know that enclosure looks even better in person.

so we need video proof for sounds.

Dirk

Re: School me on reverse polarity protection

by **Pepe** » 10 Jan 2015, 19:30

Maybe I can do a video of it. It has really cool synth-like sounds in store.

Pepe

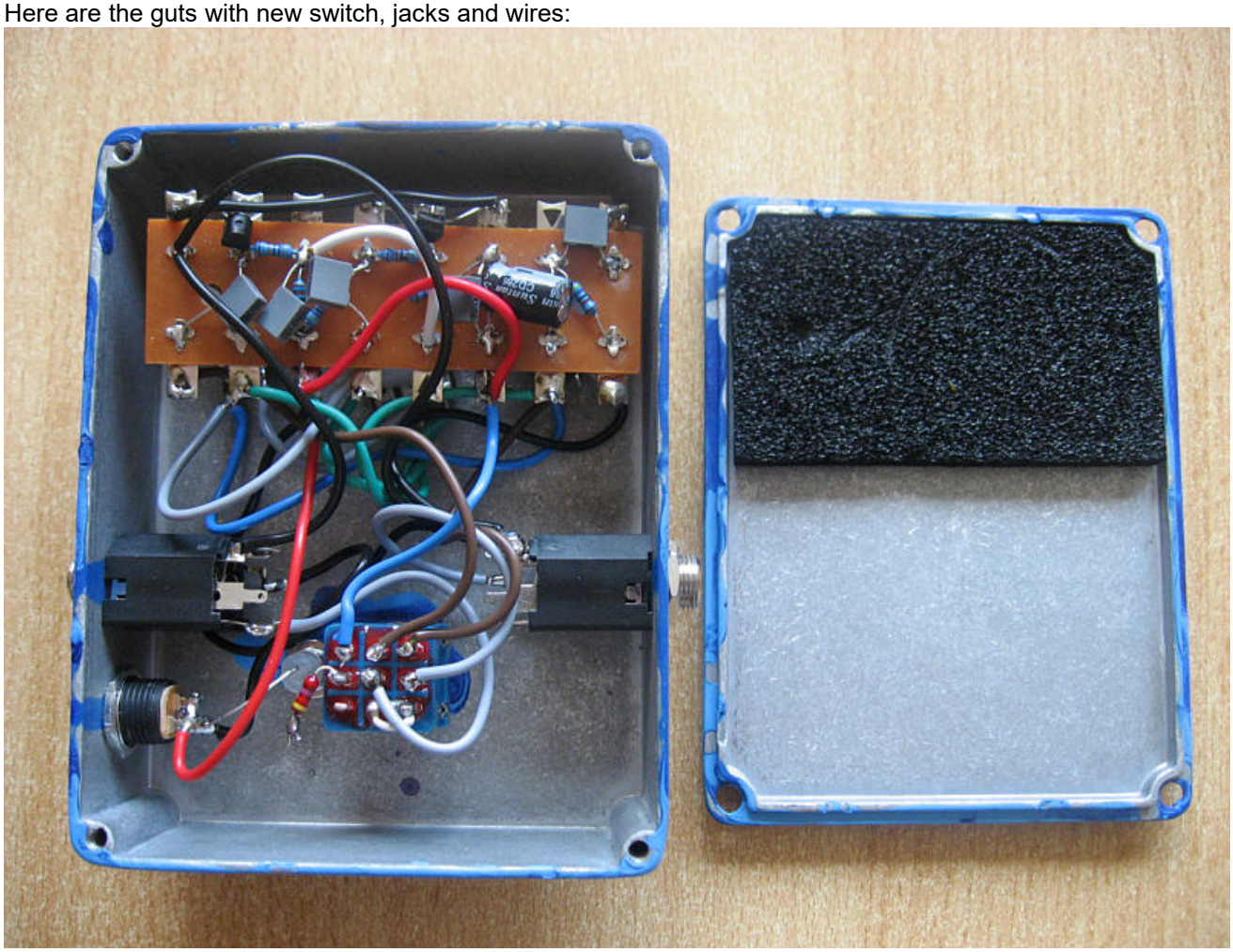
Re: School me on reverse polarity protection / pedal rehousi

by **Pepe** » 14 Jan 2015, 11:09

> *Dirk wrote:*
> *I know that enclosure looks even better in person.*

This is another snapshot made by daylight:

Here are the guts with new switch, jacks and wires:



The protecting foam is from an electrostatic shielding box.

Pepe