RE: LOAD 2

One thing I was missing on my table was an adjustable constant-current load. I occasionally repair small power supplies and having a robust load to test them is quite handy. I have a drawer full of high-power ceramic resistors, but those are clumsy to handle, especially when they get too hot to touch.

For a while I've been planning to make one myself. I have a finished schematic hanging on the wall for a battery powered device using a micro-power op-amp and an old passive heat sink salvaged from an old Radeon. I just never came around to finish a PCB layout for it. Then I came across the Re:load 2. It looked better than what I was making, so I filed away my design and ordered one instead. It's nice being a shopper on Tindie instead of a seller for once.

The build instructions were quite clear and there's not much assembly required anyway. I ordered the version with the highest power (6 A and 20 W) and I got the PCB pre-assembled with SMD components. The Arachnid Labs shop points to an instruction manual that describes soldering through-hole components, which was not necessary in my case.

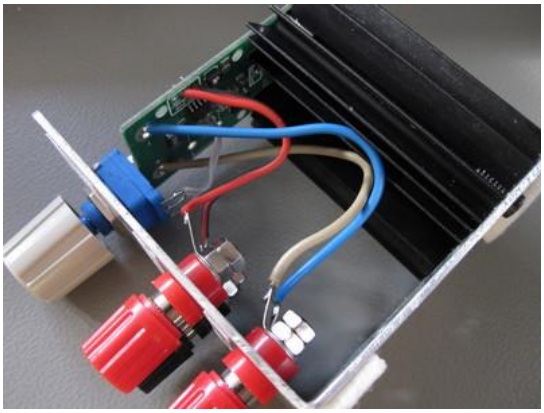
Re:load comes without an enclosure and the bare circuit seemed a bit awkward to use, with the tiny pot and current sense wires close to the big load terminals.

I wanted it to stand on its own on my table, so I fashioned a simple stand from a scrap piece of aluminum I found in my father's workshop.

I connected the load and the current sense wires to terminals on the front panel. I also found a matching 10 kΩ potentiometer with a knob for setting the current.

Eventually I want to also add a connector for external power supply and a switch instead of the solder jumper that's on the PCB. I didn't have one at hand when I was first assembling it though so it's missing here.

Mounting the enclosure directly to the heat sink makes sense from the mechanical point of view, but it also means the whole thing gets uncomfortably hot under load. Unfortunately that was the only obvious solution. The four 3 mm mounting holes on the Re:load's PCB turned out to be useless for actually mounting the thing. SMD components are too close to the holes to accommodate a spacer or a M3 nut.



As far as I have tested it, Re:load 2 seems to work as advertised. I haven't noticed any drift in current I could notice with my multimeter when Re:load is heating up. I did notice though that with the 6 A range it gets hard to set currents below 1 A even with the large knob I added. A fine-adjustment pot might be handy in those cases.

I haven't tested the thermal protection feature. I have looked up its design though - there are no obvious components doing the advertised thermal shutdown visible on the board or the schematic.

The secret turns out to be in the BTS117 component. What looks like an ordinary MOSFET in a TO-220 package is in fact a linear integrated circuit with a power MOSFET and all sorts of protection functionality. Here's the datasheet if you're interested.

In conclusion, at the first glance Re:load 2 seems to be exactly what it says it is. At $30 I paid with shipping to Slovenia it's also quite cheap. Even if I just count the material, I doubt I would get below that if I would make my own from scratch.

Only time will tell if it's also as indestructible as it claims to be. Considering what kind of hardware ends up on my desk I don't think I'll have to wait long to put that to the test.

Source: https://www.tablix.org/~avian/blog/archives/2014/05/re_load_2/