

Ultrasonic Anti-Fouling unit blowing fuses

I bought an Ultrasonic Anti-Fouling kit from Jaycar (September & November 2010) and I'm having issues with it. I followed the instructions carefully while building it. I have measured all the resistor values and the diodes and capacitors all check out. I have had a good look at the pre-wound transformer and it seems to be as per the instruction sheet. I have no way of checking the chips or the Mosfets.

I'm using a Dick Smith 12V power supply. I have adjusted the regulated voltage to 5V as per the instructions, with the fuse and IC2 removed. The 5V supply seems stable. With IC2 and the fuse fitted and the transducer connected, the fuse blows immediately the power is turned on.

I have read on a forum that others have had similar issues and the answer for them was a higher-rated slow blow fuse. One guy used a strand of wire as a fuse. It seemed to work for them but this did not solve my problem; in fact, it made it worse as it allowed the Mosfets to burn out along with the track between the fuse and the switch. I have since fixed this but it still doesn't work.

I checked the board tracks against the magazine drawing and it is the same except that the terminals have been rotated. I also checked and re-

checked all my solder joints, both visually and with my meter, as well as reheating the joints to make sure.

I have replaced all the diodes, capacitors and both the Mosfets. I did not replace the resistors as they still measure OK. I bought a new regulator but the replacement Jaycar sent is a different part number and I could not adjust the output to 5V, so I reinstalled the original. Jaycar would not sell me a replacement programmed microcontroller (IC2) so I could not try that.

Given all this, I can only guess that one of the ICs is the problem. I would appreciate any ideas that you might have. (R. A., Crestmead, Qld).

- It sounds like the 5V supply is OK. You could check the drive to the Mosfet gates by removing the fuse and powering up. You should be able to measure a DC voltage at the gates of the Mosfets with respect to ground.

The voltage should go above 0V and since the DC voltage will be an average of the pulses, it will settle at about 2V. That's not the best test but gives an idea if the Mosfets are being switched. An oscilloscope will show whether the Mosfets are being correctly driven in anti-phase.

One problem that can cause a blown

fuse is if the large low-ESR electrolytic capacitor is faulty. Another is if one of the IC pins is bent up under the socket for IC2 and so not making contact. A much less likely cause is a faulty PIC12F675 or programming error.

You can get a replacement programmed PIC for the unit by contacting kits@jaycar.com.au

Charging gel cell batteries

It may be a silly question but I've forgotten if it's OK to use a lead-acid battery charger designed for car batteries (Thunderbird Battery Charger) on a 12V gel cell. I do have the gel cell charger that SILICON CHIP designed a long time ago but it's buried in my lock-up storage shed. I'd like to avoid digging for it, if I can. (P. V., Hazelbrook, NSW).

- Provided your Thunderbird Charger is adjusted to provide a maximum output of 13.6V when set to charge 12V batteries, it should be fine to charge 12V SLA (gel cell) batteries.

Horizontal trimpots for MPPT Solar Charger

I am purchasing components to

build the Solar MPPT Charger & Lighting Controller from the February & March 2016 issues of SILICON CHIP. Can you give me a little more detail on the type/brand of mini horizontal trimpots in your parts list on page 36 of the February edition? I'm not sure whether they are of the open carbon type, Cermet 1-turn type or Piher style. Your photo on page 37 suggests Cermet types. (R. C., Freshwater, NSW.)

- We use the Piher-style trimpots with 5mm (5.08mm) pin spacings, eg, Jaycar RT4360 (10kΩ) and RT4362 (20kΩ), Altronics R2480B (10kΩ) and R2481B (20kΩ). Cermet 3386F types can also be used, such as Altronics R2597 and R2598.

Programming the Spacewriter

I have been given an old Spacewriter kit originally sold by Jaycar Electronics. I would like to build it but note that the TMS6264L is programmed via a parallel printer port. As I have a laptop with USB and no printer port, is there a way I can program the device using a USB cable? I don't want to proceed if I cannot program it. (R. B., NZ).

- Technology has certainly changed