Modification Sedona food dehydrator

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Abstract

The Sedona food dehydrator has a design flaw. The diodes in the power supply are slightly under-specified. The result is that the operating temperature of the diodes is to high. The diodes wear out and eventually burn out. I designed a modification for the oven which lowers the operating temperature of the power supply. The modification can be made as a preventative measure, or as a repair of an already defective oven.

1 The original power supply and its flaw

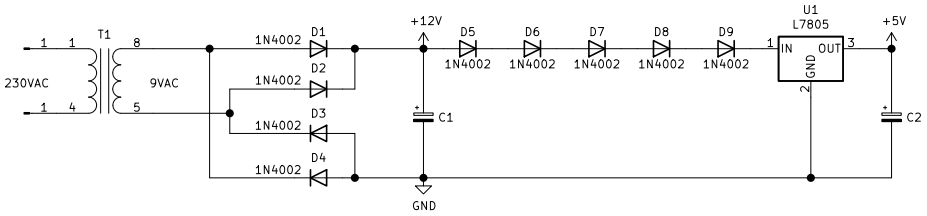

Figure 1: the Sedona design

Figure 1 shows the original Sedona design. The diodes of the full bridge rectifier (D1-D4) can handle 1 Ampère each, but the total current drawn by the oven is slightly above that. Because of that, the diodes become very hot.

The other diodes (D5-D9) drop the voltage from about 12 Volts to about 9 Volts. The power dissipated in the 7805 linear voltage regulator is therefore lower, but that shifts a part of the power dissipation to these diodes, which become hot.

As all the nine diodes are mounted flush against the pcb, the heat builds up around them. As a result of this heat build-up, the diodes wear out and eventually burn out.

2 The modification

Figure 2 shows the proposed modification. All the nine diodes (D1-D9) are removed. Diodes D1-D4 are replaced with a bridge rectifier specified at 1.5 Ampères. The pins of the bridge rectifier fit in the existing holes of the removed diodes. The other five diodes (D5-D9) are replaced by a jumper, which is placed

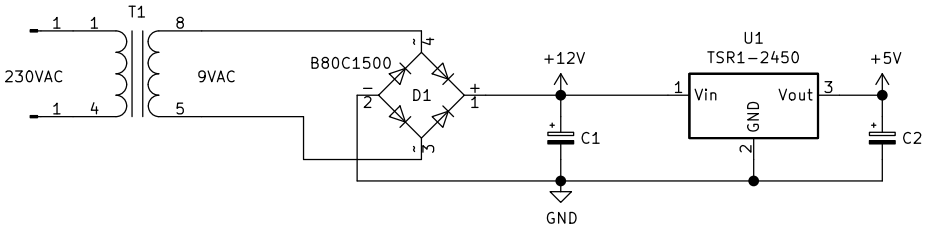

Figure 2: proposed modification

in two of the existing holes left behind by the removed diodes. The linear voltage regulator (U1) is replaced by a DC/DC-converter with the exact same pin-out. The heat sink, which was mounted on the linear voltage regulator, is not needed anymore and can be removed. In table 1 you find the needed component for the modification.

Figure 3 shows the unmodified Sedona pcb and figure 4 shows the same pcb after the modification. These photographs should be self-explanatory. If in doubt, watch the video of this modification on my website.

Qty	**Description**	**Manufacturer**	**Ordering nr.**
1	Bridge rectifier	Generic	B80C1500
1	Jumper	Make your own	Solid wire
1	DC/DC-converter	TracoPower	TSR 1-2450

Table 1: bill of material

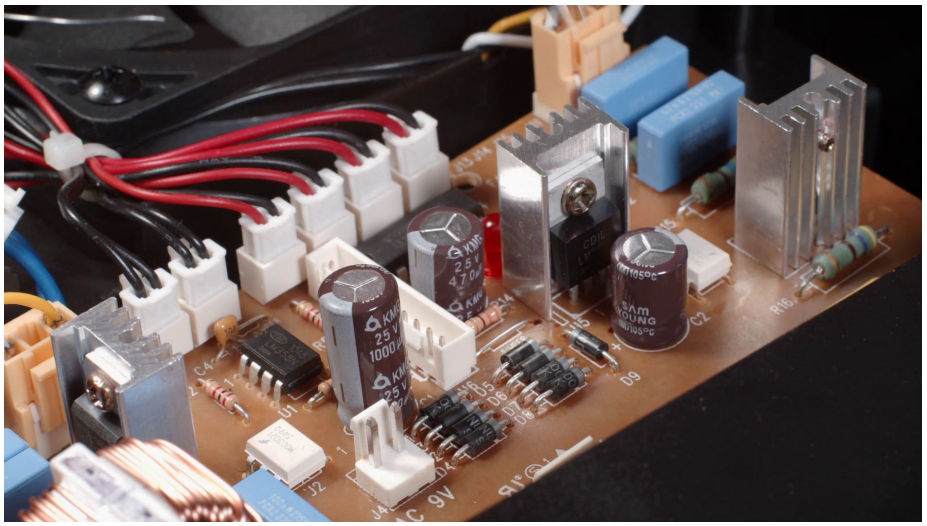

Figure 3: before the modification

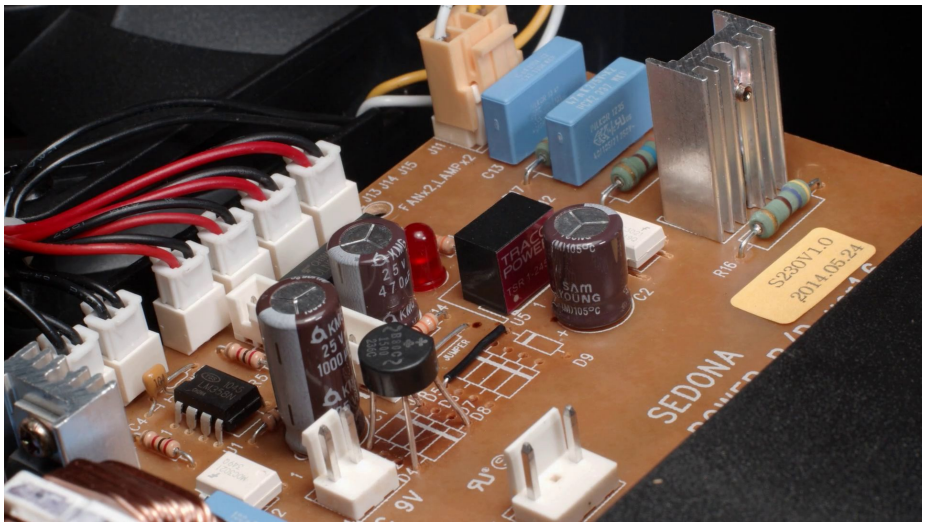

Figure 4: after the modification

3 Open source hardware

All the design files are available on my website: https://www.meezenest.nl/mees