

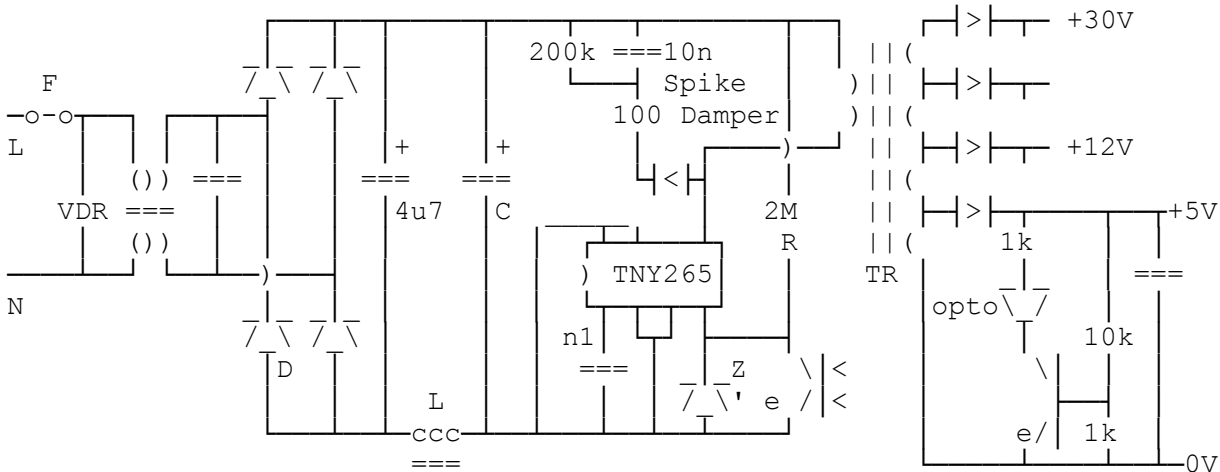
Bad SMPSU design

By G8MNY

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(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

I recently looked at a Freeview STB that had blown up (a Digilogic DSTB1000 which is the same as Goodmans GDB6). On first sight the SMPSU design looks fine like any other, with the normal safety features etc..



WHAT WENT WRONG

The original fault was just an electrolytic "C" going open circuit (very common & the cause of a lot of mains born RFI!). But the resultant failed component count was so high much more than the STB was worth new!!

With the SMPSU IC now having no low Z Cap C to push the current through the transformer, all the pulse current appear as high voltage across the small decoupling choke L (1.5mH). This bypasses the spike damper that the protects the IC from over voltage & the IC blows up. In doing so it took out the PCB track near the 2M R (4x 500k surface mounts) to a spare transformer primary winding TR, the control loop protection zener Z, the L itself, 2 of the surface mount bridge diodes D, & of course the fuses both the PCB 3A fuse & plug 5A one!

This is relatively modern kit that has had a very short lifetime. Why do makers make it so unreliable! The circuit component count is quite high, I can't really see why a simple conventional mains transformer would not have been a much better design & far more reliable!

As far as this kit goes, powering it off rather than standby will extend the life of the caps, but repeated power on surges will stress the other components!

See my bul on "Faulting Tips".

Why Don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP