

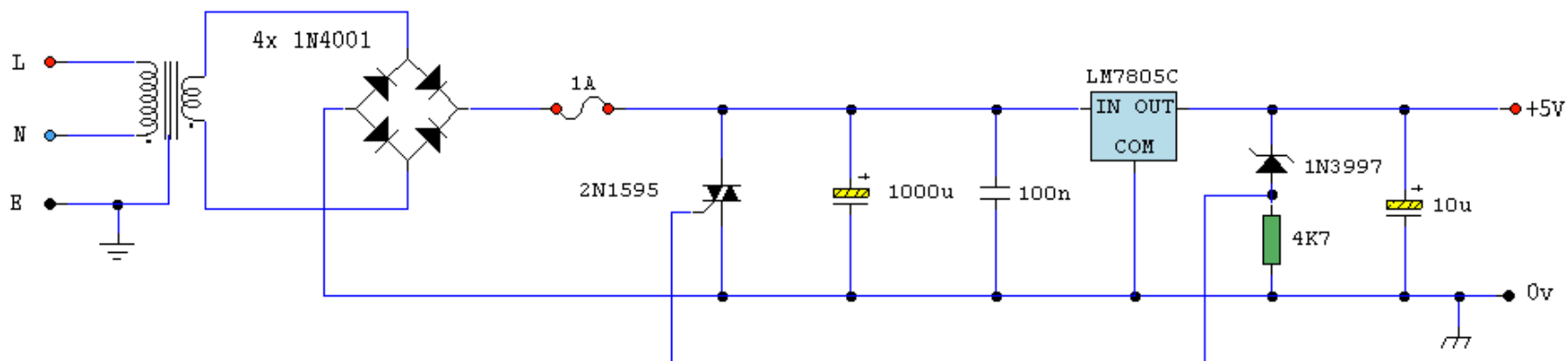
Logic PSU with Overvoltage Protection

Circuit : Andy Collinson

Email: anc@mitedu.freereserve.co.uk

Description:

A simple 5 Volt regulated PSU featuring overvoltage protection.



Notes:

The 5 volt regulated power supply for TTL and 74LS series integrated circuits, has to be very precise and

tolerant of voltage transients. These IC's are easily damaged by short voltage spikes. A fuse will blow when its current rating is exceeded, but requires several hundred milliseconds to respond. This circuit will react in a few microseconds, triggered when the output voltage exceeds the limit of the zener diode.

This circuit uses the crowbar method, where a thyristor is employed and short circuits the supply, causing the fuse to blow. This will take place in a few microseconds or less, and so offers much greater protection than an ordinary fuse. If the output voltage exceed 5.6Volt, then the zener diode will conduct, switching on the thyristor (all in a few microseconds), the output voltage is therefore reduced to 0 volts and sensitive logic IC's will be saved. The fuse will still take a few hundred milliseconds to blow but this is not important now because the supply to the circuit is already at zero volts and no damage can be done. The dc input to the regulator needs to be a few volts higher than the regulator voltage. In the case of a 5v regulator, I would recommend a transformer with secondary voltage of 8-10volts ac. By choosing a different regulator and zener diode, you can build an over voltag trip at any value. I have a simulated transient graph of this over voltage protection circuit in the [Design section](#).

Return to [Power Supply Circuits](#)