

Simple 20A PS

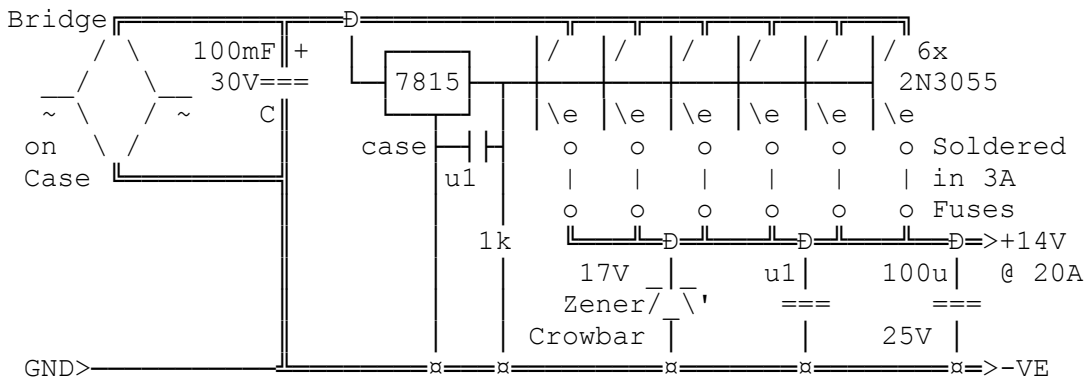
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(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

This is a positive regulator followed by power transistors design. It's a simple cheap low component count design, but does have drawbacks.

- 1/ Unregulated 18-25V needed to give the 3.8V voltage overhead.
- 2/ Hazardous exposed unregulated rail voltages on the transistor cases.
- 3/ Transistors will get very hot as there is a lot of voltage drop!



AC

The transformer needed is 17V-19V @ 25A for an 20A rated PSU. The high pulse current AC wiring to bridge & to the reservoir C, should be in thick & twisted wire to keep the losses & magnetic pulse radiation down.

If the transformer has 2 identical windings (e.g. 2x 13A), consider 2 diode bi-phase rectifier instead of the single bridge or use 2 bridges, this cuts the silicon losses & heat down, & enables higher rated PS to be built.

A slow blow mains fuse of 2A should be used.

PSU

The 7815 1A regulator must be mounted on the chassis. it's internal thermal shutdown (180°C?) & current limiting are used to limit the drive to the 6 low gain 15A 2N3055s. This ensures they are not over driven to destruction, if a large heatsink or case is used. Each pass transistor has 3A fuse as the emitter equalising resistor & identical base & emitter wiring length to ensure all are given equal drive voltage.

PROTECTION

Off load the PSU voltage will be high, a load R (20R 10W) can be put across the output to keep this down if important. Voltages over 17V may damage equipment, so a high power 17V zener is needed, capable of blowing a 3A fuse! Current peaks & RF will be absorbed by the caps.

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73 De John, G8MNY @ GB7CIP