EDUCATIONAL ELECTRONIC KITS

Symmetrical ±1,25 V...±25 V / 1,5 A power supply

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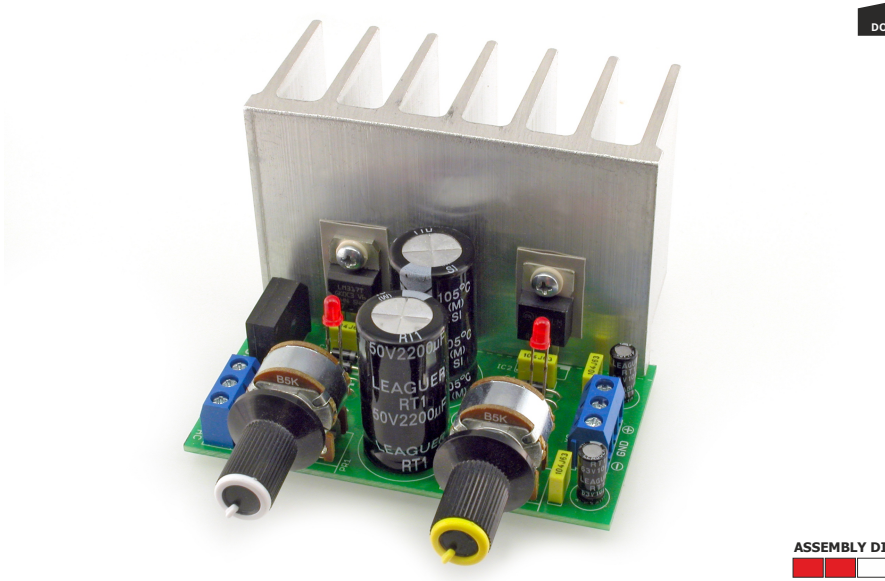
AVT 1572



ASSEMBLY DIFFICULTY

There is no need to convince any practitioner how useful a device a power supply is in the laboratory, while a beginner will quickly learn that nothing can be done without it. The devices being run very often require a symmetrical power supply, and the single-voltage power supplies can't always be connected in series to get the voltage you need. Thus, the presented power supply is another device that expands the capabilities of our workshop.

Characteristics

- positive and negative output voltages
- adjustable output voltages 1,2...25 V DC
- maximum continuous output current: 2×1,5 A
- output voltage indicator lights – LEDs
- short circuit and thermal protection
- recommended transformer: 2×17...19 V AC
- board dimensions: 45×81 mm

Circuit description

The schematic diagram is shown in Fig. 1. The reference voltage is set using the PR1 and PR2 potentiometers. LM317 is a positive voltage regulator while LM337 is a negative voltage one. LM circuits need only a few external components and have built-in thermal protection as well as current limiting when the output is shorted to ground. The output voltage range for a 2×17...19 V AC supply is ±1,25 V to ±25 V. The LM317 and LM337 circuits have built-in short-circuit and thermal protection.

When selecting a transformer, pay attention to the voltage rating of the C1 and C2 capacitors. The transformer should be selected so that its secondary voltage after rectification through the M1 bridge is no greater than the rated voltage of the capacitors.

Assembly and start-up

The assembly diagram is shown in Fig. 2. The assembly must start by soldering the "Z" jumper and the last components to be assembled must be the C1 and C2 capacitors, just after screwing the circuits to the heatsink. Insulate the US1 and US2 circuits from the heat sink with a mica or silicone spacer. The assembly is typical, and the circuit, assembled from working components, does not require any adjustment. Once connected to the transformer it immediately works properly.

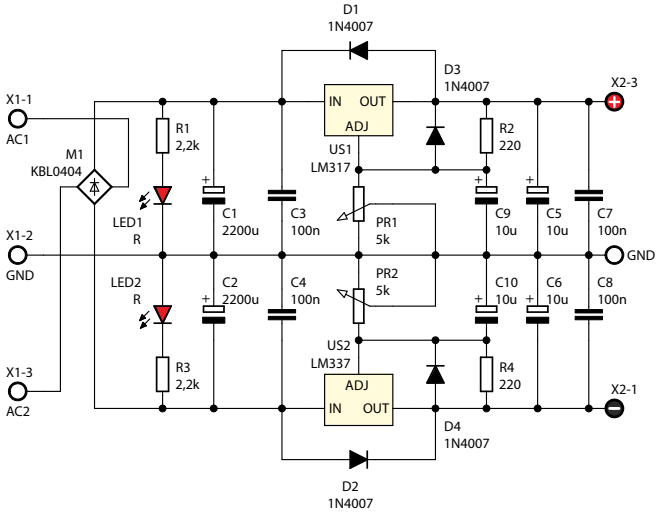


Fig. 1 Schematic diagram of the power supply

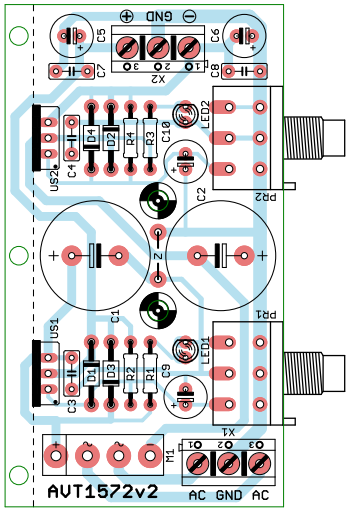
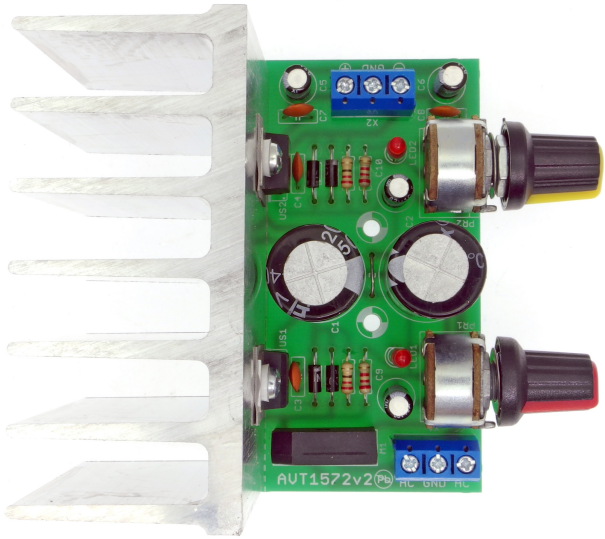


Fig. 2 Layout of the components on the circuit board

List of elements

Resistors:
R1, R3:.....2,2k Ω
R2, R4:.....220 Ω
PR1, PR2:.....linear 5 kΩ
Capacitors:
C1, C2:.....2200 uF / 35 V
C3, C4, C7, C8:.....100 nF
C5, C6, C9, C10:.....10 uF / 63 V
Semiconductors:
US1:.....LM317
US2:.....LM337
D1-D4:.....1N4007
LED1, LED2:.....red 3 mm
M1:.....bridge rectifier
Other:
X1, X2:.....DG301-5.0/3
TO220 silicon washers ×2 Spacers ×2
Screws ×3 Radiator



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