

R20 limits the input current to Q1 C7 bypasses any high frequency noise from the input. Transistor Q1 and Q2 forms the input differential pair and the constant current source circuit built around Q9 and Q10 sources 1mA. Preset R1 is used for adjusting the voltage at the output of the amplifier. Resistors R3 and R2 sets the gain of the amplifier. The second differential stage is formed by transistors Q3 and Q6 while transistors Q4 and Q5 forms a current mirror which makes the second differential pair to drain an identical current. This is done in order to improve linearity and gain. Power amplification stage based on Q7 and Q8 which operates in the class AB mode. Preset R8 can be used for adjusting the quiescent current of the amplifier. The network comprising of capacitor C3 and resistor R19 improves high frequency stability and prevents the chance of oscillation. F1 and F2 are safety fuses.

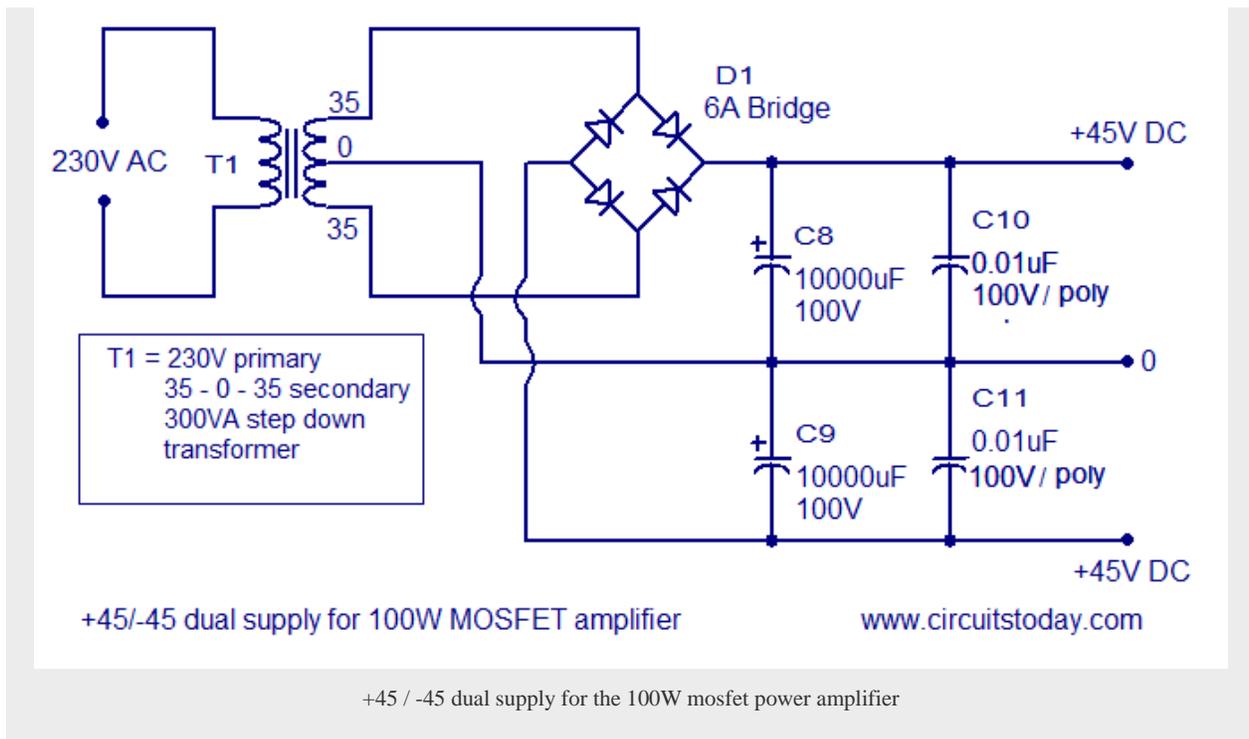
Circuit setup.

Set R1 at midpoint before powering up and then adjust it slowly in order to get a minimum voltage (less than 50mV0 at the output. Next step is setting up the quiescent current and keep the preset R8 in minimum resistance and connect a multimeter across points marked X & Y in the circuit diagram. Now adjust R8 so that the multimeter reads 16.5mV which corresponds to 50mA quiescent current.

Notes.

- ☐ Assemble the circuit on a good quality PCB.
- ☐ Use a +45/-45 V DC, 3A dual supply for powering the circuit.
- ☐ Power supply voltage must not exceed +55/-55 V DC.
- ☐ Before connecting the speaker, check the zero signal output voltage of the amplifier and in any case it should not be higher than 50mV. If it is higher than 50mV, check the circuit for any error. Replacing Q1, Q2 with another set could also solve the problem.
- ☐ Fit Q7 and Q8 to a 2°C/W heat sink. Both Q7 and Q8 must be isolated from the heat sink using mica sheets. Heat sink mounting kits for almost all power transistors/ MOSFETs of almost all package styles are readily available in the market.
- ☐ All resistors other than R10, R11 and R19 are 1/4 watt metal film resistors. R10 and R11 are 5W wire wound type while R19 is a 3W wire wound type.

Power supply for the 100W MOSFET power amplifier.



A basic dual power supply is used for the amplifier circuit. If 6A ampere bridge is not available, then make one using four 6A6 diodes. C10 and C11 are high frequency bypass capacitors. Filter capacitors C8 and C9 must be at least 10000uF, higher the value lesser the ripple. Optional 3A fuses can be added to the +45 and -45 lines. Transformer T1 can be a 230V primary, 35-0-35 V secondary, 300VA step down transformer.

Source : <http://www.circuitstoday.com/100w-mosfet-power-amplifier>