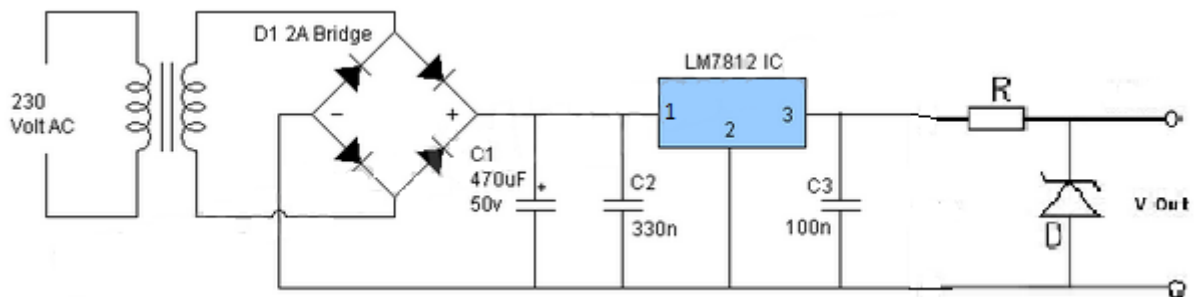


Question #51589, Physics, Electric Circuits

propose a circuit to obtain +10 V dc regulated output using IC7812

Answer:

LM7812 is a three terminal fixed voltage regulator IC comes in TO220 package. It has many built in features like thermal shutdown, short circuit protection, safe operating area protection etc. The output current of the IC is 1A which is enough to run most electronic devices. It is an IC of LM78xx series, this series contains many fixed voltage ICs made for different voltage requirements. You can see that Pin 1 is input, Pin 2 is Ground (which is often -V) and Pin 3 is output. It is very simple to understand 7812. The 220uF 25V capacitor is used as a buffer to cover frequency gap. The second capacitor is used as an extra filter. IN4001 rectifiers are used to convert AC current into DC current. Transformer is used to convert 240V AC into 15V AC. If you have 110V mains then you can use a 110V AC to 15 AC transformer.



But we need to have 10 V output. We can use zener diode, in this case we'll have:

$$U_R = U_{in} - U_{out}$$

$$U_R = 12 - 10 = 2 V$$

$$R = U_R / I_{stab.}$$

$$R = \frac{2 V}{2 A} = 1 Ohm$$