CIRCUIT IDEAS

Economiser for DC Flashlights

There are various types of solidstate AC lamp dimmers in the market these days, but what does one do while using a DC source of supply such as dry cell batteries or storage cell operated emergency lights. The conventional alternative has been a rheostat, which is undesirable as it gets hot in operation and consumes the very power we intend to conserve.
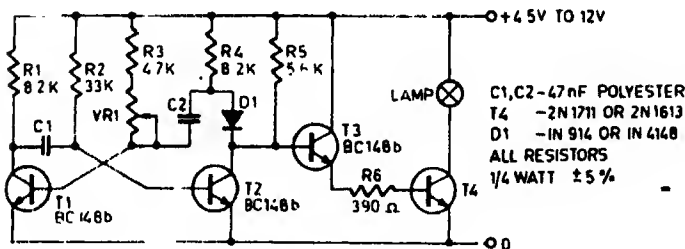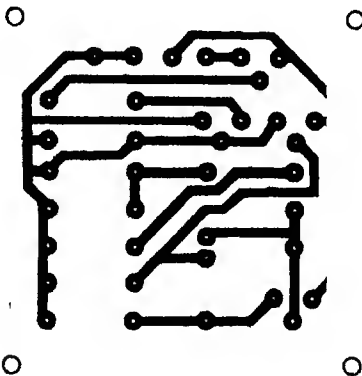

Fig. 1

Fig.2

To solve this problem I devised the circuit given here. This dimmer may be used with 4.5 to 12 volt batteries, keeping in mind that the maximum load that transistor T4 can take is 1 ampere. Keeping the basic principle in mind, and using suitable semiconductors, the device may be adapted for use on higher voltages and current.

Transistors T1 and T2 form an astable multivibrator

whose duty cycle can be varied by means of potentiometer VR1. The diode improves the rise time of the resultant square wave. Via T3 the multivibrator switches transistor T4, which in turn switches on the lamp. Since T4 is operating as a switch, no special cooling will be found necessary for it. With the components used, the control range is three to one, i.e. at the minimum brightness the lamp would burn at one third of its normal intensity; that means the batteries would last three times as much.

Though no special construction skill is necessary, as the circuit is very simple, yet for those who want to give beauty and neatness to their gadget a printed board layout is given. And in case you are willing to experiment with the circuit, I suggest you replace potentiometer VR1 with a suitable light-dependent resistor so that the brightness of the lamp would be inversely proportional to the ambient light where the LDR is placed.
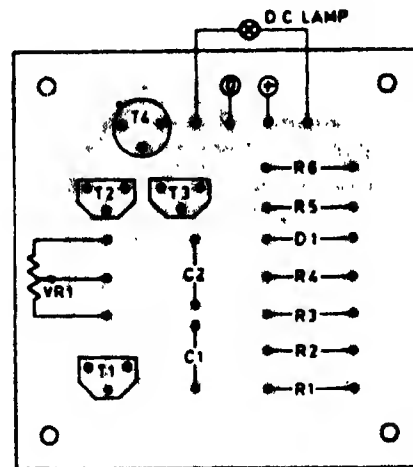
—P.K. SOOD

Fig 3

A Simple Overload Indicator

With power electrical appliances, the fuse may blow off often, and it may be a nuisance for you to replace it frequently. To save yourself from this trouble, you can use the following overload indicator circuit with the supply