Alternating Blinker

057

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The circuit represents a general-purpose astable multivibrator that alternatively energises two heavy loads via a relay (in this case, the loads are 12-V incandescent lamps).

In contrast to an 'analogue' flip-flop, here it is not necessary to use power transistors with heatsinks. This alternating blinker can thus be built at a lower cost, more easily and more compactly.

In the idle state, capacitor C1 is charged via R1 and at the

same time discharged via R2 and P1. Here P1 must be adjusted such that sufficient current is available to switch on transistor T1. This should occur when the voltage on the capacitor is around 1.2 V, if a BC517 is used. As a consequence, the relay pulls in.

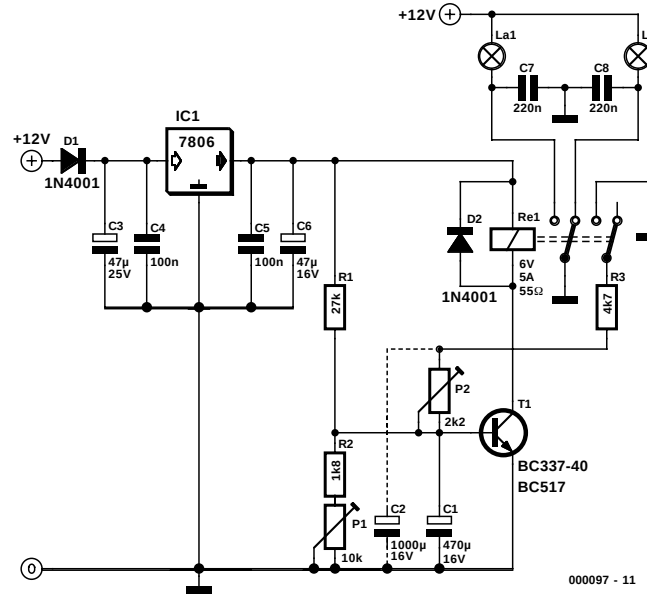
This causes R3 and P2 to be connected in parallel with R2 and P1. P2 must be adjusted such that there is not enough current left to provide the base current for T1. This causes the voltage on C1 to drop, and a short time later the transistor is cut off. The relay then drops out, and the cycle starts over again.

Operating power can be supplied by an unregulated 12-V mains adapter (for example). The current consumption essentially depends on the two loads, since the alternating blinker circuit only draws the rated current of the relay.

Each load is connected directly to the supply voltage, while the blinker circuit receives a stabilised supply voltage via the fixed voltage regulator IC1. Diode D1 protects the circuit against an incorrectly polarised input voltage.

To set up the circuit, first turn P1 to minimum and P2 to maximum resistance. Now turn up P1 slowly (!) until the relay pulls in. Repeat the same process with P2 until the relay again drops out. Using this basic procedure, you can select both the blinking rate and the desired on/off ratio.

The author used a BC337-40 for T1. If this is difficult to obtain, a BC517 (Darlington) can also be used. The proper operation of the circuit also depends on the type of relay



used. In one prototype model, the relay pulled in OK and energised R3 and P2, but it refused to do anything further. If your construction exhibits similar behaviour (and you are dependent on a particular type of relay), it may help to include capacitor C2 in the circuit (as shown in dashed outline) in order to slightly delay the effect of switching in P2 and R3.

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