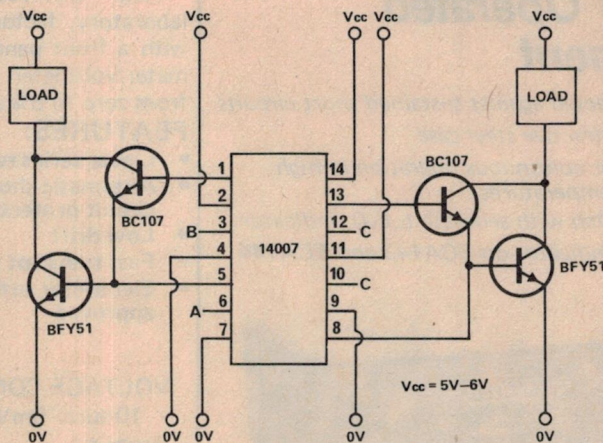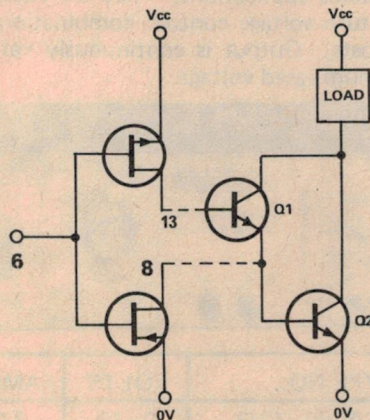# Ideas for Experimenters

Darlington drivers

This circuit from C.J. Ramey, UK, offers a very efficient way of driving a pair of transistors in Darlington configuration from CMOS. The circuit at right shows how two loads of up to 1A may be driven from a single 14007 chip with no external resistors. Using a 2N3055 in place of the BFY51 will enable loads of up to 3A to be driven at voltages limited only by the Vceo of the transistors.

The circuit at left shows the internal circuit of one section of the 14007. A high on pin 6 switches the lower CMOS transistor on, holding Q2 off and sinking the leakage current of Q1. A low on pin 6 drives Q1 and switches the lower CMOS transistor off and the upper CMOS transistor on.

The result is fast switch off at low cost and efficient switch on.

A bonus is the inverter between pins 10 and 12. Note: Vcc should be 5-6 V to prevent excessive current being drawn from the CMOS chip.
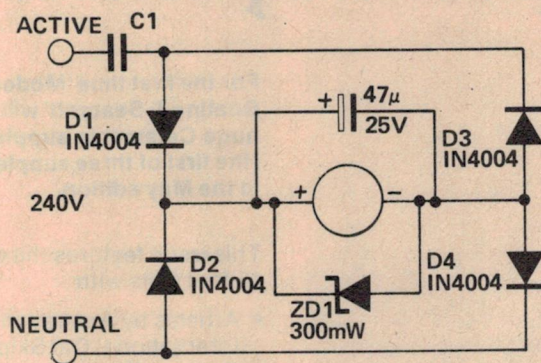
Operating a Sonalert from 240 Vac mains

There are occasions when it is convenient to operate a Sonalert-type piezo-electric alarm from the 240 Vac mains. The accompanying circuit, from **Barry Wilkinson of Nebula Electronics**, shows how it's done.

The 'ACTIVE' input is switched to activate the alarm. Capacitor C1 acts as a current-limiting device, the four diodes being arranged as a bridge rectifier, with the alarm across the output. The zener diode across the alarm limits the maximum voltage and the electrolytic capacitor provides smoothing.

The value of C1 depends on the type of alarm used and its current drain. As an example, for the popular "Murata" make, two 33 nF, 250 Vac rated capacitors in parallel gave reliable operation. Current drawn was around 5 mA. This gave about 8 Vdc across the alarm and adequate sound output.

Not that C1 *must* be rated for 250 Vac operation.

Any ideas?

Have you had a bright idea lately, or discovered an interesting circuit modification? We are always looking for items for these pages so naturally, we'd like to hear from you.

We pay between $5 and $10 per item — depending on how much work we have to do on it before we publish it.

The sort of items we are seeking, and the ones which other readers would like to see, are novel applications of existing devices, new ways of tackling old problems, hints and tips.