

CIRCUIT NOTEBOOK

Interesting circuit ideas which we have checked but not built and tested. Contributions from readers are welcome and will be paid for at standard rates.

Relay driver board with high voltage supply

This relay driver board uses four cheap 48V relays driven by flipflops and fed by a high voltage supply generated by a 555 timer and a diode string.

Fig.1 shows the circuit. Two 4013 dual-D flipflops are used to provide latching operation of the four relays.

The inputs of the flipflops are each filtered with a 22k Ω resistor and a .015 μ F capacitor. Each time the input goes high, the flipflop changes state and turns its respective transistor on or off, to operate the relay.

Diodes D5-D8 are connected to the collectors of transistors Q1-Q4 and operate as a 4-input NOR gate. If any one of the transistors is on (ie, low), the base of Q5 is pulled low, turning it

on. This applies power to the 555 which oscillates and drives a Cockroft-Walton voltage multiplier consisting of diodes D9-D14 and associated 10 μ F capacitors. This generates a supply of about +32V to feed the relays.

With none of the relays energised, the circuit has a very low current drain by virtue of the following conditions. When power is first applied and no relays are operated, all transistors are

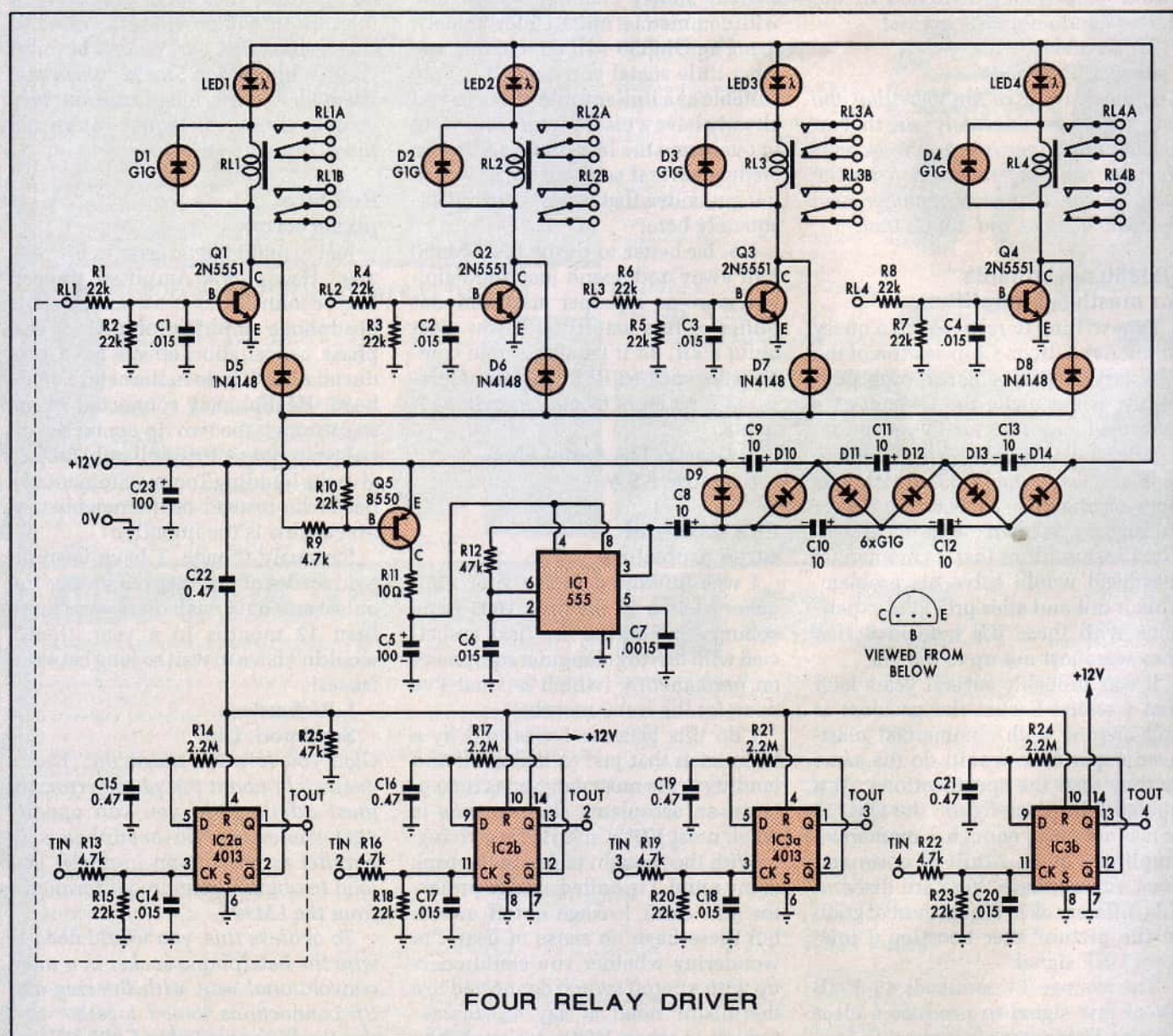


Fig.1: the circuit uses two 4013 dual-D flipflops to provide latching operation of the four relays.

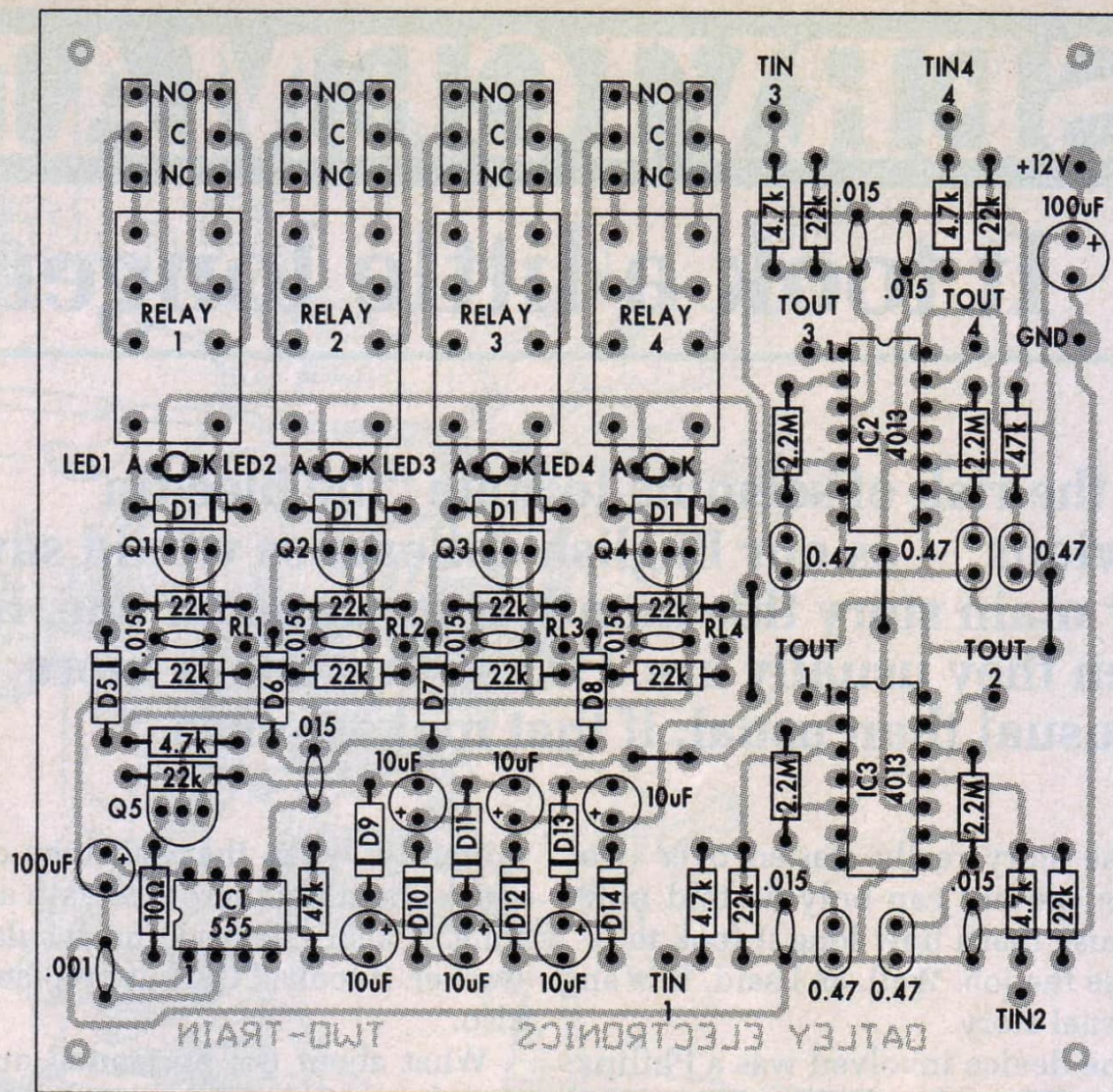
Fig.2 (right): install the parts on the PC board as shown in this layout diagram. The board can be powered from any suitable 12V DC supply (eg, a plugpack).

off and only the 4013s draw any current. The +12V supply is applied to the four high voltage transistors via diodes D9-D14 and the associated relay coils. Since these transistors are off, the base of Q5 is held high by the four associated diodes (D5-D8) and hence the 555 timer can draw no current.

The circuit can also be configured for momentary operation of the relays by applying the inputs directly to the four driver transistors, rather than via the 4013 latches.

A PC board has been designed for this circuit and the parts layout is shown in Fig.2. Take care to ensure that all polarised parts are correctly oriented.

A complete kit of parts for this circuit is available for \$28 from Oatley Electronics, PO Box 89, Oatley, NSW 2223. Phone (02) 570 7910.



Automatic antenna controller for cars

