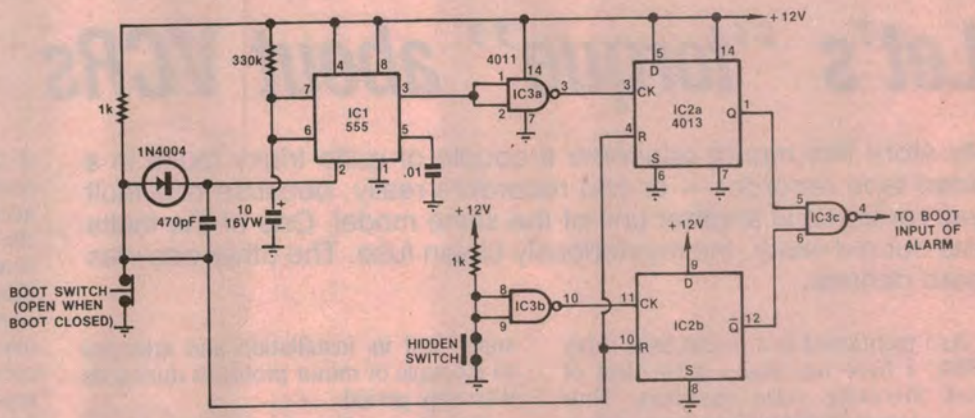
Circuit & Design Ideas

Modification to the EA Car Alarm



A number of people have written to *Electronics Australia* commenting on one shortcoming of the car alarm published in the May issue. It is quite inconvenient to have to open the car and turn off the alarm if you only want to put something in the boot (for instance, when shopping). This circuit overcomes that problem.

When the boot is closed, the flipflops are held reset, so pin 1 of IC2a will be low and pin 12 of IC2b will be high. This will cause the output of NAND gate IC3c to go high. When the boot is opened, the reset line goes low and a negative going pulse is delivered to pin 2 of the monostable formed by IC1 and associated components. Pin 3 of this IC immediately goes high, and remains this way until the time period expires. With the component values shown this is about five seconds.

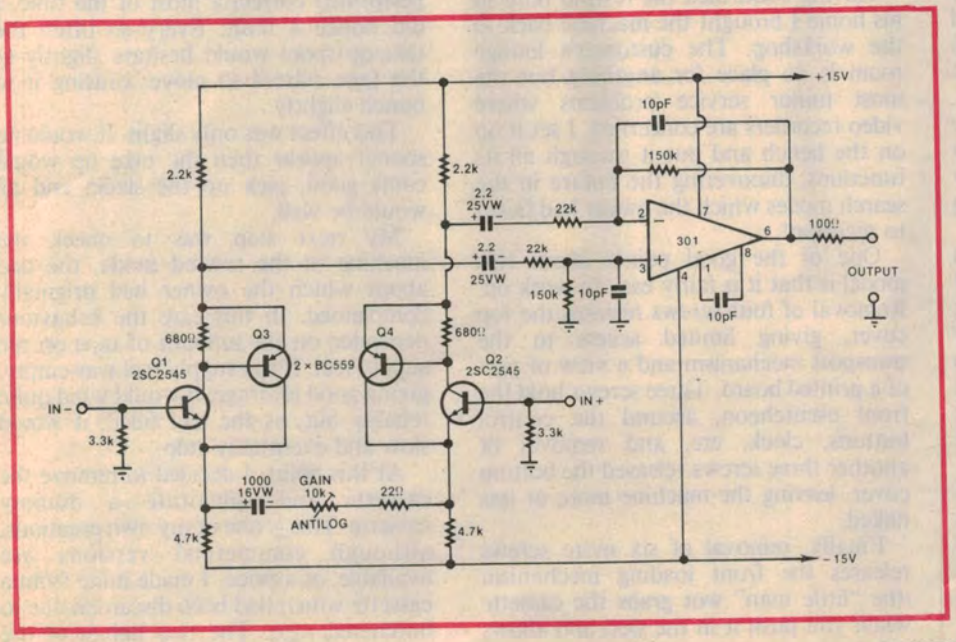
The output signal from the monostable is inverted by IC3a, and fed into the clock input of IC2a. Nothing will happen on the falling edge of this signal, but, on the rising edge, the output of the flipflop will go high. If there has been no change in the output of IC2b in the meantime, the output of IC3c will go low, triggering the alarm.

If the hidden button is pressed however, a rising edge will be presented to the clock input of IC2b. This will cause the output of this flipflop to go low. Now when the time period expires, and the output of IC2a goes high, there will be no change of state at the output of IC3c. In this case the boot may remain open indefinitely.

Andrew Rankin,
East Malvern, Vic. **$20**

Low-noise balanced input mic preamp

This preamp has been designed as an alternative to a transformer input stage for low impedance balanced microphones (150-600Ω).



Performance is very good, with a CMRR of 70dB, THD of less than .002% and noise within 2dB of the thermal noise limit (measured with 200Ω source impedance).

The circuit consists of two compound transistor pairs connected as a differential amplifier, and an op amp output stage. The first stage has a common mode gain control, allowing the gain to be adjusted over the range 15-60dB.

Low noise 2SC2545 transistors are used in the input stage, with BC559s to linearise their characteristics. The op amp is connected as a differential amplifier to provide an unbalanced output and to further remove any common mode input signal.

If an antilog pot cannot be obtained, a log pot may be used in its place. This will work fine, but in the opposite sense to normal. An improvement in the CMRR may be obtained by using 1% tolerance resistors throughout. A TL071 may be used in place of the 301 (delete the 10pF capacitor).

Phil Allison,
Summer Hill, NSW. **$20**