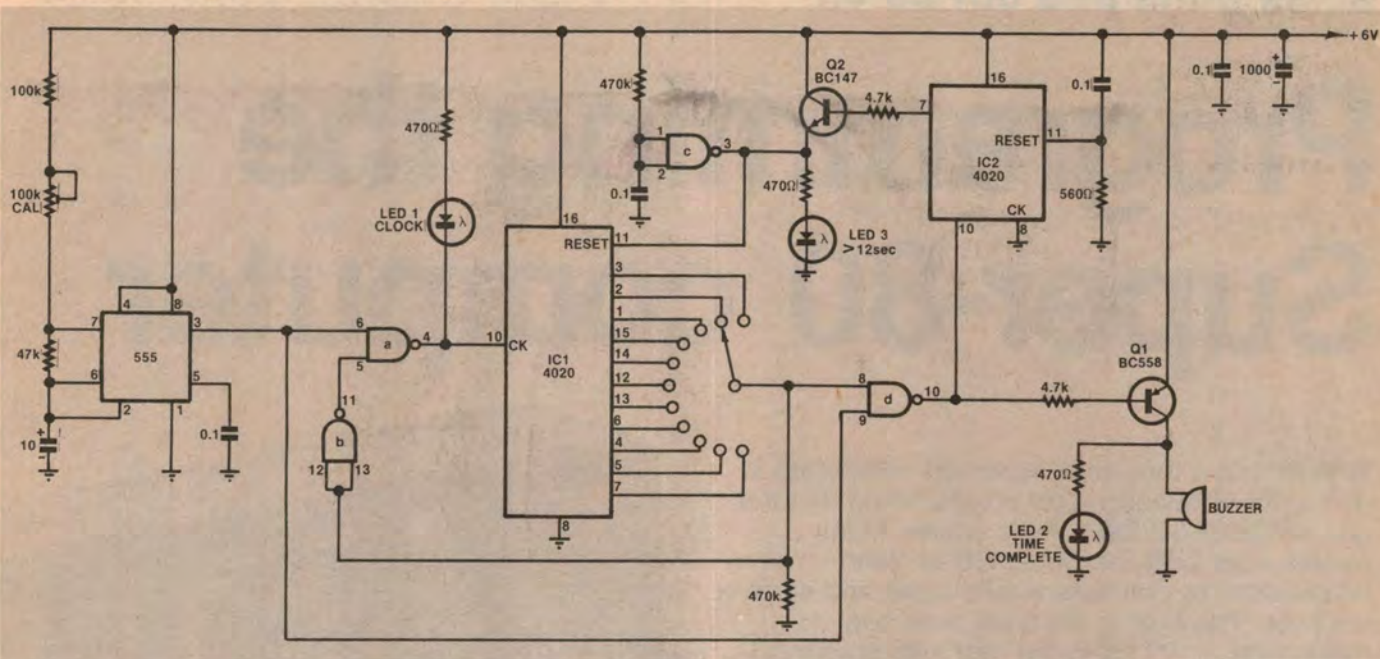


Modifications to the Utility Timer



Addition of two extra ICs and several other components adds to the versatility of the Utility Timer described in the August, 1978 issue of *Electronics Australia*. The modifications provide for automatic switch-off of audible alarm after a preset time, and three LEDs to indicate (a) circuit "counting", (b), end of the selected timed period, and (c) that the end of both the selected and alarm time periods has taken place.

The first LED is connected between the supply and the "clock" input of the original 4020, with a series 470Ω resistor to limit current flow. This indicates the presence of clock pulses at this point.

Via another current-limiting resistor, the second LED is connected in parallel with the buzzer to provide visual as well

as audio alarm.

Pins 8 and 9 of the 4011(d) are separated with pin 9 being left connected as in the original circuit. Pin 8 is connected back to pin 3 of the 555. This modification was fully described in the December, 1980 issue of this magazine, and provides a pulsating sound from the buzzer. It will be noted that when the preset time has elapsed, the output of 4011(d) consists of a string of pulses at the nominal frequency of the 555, eg, approx 0.6Hz.

A second 4020 14-stage binary counter is added to the circuit, with its clock input being fed from the output of 4011(d). Thus when the selected period elapses, the second 4020 is clocked by the pulses from 4011(d).

When the selected counter output (pin 7) goes high, the BC147 (Q2) is switched on, energising the third LED and resetting the first 4020, which is held in a state of permanent reset — until the timer is switched off (and another cycle started). Thus the BC558 is de-energised which stops the buzzer and extinguishes the second LED.

Note that by selecting another output of the second 4020, other durations of alarm period can be preset according to the user's requirements. Note also that the second 4020 is reset by the network comprising the 0.1μF capacitor and 560Ω resistor. Reset occurs at switch on, ie every time the timer is activated.

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