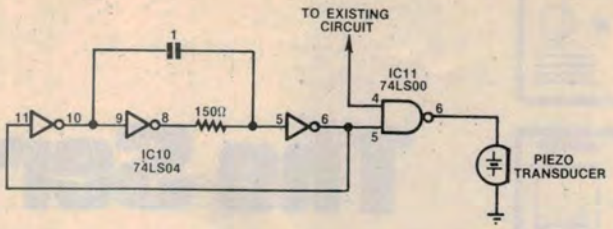
Circuit & Design Ideas

EPROM Programmer beeper



Readers who have constructed the EPROM Programmer (EA, January 1982) will be well aware of reliability problems with the pushbutton switches in the hex keypad. The alternative "Digitran" keypad is the obvious way to go, but it is rather expensive.

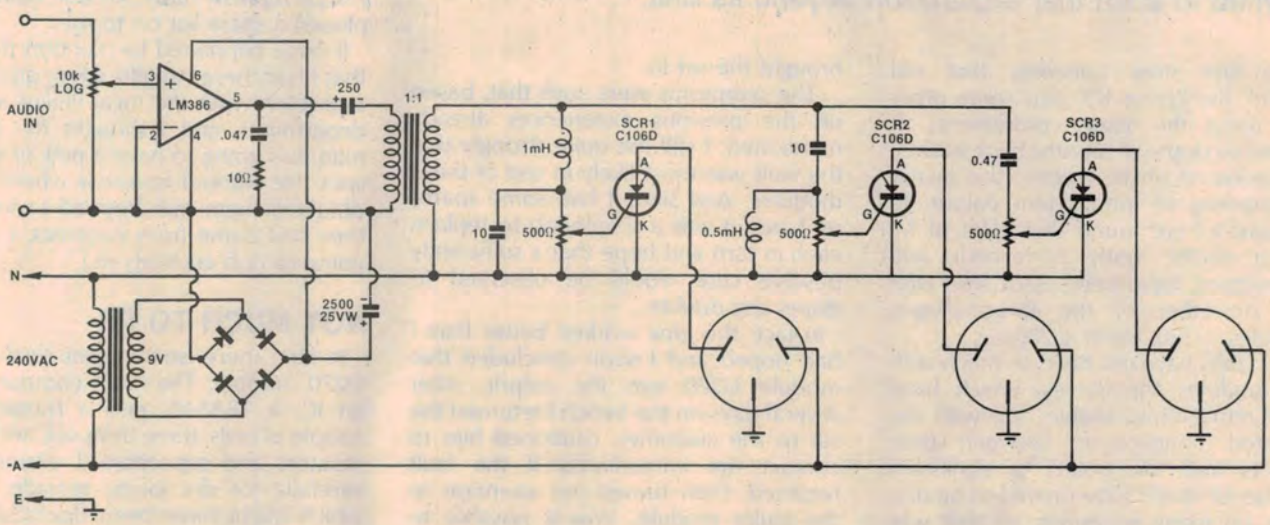
Yet another option is to use a "Utilux" type H12231/1 membrane switch. This permits reliable data entry, but without "feel" or "sound". This simple circuit provides "beep" to indicate that data has been entered whenever a key is pressed.

Fortunately, due to an abundance of unused gates in the circuit (not shown on the circuit diagram), all it takes to get a beep from the keypad is one 150Ω resistor, one 1μF capacitor, and a piezo transducer. Here's how it's done:

- locate IC10 74LS04 and cut the PCB tracks to free the unused inverters. Note that you will have to use a wire link to rejoin pin 3 of IC10 to pin 4 of IC6;
- using the free inverters, connect up the oscillator shown in the accompanying circuit diagram;
- locate IC11 (74LS00) and free pin 5 for connection to pin 6 of IC10;
- connect the piezo transducer between pin 6 of IC11 and supply ground.

And that's it – from now on you will have no doubt when data has been entered into your EPROM Programmer.

C. Wilton,
Redland Bay, Qld. **$15**



Throbotron light show

Christened the "Throbotron", this simple circuit will modulate coloured 240V lamps in time with the music from your hifi. It can be plugged into the record output socket of your hifi or you can use a microphone pick-up instead.

Basically, the circuit splits the incoming audio signal into three bands or channels. Each channel is used to control an SCR which, in turn, switches the mains to the lamps.

The incoming audio signal is first of all fed to an LM386 audio amplifier (IC1) and thence to a 1:1 line isolation transformer. From there, the signal is split by a 3-way filter network which sends the bass frequencies to SCR1, the midrange frequencies to SCR2 and the high frequencies to SCR3. Trimpots VR1, VR2 and VR3 adjust the sensitivity.

Editor's note: this circuit must be housed in an earthed metal case. Readers are warned that, depending upon your house wiring, the SCR and filter circuitry can all float at 240V AC. Heatsinks will be required for the SCRs and these must NOT be earthed.

Finally, the isolation transformer must comply with the insulation requirements of Australian standard ASC126. The Fergusson MT627 line isolation transformer, as used in the Multi Modem (EA, January 1984), is suitable.

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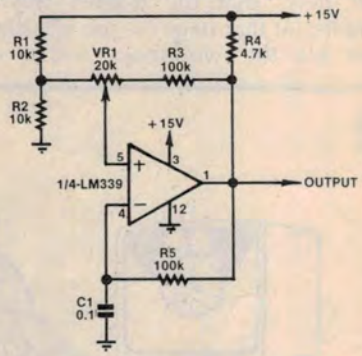
Magill, SA. **$15**

Variable-frequency oscillator



Based on a single op amp comparator (¼LM339), this circuit forms a simple variable-frequency oscillator with a fixed duty cycle of approximately 50%.

R1, R2 and VR3 set the upper threshold voltage on the non-inverting input (pin 5). When power is initially applied, the voltage across C1 is zero and thus the output is high. C1 then charges via R4 and R5 until it reaches the upper threshold voltage. At this point, the output of IC1 switches low and C1 discharges through R5 until the voltage across it reaches the lower threshold. The output now switches high again and the cycle repeats.

The output frequency is varied by means of VR1 which simply varies the circuit's hysteresis. Using the values shown, the output can be smoothly adjusted anywhere between about 750Hz and 2.7kHz.

From "Electronics", November, 1983.