

2. ELECTRONIC SIREN



The schematic diagram of the siren is shown in Fig. 2. The "wailing" sound of the siren is generated by a variable-frequency oscillator consisting of Q1 and Q2. Capacitor C2 provides the feedback for the oscillator. The frequency of the oscillator is varied by the voltage applied to the base of Q1 through R3. When switch S1 is closed, capacitor C1 charges, thus increasing the oscillator frequency. When S1 is released (opened), capacitor C1 discharges and the oscillator frequency decreases. Capacitor C3

limits the maximum oscillator frequency. The average battery current drain is about 15 milliamps.

Construction

You can build the siren using any construction method you choose; there is nothing critical about the layout. Be sure to use only the transistors listed for Q2. You have a little more flexibility in choosing Q1, as long as it is equivalent to the ones listed. Use a miniature pushbutton-switch for S1. When S1 is

closed, the siren will begin its upward wail; a slow, downward wail will begin as soon as S1 is released.

The loudspeaker should be a miniature 8-ohm transistor-radio type. You can change the overall pitch of the siren by changing the value of R3. If you decrease the value of R3, the overall pitch of the siren will increase. Too small a value of resistor R3, however, could make the oscillations stop prematurely, provided that switch S1 is held down long enough.

PARTS LIST—SIREN

Resistors, 1/4 watt, 5%, unless otherwise noted

R1, R4—7500 ohms

R2—33,000 ohms

R3—270 ohms

R5—4.7-10 ohms

Capacitors

C1—100 μ F, 10 volts or higher, electrolytic

C2—.0068 μ F, Mylar or ceramic disc

C3—1 μ F, 10 volts or higher, tantalum or electrolytic

Semiconductors

Q1—2N3904, 2N2222, or equivalent NPN transistor

Q2—MJE370 or 2N4919 PNP transistor

B1—9-volt battery, transistor-radio type

S1—SPST momentary pushbutton-switch, normally open

Miscellaneous: wire, solder, 8-ohm speaker, etc.

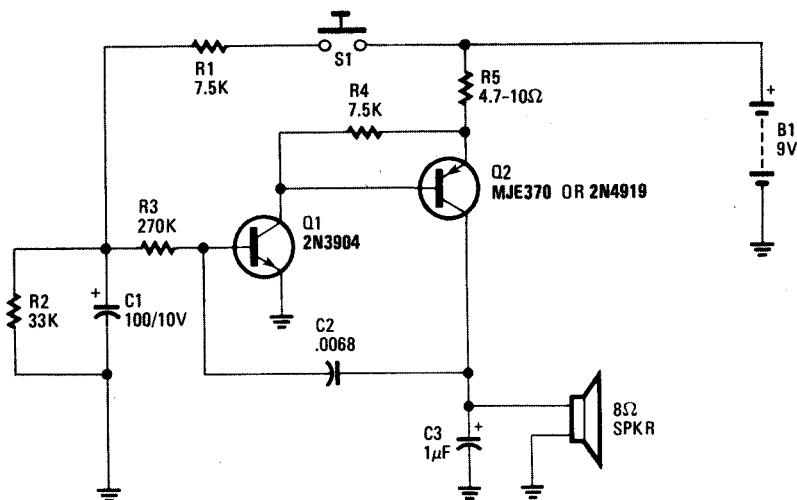


FIG. 2—EASE OF CONSTRUCTION makes this electronic siren a great first-time project for your child. Be sure to use only the transistors listed for Q2.