

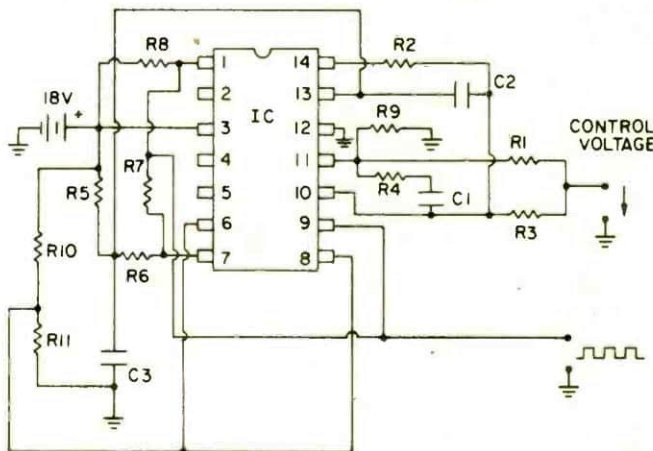
36 Voltage-Controlled Oscillator

□ By varying the control voltage (a separate battery) between 1 and 25 volts, the output frequency of this oscillator will vary between about 500 Hz and 50,000 Hz. There are a host of experimental applications, such as putting a

microphone in series with the control voltage and having the output frequency go into an amplifier and speaker. Voice-like singing sounds can be made. Or run the output of an electric guitar into the control voltage input and listen to the music!

PARTS LIST FOR VOLTAGE-CONTROLLED OSCILLATOR

C1—0.1-pF ceramic disc capacitor, 15 VDC
C2—500 pF mica capacitor, 15 VDC
C3—0.01- μ F ceramic capacitor, 15 VDC
IC1—LM339 quad comparator
R1, R7—100,000-ohm, $\frac{1}{2}$ -watt resistor
R2—50,000-ohm, $\frac{1}{2}$ -watt resistor
R3—20,000-ohm, $\frac{1}{2}$ -watt resistor
R4—10,000-ohm, $\frac{1}{2}$ -watt resistor
R5, R8—3,000-ohm, $\frac{1}{2}$ -watt resistor
R6—5,100-ohm, $\frac{1}{2}$ -watt resistor
R9, R10, R11—30,000-ohm, $\frac{1}{2}$ -watt resistor



37 Musical Modulator

□ Feed this circuit a sample audio tone, and it

gives you back a musical note with selectable

PARTS LIST FOR MUSICAL MODULATOR

C1—0.33- μ F capacitor, 35-WVDC
C2, C3—0.1- μ F mylar capacitor, 35-WVDC
C4—0.005- μ F electrolytic capacitor, 16-WVDC
C5—2.2- μ F electrolytic capacitor, 16-WVDC
D1, D2—1N914 diode
IC1—RCA CA3080 transconductance amp
J1, J2—phone jack
Q1—2N3904 NPN transistor
R1—9100-ohm, $\frac{1}{2}$ -watt 10% resistor
R2, R3, R4—1000-ohm, $\frac{1}{2}$ -watt 10% resistor
R5—2.2 Megohm-ohm, $\frac{1}{2}$ -watt 10% resistor
R6—15,000-ohm, $\frac{1}{2}$ -watt 10% resistor
R7—1 Megohm trimmer potentiometer
R8, R9—5600-ohm, $\frac{1}{2}$ -watt 10% resistor
R10, R11—250,000 linear-taper potentiometer
S1—normally open SPST pushbutton switch

