30 Telephone Turkey Caller

☐ No, this project will not put the white and dark meat on the diningroom table comes Thanksgiving day! We call it the Telephone Turkey Caller because it produces sounds like a turkey to some people. It's pleasent two-tone warbling sound is welcome in place of the harsh bell ringer used in most telephones. Also, since it does not need a phone to operate, it can be placed anywhere in the telephone line in the house, or outside the house, where the telephone normal ringer cannot be heard informing the household that the telephone is ringing.

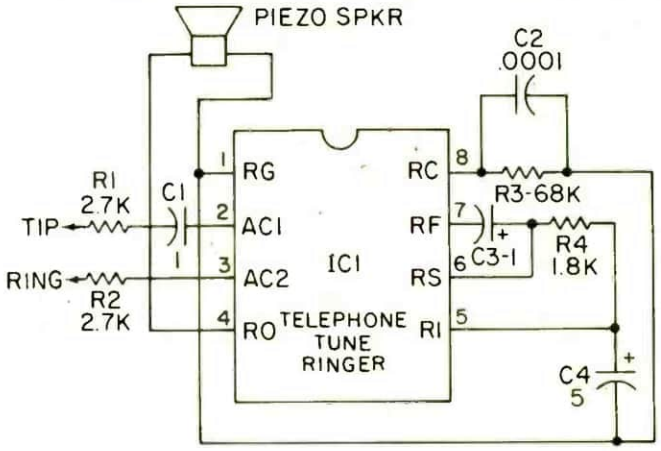
The chip, a Motorola MC34012, uses the telephone's ringing power to provide the DC to operate the chip. A relaxation oscillator within the chip develops an Fo signal, and from this basic frequency, the chip selects frequencies Fo/4 and Fo/5 (fourth and fifth note in the octive beginning with the frequency Fo), amplifies them and buffers the signal out to a piezo speaker that produces the turkey sound. C2 and R3 determine the Fo frequency. Small changes in the component values will vary the output sound frequencies. Resistor R4 controls the ringing threshold voltage. Its value may be varied between 800 to 2000 ohms. Capacitor C3 can be used to eliminate dial transcients—experiment with values from .5 to 5-uF.

For those who must report the ringer to their telephone company, the ringer equivalent is

approximately .7A. Should you own your in-home or office telephone system, you need not report its use to the telephone company.

PARTS LIST FOR TELEPHONE TURKEY CALLER

C1—1-uF, non-polarized capacitor, 200-WVDC
C2—.001 disk capacitor
C3—1-uF, 16-WVDC
IC1—MC43012-1 telephone tone ringer chip
R1, R2—2700-ohm, ½-watt resistor
R3—68,000-ohm, ½-watt resistor
R4—1800-ohm, ½-watt resistor
SPKR—piezoelectric speaker (inexpensive tweeter may be used)



31 Guitar Tuner

☐ By taking advantage of the frequency stability of the 555 timer IC operating in an astable mode, an oscillator can be constructed which can be used as a tuning aid for the guitar. The first string of the guitar, E, produces a note with a frequency of 82.4 Hertz. That frequency of the oscillator is set to twice this value. 164.8 Hertz, and then followed by a divide-by-two stage to produce the desired frequency. The purpose of the divide-by-two stage is to guarantee that the waveform produced has a duty cycle of exactly 50%. This produces a note with no second harmonic distortion. The frequency of oscillation of the circuit is set by adjustment of R1, R2, and C2 also determine the frequency of oscillation but these components are fixed values and need no adjustment. The output of IC2 is fed to an emitter follower to provide current gain to drive a loudspeaker. C3 acts as a low-pass natural sounding note. The circuit is powered by a 5-volt supply, and this voltage **must** fall within the range of 4.75 to 5.25 volts for IC2 to operate properly.

PARTS LIST FOR GUITAR TUNER

C1, C4—0.1-uF ceramic capacitor, 15-WVDC
C2—15-uF electrolytic capacitor, 15-WVDC
C3—100-uF electrolytic capacitor, 15-WVDC
IC1—555 timer
IC2—7490 decade counter
Q1—2N4401
R1—50,000-ohm linear-taper potentiometer
R2, R4—4,700-ohm, ½-watt 10% resistor
R3—33,000-ohm, ½-watt 10% resistor
R5—33-ohm, ½-watt 10% resistor
SPKR—8-ohm PM type speaker