

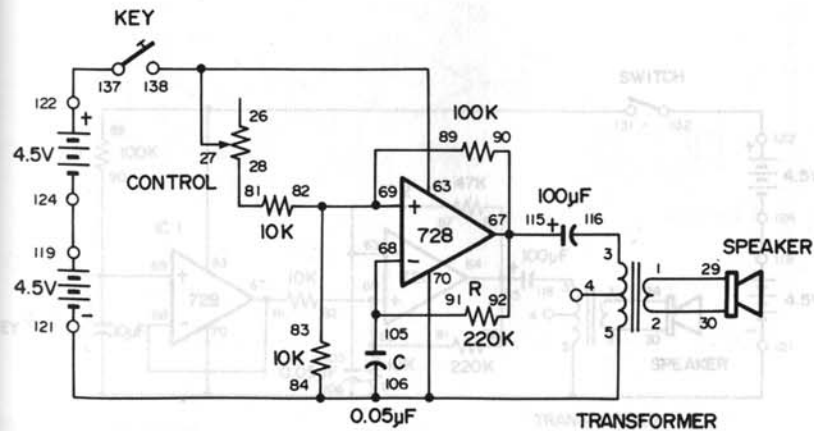
82. OPERATIONAL AMPLIFIER BUZZER

The dual operational amplifier works well as an oscillator. In this project, we build an electric buzzer that makes a continuous beep. You can change the tone of this buzzer by rotating the control.

When you complete the wiring, set the control to the 12 o'clock position and press the key. You hear a continuous beep from the speaker. Now turn the control while pressing the key. The tone of the buzzer changes.

This electronic buzzer only makes a beep, but it can be used for many different purposes as you'll see later.

The oscillating circuit of this buzzer is an astable multivibrator and works as an oscillator producing current that shows a square wave. Changing the control changes the tone of the sound because it changes the frequency of the signal. The frequency is determined by the resistance from the battery input (+) and the resistance from the capacitor that is connected to the (-) battery terminal. Test to find out how the tone changes when you set the value of the capacitor to $0.02\mu\text{F}$ or $0.1\mu\text{F}$.



Wiring Sequence:

1-29, 2-30, 3-116, 5-84-70-106-121, 63-27-138, 28-81, 67-90-92-115, 91-68-105, 69-82-83-89, 119-124, 122-137.

NOTES

Start by sliding the switch to position B and assembling the circuit. When you finish the wiring, connect the terminals 13 and 14 to the long wire and slide the switch to position A to turn on the power. At this time, no sound comes from the speaker.

To test the alarm, detach the wire from terminal 13. The speaker gives out a deep. This deep is the alarm that tells you a burglar is about to break into your house.

As you can see in the schematic, this burglar alarm uses the dual operational amplifier as an astable multivibrator, as the electronic buzzer in the last project did. You can change its frequency by using different values for the 10K ohm resistor and the $0.1\mu\text{F}$ capacitor. Note how the tone of the buzzer changes when you set the 10K ohm resistor to 47K ohms or switch the 100K ohm and 220K ohm resistors with each other.

