

NEW IDEAS

Continuity tester

MAKING CONTINUITY CHECKS CAN BE A tedious undertaking, especially if you happen to be working with wire-wrap circuits. Of course, you could use an ohmmeter to do the job, but continuously turning your head back and forth to read the meter can be a real pain in the neck! There is, however, a way that you can check continuity (and make sure that the resistance is less than about one ohm) without "twisting your head off." All you need do is rig up some sort of audible continuity tester, like the one shown in Fig. 1.

How it works

Power for the circuit is provided by a single 9-volt, transistor-radio type battery. At the heart of the circuit are two LF411 op-amp IC's: One op-amp, IC1, is used along with resistors R1 and R2 to form a ground reference for the circuit; in effect, producing a 4.5-volt split supply. The other op-amp (IC2) is configured as a comparator whose

output used is to source current for the buzzer.

Resistors R4 and R5 form a voltage-divider that provides a reference voltage that is applied to pin 2 of IC2. The circuit to be tested is connected between points A and B via jumpers. The resistance offered by that circuit along with resistor R3 forms a second voltage divider. That leg of the circuit provides the voltage that's presented to the non-inverting input (pin 3) of IC2.

When a non-continuous (open) circuit is connected across points A and B, the voltage appearing at pin 3 of IC2 will be high; therefore, its output will be high and no current flows through buzzer BZ1. However, when a continuous circuit is connected to points A and B, the input to pin 3 will be low, thereby causing the output of IC2 to go low. That completes the current path for BZ1, and causes the buzzer to sound indicating a complete circuit.

Diodes D1 and D2 along with resistor R7 provide protection for the unit in the event that it is accidentally connected to a live circuit.

To calibrate the unit, connect a 47-ohm resistor at R5 and a 1-ohm unit at across points A and B. Now adjust potentiometer R5 until the buzzer just comes on. Resistor R9, which adjusts the circuit's sensitivity, should be a multi-turn, trimmer potentiometer. The maximum current through the circuit being tested will be about 4.5 milliamps.—Ron McCabe

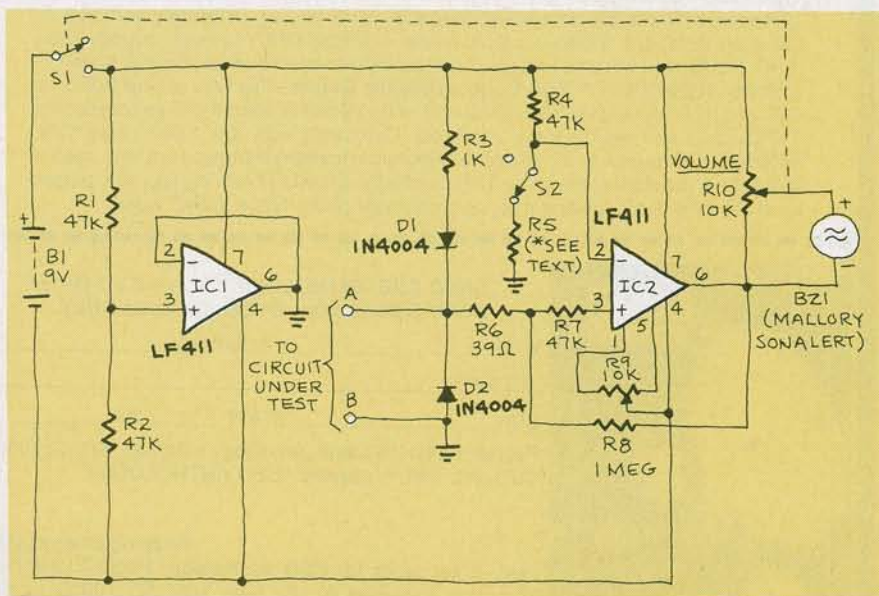


FIG. 1

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