


Circuit lets you test capacitors

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 Electrolytic capacitors tend to leak with time. The circuit in **Figure 1** lets you test capacitors and decide whether they're worth using. You can set the constraint on the leakiness through the values of C_{REF}/R_{REF} . The values in the **figure** are typical for general testing of all capacitors, from 1-nF ceramic versions to 1000- μ F electrolytic types. The value of C_{REF} in the circuit is near the value of the test capacitor, C_X . You can also choose R_{REF} by a rotary-switching arrangement, to be greater than or less than 22 M Ω .

When the pushbutton switch closes, capacitors C_{REF} and C_X charge through their respective PNP transistors. When the switch opens, the capacitors begin to discharge. C_{REF} , assuming that it is in good condition, has an additional discharge external resistance, R_{REF} . The ca-

pacitor under test, C_X , discharges through its internal resistance. If the leakage in C_X is greater than that of C_{REF} through R_{REF} then its voltage will fall faster. Thus, the voltage at the op amp's noninverting input will be lower than at its inverting input, forcing the op amp's output low and lighting the red LED. This LED indicates that the test capacitor leaks. Testing of the circuit reveals that even a 1-nF ceramic capacitor holds against the reference. Check the voltage rating on the test capacitor to make sure that it is higher than the voltage to which it will be charged—in this case, V_{SUPPLY} is -1.8V.

The LF357 has a minimum supply voltage of 10V, but the testing took place at only 6V to allow a low upper-limit voltage for the test capacitor. Make sure the capacitor has a FET or a MOS-FET input stage. **EDN**

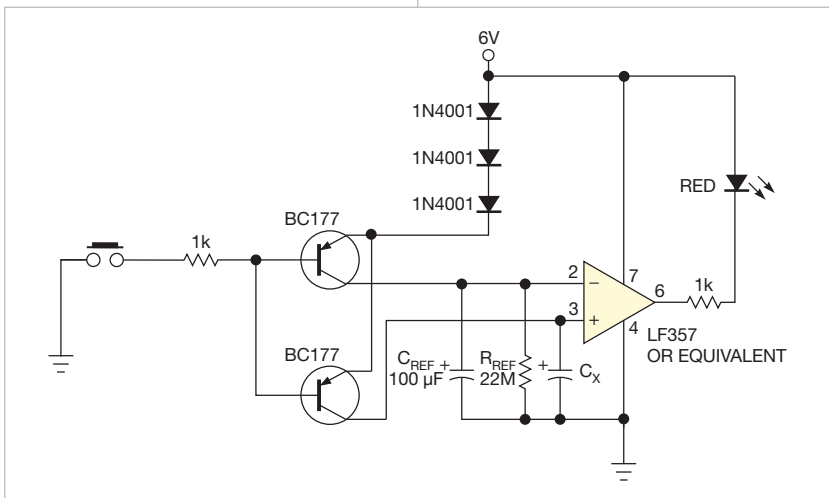


Figure 1 Electrolytic capacitors tend to leak over time, but this circuit lets you test them and decide whether they're worth using.