# Circuit automatically switches off DMM

Vladimir Oleynik, Moscow, Russia

The circuit in **Figure 1** lets you install this automatic-shutoff function in a DMM (digital multimeter). When the momentary pushbutton switch is open, the capacitor discharges through the resistor. The transistor and DMM are off because the gate-to-source voltage is 0V. When you momentarily press the button, the capacitor immediately charges up to the battery voltage. The transistor's gate voltage is higher than its source, turning on the DMM. When you release the button, the capacitor begins to discharge slowly through the resistor. When the gate voltage reaches the threshold level, the transistor turns off, thus switching off the DMM.

With a fresh battery and the values in **Figure 1**, you have about 50 seconds to test the circuit. Of course, you can set this time according to your requirements by changing the RC-network values. If your DMM starts switching on for a shorter time after you press the button, the battery is reach-
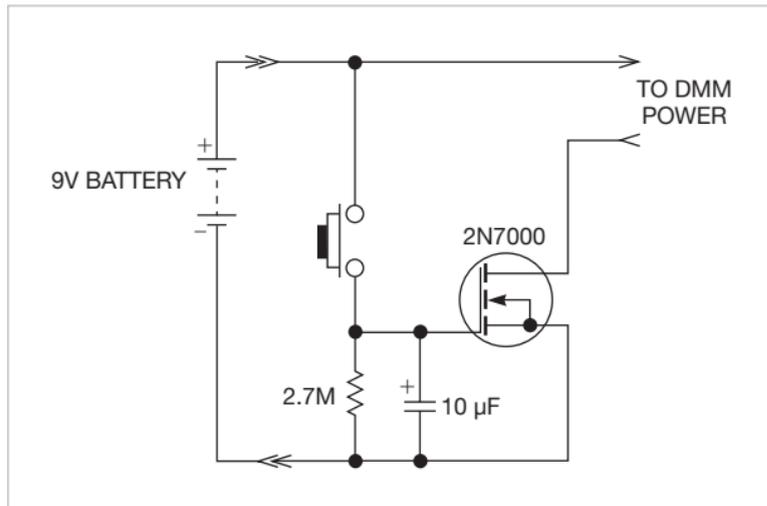
Figure 1 Because of the small number of components required, this auto-shutoff circuit is easy to build and install inside the limited space of a DMM.

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ing the end of its capacity and needs replacement.

Select a miniature, normally open pushbutton switch that will fit into a hole drilled into the circuit's DMM front panel. Because the DMM typically does not have much free space inside, you may need to use miniature surface-mounted components on a small prototype board to minimize the circuit's size. Attach the board to the DMM's back cover using glue or a piece of double-sided adhesive tape. In some cases, through-hole components may do the job as well. To avoid accidentally turning on your DMM during transit, just turn its range switch to the off position.EDN