MAT SWITCH

S.C. DWIVEDI
EFY TESTED

■ **D. MOHAN KUMAR**

This simple circuit produces a warning beep when somebody crosses a protected area in your home or office. The switch, hidden below the floor mat, triggers the alarm when the person walks over it.

The circuit uses a conductive foam as the switch. It can be two small pieces of conductive pads usually used to pack sensitive ICs as antistatic cover. Alternatively, you can make the switch by coating conducting carbon ink on two small pieces of a copper-clad board.

When the circuit is in standby mode, transistor T1 does not conduct, since its base is floating. When the person walks, the switch is pressed and current flows through R1 and the switch to provide positive bias to transistor T1. Transistor T1 conducts and its collector voltage drops, which acts as a negative trigger input for the monostable wired around IC NE555 (IC1).

IC1 outputs a pulse of fifty-seconds duration with preset values of R4 and C3. This pulse is applied to the buzzer through transistor T2. The buzzer sounds a warning beep on unauthorised entry. The pulse duration can be changed to the desired value by changing the values of R4 and C_3. Resistor R2 in the circuit makes the trigger pin of IC1 high to prevent false triggering.

Assemble the circuit on a general-purpose PCB and enclose in a plastic case. Use a 9V battery to power the circuit. Connect the touchpad switch with the PCB and hide under the mat at the entrance. The PCB can be mounted on the nearby wall.

Make the switch carefully using conducting foam or copper clad coated with conducting ink. Place the two pieces with their conducting surface facing each other. Solder carefully a thin copper electric wire and ensure that it makes contact when the two plates touch together on pressing. Provide two 1cm rubber tabs between the plates to avoid touch in the standby mode. ●