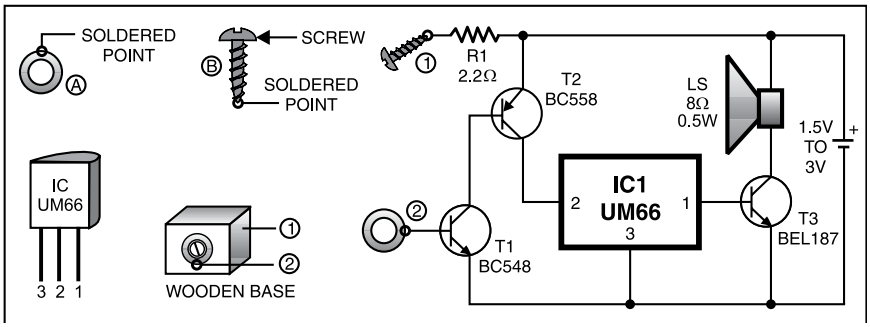
# MUSICAL 'TOUCH' BELL

SUKANT KUMAR BEHARA

Here is a musical call bell that can be operated by just bridging the gap between the touchplates with one's fingertips. Thus there is no need for a mechanical 'on'/'off' switch because the touch-plates act as a switch. Other features include low cost and low power consumption. The bell can work on 1.5V or 3V, using one or two pencil cells, and can be used in homes and offices.

Two transistors are used for sensing the finger touch and switching on a melody IC. Transistor BC548 is npn type while transistor BC558 is pnp type.

The emitter of transistor BC548 is shorted to the ground, while that of transistor BC558 is connected to the positive terminal. The collector of transistor BC548 is connected to the base of BC558. The base of BC548 is connected to the washer (as shown in the figure). The collector of BC558 is connected to pin 2 of musical IC UM66, and pin 3 of IC UM66 is shorted to the ground. The output from pin 1 is connected to a transistor amplifier comprising BEL187 transistor for feeding the loudspeaker. One end of 2.2-ohm resistor R1 is connected to the positive rail and the other to a screw (as shown in the figure). The complete circuit is connected to a single pencil cell of 1.5V.




When the touch-plate gap is bridged with a finger, the emitter-collector junction of transistor BC548 starts conducting. Simultaneously, the emitter-baser junction of transistor BC558 also starts conducting. As a result, the collector of transistor BC558 is pulled towards the positive rail, which thus activates melody generator IC1 (UM66). The output of IC1 is amplified by transistor BEL187 and fed to the speaker. So we hear a musical note just by touching the touch points.

The washer's inner diameter should be 1 to 2 mm greater than that of the screwhead. The washer could be fixed in the position by using an adhesive, while the screw can be easily driven in a wooden piece used for mounting the touch-plate. The use of brass washer and screw is recommended for easy solder-ability.

***Readers' comments:***

❑ The circuit starts ringing (without touching the screw) when connected to 3V. On disconnecting points 1 and 2 (kept open), I still received the ring. Why so?

A. Vaidhyanathan
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***The author, Sukant Kumar Behara, replies:***

You can rectify this snag by changing transistor T1 (BC148) with a new one. On touching the base of transistor T1, its emitter-collector junction starts conducting. But you've mentioned that even without touching the base of transistor T1, the bell starts ringing, which means that the emitter-collector junction of the transistor has got shorted internally.