MUSIC-ON-HOLD FOR TELEPHONES

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Here is a simple circuit for music-on-hold with automatic shut off facility. During telephone conversation if you are reminded of some urgent work, momentarily push switch S1 until red LED1 glows, keep the telephone handset on the cradle, and attend to the work on hand. A soft music is generated and passed into the telephone lines while the other-end subscriber holds. When you return, you can simply pick up the handset again and continue with the conversation.

The glowing of LED1, while the music is generated, indicates that the telephone is in hold position. As soon as the handset is picked up, LED1 is turned off and the music stops.

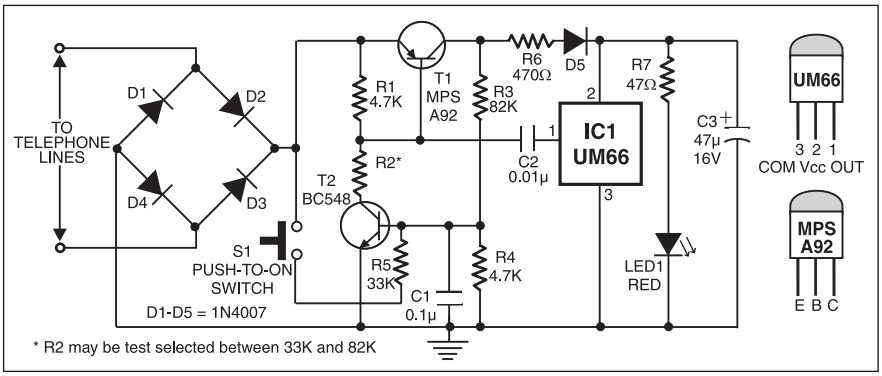
Normally, the voltage across telephone lines is about 50 volts. When we pick up the receiver (handset), it drops to about 9 volts. The minimum voltage required to activate this circuit is about 15 volts. If the voltage is less than 15 volts, the circuit automatically switches off. However, initially both transistors T1 and T2 are cut off. The transistor pair of T1 and T2 performs switching and latching action when switch S1 is momentarily pressed, provided the line voltage is more than 15 volts, i.e. when the handset is placed on the cradle.

Once the transistor pair of TI and T2 starts conducting, melody generator IC1 gets the supply and is activated. The music is coupled to the telephone lines via capacitor C2, resistor R1, and the bridge rectifier.

With the handset off-hook after a ring, momentary depression of switch S1 causes forward biasing of transistor T2. Meanwhile, if the handset is placed on the cradle, the current passing through R1 (connected across the emitter and base terminals of pnp transistor T1) develops enough voltage to forward bias transistor T1 and it starts conducting.

As a consequence, output voltage at the collector of transistor T1 sustains forward biasing of transistor T2, even if switch S1 is released. This latching action keeps both transistors T1 and T2 in conduction as long as the output of the bridge rectifier is greater than 15 volts.

If the handset is now lifted off-hook, the rectifier output drops to about 9 volts and hence latching action ceases and the circuit automatically switches off.



(***EFY lab note.*** *The value of resistor R2 determines the current through resistor R1 to develop adequate voltage (greater than 0.65 volts) for conduction of transistor T1. Hence it may be test selected between 33 kilo-ohms and 100 kilo-ohms to obtain instant latching.*)

The total cost of this circuit is around Rs 50.