

# Musical Calling Bell

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***Connection Diagram***

***Component List with cost (Approximate)***

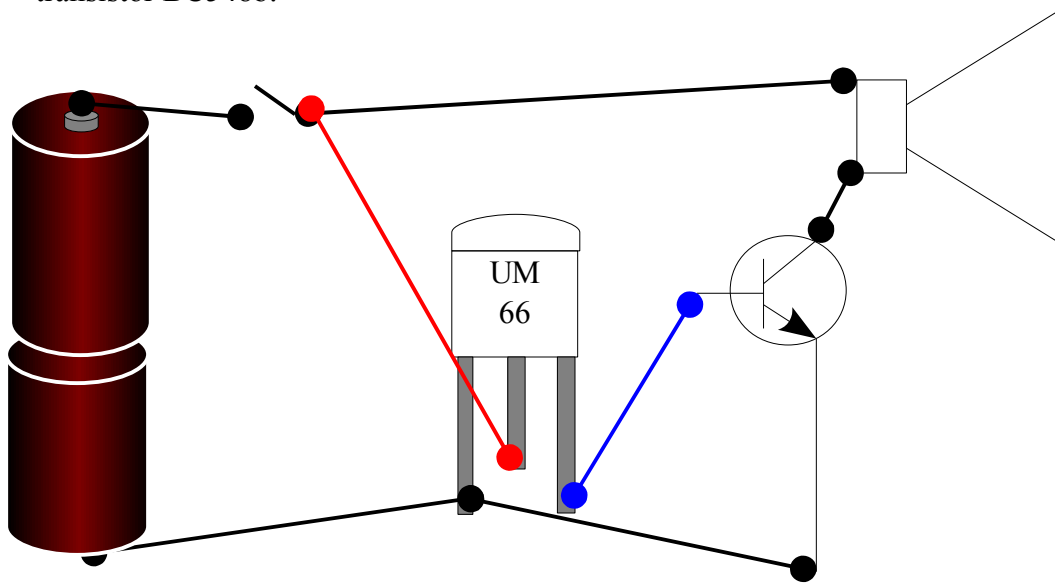
***Component Description (IC and Transistor)***

***Precaution***

***Modification for adaptation***

## Description:

This is the simplest ever musical calling bell that can be easily built. It uses the musical 3 pin IC UM66 and a popularly known Transistor BC548b. The circuit can be made even without soldering and the ideal for the first electronic project for newbies. Here the musical IC UM66 generates the music when it receives supply and drives a small speaker through a class c amplifier using silicon transistor BC548b.



**Fig-1 : Connection Diagram**

The connection diagram is shown below. The component details with cost is also with this. The battery supply should be kept in a battery container to ensure the connection. The volume of the sound of this circuit is so much that it can be used as a calling bell. If anyone want to reduce the volume of the circuit then insert a resistance ( ) in place of the blue line connection. In this circuit please don't give the supply beyond 3 volt without modification as the IC may got damaged. It is better that you should not run this circuit in Eliminator as most of the available eliminator don't have a good filter built in and have no precision over voltage protection. The circuit should not be run in Rechargeable battery also if the Speaker resistance is less than 8 Ohm and may burn the Transistor.

## Component

| <i>Sl No</i> | <i>Item</i>         | <i>Specification</i>  | <i>Cost</i>   |
|--------------|---------------------|---|---|
| 1            | IC UM66             | Three pin IC, like plastic case transistor. Package code TO-222.  | Rs. 6 to Rs. 20 depending upon the music and part code. |
| 2            | Transistor BC548b   | -same-  | Rs. 1/- to Rs 2.5/- depending upon the make.            |
| 3            | Speaker 2"-4"       | Speaker having diameter 2 inch to 6 inch with 50gm to 200 gm magnate and the resistance is more than 4 Ohm. | Rs. 10/= to Rs35/-.                                     |
| 4            | Wire for connection | Any insulated wire. Five coloured wire can be used.   | Each 1 M = Rs 2/- to Rs 3.5/-                           |
| 5            | Push button switch  | Any type.   | Rs 1/- to Rs 25/-                                       |
| 6            | Battery             | Any Dry cell battery, Alkaline battery. Rechargeable can be connected with protection/Modification.         | Rs. 4.5/- to Rs. 25 each.                               |
| 7            | Battery Holder      | Any type but should be matched with the battery.  | Rs. 7/- to Rs. 10/-                                     |
| 8            | Resistance          | Optional Quarter watt if not specified.   | Rs. 4.5/- to 2.5/- for 1 dozzene,                       |

## Component Description

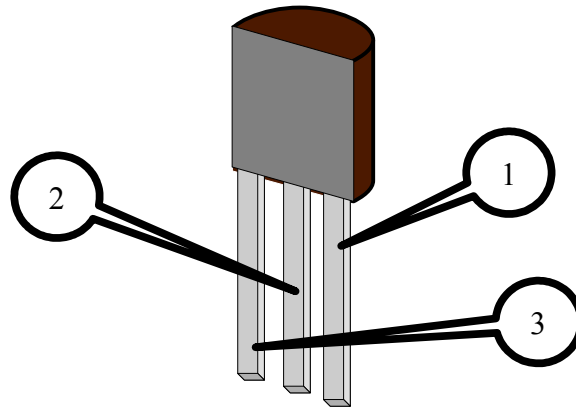


Fig -2 : Pin Configuration

| Component | Pin1    | Pin2 | Pin3      |
|-----------|---------|------|-----------|
| ICUM66    | Output  | +Vcc | -Vcc      |
| BC548b    | Emitter | Base | Collector |

## Precaution

Points of importance:

- ➔ Never connect the IC in reverse supply connection.
- ➔ The music depends on the part number of the IC .
- ➔ The transistor are should be connected in proper pin configuration.
- ➔ The recommended power supply is battery of 3 volt.
- ➔ The speaker and resistance has no terminal polarity and connection points can be interchanged.

## Modifications

### **1. For supply voltage difference.**

The IC positive point should be biased with potential divider such that the voltage at the positive in should not exceed 2.5 volt. For example it should be 68k and 10k and the terminal voltage will be 1.82 volt. Sometimes the IC is supplied only through a very high value series resistance like 220k from 12 volt, but the output bias current of the IC will not be sufficient then to drive and works as a signal and can only be driven through preamplifier or using Darlington pair/Zhikli pair as buffer.

### **2. To limit speaker current/reduce volume.**

The speaker current can be limited using series resistance in blue line such that the base current as well as collector current (i. e. Speaker current also). The formula is  $R = \{(V_{cc} - V_{ee}) - 0.05\} * [\text{ratio of potential divider if used}] * b / I_{spk}$ .  $I_{spk}$  = Speaker Current,  $b = h_{FE}$  of the transistor

### **3.to Increase volume/Protection of Transistor.**

The current carrying capacity can be increased using Darlington pair with power transistor to increase volume.