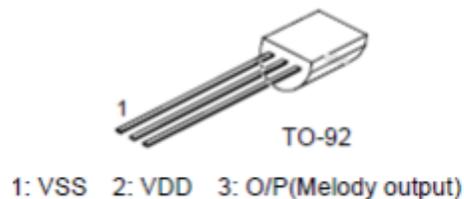


Introduction to UM66 and Different Testing Circuits

UM66:

UM66 is CMOS technology melody integrated circuit especially used in doorbell, toys and alarm applications. The integrated circuit has inbuilt ROM for storing the melody information, low power consumption by the integrated circuit (UM66) is another feature, UM66 has 6bit of ROM, can operate at different voltage levels like 1.5V to 4.5V. NPN transistor is used in between to give the output from speaker, when we reset the circuit UM66 will play the melody from the first note in the ROM.

Functional Description of UM66:



PIN	FUNCTION
VDD	Power supply is given to this pin
VSS	This pin used for giving the ground
O/P	Melody output will come from this pin.

Oscillator Circuit: The quality of frequency is always depends on the oscillator frequency.

Tone Generator: There are different tone frequencies, each frequency of tone will give different sounding and tone generator will work as a voltage divider and generate different tone. The different range of frequency is from 258Hz from 32768 Hz.

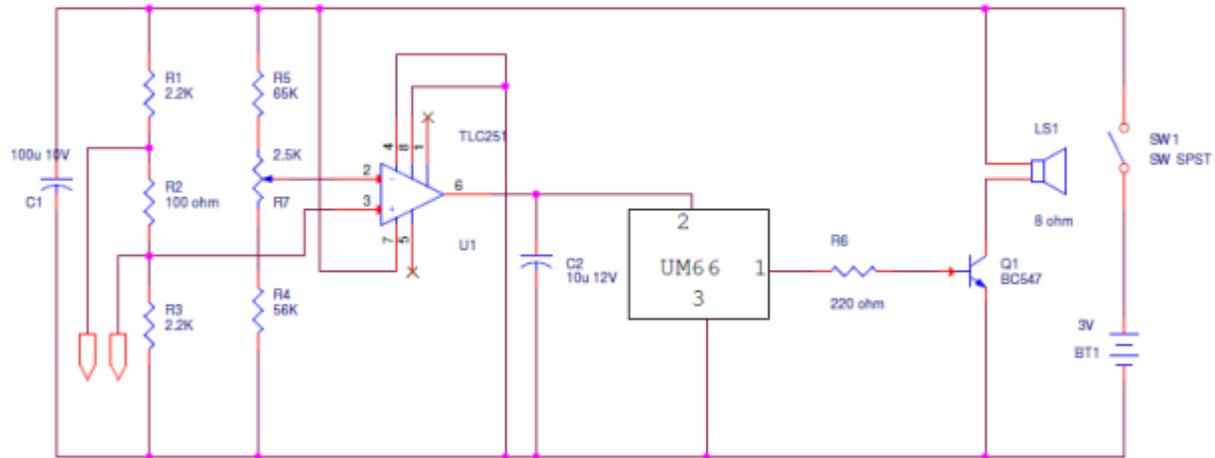
Melody ROM: In the circuit, we know that 6bit of ROM is available, in which 4bit is used for storing the melody not and remaining 2 bit is used to control the output of rhythm.

Tempo Generator: UM66 can generate the tone in different tempos, 15 tempos are available like 127 to 1920 j/minute.

Simple Continuity Tester:

We know that continuity tester will used to test whether there is continuity or connection between two components. Here is another simple and easy designed circuit for testing the continuity.

Simple Continuity Tester Circuit Diagram:



Circuit Explanation:

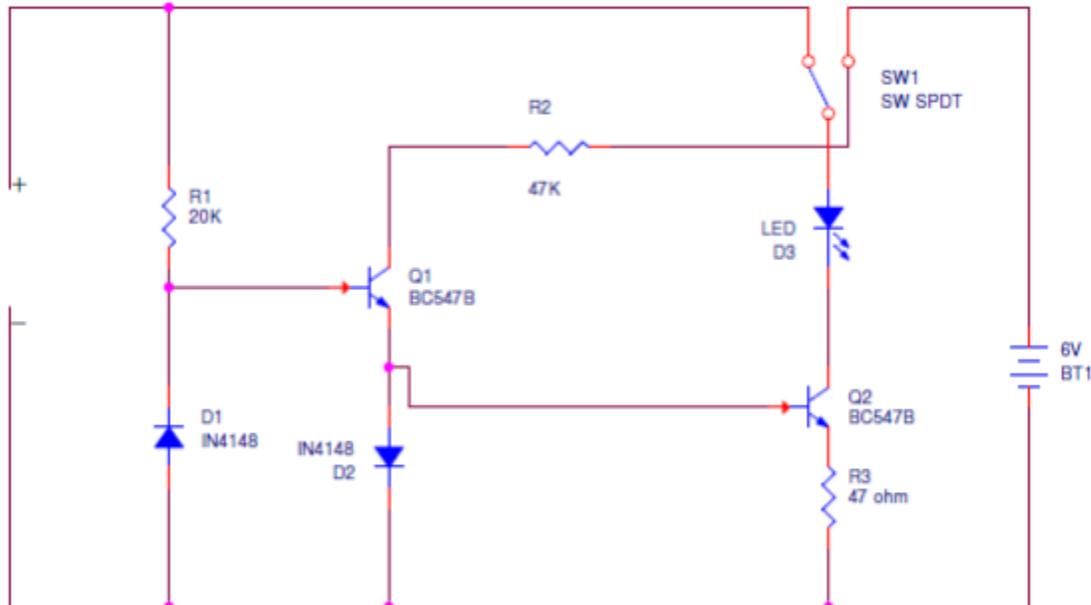
- The main component in the circuit is TLC251 which is a low cost operational amplifier which can operate at 1.5V to 16V with low noise. The operating voltage of 3V is used in this circuit.
- The pin 2 of operational amplifier is connected to the potentiometer which is used for adjusting the negative resistance of TLC251. The pin 3 is connected to the one of the probe as shown in the circuit. Another probe is connected to the resistors R1 and R2.
- UM66 is connected to the output of TLC251; UM66 is audio or melody generator whose output is given to the speaker through a transistor (BC547). The capacitor C2 is used for smoothing the signal from the output of TLC251 and given to the UM66. The transistor Q1 will act as an amplifier and amplify the signal from the UM66 and give to the speaker. The resistor R6 used for limiting the current for base of the transistor. The Resistor R1 and R2 are used as biasing circuit to the probe.
- If you want to check whether the circuit is working or not, make the two probes to contact each other. When there is a contact the resistance between them will be almost zero so there is a change in voltage in the circuit. This change will immediately recognized by the op-amp and amplify the signal and trigger the UM66 (melody generator), which will generate sound by using a speaker.
- Same theory applies when you tested the connectivity or continuity between the components. If there is continuity or connectivity the resistance change in the circuit and sound is generated.
- When the probes are far away or not in contact the resistance will not change and no sound is generated.

Polarity Testing Circuit:

We always face a lot of problem with polarity of the components; we often make wrong decisions in the components polarity and use them in wrong direction. This may cause even damage to the entire circuit also, so choosing the

correct polarity for the component is must. Here is the simple circuit which will check the polarity of the component, if you connected in right polarity the LED in the circuit will glow and it will not glow when you connected in wrong way.

Polarity Testing Circuit Diagram:



Circuit Explanation:

- The circuit will work on the concept of constant current source technique (CCS), this concept is very simple the circuit will work only when all the components in the circuit are closed, so there is constant current flow in the circuit from the source.
- When the component is placed in the circuit (should be placed between + and – symbols), if it is placed in the correct polarity the transistor Q1 will be turned on because of the current flow. The transistor Q2 will also be turned on by the emitter current of the transistor Q1. The diode D2 is used for maintaining the constant current flow to the base of the transistor which will give the constant current flow in the collector also. The transistor Q1 will also turn on the LED through the Switch.
- When the component is placed in the wrong direction the reverse current will flow and diode D1 will conduct and turn off the transistor Q1 and Q2 as a result the LED will not glow.

Source: <http://www.electronicshub.org/introduction-um66-different-testing-circuits/>