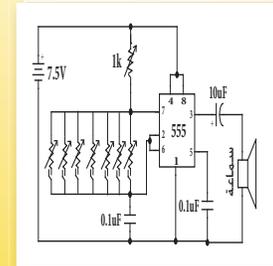
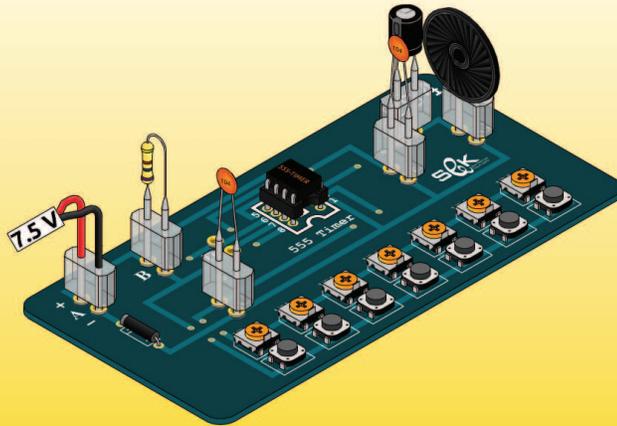


## Experiment No. (42) Timer 555 - Electronic Piano Circuit



### Objectives:

1. The student will construct an electronic piano circuit using IC 555.

### Apparatus:

- EB4 Board w/IC 555
- Voltage Source (PSB Board)
- Connection Wire
- Ceramic Capacitors  $0.1\mu\text{F}$  (104)
- Electrolytic Capacitor  $10\mu\text{F}$
- Variable Resistors  $100\text{K}\Omega$
- Resistor  $1\text{K}\Omega$
- Micro Speaker
- Mini Screw Driver

### Procedure and Conclusions:

1. Using EB4 board set up a circuit by inserting a resistor  $1\text{K}\Omega$  at the pair (B), ceramic capacitor  $0.1\mu\text{F}$  at the pair (C), another ceramic capacitor  $0.1\mu\text{F}$  at the pair (E), electrolytic capacitor  $10\mu\text{F}$  at the pair (F), speaker at the pair (G).
2. Connect (7.5 volt) from PSB Board to the pair (A) using a connection wire in a way that the positive terminal (red wire) is placed at the positive sign of the pair (A).
3. You can produce different types of tones and sounds by changing the variable resistors values.
4. While pressing continuously the first switch buttons placed on the left of EB4 board, use a mini screw driver to turn the wiper of the first variable

- resistor placed on the left of EB4 board until you get the first suitable tone.
6. Now, press continuously the next switch buttons placed on the left of EB4 board, use the mini screw driver to turn the wiper of the second variable resistor placed on the left of EB4 board until you get your second suitable tone.
  7. Likewise, do the same thing for all switches placed on EB4 board. This will produce a voltage signal with a varying frequency. This signal is fed to a speaker, which vibrates more or less depending on the frequency of the signal, hence producing sound of different tones.
  8. Press all the switches buttons randomly in order to listen the tones produced by them. This circuit produces a tone according to the button being pressed.

### Notes:

- The 555 timer is a chip that can be used to create pulses of various durations.
- In this circuit, the 555 timer is operated in astable multivibrator mode. In astable multivibrator mode, the circuit produces accurate free running waveforms, which can be adjusted.



### Discussion

1. Discuss the three different modes of 555 Timer: Monostable Mode, Astable Mode & Bistable Mode.