

# INTRODUCTION OF PIEZO CERAMIC AUDIO DEVICES

1. Piezoelectric Ceramic buzzer elements have a simple structure in which a piezoceramic element is glued to vibration plate. When alternating voltage is applied to a piezoceramic element, the element expands or shrinks diametrically. This characteristic is utilized to make vibration plate bend to generate sounds.



2. The acoustic generating method can be roughly divided into self-drive oscillation method and external-drive oscillation method. The former shows the lowest impedance on the acoustic generator, and produces the sound by the positive feedback oscillation circuit to make resonance. Thereby, big sound pressure can be obtained by a simple circuit. While the latter selects an optional frequency and makes sound by the non-stable multivibrator, and it is used for the case having the oscillation circuit.



3. There are 2 support methods for piezoelectric ceramic buzzers products.

**A. Circumference Fixing Method** - This method is to fix the outside circumference of the buzzer element to the supporting ring of the plate. Considerable sound pressure can be obtained covering a wide frequency range around the resonant frequency.

**B. Nodal Mounting Method** - This method is to fix the nodal diameter of the buzzer element to the supporting ring of the plate. Loud sound pressure can be obtained. Flexible adhesives, such as silicon rubber, should be used between the buzzer element and the support ring.



4. Piezoelectric ceramic devices are specifically designed for applications requiring a highly reliable alarm or signal that is completely solid state with no electromechanical contact. They are generally replacing the conventional electro-magnetic buzzers because of low power consumption, extremely clear penetrating sound, no electrical noise, compact size and lightweight, variety of models for various tone functions. Furthermore, the demand for piezo speakers is increasing recently due to the increasing use of LSI for voice synthesis. There are developed many products which can meet the demand for high sound pressure level and wide frequency band by using high performance of piezo ceramic elements based on advanced technology.