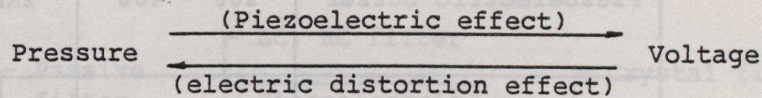


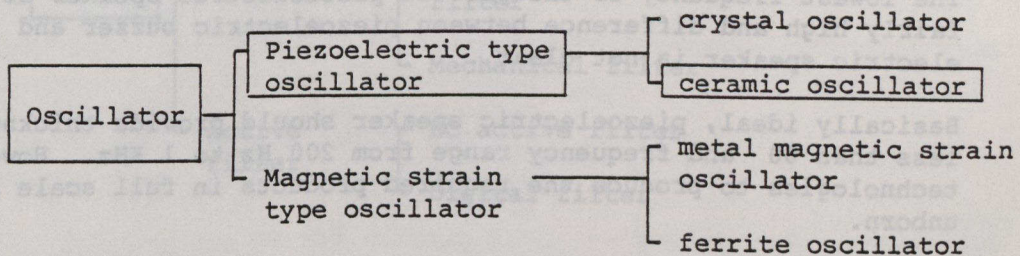
a) Outline

Market Position and Application of Piezoelectric Ceramics

Piezoelectric ceramics is considered as being kind of oscillator.



Among those providing piezoelectric effect and electric distortion effect, it can be classified as one of the ceramic oscillators, excluding crystal oscillator.



Ceramic oscillators which are usually called piezoelectric ceramics, have broad application area as follows:

- | | |
|---|---|
| Ceramic Oscillator
(piezoelectric ceramic) | <ul style="list-style-type: none"> - Filter (Band, Pass, Filter) - Ignition cock (for gas equip. & cigarette lighters) - Ultrasonic wave (microphone, delay line) - Sensor (pick-up) - Others (light-effect parts, buzzer, etc.) |
|---|---|

Although ignition cock and piezoelectric buzzer are grouped in the product of late start, they have developed unique applications showing stable growth in share.

Clevite Co. of U.S developed the piezoelectric ceramic material named PZT and at the same time obtained wide range patents.

In 1965, three-composition piezoelectric ceramics containing composite Perovskite and PZT was developed by Matsushita Electric Group.