Ceramic Package Crystal Oscillator Module Handling Precautions

Crystal oscillator modules available in ceramic packages have a wiring pattern comprised of both the pad terminals on the bottom surface (Figure 1), for use by the customer, and additional internal wiring (Figure 2) connecting the oscillator IC to a crystal blank. The ceramic package has a construction that exposes the wiring pattern externally via the internal wiring, even when the pads are not used.

The exposed portions are located at many points around the side walls of the ceramic package, although these points are too small to distinguish with the naked eye upon inspection. However, the exposed portions are electrically connected to the internal wiring pattern and the IC pad terminals (Figures 3 and 4).

The crystal oscillator IC used in the crystal oscillator module is a semiconductor integrated circuit, and hence is susceptible to electrostatic breakdown if the electrical stress applied externally exceeds the allowable level.

In order to prevent electrostatic breakdown, direct contact of the pad electrodes on the bottom surface with charged, metallic, or conducting materials must be avoided when handling the device. However, as noted above, there are other indistinguishable electrodes exposed on the periphery of the device.

These indistinguishable electrodes are also connected to the internal wiring, and are equally susceptible to electrostatic breakdown if the electrical stress applied externally exceeds the allowable level. Accordingly, these points must be treated in the same way as the pad electrodes when handling devices.

Figure 1.

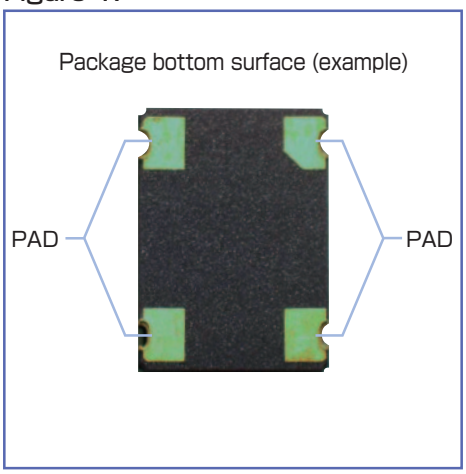


Figure 2.

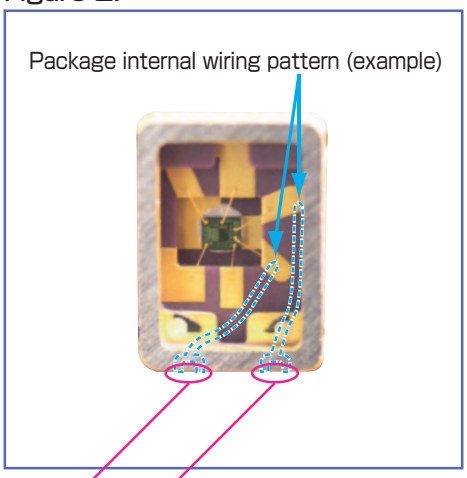
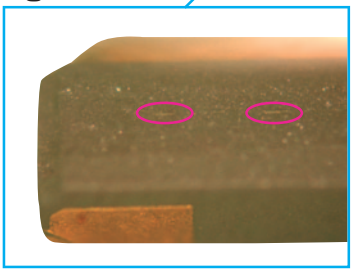


Figure 3.

Package side walls

The internal wiring pattern is exposed on the package side walls.
These portions (within OVAL) are not distinguishable with the naked eye.

Figure 4.



Package side wall enlargement

Exposed wiring pattern (within OVAL) is just visible when viewed on enlarged scale.