



## Quartz Crystal Handling Instructions

The following instructions and information are provided for the purpose of having the user understand the proper way to process our crystal products to prevent problems prior to use and enhance the reliability of the equipment to which they are applied.

### **When dropped by mistake:**

The crystal units are designed and manufactured to resist physical shocks. However, when the crystal units are subjected to excessive impact such as being dropped onto the floor or giving shocks during processing, need to make sure its satisfactory performance before using it.

### **Lead cutting:**

One sensitive part in through hole crystals is the glass isolator section. Mechanical stress during lead bending or lead cutting can create micro cracks in the glass. The wire must be mechanically fixed between the bending or cutting point and the glass area. Do not cut or bend the wire at less than 3.0 mm distance from the base plate. Fronter offers a cutting service for all through hole crystal types.

### **To bend the lead of cylinder type products:**

When the lead of cylinder type crystal units need to be bent, leave more than 1.5mm (3.0mm is recommendable) of lead from the case in order to prevent from any cracks of the hermetic sealing glass at the root of the lead, and use a jig to bend if possible.

### **Mounting:**

#### ◆ Mounting of cylinder type product

Soldering the body of the cylinder type crystal units with PCB must be avoided due to deteriorate the characteristics or damage the products. Rubber adhesive is recommended.

#### ◆ Mounting of SMD type product

When using an automatic loading machine, please test and confirm to cause no damage to the crystal units before mounting. Bending the circuit board in the process of cleaving boards after mounting and soldering crystal units may cause peeling off the soldering or package cracks by mechanical stress. Please be sure that the layout of crystal products position is on the less stressed and the cleaving process is under less stressed for the crystal units.



**Cleaning:**

- ✓ General cleaning solutions or ultrasonic cleaning may be used to clean our crystal products, Ultrasonic cleaning is acceptable up to 20 kHz. Higher frequencies can destroy the crystal blank. The ultra sonic conditions can change according to different pc-board sizes and weights.
- ✓ Please be sure to check if your cleaning and welding process affects any damage to crystal units before using.
- ✓ Products using tuning-fork crystals cannot be guaranteed if cleaned using ultrasonic methods, because crystal may be destroyed.
- ✓ Please advise us in advance if any requirement for ultrasonic washing.
- ✓ Some kinds of cleaning fluid may cause any damage to crystal units. Please be sure to check suitability of the cleaning fluid in advance.

**Soldering:**

- ◆ Lead Type products
  - ✓ All through hole crystals are suitable for the standard wave soldering lines.
  - ✓ Lead wires should be soldered within 3 seconds with the soldering iron heated to a temperature no higher than 300°C.
- ◆ SMD Type products
  - ✓ Our crystal products are designed so they may withstand the same standard reflow soldering temperatures as most other electronics components. However, if the reflow temperature is higher than our specification allows, the crystals' performance may be affected. Avoid soldering the product at temperatures higher than specified.
  - ✓ If soldering processes are used with higher temperatures (lead free soldering) please contact us.

**Storage:**

- ✓ Storage of crystal units under higher temperature or high humidity for a long term may affects frequency stability or solderability. Please store the crystal units under the normal temperature and humidity without exposing to direct sunlight and dew condensation
- ✓ Avoid storing them for a long period and mount them as soon as possible after unpacking.

**Normal temperature and humidity:**

Temp: +15 °C to +35 °C, humidity: 25 %RH to 85 %RH

Please carefully handle the inner and outer boxes and reel. External pressure may cause deformation of reel and tape.