

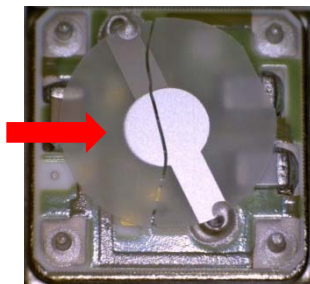
Product Handling and Storage Procedures for Quartz Crystals, Oscillators, TCXO, VCXO, OCXO and Crystal Filter products

This document is intended as a guide for manufacturing engineering, production line, quality inspection and material control personnel in the proper transporting, handling, storage and processing of quartz based devices. This document should be distributed to the appropriate personnel in their respective areas of responsibility.

Mechanical Shock & Vibration

- When transporting quartz based devices it is important to minimize shock by transporting the devices in a suitable carrier or other packaging in order to avoid device-to-device contact. Dropped carriers or reels should be considered as “probably damaged” and should not be used.
- All quartz based devices should be considered as “probably damaged” if dropped from more than 18” on to a hard surface.

**Broken Quartz Crystal
due to Excessive
Mechanical Shock**



- Do not expose crystal devices to shock or vibration levels that are beyond the specified limits. Please see MtronPTI’s website at www.mtronpti.com for standard shock and vibration specifications.

Storage

- Do not exceed the recommended storage temperature and humidity limits for a quartz based device during short term storage. See specific MtronPTI product data sheet or website www.mtronpti.com for storage condition information.
- Long term storage of crystals, crystal oscillators and other quartz based timing modules should be conducted in the supplied packaging under controlled conditions not to exceed 30°C and 60% RH (Relative Humidity). Storage of product within these conditions ensures the continued acceptability of electrical and mechanical characteristics such as frequency, aging, and solderability. For optimal solderability performance, it is recommended that product be used within 12 months of receipt.

ESD Sensitivity

- Crystal oscillators and timing modules all contain active electronic circuits and are considered ESD sensitive. Personnel handling these devices should use a grounded wrist strap or heel strap in a static safe work station. Parts should only be placed on grounded conductive surfaces and ESD protective packaging must be used when transporting or shipping the devices.



Processing Precautions

- Heed all manufacturers “Warning Labels” on device packaging.
- Do not exceed the recommended reflow temperature profile for a given quartz based device. Failure to do so can result in devices that are permanently damaged or out of specification. See specific MtronPTI product data sheet for recommended reflow conditions.
- Do not expose quartz based devices to high temperature reflow if “Hand Solder Only” is specified on the product data sheet.
- Do not hand solder any leads to the case of the quartz based device, excessive heat may damage the device.
- Do not use ultrasonic cleaning for quartz based devices.
- Do not perform lead cutting or forming operations unless the proper tooling is available. Failure to do so can result in cracked or broken glass-to-metal seals around the crystal or oscillator leads and may result in loss of hermeticity.
- Do not force or stress leads of the device when pick and placing into a socket or PCB hole.
- Do not use excessive force when pick and placing devices on to a PCB assembly.
- Use a cleaning process that will assure that no residual material from the soldering or washing process will exhibit a low resistance path across the crystal leads. Tuning fork (32.768 kHz) crystals are especially susceptible to starting problems if the crystal leads have a low (≥ 10 K ohms) resistance path across the leads.
- Some quartz based device packages are non-hermetic and failure to comply with the “No Wash” recommendation can result in a damaged, or an out of specification device. See specific information on product data sheet.



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