

GLOBAL QUALITY

HANDLING GUIDE

SOLDERING

Harmony Electronics' crystal products are designed to withstanding the standard reflow soldering temperatures as most other electronics components. However, temperatures higher than the specified rules may affect the crystal products' performance. It is recommended that customers avoid soldering the product at temperatures higher than specification.

CLEANING

General cleaning solutions and ultrasonic cleaning may be used to clean our crystal products; however, verification tests are recommended before using.

SHOCK RESISTANCE

Harmony Electronics' Crystal products are designed for resisting physical shocks, but the products may be damaged under some conditions, such as receiving excessive shocks or dropped on the ground. Please be sure to check for any damages before using.

MOUNTING

< SMD Type >

Surface mount crystals are designed to be compatible with most automatic mounting processes; however excessive shocks caused by mounting and vacuuming may deteriorate the crystals' characteristics and affect the products. Please set the mounting conditions to minimize the shocks as much as possible, and to clear all conditions which may affect on the characteristics before mounting, or test mounting of the crystal before mass production. If there is a possibility that the PCB may be warped, make sure the degree of warping will not affect the crystal product's operating characteristics or soldering conditions negatively.

< Lead Type >

Avoid putting too much stress on the glassed part of the base when bending, forming, or mounting leaded crystal products as it may crack and affect the crystals' performance negatively.

STORAGE

Storing crystal products under higher temperatures, lower temperatures, or high humidity may affect frequency stability or deteriorate the soldering ability. Be sure to store crystal products under adequate conditions. Avoid storing in direct sunlight or damp environments.

The Normal storage temperature and humidity is:
Temp, +15°C to +35°C, humidity 25 % RH to 85 % RH

OTHERS

< Crystal Resonators >

Excessive voltage may affect crystal resonators' performance, or damage the crystal blank. Please use the product within the specification provided.

Negative resistance determines the tolerance margin of a circuit that oscillates the resonator. We recommend that the negative resistance be at least five times the standard series resistance for standard applications and at least ten times the standard series resistance for automotive and safety applications.

< Crystal Oscillators >

C-MOS is used for internal circuit of crystal oscillators. Take care to prevent the "atch-up phenomena" or static electricity.

Some crystal oscillators do not have internally connected bypass capacitors. When using the product, use a condenser with a good high frequency characteristic of 0.01 F between Vdd and GND (e.g. Ceramic chip capacitor) and connect it at the shortest possible distance. For details, refer to the specifications of each individual product.