

# Chip Resistors Application Notes

## Surface Mount Device Application Notes

### Safety Precautions

1. Avoid excessive bending of printed circuit boards in order to protect the resistors from abnormal stress.
2. When soldering with a soldering iron, never touch the body of chip resistor with the tip of the soldering iron. When using a soldering iron with a high temperature tip, finish soldering as quickly as possible (within three seconds at 350 °C max.).
3. Take measures against mechanical stress during and after mounting of Chips, so as not to damage their electrodes and protective coatings. Be careful not to misplace the resistors on the land patterns. Otherwise, solder bridging may occur.
4. If a transient load like a pulse is expected to be applied, check and evaluate the operations of the resistors before use. Never exceed the rated power. Otherwise, the performance and reliability of the chip device may be damaged.
5. As the amount of applied solder becomes larger, the mechanical stress applied to the resistors increases, causing problems such as cracks and faulty characteristics. Avoid applying an excessive amounts of solder.
6. Do not apply shock to the resistors or pinch them with a hard tool (e.g. pliers and tweezers). Otherwise, the protective coatings and body of chip device may be chipped, affecting their performance.
7. Do not use halogen-based or other high-activity flux. Otherwise, the residue may harm the resistors' performance and reliability.

## Precautions for use

1. Carefully position these products so that their temperatures will not exceed the category temperature range due to the effects of neighboring heat-generating components. Do not mount or place heat-generating components or inflammables, such as vinyl-coated wires, near these products.
2. Note that non-cleaning solder, halogen-based highly active flux, or water-soluble flux may deteriorate the performance or reliability of the products.
3. Carefully select a flux cleaning agent for use after soldering. An unsuitable agent may deteriorate the performance or reliability. In particular, when using water or a water-soluble cleaning agent, be careful not to leave water residues. Otherwise, the insulation performance may be deteriorated.
4. These products are not intended for use in the following special conditions. Before using the products, carefully check the effects on their quality and performance, and determine whether or not they can be used.
  - In salty air or air with a high concentration of corrosive gas, such as SO<sub>2</sub>, Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, or NO<sub>2</sub>.
  - \* Please take measures to avoid any of ESD environments. Smaller components are more sensitive to ESD.
  - \* Avoid any environment where strong electromagnetic waves exist.
  - \* In an environment where these products cause dew condensation
  - \* In liquid, such as water, oil, chemicals, or organic solvent
  - \* In direct sunlight, outdoors, or in dust

## Precautions for storage

The performance of these products including the solderability is guaranteed, provided that they remain packed as they were when delivered and stored at a temperature of 5°C to 35°C and a relative humidity of 45% to 85%.