

# Operating Precautions

1. The use of the products mentioned in this catalog refers to consumer appliances that are available on the open market.
  2. There are cases which high levels of reliability distinctive from consumer appliances sold on the open market are necessary for electrical components which are used in equipment that could effect human life or create huge social loss owing to defects in medical equipment, space equipment, nuclear power-related equipment, vehicle-mounted equipment, aircraft and other equipments. When you examine the use in the above-mentioned equipment or for uses not mentioned within this catalog, ensure that you consult with our sales department prior to deployment.
  3. As the use of resistors and surface-mounted parts used in all electrical components, especially resistors used in high-voltage circuits and in circuits prescribed for safety regulations, will be greatly affected by the circuit used, the method of mounting, the material, and environmental conditions, ensure that you consult with our sales department prior to deployment when examining the viability of use in characteristic circuits, mounting methods, material and under characteristic environmental conditions.
  4. Thoroughly verify performance and reliability when using under the following characteristic environmental conditions:
    - (1) Use within a liquid environment (water, oil, liquid chemical, organic solution, etc.)
    - (2) Use in direct sunshine, outdoors in heavy dew, in dusty environments, or where corrosive gas is present (sea breezes, Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>, etc.)
    - (3) Use in environments with strong electrostatic or magnetic waves exist.
    - (4) Use nearby flammable substances.
    - (5) Use with the resistors coated in resin, etc.
    - (6) Use of water or water solution for flux cleaning after unwashed soldering or soldering.
  - (7) Use in environment which allow condensation to collect on the product.
5. Storage
- (1) Store these products in the following environment :  
Within 5~35°C, 25~75 % R.H.
  - (2) Avoid storage in locations where corrosive gas is present (sea-breezes, Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>, etc.) or in direct sunlight. Failure in observing this may result in a deterioration of performance and may adversely affect the soldering.
  - (3) Terms of guarantee:  
2 years except RC series and RC1/2U. Please refer storage terms at RC and RC products at 57 and 59.
6. Take care handling these products as they may be damaged and become defective if subject to impact, such as dropping.
7. Take special note of the following for surface-mounted components:
- (1) Separate the parts that do not require soldering with solder resist, and do not solder areas which do not require soldering.
  - (2) Avoid mounting in areas which are subject to mechanical stress, such as close to printed circuit board grooves or areas which distort easily.
  - (3) Ensure that the condition of the mounting is evaluated and verified on circuit boards when subjected to overloads in the form of pulses or surges, etc.
  - (4) Use non-corrosive flux.
  - (5) Avoid gripping chip resistors with pincers as this may result in the loss of the protective cover or resistance.
  - (6) Do not allow soldering irons to come into direct contact with the electrodes when soldering with the use of an iron.
8. Ensure that the rated electricity is reduced sufficiently in consideration of temperature rises caused by adjacent heat generation components when using high-voltage circuits.

## [RoHS Directive Compliance]

1. All of Kamaya branded products, chip resistors and leaded resistors are in compliance with RoHS directive\*.  
\*RoHS Directive (The restriction of the certain hazardous substances in electrical and electronic equipment.)
2. The following 6 materials are prohibited by RoHS directive.
  - Lead (Pb)
  - Cadmium (Cd)
  - Mercury(Hg)
  - Hexavalent Chromium
  - Polybrominated Biphenyl (PBB)
  - Polybrominated Diphenyl Ether (PBDE)
3. In case of chip resistors, PbO is content in glass materials which is agreed by RoHS directive as exception.  
("Environment Update, WEEE Handbook V")  
Application of lead, mercury, cadmium, and hexavalent chromium, which are exempted from the requirements of Article 4(1)
  - 5. Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.
4. About shipment product after January, 2004 of our product (KAMAYA brand product), we ship it with an article (an electrode plating no lead article) for environment.