

# ALUMINUM ELECTROLYTIC CAPACITORS

## TECHNICAL NOTE

### Points for Attention

#### 1. On the circuit design

(1) While making confirmation on the environment for operation and installation, the following conditions should be avoided for those capacitors with rated performance range specified in the product catalogue and design instruction.

- High temperature (The temperature exceeding the Max. Operating temperature)
- Over-current (The current exceeding the rated ripple current)
- Over-voltage (The voltage exceeding the rated voltage)
- Applying reverse voltage or AC voltage
- To be used in the circuits with repeated sudden charge and discharge. Furthermore, during the circuit design, please select capacitors which match the lifetime of the machine.

(2) The capacitor can, the auxiliary lead terminal used for increasing the installation strength, the positive & negative electrode and the PCB should be separated from each other, totally.

(3) If the insulation property of the capacitor sleeve can not be ensured, please don't use it in places which specified insulation.

(4) Please don't place the capacitors under the following operation conditions.

- Directly in contact with water, salt solution and oil or under the dewing environment
- Under the environment full of poisonous gases (H<sub>2</sub>S, H<sub>2</sub>SO<sub>3</sub>, HNO<sub>3</sub>, Cl<sub>2</sub>, ammonia solution etc.)
- Expose directly to sunshine, Ozone, ultraviolet rays and radiation
- The vibration and impact conditions exceeded the range of the adverse circumstances specified in the catalogue and the operation instruction.

(5) The following items should be confirmed before it is inserted into the PCB.

- The distance between the positive and negative electrodes of the capacitor should match the distance between the holes on PCB.
- To ensure a proper space above the explosion-proof vent of the capacitor
- Above the explosion-proof vent, to avoid as much as possible the arrangement of circuit lines and the installation of other components.
- Please don't arrange other circuit lines around the location for mounting capacitors

e. To avoid as much as possible the mounting of heat generating components around the capacitors and on the PCB

(6) Furthermore, the following items should be confirmed during circuit designing

- The variation of temperature and frequency should not cause the variation of electrical property.
- While mounting capacitors on double-side PCB, the capacitors should be away from those unnecessary base plate holes and connection holes.
- When more than two pieces of capacitors are parallelly connected, the current should be in equilibrium.
- When more than two pieces of capacitors are serially connected, the voltage should be in equilibrium.

#### 2. The mounting of capacitors

(1) While mounting the capacitors, the regulations below mentioned should be followed:

- While making regular testing of electrical property on the circuit, except those capacitors removed from the PCB, Please don't use the capacitors on the PCB after energization any more.
  - When the capacitor produces regenerated voltage, it is required to discharge it through a resistor of 1KΩ.
  - As for those capacitors which have been stored for long period of time (Suggest without 6 months), it is necessary to apply voltage via a resistor of 1KΩ.
  - Please make confirmation on the specification (rated voltage and capacitance) and the polarity before mounting;
  - Don't let the capacitor drop down to the ground from the working table. Please don't use the dropped down capacitors.
  - Don't mount the deformed capacitor
  - The distance between the positive and negative electrodes of the capacitor must match the distance between two holes on PCB.
  - The clip pressure of the fixture on the auto inserting machine should not be too high, and the impact not too great
- 2) Please make confirmation on the following items while soldering
- Don't get the soldering tin out of the terminal pin area.
  - The soldering conditions (temperature, time and frequency) should be up to the requirement specified on the instruction.
  - Don't immerse the capacitor in the melted solder solution.
  - When soldering, don't let other components bend down to contact the capacitor.

## TECHNICAL NOTE

(3) The treatment after soldering should not cause the following mechanical stress:

- The capacitors should not be inclined or twisted
- The capacitor touches the other PCB
- Prevent other objects from hitting the capacitor

(4) Don't use the rinsing liquid to clean the capacitor. However, when it is necessary to do the cleaning, it should be done within the range specified in the capacitor operation standard.

(5) For those capacitors necessary to be cleaned, the following items should be confirmed during cleaning.

- The pollution management for the rinsing liquid (conductivity, PH value, gravity, water content etc.)
- After cleaning, the capacitors can not be sealed under the environment with rinsing liquid or put into a sealed container. Use the hot air (below the max. working temperature) to dry the PCB and capacitors and eliminate the remained rinsing liquid.

(6) Don't use the fixing agent with halogen content and the epoxy resin coating material.

(7) Please confirm the following items while using the fixing agent and the coating material.

- No soldering residue and dirt should exist in between the PCB and the capacitor.
- Before using the fixing agent and epoxy coating material, make the drying treatment to take away as much as possible the remained rinsing liquid and prevent the holes on the PCB from being blocked.
- The heat curing condition for the fixing agent and epoxy resin coating material according to the requirement of the specification

#### 3. During assembling

(1) During assembling, following points should be observed: Don't let the positive and negative electrodes to contact. No conductive material is allowed to exist between the positive and negative electrodes in order to avoid short circuit.

(2) Please confirm the environment in which the capacitors are assembled.

- Don't contact the water or oil or place them under dewy environment
- Don't subject them to direct sunshine, Ozone, Ultraviolet ray and radiation.
- Don't subject the capacitors to the environment with poisonous gas (hydrogen sulphide, sulphurous acid, ammonia solution, chlorine etc.)
- The vibration and impact should not exceed the range specified in the specifications.

#### 4. The routine inspection

The capacitors to be used in factories should make regular inspection. The items to be inspected include visual appearance inspection and the electrical property testing.

#### 5. Unexpected situations

(1) During assembling, if the explosion-proof vent opens, please turn off the power, or pull out the plug;

(2) When the explosion-proof vent activated, there is high temperature gas (Over 100°C) spraying out. Don't place your face close to it. In case the gas enters into your eyes, please wash your eyes with water immediately. Don't taste the electrolyte, and if there is electrolyte on your skin, please wash the skin with soap.

#### 6. The fumigation treatment

When the capacitors including the electronic products assembled with capacitors are to be exported, they should be subjected to fumigation treatment with potassium bromide and other halogenides. In doing so with this method, it may cause corrosion reaction due to the halogen ions. So special attention should be paid during the operation. While making the fumigation treatment, don't let the fumigation liquid to directly contact the electronic products. And if necessary, drying treatment should be made.

#### 7. The shortage condition

(1) Temperature: 5 to 30°C, Humidity: Below 75%

(2) The environment not suitable for assembling capacitors (3(2)) is also forbidden to store the capacitors.

#### 8. The handling of rejects

The rejected capacitors can be handled in the following ways:

- To drill a hole on the capacitor, or press it flat and then burn it;
- When the capacitors are not to be burned, they can be handed over to the professional waste collecting personnel to make deep bury treatment and so on.