

# Aluminum Electrolytic Capacitors

## TECHNICAL NOTE

### 1. Polarity

Aluminum electrolytic capacitor has polarity. If used in reverse polarity, the circuit life may be shortened or the capacitor may become a short circuit and may be damaged by the safety vent operation, etc. Where the polarity in a circuit sometimes reversed or unknown, a bi-polar capacitor should be used. However, the bi-polar electrolytic capacitor must be used for AC voltage application.

### 2. Applying Voltage

Do not apply voltage exceeding the rated voltage of the capacitor.

If a voltage exceeding the rated voltage is applied, the capacitor may be damaged as the leakage current will increase or the capacitor's life is shortened.

When AC voltage is superimposed to DC voltage, the sum of the DC voltage and the peak AC voltage should not exceed the full rated voltage of the capacitor.

### 3. Ripple Current

Maximum permissible ripple current is specified in individual specifications.

Please do not apply excessive ripple current, which will shorten life expectancy due to heat rise and internal gas evolution.

Aluminum electrolytic capacitors with high ripple current capability are available upon request.

### 4. Operating Temperature

Use the capacitor to be fit to actual operating temperature. A temperature decreased by 10°C gives an acceleration rate of 2 in the life.

Every time the operating temperature increased by 10°C, capacitor life is shortened to half.

### 5. External Stress

Excessive force or stress to terminals or lead wires of capacitors should be prevented. The stressed like pull, push, bend etc, will cause high leakage of electrolyte and open/short circuit in the worst case.

Following examples are typical stress to capacitors to be prevented.

- (1) Tilt or bend down a capacitor after soldering.
- (2) Terminal space did not fit to the hole space on PC board.
- (3) Pick up PC board by holding the soldered capacitor.

### 6. Charge and Discharge Application

When aluminum electrolytic capacitors for general purpose are employed in rapid charge and discharge application, its life expectancy may be shortened by capacitance decrease, heat rise, etc.

### 7. Preheat and Soldering Temperature

When the preheat or soldering temperature is too high and the soldering time is too long, it affects the capacitor's characteristics and also the PVC sleeve may split or shrink. Especially, when the thin PC board or the through-board is used, repeatedly confirm that the capacitor does not have any damage. Before actual use. Also, do not locate a copper trace right under the capacitor on the PC board. The temperature on the trace increases by the preheat and the soldering and the sleeve may split or shrink.

### 8. Insulation and PC Board Mounting

- (1) Aluminum electrolytic capacitors are ordinarily covered with PVC (Polyvinyl Chloride) sleeve to mark.
- (2) Aluminum case of capacitors is not insulated from cathode. There is an indefinite resistance of electrolyte between them. When the capacitor has auxiliary terminals, please design actual lands for them because they are not insulated from cathode terminal for the same reason.

### 9. Vent

The vent needs a space to work well. Make the space above the vent. This catalog shows the location of the vent and it is advisable to make the space, more than 2mm for the case dia. 16mm and smaller, more than 3mm for the case dia. 18-35mm, and more than 5mm for the case dia. 40mm and larger, above the vent.

### 10. Apply rated DC voltage treatment to the capacitors which have been stored for a long time

Long periods of storage have virtually no effect on a capacitor's capacitance and tan δ. Such periods tend, however, to increase leakage current and decrease withstand voltage.

After removing capacitors from long-duration storage, first apply a gradually increasing DC voltage to rated voltage and then use them.

Note: Specifications are subject to change without notice. For more detail and update, please visit our website.