

**When using aluminum electrolytic capacitors, pay strict attention to the following:**

**Common application conditions to avoid**

If the loads shown below are applied to a capacitor, then its characteristics may degrade rapidly or it may short-circuit. Rapid heat or gas generation may occur, which leads to the activation of the pressure valve. Electrolytes will then leak from the sealing section. In the worst case, an explosion or ignition may occur.

When the capacitor breaks down, combustible materials (electrolytes, element fixing materials, etc.) may flow externally in all directions.

(1) Polarity

**Aluminum electrolytic capacitors have polarity**

Reverse voltage caused short circuit breakage of the capacitor or leakage of electrolyte. Where the polarity in circuit sometimes reverse or unknown, please use bi-polar capacitor. However bi-polar capacitor cannot be used in alternative current.

(2) Applied voltage

**Do not apply an excessive voltage (voltage exceeding the rating).**

The peak direct current voltage superposed with a ripple voltage (alternating current component) must be equal to or less than the rated voltage.

A surge voltage is allowed and specified. However do not apply overvoltage continuously. When overvoltage is applied to the capacitor, leakage current increase drastically.

(3) Ripple current

**Do not allow current exceeding the rated ripple current to pass.**

If an excessive ripple current passes through cause great heat generation, invites deterioration of properties, or the pressure valve will be activated, leading to breakdown.

(4) Charging/discharging applications

**Electrolytic capacitor is not suitable for circuit in which charge + discharge are frequently repeated.**

Frequent and quick charge/discharge generates internal heat, causing increase of leakage current, decrease of capacitance, or breakage occasionally.

(5) Series/parallel connection

**[Parallel connection]**

If capacitors are connected in parallel, then the balance of currents between these capacitors may be disrupted and an excessive ripple current may pass through only part of these capacitors.

Wire your circuits such that excessive ripple current does not pass through the capacitors.

**[Series connection]**

If capacitors are connected in series, then the balance of voltages between these capacitors may be disrupted and excessive voltage may be applied. Add a bleeder resistor in parallel with each capacitor. By taking leak currents into consideration the balance of voltages will not be disrupted.

(6) Capacitor sleeve

Exterior sleeves or lamination covering capacitors are for indication purposes only and do not guarantee electrical insulation.

(7) Storage

**When you see a capacitor after prolonged storage.**

When the capacitor is stored for a long time without applying voltage, leakage current tends to increase. Whenever you use a capacitor that has been long stored, make sure to gradually increase the voltage to the rated value. It is recommended to apply DC working voltage to the capacitor for 30 minutes through 1KΩ of protective series resistor, if it is stored for more than 6 months. Store the capacitor at a location between the ambient temperature of 5°C ~ 35°C and relative humidity of 75% or below. Do not expose to direct sunshine, ozone, ultraviolet ray and radiation, or in an atmosphere filled with toxic gasses or acidic or alkaline solution.

(8) Soldering

Improper soldering may shrink or break the insulating sleeve and/or damage the internal element as terminals and lead wires conduct heat into capacitor. Soldering condition must be within HITANO's specification.