Precautions

Electrical Characteristic:

1. Aluminum electrical capacitors are polarized. Do not apply either reverse voltage or AC voltage to the polarized capacitors. Applying reverse voltage causes a short circuit or venting to the capacitor. Prior to use refer to the product specification or the capacitor body to identify the correct polarity marking.
2. Use bi-polar capacitors where the circuit polarity is unknown or where the polarity can occasionally reverse.
3. Do not apply DC voltages that exceed the specified rated voltage of the capacitor. The DC voltage plus the peak superimposed ripple voltage is not to exceed the specified rated voltage of the capacitor.
4. Do not apply ripple-currents that exceed to specified ripple current. Excessive ripple currents can cause increases in the internally heating of the capacitor which may cause the lifetime to shorten. The rated ripple current is specified at a specific frequency and temperature. The rated ripple current at other frequencies and temperature must be calculated taking the specified ripple current and multiplying it by the ripple current multipliers for the product series selected.
5. Do not use in circuits where heavy charge/discharge cycles are frequently repeated. Frequent and sharp heavy discharge cycles will result in decreasing capacitance and damage the capacitor through excessive heat generation. Use only capacitors designed specifically for frequent charge/discharge applications.

Ambient Temperature

Do not apply temperatures that exceed the rated temperature of the selected capacitor. Apply temperatures exceeding the rated temperature of the capacitor will shorten the life of the capacitor or cause the safety vent to activate.

Life of the capacitor

Select a capacitor that will meet the service of the device the capacitor is going to be used in. The results from using the life expectancy formula are not guaranteed. During capacitor selection choose a capacitor that is higher than the service life of the device. If the calculated life exceeds 15 years consider 15 years to be the maximum life of the capacitor.

Failure mode of the capacitor

Non-solid electrolytic capacitors in general have a lifetime that ends when the capacitor becomes an open circuit. Depending on the conditions the capacitors failure mode could be the safety vent activating.

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Sleeve

The outer sleeve is not to be used as an insulator. It is for marking purposes only. The outer sleeve color is not to be used as an indicator of the product type.

Conditions for application

Do not use or expose the capacitors to the following conditions:

1. Spray directly by water, salt water, oil or storage in a damp locations
2. Direct sunlight
3. Storage where toxic gases (hydrogen sulfide, sulfurous acid, nitrous acid, ammonium, chlorine or its' compounds.
4. Ozone, ultraviolet rays or radiation
5. Severe vibration or mechanical shock that exceed the limits specified for the product.

Cleaning PC boards

1. Do not wash using any of the solvents listed under general specifications.
2. Do not use ultrasonic cleaning it will damage the capacitors.
3. Do not expose the capacitors to air dryer temperature exceeding the rated temperature of the capacitor for more than 10 minutes.

Storage

It is recommended to store capacitors between 5°C and 35°C and with the relative humidity at 75% or lower.
Avoid storage in any of the following conditions

1. Damp conditions such as water, salt water spray or oil spray or fumes are present
2. Conditions where toxic gases are present such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia ETC.
3. Exposure to direct sunlight, ozone, ultraviolet rays or radiation.
4. Exposure to acidic or alkaline solutions.
5. Conditions where severe vibration or mechanical shock that exceeds specifications.

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General Specifications

Construction:
Electrodes: High purity aluminum
Separator: Porous paper impregnated with electrolyte
Terminations:
Case: Extruded aluminum can
Seals: rubber, rubber/ phenolic, high temperature elastomer
Labeling sleeve Polyester (PET)
Optional sleeve: Polyvinyl chloride (PVC)
Not guaranteed as an electrical insulator
Sleeve dielectric strength: 1.5kV for 30 seconds with no breakdown.

Ammo pack/ Tape & reel
Axial capacitors with diameters of 13mm can be supplied on tape and reel for automatic insertion.
Radial capacitors with diameters of 18 mm can be supplied on tape and ammo pack for automatic insertion.

Shock and Vibration
2 hours in each of 3 mutually perpendicular directions parts will not show any electrical or physical damage
Sweep rate: 10Hz-55Hz-10Hz
Peak to peak amplitude: 1.5mm
Appearance No mechanical damage, leakage of electrolyte or swelling of the can.
Internally: No intermittent contact, open or short circuit. No damage to terminals or electrodes

Safety vent
Available for case diameters 8mm and larger.

Lead pull
A static load of 25N (2.5kgf) shall be applied to the lead terminals in the axial direction away from the capacitor body for 30 seconds.
There will be no intermittent contacts, opens are shorts and there shall be no mechanical damage.

Lead bend
Lead will be bent 90° returned to center position and bent 90° in the opposite direction without the leads breaking.

Solderability
All capacitors shall meet the requirements of ANSI/ J-STD 002.

Cleaning solvents

Safe	Unsafe
Xylene	1,1,2 trichlooro- 1,1,2-trifluoroethane
Ethyl Alcohol	Carbon tetrachloride
Butyl alcohol	Chloroform
Methyl alcohol	Trichlorothane
Propyl alcohol	Trichlorofluoromethane
De-ionized water	Methyl chloride
	Trichloroethane
	Florotrichloromethane
	Petroleum or terpene
	Alkali solvents (corrodes aluminum case)
	Acetone (removes markings)

Water and alcohol have little effect on the capacitor if the penetrate the capacitor.

Pressure relief vent
The clearances below should be used to allow the pressure relief vent to operate properly

Diameter (mm)	Gap
6.3 to 16	2mm or more
18 to 35	3mm or more
40+	5mm or more

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Test methods

Capacitance, dissipation factor and ESR:
Will be measured using the bridge method at a standard frequency of 120 Hz, 2.0VDC maximum bias and ≤ 1.0Vrms at room temperature.

Leakage current
Leakage current will be measured at the specified time for the selected capacitor after the specified DC voltage is applied to the capacitors through a 1kΩ resistor. Leakage current will be calculated as a function of the voltage drop across the resistor.

Reverse voltage
Polarized capacitors shall not have more than 1.5VDC applied to the capacitor in the reverse direction.

Surge Voltage
Capacitors will withstand 1000 cycles of the rated surge voltage applied to the capacitors. 1 cycle shall consist of applying the rated surge voltage for 30 seconds followed by a discharge of 5min, 30s at room temperature.

Load life
The capacitors will be placed into an oven set to the specified temperature with the rated voltage applied to the capacitors. Where applicable the rated ripple current will be applied to the capacitors. After the specified time has been reached the capacitors will be allowed to cool to room temperature for 24 hours and tested per the specifications for the capacitor.

Shelf life
The capacitors will be placed into an oven set to the specified temperature with no voltage applied to the capacitors. After the specified time has been reached the capacitors will be allowed to cool to room temperature for 24 hours and tested per the specifications for the capacitor.

Storage

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