

# 片式铝电解电容器应用指南

## Application Guidelines For V-Chip Aluminum Electrolytic Capacitors

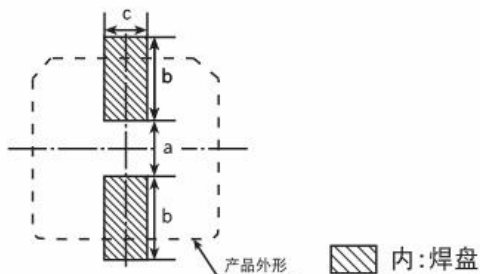
### 1. 电路设计 Circuit Design

- 1.1 请明确铝电解电容器所处的环境和安装条件应符合本说明书中规定的情况。Please make sure the environmental and mounting conditions to which the capacitor will be exposed to are within the conditions specified in this catalog (or alternate Acon's specifications, such as series drawings).
- 1.2 工作温度和纹波电流应小于本说明书中的规定。Operating temperature and applied ripple current must be within ACON'S specification.
  - I 电容器不能用于超过规定的环境温度。The capacitor must not be used in an ambient temperature which exceeds the operating temperature specified in this catalog.
  - I 电容器不能用于超过规定的纹波电流。Do not apply excessive current which exceeds the allowable ripple current.
- 1.3 设计电路时请选择满足产品寿命的电容器。Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.
- 1.4 铝电解电容器是有极性的。不要施加反向电压或交流电。在可能出现电压极性相反的电路中，请使用无极性电容器。注意：即使无极性电容器也不能在交流电情况下使用。Aluminum electrolytic capacitors are polarized. Do not apply reverse voltage or AC voltage. Please use non-polarized capacitors for a circuit that can possibly see reversed polarity. Note; Even non-polarized capacitors can not be used for AC voltage application.
- 1.5 在需要快速和频繁充放电的电路中，请不要使用铝电解电容器。它需要使用具有长寿命特征的特别设计的电容器。Do not use aluminum electrolytic capacitors in a circuit that requires rapid and very frequent charge/discharge. In this type of circuit, it is necessary to use a special design capacitor with extended life characteristics.
- 1.6 不要施加过高的电压。Do not apply excess voltage.
  - I 请注意，直流电压上叠加纹波电流时的峰值电压不要超过额定电压。Please pay attention so that the peak voltage, which is DC voltage overlapped by ripple current, will not exceed the rated voltage.
  - I 在使用 2 个以上的铝电解电容器串联时，请注意施加的电压应低于额定电压。应在每只电容器并联一只平衡电阻，使每只电容器承受的电压相等。In the case where more than 2 aluminum electrolytic capacitors are used in series, please make sure that applied voltage will be lower than rated voltage and the voltage will be applied to each capacitor equally using a balancing resistor in parallel with the capacitor
- 1.7 电容器避免用在下面的情况：Capacitors must not be used under the following conditions:
  - I (a) 暴露于水（包括露水）、盐水或油。Capacitors must not be exposed to water(including condensation), brine or oil
  - (b) 在环境含有害气体，象氢硫化物、亚硫酸、亚硝酸，氯，铵，等等.....。Ambient conditions that include toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonium, etc...,
  - (c) 使电容器暴露在有臭氧、紫外线和放射线的环境中。Ambient conditions that expose the capacitor. to ozone, ultraviolet ray and radiation.
  - I 超过本说明书的剧烈振动和物理冲击。Severe vibration and physical shock conditions that exceed ACON's specifications.

振动的测试条件如下：Vibration test condition:  
 振动频率范围：10~55~10Hz Sweep rate: 10~55~10Hz  
 扫描频率：10~55~10Hz/分钟 Sweep rate:10~55~10/minute  
 扫描方式：对数 Sweep method:logarithmic  
 振幅或加速度：1.5mm（最大加速度为 10G）Amplitude or acceleration:1.5 mm（max. acceleration is 10G）  
 振动方向：X\Y\Z Direction of vibration: X\Y\Z  
 测试时间：每个方向 2 小时 Testing time:2 hours per each direction  
 冲击一般不适用。Shock is not applicable normally.
- 1.8 用于电容器的主要化学成分电解液和隔离纸是易燃的。电解液是导电的，当它与线路板接触时，可能造成腐蚀或短路，甚至会燃烧和起火。因此不要在电容器密封端的下面布置任何线条。The main chemical solution of the electrolyte and the separator paper used in the capacitors are combustible. The electrolyte is conductive. When it comes in contact with

the PC. board, here is a possibility of pattern corrosion of Short circuit between the circuit pattern which could in result of smoking or catching fire. Do not locate any circuit pattern beneath the capacitor end seal.

- 1.9** 当使用片式电容器进行设计时, 请参考以下安装尺寸: Please refer to the table of land size (mm) bellow when designs in surface mount capacitors.



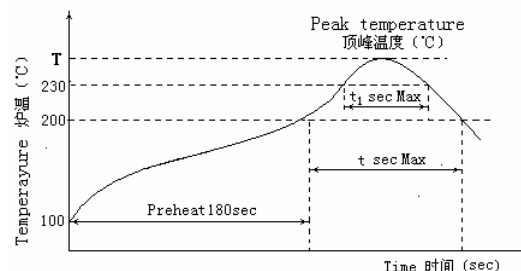
规格 Size	a	b	c
Ø4	1.0	2.6	1.6
Ø5	1.4	3.0	1.6
Ø6.3	2.1	3.5	1.6
Ø8*6.5	3.0	3.5	2.5
Ø8*10.5	3.0	3.5	2.5
Ø10*10.5	4.0	4.0	2.5

- 1.10** 设计电路板时, 不要在电容器的旁边或下面 (PCB 板的另一面) 放置发热量较大的元器件, 如电阻、变压器等。  
Do not design a circuit board so that heat generating components such as resistor and transistors are placed near an aluminum or side of PC. board (under the capacitor).
- 1.11** 铝电容器的电特征随温度和频率而变化。设计电路时请考虑些变化。Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.
- 1.12** 当设计双面 PCB 板时, 避免在电容器下面布置线条或通孔。When you are designing capacitors for use on double-sides PC. Boards avoid circuit patterns or through holes (such to connect both sides), that are placed under the capacitor.
- 1.13** 当用 2 个以上电容器并联时, 请考虑电容器电流的平衡。When you install more than 2 capacitors in parallel, consider the balance of current lowing into the capacitors.

## 2. 安装 Mounting

- 2.1** 一旦一个电容器已用在设备中并加上电压, 不要尝试再将它使用在别的电路。Once a capacitor has been assembled in the set and power applied, do not attempt to reuse the capacitor in other circuits or application.
- 2.2** 贮藏 2 年以上, 漏电流可能增加。当漏电流已增加时, 请使用 1kΩ 电阻做一次电压修补。Leakage current of the parts that have been stored for more than 2 years may increase. When leakage current has increased, please perform a voltage treatment using 1kΩ resistor
- 2.4** 在将电容器安装到 PCB 板之前注意核实其额定值。Please confirm ratings before installing capacitors on the PC. board.
- 2.5** 在将电容器安装到 PCB 板之前注意核实其极性。Please confirm polarity before installing capacitors on the PC. Board.
- 2.6** 不要将电容器掉到地板上, 也不要使用已掉到地板上的电容器。Do not drop capacitors on the floor, nor use a capacitor that was dropped.
- 2.7** 回流焊 Reflow soldering
- 请遵守产品目录中的回流焊条件。Please follow "Reflow Soldering Conditions" in catalogue.
  - 当使用红外线加热时, 请注意加热程度, 因为红外线吸收率会随着电容器颜色和大小不同而变化。When an infrared heater is used, please pay attention to the extent of heating since the absorption rate of infrared will vary due to difference in the color and size of the capacitor.

Size	T(°C)	t (second)	t <sub>1</sub> (second)
φ 4~ φ 6.3	250	90	40
φ 8	240	90	30
φ 10	240	60	30



回流焊温度与时间曲线 Temperature/ Time profile

- 2.13** 将电容器焊接到 PCB 板后, 请不要扳倒或转动电容器。Do not tilt lay down or twist the capacitor body after the capacitor are soldered to the PCB board.

**2.14** 请不要靠拿住焊好的电容器移动 PCB 板。Do not carry the PCB board by grasping the soldered capacitor.

**2.15** 请不要允许任何东西接触焊接好的电容器。如果 PCB 板存在货架, 请保证 PCB 板或其他器件不要接触电容器。Please do not allow anything to touch the capacitor after soldering. If PCB board are stored in stack, please make sure PCB board or the other components do not touch the capacitor.

电容器不能受刚焊接好的 PCB 板或其他器件的热辐射的影响。The capacitors shall not be effected by any radiated heat from the soldered PCB board or other components after soldering.

**2.16** 清洗

a) 不要用卤化物清洁电容器。Do not clean capacitors with halogenated cleaning agent.

b) 推荐清洗方法: Recommended cleaning method:

使用范围: 任何类型及规格 Applicable: any type, any ratings.

清洗方法: 浸泡、超声波或其他方法的总清洗时间应在 2 分钟内。清洗剂温度应在 40℃ 以下。清洗后, 应将电容器与 PC 板一起用热风至少吹 10 分钟。热风温度应低于电容器工作温度。水洗后如不充分吹干, 可能导致外观不良, 如座板发胀等。Cleaning conditions: Total cleaning time shall be within 2 minutes by immersion, ultrasonic or other methods. Temperature of the cleaning agents shall be 40℃ or below. After cleaning, capacitors should be dried by using hot air for the minimum 10 minutes operating temperature of the capacitor. Insufficient dryness after water rinse may cause appearance problems, such as bottom-plate bulge and etc.

c) 避免使用破坏臭氧层的清洗剂以保护环境。Avoid using ozone destructive substances as cleaning agents for protecting global environment.

**3. 贮存 Storage**

当铝电解电容器经过长期静态贮存时, 其性能会降低。变化的比率依温度、湿度而变化。The characteristics of aluminum electrolytic capacitors degrade when stored in a static condition for long periods of time. The rate of deterioration depends upon temperature and humidity.

电容器应当在温度 5℃~35℃, 湿度不大于 75%, 无直接日光照射的环境贮存。Capacitors should be stored at the temperature of 5℃ to 35℃, the humidity of less than 75% RH and out of direct sunlight.