



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_2S , H_2SO_3 , HNO_3 , Cl_2 , 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
 - 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 $1K\Omega$.
 - As for those capacitors which have been stored for long period of time, it is necessary to apply voltage via a resistor of $1K\Omega$.
 - 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.

铝电解电容器的使用注意事项

1、电路设计

(1) 在确认使用及安装环境时，作为按产品样本设计说明书上所规定的额定性能范围内使用的电容器，应当避免在下述情况下使用：

- 高温（温度超过最高使用温度）
- 过流（电流超过额定纹波电流）
- 过压（电压超过额定电压）
- 施加反向电压或交流电压。
- 使用于反复多次急剧充放电的电路中。

另：① 在电路设计时，请选用与机器寿命相当的电容器。

② 机器性能有特殊要求时，可与研发人员探讨，制作适用的特规电容器。

(2) 电容器外壳、辅助引出端子与正、负极以及电路板间必须完全隔离；

(3) 当电容器套管的绝缘不能保证时，在有绝缘性能特定要求的地方请不要使用；

(4) 请不要在下述环境下使用电容器：

- 直接与水、盐水及油类相接触、或结露的环境；
- 充满有害气体的环境（硫化物、 H_2SO_3 、 HNO_3 、 Cl_2 、氨水等）；
- 置于日照、 O_3 、紫外线及有放射性物质的环境；
- 振动及冲击条件超过了样本及说明书的规定范围的恶劣环境；

(5) 在设计电容器的安装时，必须确认下述内容：

- 电容器正、负极间距必须与线路板孔距相吻合；
- 保证电容器防爆阀上方留有一定的空间；
- 电容器防爆阀上方尽量避免配线及安装其他元件；
- 电路板上，电容器的安装位置，请不要有其他配线；
- 电容器四周及电路板上尽量避免设计、安装发热元件；

(6) 另外，在设计电路时，必须确认以下内容：

- 温度及频率的变化不至于引起电性能变化；
- 双面印刷板上安装电容器时，电容器的安装位置避免多余的基板孔和过孔；
- 两只以上电容器并联连接时的电流均衡；
- 两只以上电容器串联连接时的电压均衡。

2. 元件安装

(1) 安装时，请遵守以下内容：

- 为了对电容器进行点检，测定电气性能时，除了卸下的电容器，装入机器中通过电的电容器请不要再使用；
- 当电容器产生再生电压时，需通过约 $1K\Omega$ 左右的电阻进行放电；
- 长期保存的电容器，需通过约 $1K\Omega$ 左右的电阻加压处理；
- 确认规格（静电容量及额定电压等）及极性后，再安装；
- 不要让电容器掉到地上，掉下的电容器请不要再使用；
- 变形的电容器不要安装；
- 电容器正、负极间距与电路板孔距必须相吻合；
- 自动插入机的机械手力量不宜过大；

(2) 焊接时，请确认下面内容：

- 注意不要将焊锡附着在端子以外；
- 焊接条件（温度、时间、次数）必须按规定说明执行；
- 不要将电容器本身浸入到焊锡溶液中；
- 焊接时，不要让其他产品倒下碰到电容器上；