针对客户的预防措施和指导原则

PRECAUTION FOR USE OF ALUMINUM ELECTROLYTIC CAPACITORS

Select the capacitors suited to their installation and operating environment, and use them within the performance limits prescribed in their catalog or product specifications, please pay attention to the points listed below.

- Allowable operating temperature range is exceed
- PCB board cleaning conditions
- Reverse voltage
- Voltage exceeds rated working voltage
- Rapid charging and discharging
- Severe vibration or mechanical shock

Please pay attention to right circuit pattern design. When you fail to follow above precautions, you can expect the leakage of electrolyte or opening of the vent in a capacitor because of sudden heating and increased internal pressure.

CAUTION DURING CIRCUIT DESIGN

1. Rated voltage

If a voltage exceeding the capacitor's rated voltage is applied, the capacitor may be damaged as leakage current increases. When using the capacitor with AC voltage superimposed on DC voltage, care must be exercised that the peak value of AC voltage does not exceed the rated voltage.

2. Operating Temperature

Do not use Aluminum Electrolytc Capacitors at temperature which exceeds the specified operating temperature range. Applying capacitors surpassing guaranteed conditions may cause destruction due to rappid characteristic det-erioration. Where, temperature of a capacitor in-cludes radiation heat of Power transistor, IC, Re-sitor, etc. and self heat by ripple current as well as ambient temperature of a set.

3. Ripple Current

Do not apply excessive current to the capacitors, which exceeds the specfied maximum permissible ripple current. If you apply over-rated ripple current, you can expect initial failure in your set. When the value of direct bias voltage is small, even though you apply permissible ripple current, reversed voltage can be occurred. Please take deep attention to possible reversed voltage.

4. Charge and discharge

General Aluminum Electrolytic Capacitors are not suitable for rapid charge and discharge app-

铝电解电容器使用注意事项

使用电容器时，必须在产品目录或承认愿记载的范围内设置，使用环境选定时要注意下记事项。

- 超过允许使用温度。
- PC板清洗条件。
- 逆电压。
- 超过额定工作电压的过电压。
- 急速充放电。
- 严重的振动和机械冲击。

因上记情况发生时会造成急剧发热或耐压上升，电解液漏出或安全阀打开、发热、起火的现象，所以电路设计时要注意。

电路设计时注意事项

1. 额定电压

如果加载的电压超过额定电压，电容器的漏电流增大破坏电容器，当在直流电压中叠加交流电压使用时，一定要注意交流电压的峰值应在额定电压以下。

2. 使用温度

不能超过规定的工作温度范围使用电容器，超过保证条件使用电容器会导致急剧的特性劣化情况。使用温度不仅要确认Set周围的温度，还包括Set内的发热体（Power TR、IC、Re-sitor等)的放射热和纹波电流造成的自发热等电容器的实际温度。

3. 纹波电流

请不要加载过大的电流（超过最大允许纹波电流），过大的电流会导致电容器发生故障。即使在允许纹波电流下加载的直流偏置电压值很小，也可能发生引加逆电压，要在不引加逆电压的范围内使用。

4. 充放电

一般的铝电解电容器不能在急充放电的电路中使用，

lications. Consult with samyoung about specially designed capacitors for rapid charge and discharge.

5. Polarization

Aluminum Electrolytic Capacitors are normally polarized. Reverse voltage or AC voltage should not be applied. When polarity of applied voltage is uncertain or when the polarity may flip over, non-polar type capacitors should be used. But the non-polar type cannot be used for AC circuit. Please confirm the polarity to avoid applying any reverse voltage or ac voltage to the capacitors. Polarity is indicated as below:

- Negative polarity is indicated on the side of body by meams of a stripe or an arrow.
- On radial leaded Aluminum Electrolytic Capacitors, the shorter lead is the negative terminal.
- On Snap-In and Lug Terminal type capacitors, the knurled rivets〔▨, ●〕indicates the negative terminal.
- On Surface Mount Capacitors, the mark〔◖〕indicates the direction of Negative Polarity.

6. Insulation

- Aluminum case, cathode lead wire, anode lead wire and circuit pattern should be electrically isolated.
- The blank terminals must not be connected to a solder trace on the pc board, but be electrically isolated from negative or positve terminal.
- The PVC sleeve of Aluminum Electrolytic Capacitors is not recognized as an insulator, and therefore, the standard capacitor should not be used in a place where insulation function is needed. Please consult with Samyoung should your require a higher grade of insulating sleeve.

7. Surge Voltage

The surge voltage rating is the maximum DC overvoltage to which the capacitor may be subjected for short periods not exceeding approximately 30 seconds at infrequent intervals of not more than six minutes. According to KS C IEC 60384-4, the test shall be continued 1000 cycles at room temperature for the capacitors of characteristic KS C IEC 60384-4 or at the maximum operating temperature for the capacitors of characteristics B and C of KS C IEC 60384-4 with voltage applied through a series resistance of 1000 ohms without discharge, the electrical characteristics of the capacitor after the test are specified in KS C IEC 60384-4 unless otherwise specified, the surge voltages are as follows:.

8. Lead Stress

Do not apply excessive force to the lead wires or terminals. If excessive force is applied to the lead

要在充放电回路中使用时，请联系我们。

5. 极性

铝电解电容器有极性，请不要加载逆电压还有交流电压。极性不明确或极性反转回路请使用无极性电容器。但即便是无极性电容器也不能用在交流回路中，请确认在逆电压或交流电压不可能加载的情况下使用。极性表示如下：

- 负极在制品侧面由实线或箭头表示。
- 引线同一方向的电容器，短的引线一侧表示负极。
- 基板自立型（pcb terminal）LUG端子的电容器，用〔▨，●〕表示负极。
- SMD型用〔◖〕表示负极。

6. 绝缘

- 铝壳和负引线、正引线与电路间应完全隔离。
- 辅助端子在线路板中不要与负极或正极连接。
- 电容器的外装PVC套管不能保证绝缘，不要使用在有绝缘要求的情况下。有对套管要求必须绝缘的情况，请联系我们。

7. 浪涌电压

浪涌电压是最大直流过电压，周期不超过6分钟、充电电压不超过30秒的电压。
（30秒充电，5分30秒放电）
实验方法是在常温下通过串联 1kΩ 的电阻实施充放电1,000次。
实验的电气特性参照规格KS C IEC 60384-4，没有特别指出的情况，浪涌电压和下表一样。

额定电压 (WV)	4	6.3	10	16	25	35	50	63	80	100	120	160	200	250	315	350	400	420	450	460	500	550	600
浪涌电压 (SV)	5	8	13	20	32	44	63	79	100	125	150	200	250	300	365	400	450	470	500	550	550	600	650

8. 引线能承受的压力

请不要给电容器的引线或端子施加过大的力。
过大的力能造成引线或端子与回路断路。基板安装后

wires and/or terminals, they may break and cause an open circuit. After mounting, avoid holding or applying force to the capacitor. Do not twist or carry the PC board by grasping the capacitor body after the capacitor are soldered to the PC board.

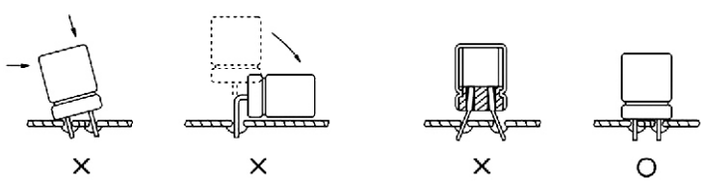
不要对电容器施加过大的力。电容器在电路基板上安装后，不要拿着电容器来移动或扭曲。

9. Mounting

The distance between the terminal holes on the circuit board should be the same as that between the lead wires or terminals of the capacitor. Excessive force in mounting on circuit boards should be avoided.
Improper insertion of the lead wires in circuit board may cause electrolyte leakage, break the lead wires or impair their connection with the internal elements.
When the distance between the two terminal holes on the circuit board cannot be reduced to that between the lead wires, lead formed capacitors are recommended.

9. 基板安装

电路板上端子孔的间隔与电容器的引线或端子间的间隔要一样。
在电路板上安装时，不要对电容器施加过大的力。引线硬插入电路板时，容易发生电解液漏出、引线损伤、内部各种材料连接部位的破损等。
当电路板的孔间隔与引线间隔不一致时，请使用引线加工电容器。

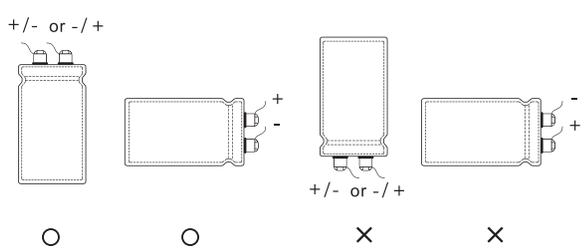


CONSIDERATION TO ASSEMBLY CONDITION

- Design the appropriate hole spacing to match the lead pitch of capacitors.
- Do not locate any wiring and circuit patterns directly above the capacitor`s vent.
- The sealing side of the screw terminal type should not face down in the application. When the capacitors are mounted horizontally, the anode screw terminals must be positioned at the upper side.

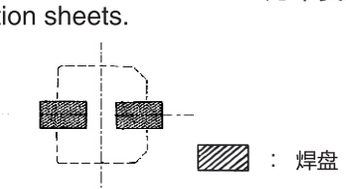
装配条件设计

- 请设计适当的电路板孔距来匹配电容器的端子间距。
- 电容器的安全装置（安全阀）上部的配线和电路板在设计时，要留出空间。
- 螺丝端子型电容器的封口部不应朝下使用。如果水平安装时，正极端子必须位于上侧。



- Parts which radiate heat should not be placed Capacitors on the PCB board.
- Land pattern of Surface Mount Capacitors should comply with the specification which is mentioned in the catalog or specification sheets.
  (Refer to SMD Type)
- Torque of tightening screw terminals should not exceed the specified maximum value which is described in the catalog or specification sheets.

- 电容器的周围和电路板的相反方向，不应配置发热部件。
- SMD型电容器的电路板的焊接条件不应超出产品目录和承认愿中规定的条件。
- 螺丝端子型回路连接时，拧紧及主体安装螺丝的扭力不要超过产品目录和承认愿中规定的范围。



- Consider current balance when 2 or more Aluminum Electrolytic Capacitors are connected in parallel.
- Use bleeder resistors when 2 or more Aluminum Electrolytic Capacitors are connected in series. In this case, the resitors should be connected parallel to the capacitors.
- Aluminum Electrolytic Capacitors may accumulate charge maturally during storage. In this case, discharge through about 1kΩ resistor before use.
- Leakage current of Aluminum Electrolytic Capacitors may be increased during long storage time. In this case, the capacitors should be subject to voltage treatment through about 1kΩ resistor before use.

- 两个以上电容器并联连接时应考虑电流的平衡。
- 两个以上电容器串联连接时应考虑电压的平衡，可插入与电容器并联的分压电阻。
- 电解电容器可能产生再生电压，在这种情况下，使用前请通过1kΩ左右的电阻放电。
- 电解电容器长期不使用放置时，漏电流会增大。在这种情况下，使用前请通过1kΩ左右的电阻进行电压处理。

1. Soldering

- Kindly follow the soldering conditions (temperature and time) defined on your approval sheet, otherwise less 10 seconds at 260℃.
- In case lead wire reforming is needed due to inappropriate pitch between capacitor and holes on PCB stress to the capacitor should be avoided.
- In case soldered capacitor has to be withdrawn from the PCB by soldering irons, the capacitor should be removed after solder has melted sufficiently in order to avoid stress to the capacitor or lead wires.
- Soldering iron should never touch the capacitor's body.

1. 焊接

- 焊接条件（温度、时间）必须在承认愿规定的范围或260℃、10秒以下的条件内使用。
- 因端子间距和电路板的孔间距不一致需要加工时，焊接前不要对电容器本体施加压力。
- 焊接完了的电容器需取下来重新焊接时，应使焊料完全融化，避免对电容器的端子产生应力。
- 请不要将焊接烙铁接触电容器本体。

2. Flow soldering

- Do not dip capacitor's body into melted solder.
- Soldering conditions (preheat, solder temperature and dipping time) should be within the limits prescribed in the catalogs of product specifications.
- Do not put flux on any part of capacitors others than their terminals.
- Do not let other components lean against the capacitors while soldering.

2. 波峰焊

- 请不要将电容器本体浸入到熔融的焊料中。
- 焊接条件（预备加热、焊接温度、浸渍时间）不要超出产品目录或承认愿中规定的范围。
- 端子以外的部分不可以附着焊剂。
- 焊接过程中要避免其他部件接触到电容器。

3. Reflow soldering (Refer to page 85)

- Soldering conditions (preheat, solder temperature and reflow time) should be within the limits precribed in the catalogs or product specifications.
- For setting a degree of heating infrared heater

3. 回流焊（参照 P85）

- 焊接条件（预备加热、焊接温度、回流时间）不要超出产品目录或承认愿中规定的范围。
- 使用红外线加热器时，因电容器的颜色和材质不同

consider that the color and material of a capacitvary their infrared absorption.

会导致红外线的吸收率不同，请注意加热的程度。

- Do not solder capacitors more than once by refolw.
- 电容器不能进行2次以上的回流焊。

4. Handling after soldering

4. 焊接后的处理

- Do not bend of twist the capacitor' s body after soldering on PCB.
- 焊接在电路板上的电容器不可扭曲。
- Do not pick-up or move PCB by holding the soered capacitors.
- 焊接完了后，不可拿着电容器来提起或移动电路板。
- Do not hit the capacitors and isolate capacitor from the PCB of their device when stacking PCB store.
- 安装完的电路板叠放时，不能使电路板或其他部件接触到电容器。

5. Mounting Capacitors with pressure Relief Vent

5. 有安全阀制品的安装

- Make the following open space over the pressure relief vent of the capacitor so that the vent can operate.
- 应留有电容器安全阀动作的空间。

ø D(mm)	6.3～16	18～35	40～
空间	2mm min.	3mm min.	5mm min.

- Do not locate any wire or copper trace over the vent of the capacitor
- 电容器安全阀上部不应有配线或电路板通过。
- If the capacitor is mounted with its vent faced down on the PCB, make a ventilation hole in the PCB in place.
- 如果电容器的安全阀朝向电路板时，电路板上应设置排气孔。
- In designing double-sided PCB, do not locate any copper trace under the seal side of a capacitor.
  If it is absolutely unavoidable, these traces must be sufficiently spaced at least 1 or 2 mm apart.
- 两面电路板使用时，电容器下方不要设计电路。不可避免时，以离开电容器最小1~2mm的间隔来设计。

6. Protecting Vibration

6. 振动保护

- Radial lead type : Applicable to items with over 10g in weight, diameter of 18mm or longer than 30mm in length
- 引线同一方向型：质量10g,ø18以上或L尺寸30mm以上的产品。
- PCB terminal type : Applicable to items with diameter of 22mm and longer than 40mm in length.
- 螺丝端子型　　：ø22，L尺寸 40mm以上的产品。

  In order to prevent possible damage by vibration on the PCB, kindly bond our capacitors on the PCB or use any fastening devices.

  因振动问题在电路板上安装时，电容器底面应贴近电路板或使用紧固装置。

7. Adhesive and Coating Materials

7. 固定剂和涂层剂

- Do not use halogenated adhesives and coating materials to fix Aluminum Electrolytic Capacitors.
- 不要使用含有卤素类溶剂的固定剂和涂层剂。

- Flux between the surface of capacitors should be cleaned before using adhesives or coating materials.
- Solvents should be dried up before using adhesives or coating materials.
- Do not cover up all the sealing area of capacitor with adhesives or coating materials. Make coverag only partial. (The sealing area 30%)

- 固定剂或涂层剂使用前，要注意电路板和电容器封口之间不可残留有焊剂残渣及污垢。
- 固定剂或涂层剂使用前，请先干燥清洗剂。
- 使用固定剂或涂层剂时，不要将电容器封口部完全堵住。（封口部的 30%以下）

8. Influence of cleaning solvent for aluminum electrolytic capacitors

- Aluminum electrolytic capacitors are easily affected by halogen ions, particularly by chloride and bromine ions. Excessive amounts of halogen ions, if happened to enter the inside of the capacitors, will give corrosion accidents-rapid capacitance drop and vent open. The extent of corrosion accidents varies with kinds of electrolytes and seal-materials.
- Therefore, the prevention of halogen ion contamination is the most important check point for quality lines. At present, halogenated hydrocarbon- contained organic solvents contained organic solvents such as Trichloroethylene, 1-1-1 Trich-loroethane, and Freon are used to remove flux from circuit boards. If electroytic capacitors are cleaned with such solvents, they may gradually penetrate the seal portion and cause the erosion.
- When using latex-based adhesive on the capacitor's rubber end seal for adhesion to a PCB, corrosion may occur depending on the kind of solvent in the adhesive. Select an adhesive as an organic solvent with dissolved polymer that is not halogenated hydrocarbon. Hot air drying is required for eliminating the solvent between the product and the PCB at 50℃~80℃ after coating.
- Followings are the penetration path of the halogenated solvent
  ① Penetration between the rubber and the aluminum case
  ② Penetration between the rubber and the lead wire
  ③ Penetration through the rubber
- The inside of the capacitors, the mechanism of corrosion of aluminum electrolytic capacitors by halogen ions can be explained as follows:
  Halides(RX) are absorbed and diffused into thseal portion. The halides then enter the inside of the capacitors and contact with the electrolyte of the capacitors, where by halogen ions are made free by a hydrolysis with water in the electrolyte:

$$RX + H_2O \rightarrow ROH + H^+ + X^-$$

8. 清洗剂对铝电解电容器的影响

- 铝电解电容器容易受到卤素类离子特别是氯和溴离子的影响，当卤素离子侵入电容器内部，由于腐蚀会发生急剧的容量减少和安全阀打开的现象。腐蚀的程度因电解液和封口材料等的不同而有所差异。
- 根据上述情况，我们的生产线对防止卤素离子的侵入作为重点的品质管理事项进行。为清除电路板上的助溶剂，我们使用三氯乙烯、1-1-1 三氯乙烷及氟利昂等碳氢化合物有机溶剂,但上述一样溶媒清洗时卤离子会慢慢地通过密封部浸入到电容器内部发生腐蚀。
- 当使用橡胶系胶结剂将电容器封口橡胶与印刷基板进行胶结时，随着胶结剂种类的不同电容器的腐蚀会发生。请选择不卤化有用性聚合物构成的有机胶结剂。要使用胶结剂时制品和基板间不能残留洗涤液，洗涤后请在50℃-80℃的热风干燥。
- 卤素溶剂浸透路径如下述
  ①通过封口橡胶和铝Case之间浸透
  ②通过封口橡胶和Lead线之间浸透
  ③通过封口橡胶浸透
- 对卤素离子的腐蚀进行如下说明。卤素化合物与水的反应如同下式分离向封口部扩散。

$$RX + H_2O \rightarrow ROH + H^+ + X^-$$

The halogen ions(X^-) react with the dielectric substance (Al_2O_3) of aluminum electrolytic capacitors:

$$Al_2O_3 + 6H^+ + 6X^- \rightarrow 2AlX_3 + 3H_2O$$

AlX_3 is dissociated with water:

$$AlX_3 + 3H_2O \rightarrow Al(OH)_3 + 3H^+ + 3X^-$$

- Aluminum electrolytic capacitors have been exposed to halogenated hydrolcarbon cleaning and defluxing solvents are susceptible to attack by these solvents. this exposure can result in solvent penetration into the capacitors, leading to internal corrosion and potential failure.
- Common type of halogenated cleaning agent are listed below.

Chemical Name	Structual Formula	Representative Brand Name
Trichlorotrifluoroethane	$C_2Cl_3F_3$	Freon TF , Daiflon S-3
Fluorotrichloromethane	CCl_3F	Freon-11 , Daiflon S-1
1,1,1-Trichloroethane	$F_2H_3Cl_3$	Chloethane
Trichloroethylene	C_2HCl_3	Trichene
Methyl Chloride	CH_3Cl	MC

- All electrolytic capcitors, including solvent-proof capacitors, should be free from halogenated solvents during PCB cleaning after soldering. If cleaning is required, use solvent-proof capacitor and follow the specified cleaning condition.

- We would like to recommend you the below cleaning materials for your stable cleaning condition taking place of previous materials.

- Isopropyl Alcohol(IPA) or water Cleaning method:
  One of immersion, vapor cleaning, ultrasonic
  Maximum cleaning time : 5minutes. (Chip type : 2minutes)

  ∗ Do not use AK225AES

- Solvent-proof capacitors in the catalogue is mark with the solvent-proof.

Solvent-proof

- Solvents should have well controlled conductivity ph, specific gravity and water contents during the cleaning of solvent-proof capacitors. Chlorine levels can rise with contamination and adversely affect the performance of the capacitor.

卤素离子(X-)和铝电解电容器的诱电体(AL_2O_3)反应。

$$Al_2O_3 + 6H^+ + 6X^- \rightarrow 2AlX_3 + 3H_2O$$

AlX_3和水反应被分解：

$$AlX_3 + 3H_2O \rightarrow Al(OH)_3 + 3H^+ + 3X^-$$

- 为了去除清洗剂和助溶剂使用的碳氢化合物与电容器接触时，使电容器损伤。溶剂如果侵入到电容器内部时会发生腐蚀不良。

- 常见的含卤素的清洗剂如下表：

化学名	结构式	代表商品名
Trichlorotrifluoroethane	$C_2Cl_3F_3$	Freon TF , Daiflon S-3
Fluorotrichloromethane	CCl_3F	Freon-11 , Daiflon S-1
1,1,1-Trichloroethane	$F_2H_3Cl_3$	Chloethane
Trichloroethylene	C_2HCl_3	Trichene
Methyl Chloride	CH_3Cl	MC

- 耐洗涤用电容器包含所有电解电容器不能用卤离子溶剂洗涤，但在必需洗涤的情况下使用我司推荐的耐洗涤电容器或规格和承认愿上规定的洗涤方法进行洗涤。

- 为了安全的清洗，我们推荐使用下面的清洗剂。

- 用异丙醇或水的清洗方法：
  浸泡、蒸汽清洗、超音波
  最大清洗时间：5分钟(但CHIP TYPE是2分钟)

  ∗ 不要使用 AK225AES.

- 产品目录内的耐清洗电容器用 Solvent-proof 来表示。

- 耐清洗电容器清洗时，清洗剂要进行污染管理（导电性、pH、比重、含水量等）。清洗剂污染时氯的浓度升高使电容器内部发生腐蚀。

EMERGENCY ACTION

- When the vent is open and some gas blows out from the capacitor, please turn the main swich of the equipment off or pull out the plug from the power outlet immediately.
- During vent operation, extremly hot gas(over 100℃) may blow out from the capacitors. Do not stand close to the capacitors. In case of eye contact, flush the open eye(s) with large amount or clean water immediately, do not swallow. Do not touch electrolyte but wash skin with soap and water in case or skin contact.

紧急情况

- 使用中的电容器安全阀打开时会有气体喷出，这种情况下请及时切断主电源开关或拔下电源线插头。
- 电容器的安全阀动作时，会喷出超过100℃的高温气体，请不要将脸部靠近。当喷出的气体不慎进入眼睛或吸入的时候，请及时用清水洗眼及漱口，漱口水不能咽下。不要接触电解液，如果粘附在皮肤上时，请用肥皂水冲洗。

CONDITION OF STORAGE/USE

If electrolytic capacitors temperatures caused by such things as direct sunlight,the life of the capacitor may be adversely affected. Storage in a high humidity atmosphere may affect the solderability of lead wires and terminals.

1. STORAGE AREA

- Do not store capacitors at a high temperature and high humidity. Store the capacitors indoors at a temperature of 5 to 35℃ and a humidity of less than 75%RH.
- Store the capacitors in places free from water, oil or salt water.
- Store the capacitors in places free from toxic gasses (hydrogen sulfide, sulrurous acid, nitrous acid, chlorine, ammonium, etc.)
- Store the capacitors in places out of ozone, ultraviolet rays or radiation.
- Keep capacitors in the package.

2. CONDITIONS OF USE

The following environment should be avoided when using aluminum electrolytic capacitors.

- Damp conditions such as water, saltwater spray, or oil spray or fumes, High humidity or humidity condensation situations.
- Hazardous gas/fumes such as hydrogen sulfide, sulfurous acid gas,nitrous acid, chlorine gas or ammonia.
- Exposure to ozone, ultraviolet rays or radiation.

3. VOLTAGE TREATMENT

If the electrolytic capacitor is allowed to stand for a long time, its withstand voltage is liable to drop, resulting in increased leakage current.
If the rated voltage is applied to such a product, a large leakage current occurs and this generates internalheat, which damaged the capacitor.
Of the electrolytic capacitor is allowed to stand for a long time, therefore, use it after giving voltage treatment. It is recommended to apply DC rated voltage to the capacitor for a minimum of 30minutes through 1㏀ of protective series resistor.

保管/使用条件

电解电容器如果保管在直射阳光和高温场所时，会对其寿命造成坏的影响；且如果在潮湿的场所保管时，要考虑到引线和端子的焊接性会变坏。

1. 保管场所

- 不要将电容器保管在高温高湿的环境中，请保管在室温5~35℃，湿度75%以下的环境中。
- 不要让水、油或盐水污染电容器。
- 不要将电容器保管在有害气体（硫化氢、亚硫酸、亚硝酸、氯、氨等）漏出的环境中。
- 不要保管在臭氧、紫外线及放射线照射的环境中。
- 请在包装完了的状态下保管。

2. 使用条件

请不要在以下环境中使用电解电容器。

- 溅水、靠近盐水、油、潮湿、结露的环境。
- 充满有害气体（硫化氢、亚硫酸、亚硝酸、氯、氨气等）的环境。
- 臭氧、紫外线及放射线照射的环境。

3. 电压处理

电解电容器长期放置会有耐压下降、漏电流增大的倾向。如果直接给产品引加电压，会由于过大的漏电流使内部发热造成损坏；所以要对长期放置的产品进行电压处理后再使用。
电压处理是通过1kΩ左右的电阻引加直流额定电压最少30分钟。

4. RECOVERY VOLTAGE

After discharged aluminum electrolytic capacitor, the voltage will be increasing again. This phenomenon is called by “Recovery Voltage”, it happens very often and commonly for all aluminum electrolytic capacitors. In this case, discharge through a 1KΩ resistance before use at your process, because you may have trouble on sensitive device and frighten a person working with the capacitor.

4. 再生电压

铝电解电容器放置时，会有电压上升的现象，这种再生电压现象在铝电解电容器中是常见现象。使用电容器的敏感装置时，由于再生电压会发生故障或使作业者受惊，所以作业前请通过1kΩ的电阻使电容器放电。

DESTRUCTING CAPACITORS

In case of destructing our capacitors, kindly take following instructions.

- Burn capacitors up after making holes on them or scrapping. When you try to destrory them by fire, you may expect explosion in the capacitors.
- In order to prevent hazardous gas like chlorine gas, burn our capacitors on high temperature range. Burning sleeve on low temperature may cause producting chlorine gas.
- When you do not have burning facilities, please contact special industrial wastes processing companies.

废弃处理

电容器废弃处理时请按照下面方法进行。

- 因为销毁时电容器有爆破现象，所以请在电容器上打孔或充分毁坏后进行销毁。
- 因为电容器外装PVC套管，所以要高温销毁，低温销毁时会产生氯气等有害气体。
- 电容器不能销毁时，请交给专业的工业废弃物处理厂进行处理。

ABOUT AEC-Q200

- The Automotive Electronics Council (AEC) was originally established by American major automotive manufactures. Today, the committees are composed of representatives from the sustaining Members of manufacturing companies in automotive electrical components. It has standardized the criteria for “stress test qualification” and “reliability test” for the electronic components. AEC-Q200 is the reliability test standard for approval of passive components, it has been specified test subjects and quantity etc. for each components. Criteria of reliability tests for Aluminum Electrolytic Capacitors are also described in this.
  As customer requirement, Samyoung Electronics has submits the test results according to AEC-Q200 for the Aluminum Electrolytic Capacitors used in automotive applications to increase in recent years. Please contact us for more information.

关于AEC-Q200

- 汽车电子委员会(AEC)原来依照美国的主要汽车制造公司设立的。如今，是由汽车电子部品生产公司的支持会员们的代表组成的。该委员会已经为电子部品的“负荷试验资格”和“信赖性试验”设立了评估标准。AEC-Q200是为了承认无源元件而形成的信赖性试验标准，其中对试验项目、数量、其他明细等进行了详细说明。铝电解电容器的信赖性试验基准也有描述。
  根据顾客的要求，三莹电子最近几年间，关于汽车部品适用的铝电解电容器依据AEC-Q200的基准将试验结果提出。如果有更多的信息请联系我们。

OTHERS

- Since it has possibilities for electric shock or burns, kindly discharge it at the level of 1kΩ in advance.(sufficient and safe resistance values should be considered before applying)
- Capacitor case sizes and other product standards specified in this catalog may be changed or modified without notice for improvement of quality.
- For methods of testing, refer to KS C IEC 60384-4 (JIS C 5101-1, JIS C 5101-4)

其他

- 为防止触电或烧伤，使用前请先通过1kΩ的电阻进行放电处理。
- 为了改善品质，产品目录中规定的产品尺寸或其他产品基准变更或修改时，恕不另行通知。
- 对于其他实验规格请参照 KS C IEC 60384-4(JIS C 5101-1,JIS C 5101-4)。