预防措施和指导原则(导电性高分子固体铝电解电容器)

DESIGNING DEVICE CIRCUITS

1. Types of circuits where reALcap capacitors are not to be used

The leakage current may increase due to soldering and other processes. Since large leakage current can bring problems, avoid the use of conductive polymer solid capacitors(hereafter called solid capacitors) in the following circuits.

1) High impedance circuits
2) Time constant circuits
   The capacitance can be varied depending the operating conditions. The change of capacitance affects the time constant circuit.
3) Coupling circuits
4) Other circuits where circuits are affected by leakage current.

2. Polarity

Solid Capacitors are polarized. Do not apply either reverse voltage or AC voltage to the solid capacitor. Reverse voltage may cause a short circuit.

3. Rated voltage

Do not apply voltage exceeding rated voltage. Overvoltage may cause a short circuit.

4. Operating Temperature

Do not use the solid capacitor at temperature which exceeds the specified range. High temperature may cause decrease the life of the solid capacitor.

5. Ripple current

Do not apply the exceeding current which value exceeds the rated ripple current. The over ripple current cause decrease the life of the solid capacitor.

6. Charge and discharge

Do not use the solid capacitor in circuits for rapid charge and discharge repetitively.
Repetitively charge and discharge of capacitors may reduce the capacitance.
Use of a protective circuit to ensure reliability is recommended when rush current exceed 10A.

电路设计时注意事项

1.固体电容器使用应避免的电路

由于焊接或其他事由可能造成漏电流增加，由于大的漏电流带来的问题，在下面的电路中，应避免使用导电性高分子固体电容器（以下简称固体电容器）。

1）高电阻电路
2）时间常数电路
   固体电容器的容量随着操作条件而发生变化，而容量的变化会给时间常数电路带来影响。
3）耦合电路
4）其他受漏电流影响较大的电路

2.极性

固体电容器是有极性的，请不要加载反向电压或交流电压，逆电压可能导致固体电容器短路。

3.额定电压

请不要加载超过额定电压的电压，过电压可能导致固体电容器短路。

4.使用温度

固体电容器不能在超出工作温度范围的环境下使用，过高温度会导致固体电容器寿命缩短。

5.纹波电流

请不要加载超过额定纹波电流的电流，过高的纹波电流会导致固体电容器寿命缩短。

6.充放电

固体电容器不能在反复急充放电的电路中使用，反复急充放电会导致静电容量减少。
当电流超过10A时，建议使用保护电路以确保可靠性。

7. Insulation

Aluminum case, cathode lead wire, anode lead wire and circuit pattern should be electrically isolated.

7.绝缘

AL CASE，阴极LEAD线，阳极LED线和电路板应该是绝缘的。

8. Solid Capacitor Usage Environment

The following environment should be avoided.

1) Damp conditions such as water, saltwater spray, or oil spray or fumes.
   High humidity or humidity condensation situations.
2) Hazardous gas/fumes such as hydrogen sulfide, sulfurous acid gas, nitrous acid, chlorine gas or ammonia.
3) Ozone, ultraviolet rays or radiation.
4) Severe vibration or mechanical shock.

8.固体电容器的使用环境

请不要在以下环境中使用

1）潮湿的环境
（有水、盐水及油，或者处于结露状态的环境）

2）有害气体
充满有害气体（硫化氢、亚硫酸、亚硝酸、氯及其化合物、溴及其化合物、氨等）的环境。

3）臭氧、紫外线及放射线照射的环境。

4）有严重的振动或机械冲击的环境。

9. Capacitor Mounting

1) Surface Mount Type
   Land pattern on PCB board should comply with the specification.
2) Radial Type
   Interval of terminal holes on the PCB is in accordance with the specification.

9.固体电容器的配置

1）贴片型（SMD型）制品
印刷线路板（PCB板）的焊盘图形请参照产品目录或规格说明书的规定进行图形设计。

2）引线型（RADIAL型）制品
请将电容器的端子间隔和印刷线路板（PCB板）的孔间隔对准。

INSTALLING CAPACITORS

1. Installing

1) Do not reuse capacitors which already assembled.
2) The capacitor may have self-charge during storage time. In this case, discharge the capacitor through about 1kΩ resistor before use.
3) Leakage current of capacitors may be increased during storage. In this case, the capacitors can be reformed by the voltage treatment through about 1kΩ resistor.

<Voltage Treatment>
Applying rated voltage for 120 minutes at maximum operating temperature range.

4) Do not apply severe vibration or mechanical shock.

电容器的安装

1.安装

1）已经成套组装的电容器请勿再次使用。

2）固体电容器保管过程中能自我充电，在这种情况下，使用前请通过1kΩ的电阻进行放电。

3）漏电流在长期保管过程中能增大，在这种情况下，使用前请通过1kΩ的电阻对固体电容器进行电压处理后使用。

〈电压处理〉
在最高工作温度范围内加载额定电压120分钟。

4）不适用严重的振动或机械冲击。

2. Soldering

The leakage current may increase due to thermal stress that occur during soldering. Ensure the soldering conditions meet the specifications.

2-1. Soldering with a soldering iron

1) Ensure the lead spacing of the solid capacitor meets the hole spacing on the PCB board.
2) Ensure the soldering conditions meets the approval sheet.
3) Soldering iron should not touch the solid capacitor' s body.

2-2. Reflow soldering

1) Reflow soldering must not be used for radial type solid capacitors.
2) Soldering conditions(preheat, solder temperature and reflow time) should be within the limits prescribed in the catalogs or product specifications.
3) For setting a degree of heating infrared heaters, consider that the infrared absorption may vary in the color and materials of a solid capacitor.
4) Do not solder solid capacitors more than once by reflow.

3. Handling after soldering

1) Do not lean or twist the solid capacitor' s body after soldering on PCB.
2) Do not pick-up or move PCB by holding the soldered solid capacitors.

4. Cleaning PCB boards

4-1. Agents must be avoided

1) Do not wash boards by using the following agents.
   - Halogenated solvents
   - Alkali system solvents
   - Petroleum system solvents
   - Xylene, Acetone
2) Monitor conductivity, pH, specific gravity and the water content before cleaning boards.

2.焊接

焊接过程中发生的热应力可能会使漏电流增加，因此要确保焊接条件符合规定。

2-1.用烙铁焊接

1）确保固体电容器的引线间距和PCB板上孔的间距一致。
2）确保焊接条件符合承认愿。
3）请不要将烙铁的烙铁头接触到电固体容器的本体。

2-2.回流焊

1）回流焊不能用于引线型固体电容器。
2）焊接条件（预热、焊接温度和回流时间）请不要超出产品规格和承认愿规定的范围。
3）设置红外线加热器的加热程度，要考虑固体电容器的不同颜色和材质对红外线吸收的影响。
4）固体电容器不能进行2次以上的回流焊。

3.焊接后的管理

1）焊接后，不可将PCB板上的固体电容器倾斜或扭曲。
2）焊接后，不可抓着固体电容器的本体提起或移动PCB板。

4.PCB板的清洗

4-1.不可使用的清洗剂

1）请不要用以下药品
   - 卤素类溶剂
   - 碱性类溶剂
   - 石油类溶剂
   - 二甲苯、丙酮
2）清洗基板前，请确认清洗剂的电导度、pH值、比重和含水率。

3) Influence of cleaning agents
(Halogenated solvents)
Solid capacitors are easily affected by halogen ions, particularly by chloride ions. When halogen ions enter the inside of the solid capacitor, the capacitor may be failed due to corrosion of capacitor' s foil.

3)卤素类清洗剂的影响

固体电容器很容易受卤素离子的影响（特别是氯离子），当卤素离子侵入到电容器的内部，由于电容器箔的腐蚀，从而导致一些破坏性故障。

4-2. Recommended Agents

1) Higher alcohol cleaning agents
Solid capacitors may withstand immersion or ultrasonic cleaning for 10 minutes at a maximum liquid temperature of 60℃
2) IPA(Isopropyl Alcohol)
Solid capacitors are capable of withstanding any one of immersion, ultrasonic or vapor cleaning for 5 minutes.

4-2.推荐的清洗剂

1）高级乙醇类清洗剂
固体电容器可以承受在最高液体温度60℃下，浸泡10分钟或超声波清洗。

2）异丙醇（IPA)
固体电容器在浸泡中，能承受超声波或蒸汽清洗5分钟。

5. Using adhesives and coating materials

1) Do not use halogenated adhesives and coating materials.
2) Flux and cleaning agents should be removed before using adhesives or coating materials.
3) Do not cover up the whole surface of the solid capacitor. Make coverage only partial.
(The sealing area 30%)

5.产品的固定剂和涂层剂

1）请不要使用含有卤素类溶剂的固定剂和涂层剂。

2）在固定剂和涂层剂使用前，请清洗助焊剂和清洗剂。
3）固体电容器封口处不可全部被堵住，只能覆盖一部分（封口处的 30%以下）

THE OPERATION OF DEVICES

- Do not directly touch the solid capacitor terminals.
- Do not connect with conductors between the terminals.
- The following environment should be avoided when using solid 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.

配套使用中的注意事项

- 请不要直接接触电容器的端子。
- 电容器的端子间不可有导电体连接。

- 请不要在以下环境中使用固体电容器。

  - 潮湿的环境（有水、盐水、油、高湿度或者处于结露状态的环境）

  - 充满有害气体（硫化氢、亚硫酸气体、亚硝酸、氯及其化合物、溴及其化合物、氨等）的环境

  - 臭氧、紫外线及放射线照射的环境。

EMERGENCY ACTION

- If a short circuit occurs and odorous gas is released, immediately turn off the main power switch or pull out the plug from the power outlet.
- If the gas comes in contact with eyes or skin, rinse immediately. If the gas is inhaled, gargle immediately.

应急措施

- 如果发生短路或者产生恶臭气体，请立即切断设备的主电源，或者从插座上拔下电源线的插头。
- 如果气体与眼睛或者皮肤接触，请立即用水冲洗；当气体吸入时，请立即漱口。

CONDITIONS OF STORAGE

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

保管条件

- 不可将固体电容器保管在高温、高湿环境中。请保管在温度 5~35℃、湿度 75%以下的室内环境。
- 请将固体电容器保管在没有水、盐水和油的环境中。
- 请将固体电容器保管在没有有害气体（硫化氢、亚硫酸气体、亚硝酸、氯及其化合物、溴及其化合物、氨等）的环境中。
- 请将固体电容器保管在没有臭氧、紫外线及放射线照射的环境中。
- 请将固体电容器包装好后保管。

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

- Case sizes and other product standards specified in this catalog may be changed or modified without notice for improvement of quality.

其他

- 在提高质量的情况下，本产品目录（CATALOG）中的产品尺寸和其他产品标准的规定变更或修改时，恕不另行通知。