

1. 电路设计中的注意事项

(1) 要在确认使用及安装环境的基础上,在电容器的产品目录或承认书、图纸交货申请书(以下简称交货承认书)中规定的电容器额定性能的范围内进行设计。(如在超过额定性能下使用,有可能发生电容器破坏,冒烟,着火)

(2) 使用温度及使用纹波电流不可超出产品目录或交货承认书中规定的范围。

① 不可在超出分类上限温度(最高使用温度)的温度下使用。

② 不可接通过电流(超过额定纹波电流的电流)。

(3) 进行电路设计时,请选用与机器寿命相符的电容器。

(4) 电容器为极性电容器。要确认有无连接反向电压或交流电压。在极性反转电路中请选用双极性电容器。但是,双极限电容器也不可以用于交流电路。

(5) 在重复进行急速充放电的电路中请选用与使用条件相符的电容器。

作为重复进行急速充放电的电路,有电焊机、相机闪光灯等。此外,电路电压变动较大的伺服马达等旋转机器的控制电路也会重复进行急速的充放电。

关于重复进行急速充放电电路中使用的电容器,请咨询我们。

(6) 请确认电容器上是否有过电压(超过额定电压的电压)。

① 要注意纹波电压(交流部分)重叠到直流电压上时的峰值不可超过额定电压。

② 将两个以上的电容器串联连接时,要将通过各个电容器的电压控制在额定电压以下。而且,此时要将考虑漏损电流的分压电阻器与各个电容器并联加入。

(7) 电容器在以下之间要从电路中完全隔离开。

(电容器的铝壳和阴极端子之间由盒内侧的自然氧化皮膜和电解液的不稳定电阻部分连接在一起。)

① 铝壳和阴极端子及阳极端子和电路型板之间。

② 基板自立型空白端子和其他阳极端子及阴极端子和电路型板之间。

③ 双极性电容的两个端子与铝壳之间。

(8) 电容器的封装套筒非绝缘保证型。请勿用于需要绝缘功能的地方。需要外套具有绝缘功能时,请咨询我们。

(9) 电容器如果在以下环境中使用,有时可能会发生故障。

① 周围环境(耐气候性)条件

(a) 直接溅水的环境中、高温高湿的环境及结露的环境

(b) 直接溅油的环境及充满油雾的环境

(c) 直接溅盐水的环境及充满盐分的环境

(d) 充满有毒气体(硫化氢、亚硫酸、氯气、溴气、溴甲烷、氨气等)的环境

(e) 有直射日光、臭氧、紫外线及放射线照射的环境

(f) 有酸性及碱性溶剂溅落的环境

② 振动或冲击条件超过交货承认书规定范围的苛刻环境

(10) 将电容器安装到印刷电路板上时,请事先确认以下内容后再进行设计。

① 将印刷电路板的孔间隔与电容器的端子间隔对合。

② 设计时不可将配线及电路型板靠近到电容器的压力阀部分。

③ 只要交货承认书中没有规定,电容器的压力阀部分上面均应保留出如下所述的间隔。

产品直径	间隔
φ6.3~φ16mm	2mm以上
φ18~φ35mm	3mm以上
φ40mm以上	5mm以上

④ 印刷电路板一侧装有电容器的压力阀时,请对准压力阀的位置,将压力阀工作时的排气孔打开。

1. Circuit Design

(1) Please make sure the application and mounting conditions to which the capacitor will be exposed to are within the conditions specified in catalog or alternate product specification (Referred to as specification here after). (If it is used under the rated performance, the capacitor may be damaged, smoke and fire may occur)

(2) Operating temperature and applied ripple current shall be within the specification.

① The capacitor shall not be used in an ambient temperature which exceeds the operating temperature specified in the specification.

② Do not apply excessive current which exceeds the allowable ripple current.

(3) Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.

(4) Aluminum electrolytic capacitors are polarized. Make sure that no reverse Voltage or AC voltage is applied to the capacitors. Please use bi-polar Capacitors for a circuit that can possibly see reversed polarity. Note: Even bi-polar capacitors can not be used for AC voltage application.

(5) For a circuit that repeats rapid charging / discharging of electricity, an appropriate capacitor that is capable of enduring such a condition must be used. Welding machines and photo flash are a few examples of products that contain such a circuit voltage fluctuates substantially.

For appropriate choice of capacitors for circuit that repeat rapid charging / discharging, please consult Chang.

(6) Make sure that no excess voltage (that is, higher than the rated voltage) is applied to the capacitor.

① Please pay attention so that the peak voltage, which is DC voltage overlapped by ripple current, will not exceed the rated voltage.

② 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 capacitors.

(7) Aluminum electrolytic capacitors must be electrically isolated as follows: The aluminum case and the cathode foil are connected by the unstable resistance of a naturally formed oxide layer inside the aluminum case and the electrolyte.

① Case and negative terminal, Case and positive terminal, Case and circuit Pattern.

② Auxiliary terminal of can type and negative and positive terminal, including the circuit pattern.

③ Case and both terminals of a bi-polarized capacitor.

(8) Outer sleeve of the capacitor is not guaranteed as an electrical insulator. Do not use a standard sleeve on a capacitor in applications that require the electrical insulation. When the application requires special insulation, please contact our sales office for details.

(9) Capacitors may fail if they are used under the following conditions:

① Environmental (climatic) conditions

(a) Being exposed to water, high temperature & high humidity atmosphere, or condensation of moisture.

(b) Being exposed to oil or an atmosphere that is filled with particles of oil.

(c) Being exposed to salty water or an atmosphere that is filled with particles of salt.

(d) In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonia, etc.).

(e) Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.

(f) Being exposed to acidic or alkaline solutions.

② Under severe conditions where vibration and/or mechanical shock exceed the applicable ranges of the specifications.

(10) When designing a P.C. board, please pay attention to the following:

① Have the hole spacing on the P.C. board match the lead spacing of the capacitor.

② There should not be any circuit pattern or circuit wire above the capacitor pressure relief vent.

③ Unless otherwise specified, following clearance should be made above the pressure relief vent.

Case Diameter	Clearance Required
φ 6.3 to 16mm	2mm or more
φ 18 to 35mm	3mm or more
φ 40mm or more	5mm or more

④ In case the vent side is placed toward P.C. board (such as end seal vented parts), make a corresponding hole on the P. C. board to release the gas when vent is operated. The hole should be made to match the capacitor vent position.

⑤安装时请勿将螺纹端子型的封口部朝下。横向放置时，请勿将压力阀以及阳极端子朝下。

(11)电容器封口部的下面如果有电路图案，一旦发生电解液泄露时，可能会造成电路图案短路，发生由漏电痕迹或电迁移引发的发烟、着火，因此，请勿在电容器封口部的下面配置电路图案。

(12)请勿在电容器的周围及印刷电路板的背面（电容器下面）配置发热部件。

(13)芯片电容器用印刷电路板的焊盘图形要参照产品目录或交货承认书的推荐图形进行电路设计。

(14)电容器的电气特性会根据温度及频率的变动而变化。请确认该变化量的基础上进行电路设计。

(15)在双面印刷电路板上安装电容器时，在进行电路设计时请将电路设计成电容器下面没有多余的印刷电路板孔及反面连接用贯通孔的样式。

(16)螺纹端子的紧固及电容器主题安装用螺丝的紧固扭矩不可超出交货承认书中规定的范围。

(17)并联两个以上的电容器时，需要充分考虑电流平衡。（特别是并联导电性高分子钽固体电解电容器和普通铝电解电容器时，更需要考虑。）

(18)串联两个以上的电容器时，要考虑电压平衡，并将分压电阻器插入，使其与电容器并联。

2. 安装注意事项

(1)对组装到设备上已经通电的电容器，请勿再次使用。除了定期检修时为检测电气性能而拆卸的电容器外，均不能再次使用。

(2)即使将电容器放电后，端子间仍有可能产生电压（再闪击电压）。此时，请通过1kΩ的电阻器进行电压处理。

(3)保管达2年以上的电容器的漏损电流有可能会增大。此时，请通过1kΩ的电阻器进行放电处理。

(4)请确认电容器的额定值（静电容量及电压）后，进行安装。

(5)请确认电容器的极性后，进行安装。

(6)请勿将电容器跌落到地上，请勿使用跌落后的电容器。

(7)安装时请勿使电容器主体变形。

(8)请确认电容器的端子间隔和印刷电路板孔间隔一致后，再进行安装。

(9)基板自立形电容器在安装时要推入到和其基板密合的程度（非浮起状态）。

(10)利用自动插入机扭结固定电容器引线的强度不可过大。

(11)请注意由自动插入机及装配机的吸附器、产品检验器及对中操作所引起的冲击力。

(12)利用烙铁进行的焊接

①焊接条件（温度、时间）不可超出交货承认书中规定的范围。

②因端子间隔和印刷电路板孔间隔不一致而需要加工引线端子时，在进行焊接之前，加工时不可使电容器主体承受力。

③利用烙铁进行修整时，如果需要先将焊接的电容器卸下，请将焊锡充分融化后再拆卸，以免使电容器的端子承受压力。

④请勿让烙铁的烙铁头接触到电容器的主体。

(13)流动焊

①进行焊接时，请勿将电容器主体浸入焊料中。插入印刷电路板，只有对电容器一侧的相反侧背面进行焊接。

②焊接条件（预热、焊接温度、端子浸渍时间）不可超出交货承认书中规定的范围。

③除端子部以外，不可附着有焊剂。

④进行焊接时，要注意避免其他部件翻倒接触到电容器。

(14)回流焊

①焊接条件（预热、焊接温度、时间、回流次数）不可超出交货承认书中规定的范围。

⑤When installing, do not face down the sealing part of threaded terminal type. Do not place the pressure valve and anode terminal downward when it is placed horizontally.

(11) If there is a circuit pattern under the sealing part of the capacitor, once the electrolyte leaks, it may cause a short circuit of the circuit pattern, resulting in smoke and fire caused by leakage trace or electric migration. Therefore, do not configure the circuit pattern under the sealing part of the capacitor.

(12) Do not design a circuit board so that heat generating components are placed near an aluminum electrolytic capacitor or reverse side of P.C. board (under the capacitor).

(13) Please refer to the pad size layout recommendations in our catalog when designing in surface mount capacitors.

(14) Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.

(15) When you mount capacitors on the double-sided P.C. boards, do not place capacitors on circuit patterns or over on unused holes.

(16) The torque for terminal screw or brackets screws shall be within the specified value on Nichicon's drawings.

(17) When you install more than 2 capacitors in parallel, consider the balance of current flowing through the capacitors. Especially, when a solid conductive polymer aluminum electrolytic capacitor and a standard aluminum electrolytic capacitor are connected in parallel, special consideration must be given.

(18) If more than 2 aluminum electrolytic capacitors are used in series, make sure the applied voltage will be lower than the rated voltage and that voltage will be applied to each capacitor equally using a balancing resistor in parallel with each

2. Mounting

(1) Once a capacitor has been assembled in the set and power applied, Even if a capacitor is discharged, an electric potential (restriking voltage) may exist between the terminals.

(2) Electric potential between positive and negative terminal may exist as a result of returned electromotive force, so please discharge the capacitor using a 1kΩ resistor.

(3) Leakage current of the parts that have been stored for more than 2 years may increase. If leakage current has increased, please perform a voltage treatment using 1kΩ resistor.

(4) Please confirm ratings before installing capacitors on the P.C. board.

(5) Please confirm polarity before installing capacitors on the P.C. board.

(6) Do not drop capacitors on the floor, nor use a capacitor that was dropped.

(7) Do not damage the capacitor while installing.

(8) Please confirm that the lead spacing of the capacitor matches the hole spacing of the P.C. board prior to installation.

(9) Snap-in can type capacitor such as JIS style symbol 692, 693, 694 and 695 type should be installed tightly to the P.C. board (allow no gap between the P.C. board and bottom of the capacitor).

(10) Please pay attention that the clinch force is not too strong when capacitors are placed and fixed by an automatic insertion machine.

(11) Please pay attention to that the mechanical shock to the capacitor by suction nozzle of the automatic insertion machine or automatic mounter, or by product checker, or by centering mechanism.

(12) Hand soldering.

①Soldering condition shall be confirmed to be within the specification.

②If it is necessary that the leads must be formed due to a mismatch of the lead space to hole space on the board, bend the lead prior to soldering without applying too much stress to the capacitor.

③If you need to remove parts which were soldered, please melt the solder enough so that stress is not applied to lead.

④Please pay attention so that solder iron does not touch any portion of capacitor body.

(13) Flow soldering (Wave solder)

①Aluminum capacitor body must not be submerged into the solder bath. Aluminum capacitors must be mounted on the "top side" of the P.C. board and only allow the bottom side of the P.C. board to come in contact with the solder.

②Soldering condition must be confirmed to be within Nichicon specification. Solder temperature: 260 5oC Immersing lead time:10 1 second, Thickness of P.C. board : 1.6mm.

③Please avoid having flux adhere to any portion except the terminal.

④Please avoid contact between other components and the aluminum capacitor.

(14) Reflow soldering(SMD only)

①Soldering condition must be confirmed to be within Huawei Specification.

②使用红外线加热器时，由于红外线吸收率根据电容器的颜色及材料的不同而不同，因此需要注意加热的程度。

(15)在无卤类焊剂中，有一些虽然不含离子性卤化合物，但却有大量的非离子性卤化物，当这类化合物进入电容器时，将与电解液发生化学反应，可能产生与清洗后结果相同的不良影响。请选用不含有非离子性卤化合物的焊剂。

(16)焊接时以及因固定电容器用的树脂的硬化等而使电容器在150℃以上的环境大气中放置2分钟以上，或者让高温气体、热射线直接接触电容器时，外装套筒有时会发生收缩、膨胀、龟裂。

(17)将电容器焊接到印刷电路板上之后，不可将电容器主体倾斜、放倒或扭曲。

(18)将电容器焊接到印刷电路板上之后，不可将电容器当作把手来移动印刷电路板。

(19)将电容器焊接到印刷电路板之后，不可让其他物体碰撞到电容器。此外，重叠放置印刷电路板时，不可使印刷电路板或其他部件等碰到电容器。

(20)清洗

①清洗方法

对象：所以品种，所以规格

乙醇类清洗剂

异丙醇

水性清洗剂

高级乙醇类

界面活性剂

②清洗条件：使用浸渍、超声波等方法、清洗时间总计不超过5分钟。（清洗液温度为60℃以下）清洗后，请将电容器和安装完毕的印刷电路板同时以热风干燥10分钟以上。另外，当洗涤液落入了外壳和封套之间时，如果热风的温度过高，封套就会变软、膨胀，所以请使热风的温度不要超过封套变软的温度（80℃）。

此外，水洗后如果干燥不充分，可能会引起封套二次收缩、底板膨胀等外观不良。需加以注意。请充分做好清洗剂的污染管理工作（电导率，PH值，比重，含水量等）。

清洗后，请勿将其保管在清洗液的环境中或密封容器中。另外，在进行喷射洗净的时候，由于喷射角度和强度的不同，可能会造成外壳膨胀，谨请注意。对于别的洗净方法，也有可能造成产品表示信息消失或者模糊褪色。

HCFC的换代产品氟利昂在将来将不能使用，而且，从地球环境角度而言，我们也不推荐将其作为清洗液来使用。

(21)固定剂、被膜剂

①请勿使用含卤素类溶剂等固定剂，被膜剂。

②在使用固定剂、被膜剂之前，请将基板和电容器的封口部之间清扫干净，不可留有焊剂残渣及污垢。

③在使用固定剂、被膜剂之前，请对清洗剂等进行干燥。

④在使用固定剂、被膜剂时，请勿将电容器封口部的整个面堵塞。

固定剂、被膜剂的种类很多，使用时详情请咨询我们。

(22)关于熏制处理

如果熏蒸剂中所含的卤素侵入电容器内部，可能与电解液、电极箔等发生化学反应。（主要是部分气体透过电容器的封口部，侵入电容器内部。）这一化学反应的进行会导致内部铝构件腐蚀，可能引起电容器漏电流不良、开路不良、压力阀动作等故障。在出口时或者机器使用的防虫对策中，有时会利用甲基溴等卤素化合物进行熏制处理。对电容器及装配了电容器的机器进行熏蒸时，或者将经过熏蒸处理的托盘等用作包装材料时，请充分注意避免电容器暴露在卤素氛围中。

3.设备使用注意事项

(1)直接接触电容器的端子有导致触电的危险

②When 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 of the capacitor body, material of the sleeve and capacitor size.

(15) Soldering flux There are non-halogen types of flux that do not contain ionic halides, but contain many non-ionic halides. When there non-ionic halides infiltrate the capacitor, they cause a chemical reaction that is just as harmful as the use of cleaning agents. Use soldering flux that dose not contain non-ionic halides.

(16) Shrinkage, bulging and/or cracking could be seen on the outer sleeve of the capacitor when capacitors are kept in for more than 2 minutes at 150 ℃ ambient temperature during soldering at reflow process or resin curing process. Applying high temperature gas or heat ray to capacitor can cause the same phenomenon.

(17) Do not tilt lay down or twist the capacitor body after the capacitor are soldered to the P.C. board.

(18) Do not carry the P.C. board by grasping the soldered capacitor.

(19) Please do not allow anything to touch the capacitor after soldering. If P.C. board are stored in a stack, please make sure P.C. board or the other components do not touch the capacitor. The capacitors shall not be effected by any radiated heat from the soldered P.C. board or other components after soldering.

(20) Recommended Cleaning Condition

Applicable : Any type, any ratings.

Cleaning Agents

Based Alcohol solvent cleaning agent

Isopropyl Alcohol

Based water solvent cleaning agent

Premium alcohol solvent type

Cleaning Conditions :

Total cleaning time shall be no greater than 5 minutes by immersion, ultrasonic or other method.(Temperature of the cleaning agent shall be 60℃ maximum.) After the board cleaning has been completed, the capacitors should be dried using hot air for a minimum of 10 minutes. If the cleaning solution is infiltrated between the case and the sleeve, the sleeve might soften and swell when hot air temperature is too high. Therefore, hot air temperature should not exceed softening temperature (80℃) of the sleeve. Insufficient dries after water rinse may cause appearance problems, such as sleeve shrinking, bottom-plate bulging. In addition, a monitoring of the contamination of cleaning agents (electric conductivity, pH, specific gravity, water content, etc.) must be implemented.

After the cleaning, do not keep the capacitors in an atmosphere containing the cleaning agent or in an air tight container. In addition regarding jet washing, please use caution since the sleeve may expand cause of the angle and / or the strength of the water jet. Depending on the cleaning method, the marking on a capacitor may be erased or blurred.

Consult Nichicon before using a cleaning method or a cleaning agent other than those recommended.

(21) Fixing Material and Coating Material

①Do not use any affixing or coating materials, which contain halide substance.

②Remove flux and any contamination, which remains in the gap between the end seal and PC board.

③Please dry the cleaning agent on the PC board before using affixing or coating materials.

④Please do not apply any material all around the end seal when using affixing or coating materials.

There are variations of cleaning agents, fixing and coating materials, so please contact those manufacture or our sales office to make sure that the material would not cause any problems.

(22) Others

If the halogen contained in the fumigant invades the inside of the capacitor, it may react with the electrolyte, electrode foil, etc. (mainly part of the gas passes through the sealing part of the capacitor and invades the inside of the capacitor.) This chemical reaction will lead to the corrosion of the internal aluminum components, which may cause the bad leakage current, open circuit, pressure valve action and other faults of the capacitor. At the time of export or in the insect control strategy used by the machine, the halogen compounds such as methyl bromide are sometimes used for fumigation. When fumigating capacitors and machines equipped with capacitors, or using fumigated pallets as packaging materials, please take full care to avoid exposure of capacitors to halogen atmosphere.

3. In the equipment

(1) Do not directly touch terminal by hand.

(2)不可以导体使电容器端子之间短路。此外，不可使电容器接触酸或碱的水溶液等导电性溶液。

(3)要确认装配了电容器的设备的安装环境不属于以下环境。

- ①直接溅水的场所、高温高湿的场所、易结露的场所。
- ②直接溅油的场所及充满油雾的场所。
- ③直接溅落盐水的场所、高温高湿的场所、易结露的场所。
- ④充满酸性有机气体（硫化氢及亚硫酸、亚硝酸、氯气、溴气、溴甲烷）的场所。
- ⑤充满碱性有毒其他（氨气等）的场所。
- ⑥有酸性及碱性溶剂溅落的场所。
- ⑦结露环境有可能导致外套发生收缩、膨胀、破裂，因此在使用时请进行充分确认。此外，因温度剧烈变化、高温高湿试验等而结露时，也可能导致同样的外套异常。

4. 保养检修

1.对于工业机器中使用的电容器要进行定期检修。检修项目包括如下内容。

- ①外观：有无压力阀的动作、液体泄漏等明显异常。
- ②电气性能：漏损电流、静电容量、损失角的正切值及产品目录或交货承认书中规定的项目。

5. 紧急情况

1.在使用装置的过程中，电容器的压力阀动作，出现蒸汽时，切断装置的主电源或者电源线的插头从插座中拔出。

2.电容器的压力阀工作时，将喷出超过+100℃的高温气体，此时不可将脸部靠近。一旦喷出的气体进入眼睛或吸入时，应立即用水清洗眼部或漱口。

不可舔食电容器电解液。如果电解液溅到皮肤上，应使用肥皂进行冲洗。

6. 保管条件

1.关于电容器的保管，建议在室温-5~35℃、相对湿度≤75%的条件下进行保管。

2.请确认保管场所不属于『1项 装配使用中注意事项（9）中记载的环境』（为使导电性高分子铝电解电容器保持良好的焊接性，请遵守以下项目。）

- 1.在使用前，请在用塑料袋密封的状态下保管。
- 2.请在即将使用前将塑料袋开封，并将产品一次用完。如果不能一次用完，请将剩余产品放回包装袋，并用胶带等密封。
- 3.为保持良好的焊接性，请将产品保管期限控制在一年以内。

7. 废弃处理

1.在废弃电容器时，可采取以下任意一种方法。

- ①在电容器上开孔或充分破碎后焚烧。
- ②不焚烧电容器时，应交与专业的工业废弃物处理厂，由其进行填拓等处理。

2.废弃电容器（从与之相连的基板上卸下）时，请确认其是否已被放电。

(2) Do not short between terminals with conductor, nor spill conductible liquid such as alkaline or acidic solution on or near the capacitor.

(3) Please make sure that the ambient conditions where the set is installed not have any of the following conditions:

- ①Where capacitors are exposed to water, high temperature & high humidity atmosphere, or condensation of moisture.
- ②Where capacitors are exposed to oil or an atmosphere that is filled with particles of oil.
- ③Where capacitors are exposed to salty water, high temperature & high humidity atmosphere, or condensation of moisture.
- ④The atmosphere is filled with toxic acid gasses (e.g. hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methy bromide, etc.)
- ⑤The atmosphere is filled with toxic alkaline gasses (e.g. ammonia)
- ⑥Where capacitors are exposed to acidic or alkaline solutions.
- ⑦Since shrinkage, bulging and/or crack could be seen on outer sleeve of capacitor when capacitors are used in atmosphere where condensation of moisture occurs, please confirm their adaptation before the use. The condensation of moisture could occur when temperature cycling test/ Rapid change of temperature test is performed, in this case, aforementioned sleeve problem could be seen.

4. Maintenance Inspection

(1) Please periodically inspect the aluminum capacitors that are installed in industrial equipment. The following items should be checked:

- ①Appearance : Remarkable abnormality such as vent operation, leaking electrolyte etc.
- ②Electrical characteristic: Capacitance, dielectric loss tangent, leakage current, and items specified in the specification.

5. In an Emergency

(1) If you see smoke due to operation of safety vent, turn off the main switch or pull out the plug from the outlet.

(2) Do not bring your face near the capacitor when the pressure relief vent operates. The gasses emitted from that are over 100℃. If the gas gets into your eyes, please flush your eyes immediately in pure water. If you breathe the gas, immediately wash out your mouth and throat with water.

Do not ingest electrolyte. If your skin is exposed to electrolyte, please wash it away using soap and water.

6. Storage

(1) It is recommended to keep capacitors between the ambient temperatures of -5℃ to 35℃ and a relative humidity of ≤75% or below.

(2) Please make sure the ambient storage conditions will be free from the conditions that are listed in clause 3. "In the equipment" at (3). In order to maintain the satisfactory soldering condition for conductive polymer aluminum solid electrolytic capacitors, the following items must be strictly adhered to.

- 1) Parts should be stored sealed in a bag until they are actually used.
- 2) Once the sealed bag is cut open, all the parts should be used at one time. If not, then the remaining parts should be placed in a bag and sealed with tape.
- 3) In order to maintain a good solderability of the parts, shelf life of parts should not exceed 1 year.

7. Disposal

(1) Take either of the following methods in disposing of capacitors.

- ①Make a hole in the capacitor body or crush capacitors and incinerate them.
- ②If incineration is not applicable, hand them over to a waste disposal agent and have them buried in a landfill.

(2) When removing a capacitor from the circuit board or when disposing of capacitor please ensure that the capacitor is properly discharged.

关于商品目录中记载的ESR阻抗值

引线型：测定位置为引线端子底部。

芯片型：测定位置为距离树脂板的孔口最近的电极部。

ESR, Impedance Measuring Point

Radial lead type

ESR should be measured at both of the terminal ends closest to the capacitor body.

Chip type

ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.