东莞市创慧电子有限公司

DONGGUAN CHUANGHUI ELECTRONICS CO.,LTD

# 承 认 书

# S P E C I F I C A T I O N

| | |
|---|---|
| 客户名称Customer Name: | 立创 |
| 客户料号Customer NO: | |
| 产品名称Product: | 固态铝电解电容 |
| 系列规格Specifiaction: | RS 6.3V470μF 6.3X5mm |
| 创慧料号CH NO: | RS471M6R3E050R1Z00ZZ |
| 成型方式Molding mode: | 长脚 |
| 版 本 号Version No: | A0 |
| 送样日期Sampled Date: | 2026/4/28 |
| 备注Remarks: | |

| 创慧承认 CHUANGHUI VALIDATION | | | 客户承认 CUSTOMER VALIDATION |
|---|---|---|---|
| 经办 PREPARED | 审核 CHECKED | 批准 APPROVAL | |
| 曾冰虹 | 石彬 | 刘劲松 | |

东莞市创慧电子有限公司 技术品质部

# 东莞市创慧电子有限公司
# DONGGUAN CHUANGHUI ELECTRONICS CO.,LTD

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# 东莞市创慧电子有限公司

DONGGUAN CHUANGHUI ELECTRONICS CO.,LTD

## 修订履历表 Revision records

| 版号<br>Version | 修订日期<br>Revised Date | 修订页码<br>Revised Page | 修订内容<br>Revised Content | 拟制<br>Prepared | 批准<br>Approval |
|---|---|---|---|---|---|
| A0 | 2026/4/28 | / | 新规格送样 | 曾冰虹 | 刘劲松 |
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# 东莞市创慧电子有限公司
DONGGUAN CHUANGHUI ELECTRONICS CO.,LTD

## 1. 料号 Product Part No.

| RS | 471 | M | 6R3 | E050 | R | 1Z | 00 | ZZ |
|---|---|---|---|---|---|---|---|---|
| ①系列 Series | ②容量 Capacitance | ③容差 Capacitance Tolerance | ④电压 Voltage | ⑤尺寸 Size | ⑥印字颜色 Printing color | ⑦成型 Finishing | ⑧脚长编码 Lead length | ⑨特殊编码 Special encoding |

| ①系列 Series | RS | RT | RL | RV | RA | RB | SS | SL | SV | SC | HS | MS | ... |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| ②容量(μF) Capacitance | 47 | 100 | 150 | 220 | 330 | 470 | 560 | 680 | 820 | 1000 | 2200 | 3300 | ... |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 470 | 101 | 151 | 221 | 331 | 471 | 561 | 681 | 821 | 102 | 222 | 332 | ... |

| ③容差 Capacitance Tolerance | C | J | K | M | A | V | P |
|---|---|---|---|---|---|---|---|
| | -5～+15% | -5～+20% | -10～+10% | -20～+20% | 0～+20% | -10～+20% | -15～+20% |

| ④电压(V) Voltage | 2.5 | 4 | 6.3 | 7.5 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2R5 | 400 | 6R3 | 7R5 | 100 | 160 | 250 | 350 | 500 | 630 | 800 | 900 | 101 |

| ⑤尺寸(mm) Size | 直径 | 4 | 5 | 5.5 | 6.3 | 8 | 10 | 12.5 | 13 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 代码 | C | D | Z | E | F | G | H | K | | |
| | 高度 | 5 | 5.8 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| | 代码 | 050 | 5R8 | 060 | 080 | 100 | 120 | 140 | 160 | 180 | 200 |

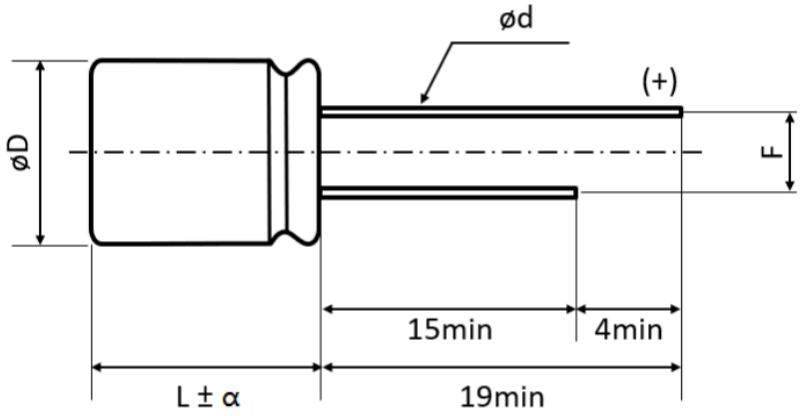
| ⑥印字颜色 Printing color | 颜色 | 红色 | 蓝色 | 黑色 | 白色 |
|---|---|---|---|---|---|
| | 代码 | R | L | B | W |

| ⑦成型 Finishing | 成型大类 | 长脚 | 短脚 | 编带 | 贴片 | | | |
|---|---|---|---|---|---|---|---|---|
| | 代码 | 1 | 2 | 3 | 4 | | | |
| | 成型小类 | 直切 | 扩脚切 | K直脚 | K扩脚 | H01 | H02 | 无特殊 |
| | 代码 | A | B | C | D | E | F | Z |

| ⑧脚长编码 Lead length | a.长脚品以 00 表示;<br>b.切脚品以个位数和小数点后一位数表示，如 30 表示脚长 3.0mm;<br>c.编带品以 00 表示;<br>d.座板品以 00 表示; |
|---|---|

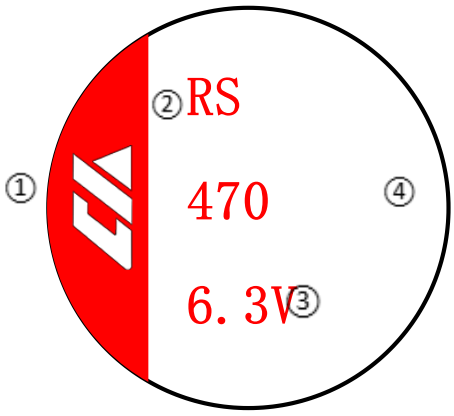
| ⑨特殊编码Special encoding | 作为特殊码保留，如无特殊要求，以 ZZ 表示。 |
|---|---|

## 2. 产品尺寸 Product Size




| D(± 0.50 )mm | L(mm) | α(mm) | F(± 0.50 )mm | φd(± 0.05 )mm |
|---|---|---|---|---|
| 6.3 | 5 | 1.00 | 2.5 | 0.5 |

## 3. 印字 Marking



①：负极标识　Cathode marking

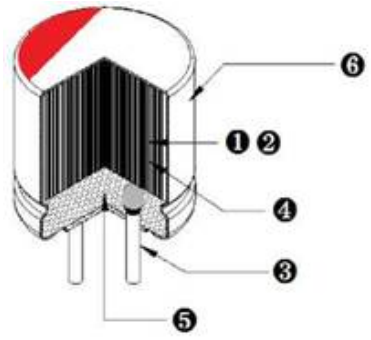
②：系列 Series

③：额定电压 Rated voltage

④：标称容量 Rated capacitance

⑤：周期 Date code
“5”：2025年 公历年代码 Digit of Christian year
“36”：第36周 周代码 Month

## 4. 产品结构图 Product Structure Diagram




1.阳极箔：高纯铝化成箔
Anode foil： high pure aluminum formation foil
2.阴极箔：高纯铝碳箔
Cathode foil： high pure aluminum carbon foil
3.导针：高纯铝，引线为镀锡铜包钢线
leader pin： high pure aluminum,lead is tin copper clad steel wire
4.电解纸：马尼拉麻
Electrolytic paper： Manila hemp
5.胶盖：橡胶
Sealing： rubber
6.铝壳：高纯铝，涂层铝壳
Aluminum can： high purity aluminum, coated aluminum can

## 5. 产品特性 Characteristics

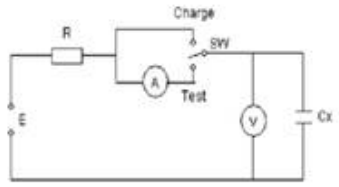
### 5.1 电容特性 Electrical Characteristics

| 额定电压 RatedVoltage (VDC) | 标称容量 NominalCapacity (μF) | 容差 Cap.Tol | 损耗 Loss | 阻抗 ESR (mΩ,100kHz) | 漏电流 Leakagecurrent (μA,2min) | 纹波电流 RippleCurrent (mArms) (105℃,100KHz) | 温度 Operating Temperature | 备注 remarks |
|---|---|---|---|---|---|---|---|---|
| 6.3 | 470 | ±20% | 0.1 | 12 | 592 | 3200 | -55～105℃ | / |

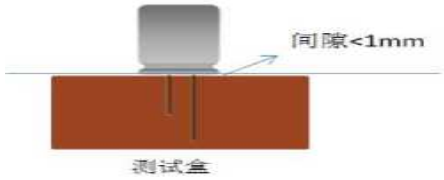
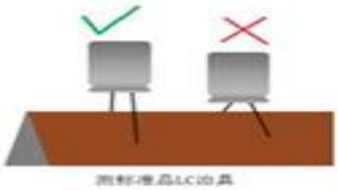
### 5.2 标准测试条件Standard test conditions

除非另有规定，所有测试环境应当在以下条件下进行：
Unless otherwise specified,all tests shall be performed at following conditions:
环境温度：15-35 ℃ Ambient temperature： 15-35 ℃
相对湿度：45-75% RH Relative humidity： 45-75% RH
气压： 86-106 Kpa Air pressure 86-106 Kpa
测试疑虑时，在以下条件下确认测量结果：
Any testing doubt, confirm the measurement results under the following conditions:
环境温度：20±2 ℃ Ambient temperature： 20±2℃
相对湿度：60-70% RH Relative humidity： 60-70% RH
气压： 86-106 Kpa Air pressure 86-106 Kpa

## 5.3 特性参数说明Description

<table>
<tr><th>NO.</th><th>特性<br>Characteristics</th><th>单位<br>unit</th><th>说明 Description</th></tr>
<tr><td>1</td><td>容量<br>capacitance</td><td>μF</td><td>产品标称容量，测试频率：120HZ,在规定容量公差内<br>Product nominal capacity, test frequency: 120HZ, within the specified capacity tolerance</td></tr>
<tr><td>2</td><td>电压<br>working voltage</td><td>V</td><td>产品额定电压<br>Rated working voltage</td></tr>
<tr><td>3</td><td>损失角<br>Dissipation Factor</td><td>%</td><td>也称损耗，测试频率：120HZ<br>Also calls dissipation, test frequency: 120HZ</td></tr>
<tr><td>4</td><td>ESR</td><td>mΩ</td><td>等效串联电阻，测试频率100KHZ<br>Equivalent series resistance, test frequency 100KHZ</td></tr>
<tr><td rowspan="4">5</td><td rowspan="4">RC</td><td rowspan="4">mA.rms</td><td>最大许可纹波电流为100KHZ下最大A. C电流<br>The maximum allowable ripple current is 100KHZ, the largest A.C current</td></tr>
<tr><td>DC电压和峰值AC电压总和不可超出额定电压，不可反向充电<br>The DC voltage plus the peak AC voltage must not exceed the rated voltage, and non-reverse charging</td></tr>
<tr><td>
<table>
<tr><td>频率HZ<br>Frequency</td><td>120≤f<1k</td><td>1K≤f<10K</td><td>10K≤f<100K</td><td>100K≤f<500K</td><td></td></tr>
<tr><td>系数<br>coefficient</td><td>0.05</td><td>0.3</td><td>0.7</td><td>1</td><td></td></tr>
</table>
</td></tr>
<tr><td></td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">LC</td><td rowspan="2">uA</td><td>泄漏电流，产品施加额定电压，充电2分钟后测试漏电值<br>Leakage current, after charging for 2 minutes, test the leakage current value of product</td></tr>
<tr><td> 
</td></tr>
</table>

## 5.4 特性测试注意事项 Precautions before testing characteristics

| | | |
|---|---|---|
| |  |  |
| 测试前保持引脚垂直平行不能扭动、拉扯电容引脚测试。<br>Keep pins vertical and parallel before testing.and can not wiggle, pull the pins | 容量/损失角/ESR值时， 测试点需在引线根部。测试LC时，需保持引脚平行。<br>When testing capacitance/dissipationfactor/ ESR value.test points need to be at the root of the lead | 不能让电容引脚呈八字形分开。<br>When testing LC,keep pins parallel,and can not separate two pins as “八” shape. |

## 6 高温负荷寿命试验 High temperature load life test

电容器在额定最高温度下印加额定电压，持续储存至规定寿命时间后，符合以下要求：
Charged rated voltage and continously stored at upper category tempevature for specified life time,characteristics of capacitor shoule meet following requirements

| 项目item | 要求 requirements |
|---|---|
| 寿命时间life time | 2000 ±48小时 hours |
| 容量变化<br>change of capacitance | 在容量初始值±20%内<br>Within ±20% of the initial value |
| 损失角<br>dissipation factor | 不超过规定值的1.5倍<br>Not to exceed 150% of the value specified |
| ESR | 不超过规定值的1.5倍<br>Not to exceed 150% of the value specified |
| LC | 不超过规定值<br>Not to exceed the value specified |

## 7 浪涌电压试验 Surge voltage test

在任何情况下，浪涌直流电压是电容器所应承受的最大电压，这包括瞬变和峰值纹波 最高的线路电压。
The surge DC rating is the maximum voltage to which the capacitor should be subjected under any conditions. This includes transients and peak ripple at the highest line voltage.

| 额定电压（V）rated working voltage | 额定温度（℃）upper temperature | 浪涌电压（V）surge voltage |
|---|---|---|
| 2.5 | 额定温度 | 2.9 |
| 6.3 | 额定温度 | 7.2 |
| 10 | 额定温度 | 11.5 |
| 16 | 额定温度 | 18.4 |
| 25 | 额定温度 | 28.8 |
| 35 | 额定温度 | 40.3 |
| 50 | 额定温度 | 57.5 |
| 63 | 额定温度 | 72.5 |
| 100 | 额定温度 | 115.0 |

## 8 稳态湿热试验Damp heat(steady state) test

于环境温度60±2℃,湿度90-95% RH条件下，储存1000±48小时，符合以下要求：
The following requirements shall be satisfied after the capacitors are stored at 60±2° C，90to 95%RH for 1000±48 hours

| 项目item | 要求 requirements |
|---|---|
| 容量变化<br>change of capacitance | 在容量初始值±20%内<br>Within ±20% of the initial value |
| 损失角<br>dissipation factor | 不超过规定值的1.5倍<br>Not to exceed 150% of the value specified |
| ESR | 不超过规定值的1.5倍<br>Not to exceed 150% of the value specified |
| LC | 不超过规定值<br>Not to exceed the value specified |

## 9 温度特性试验 characteristics at High and low Temperature

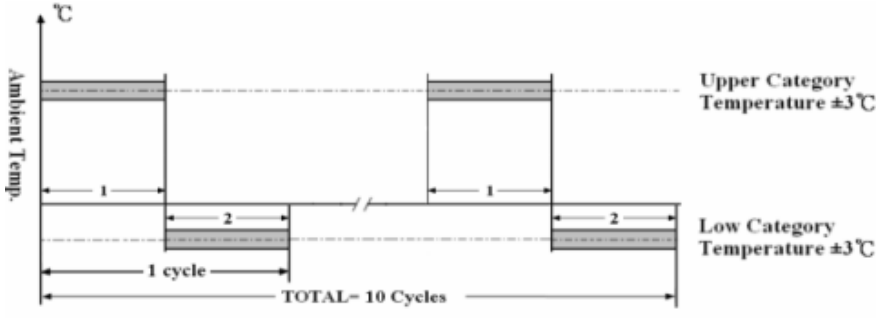
于以下环境步骤按规定时间储存，符合以下要求：
The following requirements shall be satisfied after the capacitors are stored at following conditions and specified time

| 阶段 | 温度（℃） | 测试项目 (120HZ) |
|---|---|---|
| 1 | 20±2 | CAP/DF/ESR |
| 2 | 最低使用温度±3 | ESR |
| 3 | 20±2 | CAP/DF |
| 4 | 最高使用温度±3 | |
| 5 | 20±2 | |

| 要求 requirement |
|---|
| 容量变化在初始值±20% 内<br>Within ±20%of the initial value |
| 损失角不超过规定值<br>Dissipation factor： not to exceed the value specified |
| ESR不超过规定值<br>ESR: not to exceed the value specified |

## 10. 快速变温试验 Rapid change of temperature

| 阶段 | 温度（℃） | 时间（min） | 循环回数 |
|---|---|---|---|
| 1 | 最低使用温度±3 | 30±3 | 5 |
| 2 | 常温 | <3 | |
| 3 | 最高使用温度±3 | 30±3 | |
| 4 | 常温 | <3 | |

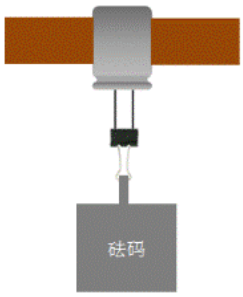



| 要 求 requirement |
|---|
| 容量变化在初始值±20% 内<br>Within±20%of the initial value |
| 损失角不超过规定值<br>Dissipation factor: not to exceed the value specified |
| LC不超过规定值<br>LC: not to exceed the value specified |

## 11. 端子强度试验 Lead strength test

11.1 引张强度 Tensile Strength
电容器引脚向下，固定电容器本体，在引脚上静态负重至规定时间，符合以下要求：
Fixing capacitor body and pins down,static load on the pins to the specified time, meets the following requirements

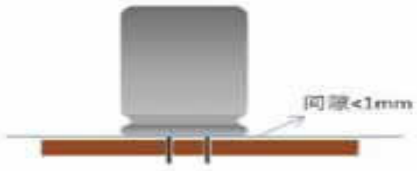
| 电容器引线直径mm<br>diameter of pin | 负重（N）<br>weight | 负重时间（秒）<br>load time | 要求<br>requirement |
|---|---|---|---|
| d≤0. 5 | 5 | 10±1 | 端子无断裂、松动<br>pins have no broken and loose |
| 0.5<d≤0.8 | 10 | 10±1 | 端子无断裂、松动<br>pins have no broken and loose |
| 0.8<d≤1.2 | 25 | 10±1 | 端子无断裂、松动<br>pins have no broken and loose |




## 12. 振动试验 Vibration test

振动频率：10-55HZ（间隔1分钟 / 10HZ—>55HZ—>10HZ）
Vibration frequency： 10-55HZ (Spaced one minute apart/ 10HZ—>55HZ—>10HZ)
振幅： 0.75mm（总偏穫1.5mm）
Amplitude：0.75mm (total migration 1.5mm)
方向： X、Y、Z （3向）
Direction： X、Y、Z axis(three directions)
持续时间：2小时/向
Duration: 2 hours/direction

安装图示如下：
Installation diagram as below:




30分钟内，容量值相比初始值不应有明显变化
Within 30 minutes,capacitance has no significant change comparation with initial value

| 项目item | 要求 requirement |
|---|---|
| 容量变化<br>change of capacitance | 在容量初始值±5%内<br>Within ±5% of the initial value |
| 外观<br>appearance | 端子无断裂、松动<br>pins have no broken and loose |

## 13. 可焊性拭验 Solderability test

焊料： 约25%松香/乙醇溶液，焊料Sn-Ag-Cu
Solder： about 25% rosin/ethanol solution, solder Sn-Ag- Cu
温度： 243±5℃
Temperature： 243±5℃
时间： 2±0.5秒
Time： 2±0.5 seconds
试验后端子浸渍位置至少95%面积包盖了新锡。
After testing, more than 95% of the terminal surface shall be covered with new solder

## 14. 焊锡耐热试验 Solder Heat Resistance Test

14.1 焊锡槽法 Tin groove method:
温度： 260±5℃ 时间： 10±1秒
Temperature： 260±5℃ Time： 10±1 seconds

14.2 烙铁焊接方法 Soldering iron welding method:
温度： 400±10℃ 时间： 3+1/-0秒
Temperature： 400±10℃ Time： 3+1/-0 seconds
以上两种方法，在电容器热量趋于稳定后，符合以下要求：
For above two methods, after the capacitor heat is stabilized, the following requirements should be met

| 项目item | 要求 requirement |
|---|---|
| 容量变化<br>change of capacitance | 在容量初始值±5%内<br>Within ±5% of the initial value |
| 损失角<br>dissipation factor | 不超过规定值<br>Not to exceed the value specified |
| ESR | 不超过规定值<br>Not to exceed the value specified |
| LC | 不超过规定值<br>Not to exceed the value specified |

## 15. 回流焊试验 Flow soldering test

| 项目item | 温度 ℃ | 时间time | 次数 |
|---|---|---|---|
| 预热<br>preheating | 120℃ | <120秒 | 1次<br>1 times |
| 焊锡条件<br>Soldering conditions | 260℃ | 10秒 | 不超过2次<br>2 times or less |

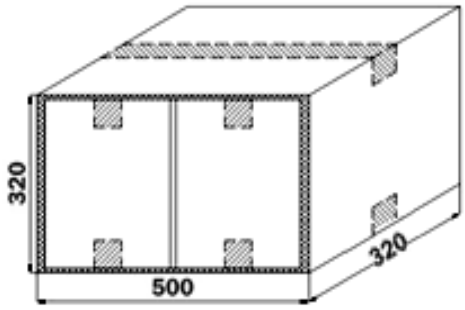
15.1 如为两次回流焊，时间应不超过10秒。
When soldering 2 times immersion time should be 10 sec.or less

15.2 SMD产品不适用该标准。
Do not apply flow soldering to SMD type

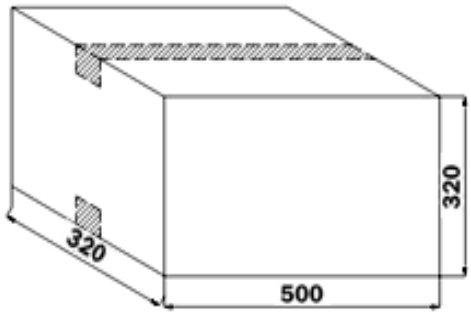
15.3 试验后ESR值不超过规定值的1.3倍。
After test, ESR not to exceed 130% of the value specified

## 16. 包装数量 Packing quantity

16.1 包装箱标准




内箱Inner Carton




外箱Outer Carton

17.2 包装数量

| 尺寸 | 切脚品 | | | 长脚品 | | | 编带品 | |
|---|---|---|---|---|---|---|---|---|
| | 内袋(pcs) | 内箱(pcs) | 外箱(pcs) | 内袋(pcs) | 内箱(pcs) | 外箱(pcs) | 内盒(pcs) | 外箱(pcs) |
| 5x6 | 1,000 | 17,500 | 70,000 | 1,000 | 30,000 | 60,000 | 2,000 | 20,000 |
| 5x8 | 1,000 | 20,000 | 20,000 | 1,000 | 30,000 | 60,000 | 2,000 | 20,000 |
| 5x10 | 1,000 | 25,000 | 50,000 | 1,000 | 12,500 | 50,000 | 2,000 | 20,000 |
| 5x14 | 1,000 | 12,500 | 50,000 | 1,000 | 25,000 | 50,000 | 2,000 | 20,000 |
| 5.5x8 | 1,000 | 20,000 | 20,000 | 1,000 | 20,000 | 20,000 | 2,000 | 20,000 |
| 5.5x10 | 1,000 | 10,000 | 100,000 | 1,000 | 10,000 | 10,000 | 2,000 | 20,000 |
| 5.5x14 | 1,000 | 12,500 | 50,000 | 1,000 | 25,000 | 50,000 | 2,000 | 20,000 |
| 6.3x6 | 1,000 | 25,000 | 50,000 | 1,000 | 25,000 | 50,000 | 1,500 | 15,000 |
| 6.3x8 | 1,000 | 12,500 | 50,000 | 1,000 | 25,000 | 50,000 | 1,500 | 15,000 |
| 6.3x10 | 1,000 | 20,000 | 40,000 | 1,000 | 10,000 | 40,000 | 1,500 | 15,000 |
| 6.3x14 | 1,000 | 7,500 | 30,000 | 1,000 | 12,000 | 24,000 | 1,500 | 15,000 |
| 8x8 | 500 | 7,500 | 30,000 | 500 | 15,000 | 30,000 | 1,000 | 10,000 |
| 8x11 | 500 | 5,000 | 20,000 | 500 | 24,000 | 24,000 | 1,000 | 10,000 |
| 8x14 | 500 | 4,000 | 16,000 | 500 | 10,000 | 20,000 | 1,000 | 10,000 |
| 8X19 | 500 | 3,000 | 12,000 | 500 | 8,000 | 16,000 | 1,000 | 10,000 |
| 10x10 | 500 | 3,000 | 12,000 | 500 | 8,000 | 16,000 | 600 | 6,000 |
| 10x12 | 500 | 3,000 | 12,000 | 500 | 8,000 | 16,000 | 600 | 6,000 |
| 10x15 | 250 | 2,500 | 10,000 | 250 | 6,000 | 12,000 | 600 | 6,000 |
| 10X20 | 250 | 2,000 | 2,000 | 250 | 5,000 | 10,000 | 600 | 6,000 |

## 17. 使用前注意事项 Precautions before using

17.1 直接与水、盐水及油类相接触、或相对湿度超过75%的环境
directly with water, salt and oil in contact, or more than 75% relative humidity environment;
17.2 充满有害气体的环境（硫化物、H2SO3、HNO2、C12、氨水等）
an environment filled with harmful gases (sulfide, H2SO3, HNO2, C12, ammonia, etc.);
17.3 置于日照、O3、紫外线及有放射性物质的环境
sunlight, O3, UV rays and radioactive substances environment;
17.4 振动及冲击的恶劣环境
impact of vibration and harsh environments;

## 18. 安装前注意事项 Precautions before installation

18.1 对于表面贴装型电容器，按照目录或产品规范设计PCB板
For the surface mount capacitor, design the copper pads on the PC board in accordance with the catalog or the product specification.
18.2 对于插件型电容器，PCB板上的端子孔应与电容的端子间距相匹配。
For radial capacitors, design the terminal holes on the PC board to fit the terminal pitch of the capacitor.
18.3 检查电容量和额定电压后安装。
Mount after checking the capacitance and the rated voltage
18.4 检查极性后安装。
Mount after checking the polarity.
18.5 不要对引线端子和电容器本身施加过大的外力。
Do not apply excessive external force to the lead terminal and the capacitor itself.
确保焊接条件符合 Poly Cap 推荐的条件。由于焊接等过程中产生的热应力，漏电流可能会增加，漏电流在施加电压时逐渐减小。
Ensure that the soldering conditions meet the specifications recommended by Poly Cap. The leakage current may increase due to thermal stresses that occur during soldering, etc. Increased leakage currents gradually decrease when voltage is applied.

## 19. 环保 Environmental protection

本公司每年一次，将电容主要材料及电容成品送第三方权威检测机构检测。
Once a year, we will send the main materials and the capacitor products to the third party authorities for testing
检测时，根据当年欧盟最新要求检测ROHS、SVHC管理物质。
Test ROHS and SVHC management substances according to the latest requirements of the European Union
检测报告，本公司会在检测完成后上传到公司网站。
The test report will be uploaded to the company website after the test is completed
为倡导环保，节能减排，本公司一律提供pdf电子档承认书给客户。
To advocate environmental protection, energy conservation and emissions reduction, our company will provide the PDF specification by email admitted to customer
有特殊要求，请再联络本公司业务人员，谢谢！