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客户Customer：

日期Date：　　2024年10月13日

# 承 认 书
# SPECIFICATION

| | |
|---|---|
| 种　　类： | 固态铝电解电容器 |
| Description： | Aluminum Solid Electrolytic Capacitors |
| 艾华料号 AISHI P/N： | SVZ1CM101E06E00RERR3 |
| 系　列　SERIES： | VZ |
| 规 格 尺 寸 ITEM： | 16V100uF(Φ6.3*6) |
| 客户料号 Customer P/N： | / |
| 编　号No. ： | CRS-FX-2410086 |

| 批准 Approved by | | | 客户确认Client Confirmed | |
|---|---|---|---|---|
| 制作 Prepared by | 审核 Checked by | 批准 Approved by | 审核 Checked by | 批准 Approved by |
| 段巧灵 技术部 | 叶军 技术部 | 夏静 技术部 | | |

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# 制订/修订履历表Make/revised curriculum vitae

| 编号NO. | 版本Version | 日期Date | 内容Content |
|---|---|---|---|
| CRS-FX-2410086 | CRS-2024-VZ-01 | 2024/10/13 | 新建 |
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## 1.概述Scope

此承认书使用于含有导电高分子电解质的VZ系列固态电解电容

These specifications specify VZ series of the Aluminum Solid Capacitors with Conductive Polymer Electrolyte.

## 2.使用温度范围Operating Temperature Range （-55～105℃）

使用温度范围是指电容在额定电压下可以稳定运行的环境温度范围

Operating temperature range is the range of ambient temperature at which the capacitor can be operatedcontinuously at rated voltage.

## 3.特性Characteristics

除非另有说明，标准的测量和测试环境条件如下：

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows.

环境温度Ambient temperature： 15 to 35℃

大气压力Air pressure：86kpa to 106kpa

若对结果有疑问，测试则按如下标准进行

If there may be doubt on the results, measurements shall be made within the following limits.

环境温度Ambient temperature： 20±2℃

大气压力Air pressure：86kpa to 106kpa

## 4.额定电压、浪涌电压和额定温度Rated voltage, Surge voltage and Rated temperature

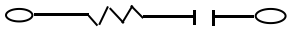
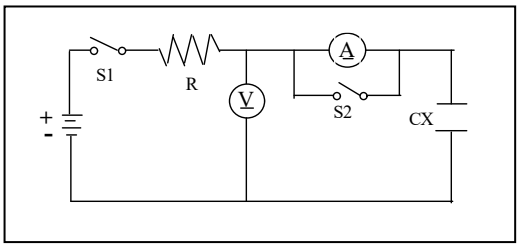
| 额定电压<br>Rated voltage(V) | 额定温度<br>Rated temperature(℃) | 浪涌电压<br>Surge voltage (V) | 电压种类<br>Category voltage(V) |
|---|---|---|---|
| 2.5 | 105 | 2.88 | 2.5 |
| 6.3 | 105 | 7.25 | 6.3 |
| 6.8 | 105 | 7.82 | 6.8 |
| 7 | 105 | 8.05 | 7 |
| 7.5 | 105 | 8.63 | 7.5 |
| 10 | 105 | 11.5 | 10 |
| 12 | 105 | 13.8 | 12 |
| 16 | 105 | 18.4 | 16 |
| 20 | 105 | 23 | 20 |
| 25 | 105 | 28.75 | 25 |
| 35 | 105 | 40.25 | 35 |
| 50 | 105 | 57.5 | 50 |
| 63 | 105 | 72.45 | 63 |
| 80 | 105 | 92 | 80 |
| 100 | 105 | 115 | 100 |

## 5. 高低温阻抗Impedance at high and low temperature

阻抗Impedance at 100kHz at -55±3℃ or 105±2℃

| 阻抗比Impedance ratio | 性能Performance |
|---|---|
| Z (-55℃) / Z (+20℃) | ≤1.25 |
| Z (105℃) / Z (+20℃) | ≤1.25 |

## 6.1 电性能Electrical Characteristics

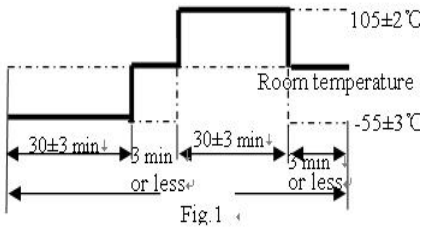
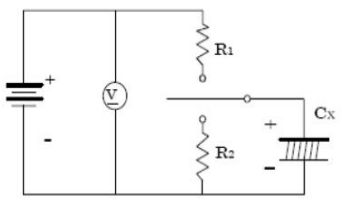
| 序号 No. | 项目 Item | 测试方法 Test method | 性能 Performance |
|---|---|---|---|
| 6.1.1 | 额定工作电压 Rated voltage | DC: 2.5V～100V | |
| 6.1.2 | 电容量 Capacitance | 测试频率Measuring frequency : 120Hz<br>测试电路Measuring circuit  <br>等效串联电路Series equivalent circuit<br>测试电压Measuring voltage: 0.5Vrms or less<br>直流偏压DC bias voltage： +1.5~2.0VDC | 参考特性表 Refer to characteristic table |
| 6.1.3 | 损失角正切值 Dissipation Factor | | 参考特性表 Refer to characteristic table |
| 6.1.4 | 等效串联电阻 ESR | 测试频率Measuring frequency: 100kHz<br>测试温度Measuring temperature: 20 ±2℃<br>测量位置：a）不得超过导针焊点2mm<br>a）Measuring point : 2mm max from the surface of a sealing resin on the lead wire<br>b）应在最靠近端子伸出塑料平台的两端测量<br>b）ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform. | 参考特性表 Refer to characteristic table |
| 6.1.5 | 漏电流 Leakage current | 直流漏电流在20℃，有串联1000±100Ω电阻的情况下以直流工作电压且充电2min后测试<br>DC leakage current shall be measured after 2 minutes application of the DC rated working voltage through the1000 Ω resistor at 20℃<br>  <br>Refer to characteristic table<br>R : 1000±100Ω A :电流表 DC current meter S1 : 开关Switch S2 : 电流表保护开关<br>Switch for protect of current meter<br>V:电压表 DC voltage meter<br>CX : 测试电容Testing capacitor | 参考特性表 Refer to characteristic table |

<table>
<tr><th>序号<br>No.</th><th>项目<br>Item</th><th colspan="4">测试方法<br>Test method</th><th>性能<br>Performance</th></tr>
<tr><td rowspan="7">6.1.6</td><td rowspan="7">高温&低温特性<br>Characteristicsat Hight Temperature<br>&<br>Low Temperature</td><td>步骤<br>Step</td><td>温度(℃)<br>Temperature</td><td>时间（h）<br>Time</td><td>测试项目<br>Measurement item</td><td rowspan="7">Step 1:容量、损失角在规格值内<br>Capacitance,tanδ shall meet the specified value<br><br>Step 2:容差±20%<br>Capacitance change:Within±20% of step1<br>阻抗比率小于1.25<br>|Z|(-55℃)/|Z|(20℃）Less than 1.25<br><br>Step 4: 漏电小于0.2CV值或500μA中的任一个较大值的150%<br>Leakage current≤ 150% of the larger values between 0.2CV and 500uA.<br>阻抗比率小于1.25<br>|Z|(105℃)/|Z|(20℃）Less than 1.25<br><br>Step 5: 容差±5%<br>Capacitance change :Within±5% of step1<br>损失角在规格值内<br>tanδ shall meet the specified value.</td></tr>
<tr><td>1</td><td>20±2</td><td>2</td><td>容量、损失角正切、阻抗<br>Capacitance,tanδ,|Z|</td></tr>
<tr><td>2</td><td>-55±3</td><td>2</td><td>容量、阻抗<br>Capacitance,|Z|</td></tr>
<tr><td>3</td><td>20±2</td><td>0.5</td><td></td></tr>
<tr><td>4</td><td>105±2</td><td>2</td><td>阻抗、漏电<br>|Z| ,LC</td></tr>
<tr><td>5</td><td>20±2</td><td>2</td><td>容量、损失角正切<br>Capacitance,tanδ</td></tr>
<tr><td colspan="4">备注Remarks:<br>120Hz：Capacitance,tanδ<br>100KHz：|Z| ,ESR</td></tr>
</table>

## 6.2耐受能力Endurance Performance

| 序号<br>No. | 项目<br>Item | 测试方法<br>Test method | 性能<br>Performance |
|---|---|---|---|
| 6.2.1 | 负荷寿命试验<br>Load Life Test | 电容在105±2℃，额定电压下，加载直流电2000小时后，需在室温下放置2小时才可进行测试。<br>After 2000 hours continuous application of DC rated working voltage at 105 ± 2℃,the measurements shall be measured after 2 hours exposed at room temperature. | 容量变化：在初始值的±20%内<br>Capacitance change within ±20% of the initial value<br>损失角：小于规格值的150%<br>tan δ ≤ 150% of the initial specified value.<br>等效串联电阻≤规格值的150%<br>ESR ≤ 150% of the initial specified value.<br>漏电流≤0.2CV值或500μA中的任一个较大值<br>Leakage current ≤the larger values between 0.2CV and 500uA.<br>外观：没有明显的损伤<br>Appearance:No significant damage |

| 序号<br>No. | 项目<br>Item | 测试方法<br>Test method | 性能<br>Performance |
|---|---|---|---|
| 6.2.2 | 振动试验<br>Resistance to Vibration | 依照JIS C 5102 8.2和 JIS C 5025<br>To comply with JIS C 5102 8.2 and JIS C 5025<br>频率：10到55Hz(1分钟间隔/10→55→10Hz)<br>Frequency: 10 to 55Hz (1 minute interval/10→55→ 10Hz)<br>振幅：0.75mm(整体偏移1.5mm)<br>Amplitude : 0.75mm ( Total excursion 1.5mm)<br>方向：X, Y, Z (3 轴) Direction : X , Y , Z (3 axes)<br>持续时间：2小时/轴（共6小时）<br>Duration : 2 hours / axial (Total 6 hours) | 容量在30分钟内测量，与初始值相比不应有较大的差异，其改变在±5%以内<br>Capacitance value should not show drastic change compared to the initial capacitance when the value is measured within 30 minutes.Prior to the completion of exam, capacitance change should be within ±5% compared to the initial value after the exam<br>外观：导针不得断裂<br>Appearance:Don't lead wire broken |
| 6.2.3 | 可焊性<br>Solder ability | 温度：235 ± 5 °C Temperature : 235 ± 5 °C<br>持续时间：2 ± 0.5秒 Duration : 2 ± 0.5 seconds<br>焊料:25wt%的松香(JIS K5902)//乙醇(JIS K 8101)<br>Flux:Rosin (JIS K5902)//Ethanol(JIS K8101); About 25 wt.% | 至少95%的浸渍表面覆盖有新的焊料<br>At least 95% of surface area of the dipped portion of the terminal shall be covered with new solder. |
| 6.2.4 | 耐焊接热<br>Resistance to soldering heat | (1)焊料浴方法Solder bath method<br>温度Temperature : 260 ±5°C<br>持续时间Duration : 10±1 seconds<br>一直到间距为1.0mm的情况下<br>Until a distance of 1.0mm from the case.<br>(2)Soldering iron method :<br>温度Temperature : 400 ± 10 °C<br>持续时间Duration : 3+1/-0 seconds | 容量变化在初始值的±5%内<br>Capacitance change: Within ± 5% of initial capacitance<br>损失角≤ 规格值的130%<br>Tanδ≤130%of the initial specified value.<br>等效串联电阻≤ 规格值的130%<br>ESR ≤ 130% of the initial specified value.<br>漏电流≤0.2CV值或500μA中的任一个较大值<br>Leakage current ≤the larger values between 0.2CV and 500uA. |
| 6.2.5 | 稳态湿热<br>(恒稳态)<br>Resistance to damp heat<br>(steady state) | 温度Temperature : 60±2℃<br>相对湿度Relative humidity : 90% ~ 95%<br>持续时间Duration : 1000 (-0/+48) hrs<br>使用电压：无负荷<br>Applied voltage : without load | 电容变化在初始值的±20%内<br>Capacitance change within ±20% of initial value<br>损失角≤ 规格值的150%<br>tan δ ≤ 150% of t he initial specified value.<br>等效串联电阻≤ 规格值的150%<br>ESR ≤ 150% of the initial specified value.<br>漏电流≤0.2CV值或500μA中的任一个较大值<br>Leakage current ≤the larger values between 0.2CV and 500uA. |

| 序号<br>No. | 项目<br>Item | 测试方法<br>Test method | 性能<br>Performance |
|---|---|---|---|
| 6.2.6 | 快速变温<br>Rapid change of temperature |  <br>Fig.1<br>使用电压：无负荷<br>Applied voltage : without load<br>循环次数：10次<br>Cycle number : 10 Cycles<br>测试图:Fig. 1Test diagram: Fig. 1 | 容量变化：在初始值的±10%内<br>Capacitance change : Within ±10% of the initial capacitance<br>损失角：小于或等于规格值<br>tanδ ≤ initial specified value.<br>漏电流≤0.2CV值或500μA中的任一个较大值<br>Leakage current ≤the larger values between 0.2CV and 500uA. |
| 6.2.7 | 浪涌电压<br>Surge voltage | 额定浪涌电压充电30s后，在室温下放电5min30s。这一过程重复1000 次，每一次循环的时间为6 min，测试温度为15℃-35℃。测试电路如下图所示：<br>Rated surge voltage shall be applied (switch on) for 30 seconds and then shall be applied (switch off) with discharge for 5min30 seconds at room temperature . This cycle shall be repeated for 1000 cycles .<br>Duration of one cycle is 6 minutes .<br>Test temperature: 15℃-35℃<br>The test circuit is as follows: | 漏电流≤0.2CV值或500μA中的任一个较大值<br>Leakage current ≤the larger values between 0.2CV and 500uA.<br>容量改变在初始值的±20%内<br>Capacitance change<br>Within±20% of the initial value<br>损失角≤规格值的150%<br>tanδ≤150% of the initial value.<br>等效串联电阻≤规格值的150%<br>ESR≤150% of the initial specified value. |
| | | Test circuit：<br>  <br>Ⓥ：DC voltmeter<br>R1：Protective resistor 1kΩ<br>R2：Discharging resistor 1kΩ<br>Cx：Capacitor under test（10pcs）<br>备注：若浪涌电压测试标准不能满足整机实际ON/OFF要求，请在样品阶段与我司RD确认，并将具体测试要求反馈给我司，包括测试电压、浪涌电流、充放频率、循环次数、测试温度及性能表现等。Remark：If the surge voltage test standard is inconsistent with the actual ON/OFF requirements of the machine, Please confirm with our RD at the sample stage.And feedback the specific test requirements to our company, including test voltage,surge current, charge and discharge frequency, cycle times, test temperature and performance, etc. | |

| 序号<br>No. | 项目<br>Item | 测试方法<br>Test method | 性能<br>Performance |
|---|---|---|---|
| 6.2.8 | 高温储存<br>High temperature storage | 电容在105℃±2℃下放置1000小时后，需在室温下放置2小时才可进行测试。<br>Capacitor is placed under 105 ℃± 2 ℃ after 1000 hours, should be placed at room temperature 2 hours can be tested. | 容量变化：在初始值的±10%内<br>Capacitance change within ±10% of the initial value<br>损失角：小于规格值的150%<br>tan δ ≤ 150% of the initial specified value.<br>等效串联电阻≤规格值的150%<br>ESR ≤ 150% of the initial specified value.<br>漏电流≤0.2CV值或500μA中的任一个较大值<br>Leakage current ≤the larger values between 0.2CV and 500uA. |

备注 REMARKS

如果有任何疑问，在电压处理后测量漏电流。

电压：直流额定电压适用于电容器在105℃下120分钟。

需在室温下放置2小时才可进行测试

If any doubt arises, measure the leakage current after following voltage treatment.

Voltage treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105℃.

The measurements should be measured after 2 hours exposed at room temperature。

## 7.物料编码PART No. SYSTEM

| S | VZ | 1C | M | 101 | E06 | E00 | R | EX24 |
|---|---|---|---|---|---|---|---|---|

特殊编码 Special code(7.9)
奈印编码Marking code(7.8)
成型方式编码Terminal code(7.7)
尺寸编码Size code(7.6)
电容量编码Capacitance Code(7.5)
电容公差Capacitance tolerance Code(7.4)
电压编码Voltage Code(7.3)
系列编码Series Code(7.2)
类别编码Category Code(7.1)

7.1 类别编码Category Code

| 编码Code | S |
|---|---|
| 类别编码Category Code | 固态电容Solid Capacitor |

7.2 系列编码Series Code

| 编码Code | VZ |
|---|---|
| 系列编码Series Code | VZ |

7.3 电压编码Voltage Code

| 编码Code | 0E | 0J | 1A | 1C | 1E | 1V | 1H | 1J | 1B | 1K |
|---|---|---|---|---|---|---|---|---|---|---|
| 电压编码VoltageCode(W.V) | 2.5 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |

7.4 电容公差Capacitance tolerance

“M”代表 -20 % ~ +20 % “M”stands for -20 % ~ +20 %

7.5 电容量编码Capacitance Code

| 编码Code | 470 | 101 | 331 | 471 | 561 | 681 | 821 | 122 |
|---|---|---|---|---|---|---|---|---|
| 电容量Capacitance (uF ) | 47 | 100 | 330 | 470 | 560 | 680 | 820 | 1200 |

7.6 尺寸编码Size Code

| 编码Code | E4R | E06 | E7C | E09 | F9R | FAR | FBR | GCR |
|---|---|---|---|---|---|---|---|---|
| 直径D (Φ) | 6.3 | 6.3 | 6.3 | 6.3 | 8 | 8 | 8 | 10 |
| 高度H (mm) | 4.5 | 6 | 7.7 | 9 | 9.5 | 10.5 | 11.5 | 12.5 |

7.7 成型方式编码 Terminal Code

| 编码Code | D00 | E00 |
|---|---|---|
| 其他 Other | 贴片、散装SMD&Bulk | 贴片、编带SMD&Taping |

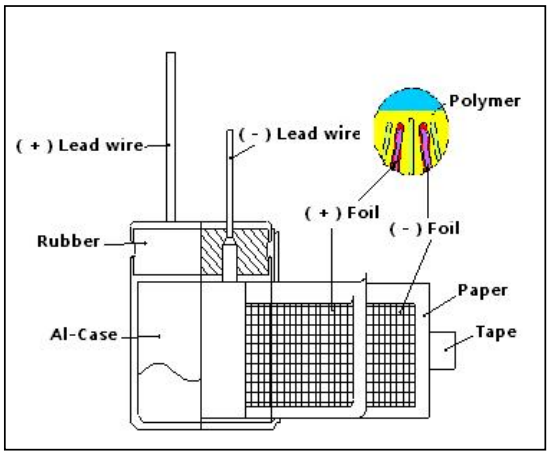
7.8 捺印编码Marking Code

| 编码Code | S | R |
|---|---|---|
| 捺印Marking | 天蓝Sky blue | 红色Red |

7.9 特殊编码 Special Code

| “EX24” 代表ESR特殊（ESR最大值为24mΩ）， “EX24” stands for special ESR(ESR max is 24mΩ） |
|---|

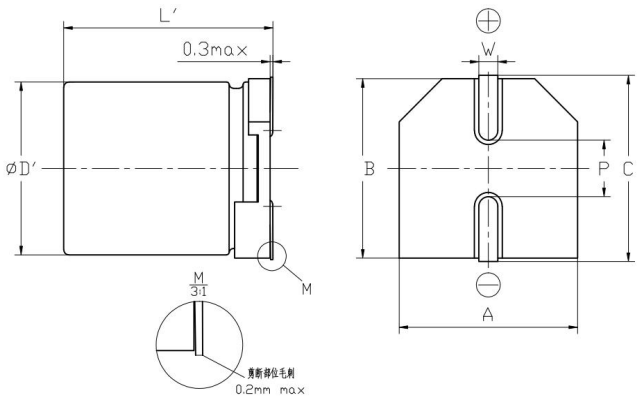
## 8. 结构Construction




导针:固体镀锡铜包钢线
Lead wires : Solid tinned copper weld steel wire
导针端子：高纯铝 Al-boss : High pure aluminum
电解纸：马尼拉麻Paper : Manila hemp
铝箔（正极）：高纯铝Al-foil (Anode) : High pure aluminum
铝箔（负极）：碳箔、高纯铝
Al-foil (Cathode) : Carbon foil、High purity aluminum
镀膜铝壳：铝+镀膜（耐压600V以上）Coating AL-case:Aluminum+coating(Can withstandvoltage above 600V)
胶带：聚酯Tape : Polyester
胶粒：(树脂)压缩成型IIR-Rubber:Resin（Compression molding)
导针和圆柱端子通过焊接连接在一起
The lead wire and the Al-boss are welded together.
导针扁平端子与铝箔通过按压连接在一起
The Al-tab and the Al-foil are stitched to join together.
卷绕的素子外部以阴极箔包裹
The outer most Al-foil spiral of the element is cathode.
导电高分子用作电解质
Conductive polymer is used as the electrolyte.

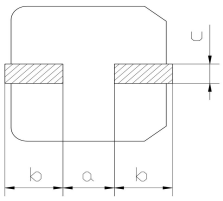
## 9.尺寸图Outer dimensions (单位Unit:mm)

尺寸Outer dimensions (单位Unit:mm)




| 尺寸编码 Size Code | ΦD' (mm) | ΦD'(mm) Tolerance | L' (mm) | L'(mm) Tolerance | A±0.2 (mm) | B±0.2 (mm) | C±0.2 (mm) | P±0.2 (mm) | W (mm) |
|---|---|---|---|---|---|---|---|---|---|
| E06 | 6.3 | -0.1～+0.5 | 6 | -0.5～+0.5 | 6.6 | 6.6 | 7.2 | 1.9 | 0.65±0.15 |

焊盘尺寸 Soldering pad dimensions (单位Unit:mm)




| 尺寸 Size | a | b | c |
|---|---|---|---|
| Φ6.3 | 2.1 | 3.5 | 1.6 |
| Φ8 | 2.8 | 4.2 | 1.9 |
| Φ10 | 4.3 | 4.4 | 1.9 |

## 10. 特性表格Characteristics Table

| 序号 No. | 艾华料号 AISHI P/N | 额定工作电压 Rated Work Voltage (V.DC) | 电容量 Nominal Capacitance 120Hz,20℃ (μF) | 电容量公差 Capacitance Tolerance (%) | 温度 Oper Temp (℃) | 尺寸 Nominal Case Size D*L (mm) | 等效串联电阻 E.S.R 100KHz 20℃ (mΩmax) | 最大漏电流 Leakage current 20℃(μA max) 2Minutes/W.V | 损失 D.F 120Hz, 20℃ (%max) | 纹波电流 Ripple Current 100KHz,105℃ (mA.rms) | 寿命 Load Life (Hours) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SVZ1CM101E06E00RERR3 | 16 | 100 | -20～+20 | 105 | 6.3*6 | 24 | 500 | 12 | 2490 | 2000 |

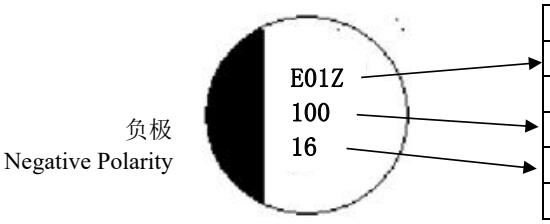
## 纹波电流频率系数Frequency coefficient for ripple current

| 频率Frequency | 120Hz ≦f ＜1 kHz | 1 KHz ≦ f ＜10 kHz | 10 KHz≦ f ＜100 kHz | 100 KHz ≦ f ＜300 kHz |
|---|---|---|---|---|
| 系数Coefficient | 0.05 | 0.3 | 0.7 | 1 |

## 11.捺印Marking

除非另有说明，捺印应该清晰地印在电容上

Unless otherwise specified. Capacitor shall be clearly marked on it body.

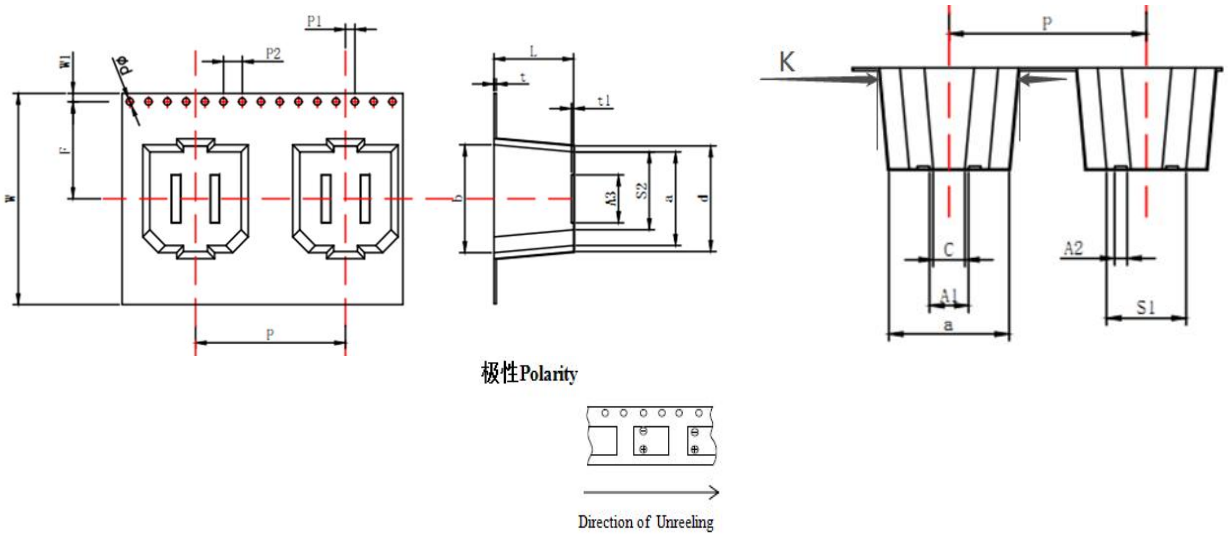



| | | |
|---|---|---|
| E: | 年编码Year code | 2022年 |
| 01: | 周编码Week code | |
| Z: | 系列Series | VZ |
| 额定电容Rated Capacitance | | 100 |
| 额定电压Rated voltage | | 16 |
| 印字油墨为红色The colour of marking ink is red. | | |

年份代码

| 年份 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|
| 代码 | C | D | E | F | H | J | K | N |
| 年份 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
| 代码 | P | Q | S | T | U | V | X | Y |

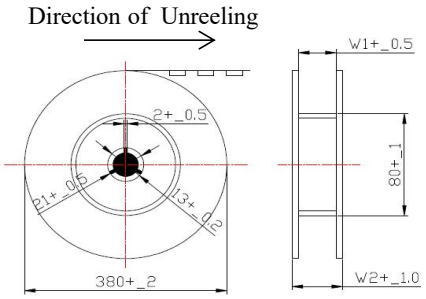
## 12. 匣盒带Box cassette (单位Unit:mm)

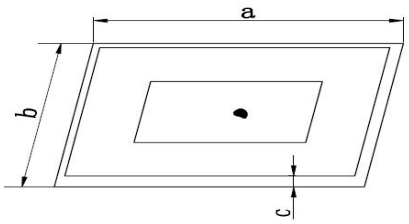



| 尺寸编码 Size Code | Φd | L | P | P1 | P2 | t | t1 | W | W1 | F | A1 | A2 | A3 | S1 | S2 | a | b | c | d |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0/0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.05 | ±0.1 | ±0.3 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 |
| E06 | 1.5 | 6.5 | 12.0 | 2.0 | 4.0 | 0.5 | 0.35 | 16.0 | 1.75 | 7.5 | 2.5 | 0.8 | 3.5 | 4.3 | 5.2 | 6.8 | 7.8 | 1.6 | 8.0 |

## 13. 包装Packing

Bulk： Standard




Paper carrier reel or plastic carrier reel

Zipper bag

| Aishi | |
|---|---|
| P/N: | |
| CUSTOMER P/N | |
| SIZE: | |
| Q'TY | |
| DATE | |

AISHI CAPACITORS

b

MADE IN CHINA

a

### 13.1 编带包装Tape Packing

编带Taping： 标准Standard

| 分类Classification | 标准Standard | | | |
|---|---|---|---|---|
| 产品尺寸 Product size D*L(mm) | 承载卷轴 Carrier reel/（pcs） | 外包箱 Outer carton/（plastic carrier reel） 390*225*390 (mm) | 承载卷轴尺寸Carrier reel size/（mm） | |
| | | | W1±1 | W2±1.0 |
| 6.3*4.5 | 1200 | 10 | 18 | 22 |
| 6.3*6 | 1000 | 10 | 18 | 22 |
| 6.3*9 | 800 | 10 | 18 | 22 |

| 产品尺寸 Product size D*L(mm) | 承载卷轴 Carrier reel/（pcs） | 外包箱 Outer carton/（paper carrier reel） 390*225*390 (mm) | 承载卷轴尺寸Carrier reel size/（mm） | |
|---|---|---|---|---|
| | | | W1±1 | W2±1.0 |
| 8*9.5 | 600 | 6 | 26 | 32 |
| 8*11.5 | 500 | 6 | 26 | 32 |
| 10*12.5 | 500 | 6 | 26 | 32 |

## 14. 操作注意事项Operating Precautions

14.1 极性Polarity

AishiCAP是具有正负极的固态铝电解电容，使用中不可反接，若接反，则电容会因为漏电流不断增大或短路而造成寿命缩短。

AishiCAP is a solid aluminum electrolytic capacitor with positive and negative electrodes. Do not reverse the polarity when using. If it is used with the polarities reversed, its life may shorten because of increasing leakage current or short circuit.

14.2禁止电路 Prohibited circuits

因为焊接及其它动作可造成电容的漏电流增加，AishiCAP不可使用在下列电路中：

Since problems can be expected due to leakage current increasing during soldering and other processes, AishiCAP cannot be used in the following circuits

1)高阻抗电路1) High impedance circuits；

2)耦合电路2) Coupling circuits；

3)时限恒量电路3) Time constant circuits；

4)为提高耐电压而串联两个或多个电容于电路中

4) Connection of two or more capacitors in series for higher withstand voltage；

5)电路因漏电流过大而有坏的影响5)Circuits to get bad influence by big leakage current

* 除漏电流的波动上升外，电容的使用条件如在承认书中规定的高温和低温，温热和耐受性条件都会影响电容量。若电容作为时限恒量电容使用，因其对电容量的变动的敏感性，电容量的改变会造成影响。不要将其作为时限恒量电容使用，同时若因电压原因要串联多个AishiCAP电容，请联系湖南艾华集团股份有限公司。

* In addition to the leakage current fluctuation above, the operational conditions such as characteristics at high and low temperature, damp heat and endurance stipulated in the specifications will affect the capacitance.The fluctuation of the capacitance may cause problem if it is used as a time constant capacitor, which is extremely sensitive to the fluctuation of the capacitance. Do not use it as a time constant capacitor.Additionally, please contact Hunan Aihua Group Co., Ltd. for usage of two or more AishiCAP in series for voltage proof.

6)ON-OFF电路6)ON-OFF circuits

请勿在一天内频繁开-关10000次以上的ON-OFF电路中使用本产品。用于此类电路时，请务必将电路条件等告知我们。

Do not use this product in an on-off circuit that frequently turns on-off more than 10000 times in a day. When used in such circuits, please be sure to inform us of circuit conditions, etc

14.3 电压Over voltage

电压若超过额定电压，即便只是一瞬间也可能造成短路

Over voltage exceeding the rated voltage may not be applied even for an instant as if may cause a short circuit.

14.4快速充放电Rapid charge and discharge

快速充放电是不适用的（为了维持高的可靠性）。若充放瞬间电流超过10A或10倍允许纹波电流超过10A，为防止快速的充放电造成电容短路、漏电增大及容量衰减，电路中应加上一个保护电路用以分流过大的电流。

Rapid charging and discharging is unsuitable(for maintenance of high-proof reliability). If the instantaneous current of charging and discharging is more than 10A or 10 times of the allowable ripple current is more than 10A, in order to prevent the capacitor short ,leakage increase and capacity reduction caused by rapid charging and discharging, a protection circuit shall be added to the circuit to reduce the excessive current.

14.5焊接注意事项Considerations when soldering

焊接条件要在承认书的规定范围内。若没有遵守承认书的条件，则电容漏电流可能急剧增加，容量衰减。

The soldering conditions are to be within the range prescribed in specifications. If the specifications are not followed,there is a possibility of the cosmetic defection, the intensive increase of leakage current, and the capacitance reduction.

使用需知Things to be noted before mounting.

(a) 已安装过的或加过电压的AishiCAP请勿再使用。经历了周期性电性能测试的AishiCAP不可再用。

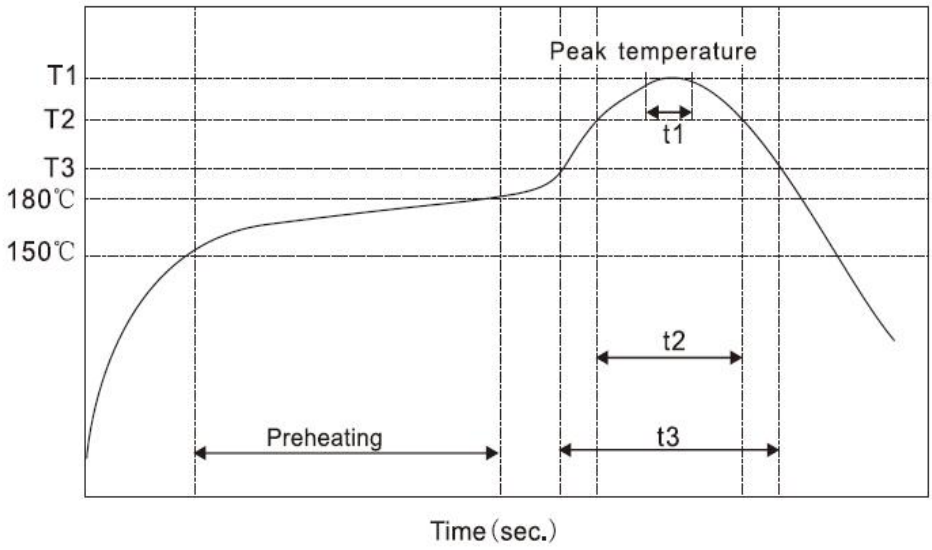
(a) Do not reuse AishiCAP that have been assembled in a set and energized. Excluding AishiCAP that have been removed for measuring electrical characteristics during a periodic inspection, AishiCAP cannot be reused.

(b) AishiCAP贮藏一年时间后，漏电流可能会增大，使用前，请在105℃，额定电压及接有1 kΩ电阻的条件下充电2小时。

(b)Leakage current may increase when AishiCAP are stored for one year. In this case, apply rated voltage for 2 hours at 105℃ with load of 1 kΩ resistor.

(c)Reflow soldering回流焊接

用于SMD系列Use flow soldering for SMD type
回流焊接Reflow soldering
焊接条件应该在下列范围内。
Soldering condition should be under the following ranges.
建议回流焊接条件
Recommended reflow soldering condition




| Item | Preheating | T1(℃) | T2(℃) | T3(℃) | t1(sec.) | t2(sec.) | t3(sec.) | Reflow cycle |
|---|---|---|---|---|---|---|---|---|
| Condition 1 | 150℃ to 180℃ within 90sec. | ≤260 | 230 | 200 | ≤10 | ≤40 | ≤60 | 1 |
| Condition 2 | | ≤250 | 230 | 200 | ≤10 | ≤40 | ≤60 | 2 |

贴装型产品为回流焊专用零部件。请在红外热风并用等气氛热处理方法。请勿用于浸流焊。

Mount products are special parts for reflow soldering. Please heat treat with infrared hot air and other atmosphere. Do not use for immersion welding.

请在产品规格书规定的焊接条件（预热，温度，时间，次数等）范围内焊接。温度测量方法，因用环氧系粘剂在电容器上方粘贴了热电偶，量产测温时需注意。

Please weld within the welding conditions (preheating, temperature, time, times, etc.) specified in the product specification. For the temperature measurement method, due to the thermocouple pasted above the capacitor with epoxy adhesive, attention should be paid to during mass production temperature measurement.

二次回流焊时，应在第一次回流焊后的电容器温度降至常温后，再进行第二次回流焊。

For secondary reflow soldering, the second reflow soldering shall be carried out after the capacitor temperature after the first reflow soldering is reduced to normal temperature.

即使是在推荐的回流焊条件下，也可能发生电容器外盒变色或货膨胀现象，但并不影响产品的可靠性，敬请谅解。
Even under the recommended reflow soldering conditions, the outer box of the capacitor may change color or cargo expansion, but it will not affect the reliability of the product. Please understand.
回流焊等产生的热量可能会使阴极标示部位的印字发生裂纹，但并不影响产品的可靠性，敬请谅解。
The heat generated by reflow welding may crack the printing on the marked part of the cathode, but it does not affect the reliability of the product. Please understand.
使用VPS回流焊时，因温度急剧上升可能会发生特性变化或外观变化引起的贴装问题，所以推荐3℃/秒以下的升温速度条件下使用。详情请恰询。
When using VPS reflow soldering, mounting problems caused by characteristic changes or appearance changes may occur due to the sharp rise of temperature. Therefore, it is recommended to use it at a heating rate below 3 ℃ / s.Please inquire for details.
(d)Handling after soldering焊接后处理
在这之后，不要倾斜，弯曲或扭曲AishiCAP Do not tilt, bend or twist the AishiCAP after it
不可通过抓捏AishiCAP来移动印刷电路板Do not move the PCB with catching AishiCAP itself.
堆叠印刷电路板时确保AishiCAP没有碰触到其它电路板或部件
When stacking PCB make sure that the AishiCAP does not touch other PCB or components.
不可将AishiCAP与其它物品堆放Do not dump the AishiCAP with objects.
14.6使用AishiCAP于工业设备Use of AishiCAP for industrial equipments
为确保AishiCAP在工业设备上的可靠性，设计必须与之相符。
To ensure reliability when the AishiCAP is used in industrial equipments, design must allow for its
14.7使用AishiCAP于生命保障系统Use of AishiCAP for human life equipments
若使用于与人类生命有关的设备上（如空间设备、航空设备、原子设备等），请与湖南艾华集团股份有限公司详细咨询，不要使用没有湖南艾华集团股份有限公司承认文件的AishiCAP。
In case of using in equipments regarding human life(e.g. Space equipment, aeronautic equipment and atomic equipment etc.), be sure to talk over the matter with Hunan Aihua Group Co., Ltd.
14.8贮存Storage
1)请将AishiCAP贮存于温度在5to 35℃之间，相对湿度在75%以下的没有阳光直射的环境中，如果可能可贮存于包裹中。(如果在35到85℃，他应该少于三个月)
1)Store AishiCAP with the temperature range between 5to 35℃（If between 35 to 85℃, it should be less than three months），and the relative humidity of 75% or less without direct sunshine and store AishiCAP in the package states if possible.
2)AishiCAP请在使用前再打开包装袋并且快速用完。
AishiCAP are recommended that you shall open the bag just before use and AishiCAP shall be used up.
3)不要在有水、盐水、油及凝结状况的地方贮存AishiCAP
Never store AishiCAP in which it is directly exposed to water, brine, oil or in condensation status.
4)禁止在含有毒气体的区域放置AishiCAP（如：硫化氢、亚硫酸、亚硝酸、氯气、氨水等）
Never store AishiCAP in any area filled with poisonous gases(including hydrogen sulfide, sulfurous acid, nitrous acid, chlorine and ammonia).
5)禁止在有紫外线或放射性辐射的区域放置AishiCAP。
Never store AishiCAP in any area to which ultraviolet and/or radial rays are radiated.
6）存储时间storage time
开封前：出货后一年内Before unseal : within 1 year after delivery
开封后：打开后1月内After seal : within 1 mouth from opening
存放时间超过3年的电解电容器应报废处理 If storage time more than three years,the products need to be discarded

14.9 清洗Cleaning

关于HCFC，可用高浓酒精，石油，匝烯，水和表面活性剂以及别的溶剂（单独或混合使用）浸泡，用超声波，煮沸，蒸发等方法按制作者的建议清洗。更多详情请联系。

Concerning about HCFC, higher alcohol system, petroleum system, terpene system, water system with surface active agent and other solvents the washing way (separateness or combinations) by soak, ultrasonic wave, boil, vapor etc. is confirmed under the maker's recommendation. Please contact us if you require further details.

14.10为AishiCAP设计电路的说明Notes on circuit designs for AishiCAP

14.10.1 执行Performance

在承认书中指定的额定性能范围内使用AishiCAP。

Use AishiCAP within the rating and performance ranges defined in this specifications.

14.10.2使用温度和纹波电流Operating temperature and ripple current

如果AishiCAP的使用温度超过了上限温度（105℃）或是有过载纹波电流通过，则有较大可能使寿命缩短，或漏电流增大，造成AishiCAP失效。

If AishiCAP is used at a temperature higher than the upper category temperature(105℃), or excess ripple current flows through AishiCAP, there are high possibilities of life cycle reduction or leakage current increasing to cause AishiCAP defective.

14.10.3漏电流Leakage current

漏电流会因焊接条件而有些微的上升，加载直流电压可使电容自我修复，漏电流逐渐减小。

The leakage current of AishiCAP may increase slightly by soldering conditions.The application of DC voltage enables the capacitors to be repaired by itself and this leads the leakage current to be smaller gradually.

14.10.4使用电压Applied voltage

为了保证AishiCAP的可靠性，加载到AishiCAP上的电压最好小于其额定电压。直流加交流电压的峰值应小于额定电压。

For the reliability of AishiCAP, it is recommended that the voltage applied to AishiCAP should beless than the rated voltage. Peak value of the the dc and ac voltage should not exceed its rated voltage.

14.10.5失效模式Failure mode

AishiCAP含有导电聚合物，其寿命的终止大部分是由于偶然失效模式，主要是短路。如果短路，AishiCAP将会因持续电流流过而过热，然后铝壳会因内部压力的增加而脱离电容。

AishiCAP contains a conductive polymer. The life ends mostly due to random failure mode, mainly short circuit.In case of short circuit,AishiCAP can be overheated by continuous current flow, then case of AishiCAP would be removed by internal pressure increasing.

14.10.6变更提前通知Advance consultation for changing

如果承认书改变，我们会提前通知

It is conducted under an advance consultation with you if this specification is changed.