

客户Customer:

日期Date: 2023年7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: SVZ0JM221E06E00RAXXX
系 列 SERIES: VZ
规 格 尺 寸 ITEM: 6.3V220uF(Φ6.3*6)
客户料号 Customer P/N: /
编 号No. : CRS-FX-2307217

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
				

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制订/修订履历表Make/revised curriculum vitae

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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 operated continuously 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 Rated voltage(V)	额定温度 Rated temperature(°C)	浪涌电压 Surge voltage (V)	电压种类 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

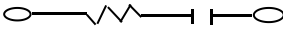
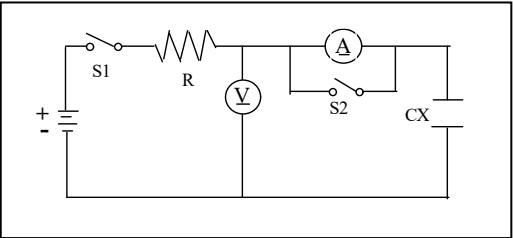
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5. 高低温阻抗Impedance at high and low temperature

阻抗 Impedance at 100kHz at $-55\pm 3^{\circ}\text{C}$ or $105\pm 2^{\circ}\text{C}$

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 测试电路Measuring circuit  等效串联电路Series equivalent circuit	参考特性表 Refer to characteristic table
6.1.3	损失角正切值 Dissipation Factor	测试电压Measuring voltage: 0.5Vrms or less 直流偏压DC bias voltage : +1.5~2.0VDC	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 测试温度Measuring temperature: 20 ±2℃ 测量位置: a) 不得超过导针焊点2mm a) Measuring point : 2mm max from the surface of a sealing resin on the lead wire b) 应在最靠近端子伸出塑料平台的两端测量 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 DC leakage current shall be measured after 2 minutes application of the DC rated working voltage through the1000 Ω resistor at 20℃  Refer to characteristic table R : 1000±100Ω A :电流表 DC current meter S1 : 开关Switch S2 : 电流表保护开关 Switch for protect of current meter V:电压表 DC voltage meter CX : 测试电容Testing capacitor	参考特性表 Refer to characteristic table

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

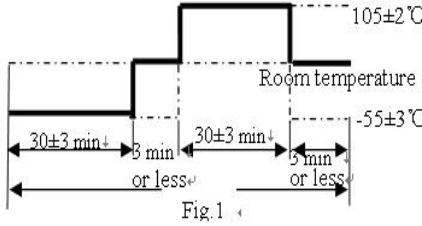
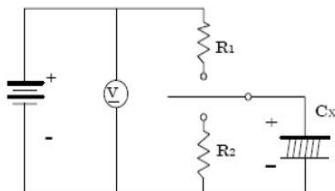
6.2 耐受能力 Endurance Performance

序号 No.	项目 Item	测试方法 Test method	性能 Performance
6.2.1	负荷寿命试验 Load Life Test	电容在$105\pm 2^{\circ}\text{C}$，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。 After 2000 hours continuous application of DC rated working voltage at $105 \pm 2^{\circ}\text{C}$, the measurements shall be measured after 2 hours exposed at room temperature.	容量变化：在初始值的$\pm 20\%$内 Capacitance change within $\pm 20\%$ of the initial value 损失角：小于规格值的150% $\tan \delta \leq 150\%$ of the initial specified value. 等效串联电阻$\leq$规格值的150% $\text{ESR} \leq 150\%$ of the initial specified value. 漏电流$\leq 0.2\text{CV}$值或$500\mu\text{A}$中的任一个较大值 Leakage current $\leq$ the larger values between 0.2CV and $500\mu\text{A}$. 外观：没有明显的损伤 Appearance: No significant damage

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序号 No.	项目 Item	测试方法 Test method	性能 Performance
6.2.2	振动试验 Resistance to Vibration	依照JIS C 5102 8.2和 JIS C 5025 To comply with JIS C 5102 8.2 and JIS C 5025 频率: 10到55Hz(1分钟间隔/10→55→10Hz) Frequency: 10 to 55Hz (1 minute interval/10→55→ 10Hz) 振幅: 0.75mm(整体偏移1.5mm) Amplitude : 0.75mm (Total excursion 1.5mm) 方向: X, Y, Z (3 轴) Direction : X , Y , Z (3 axes) 持续时间: 2小时/轴 (共6小时) 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 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 外观: 导针不得断裂 Appearance:Don't lead wire broken
6.2.3	可焊性 Solder ability	温度: 235 ± 5 °C Temperature : 235 ± 5 °C 持续时间: 2 ± 0.5秒 Duration : 2 ± 0.5 seconds 焊料:25wt%的松香(JIS K5902)//乙醇(JIS K 8101) 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 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 Resistance to soldering heat	(1)焊料浴方法Solder bath method 温度Temperature : 260 ±5°C 持续时间Duration : 10±1 seconds 一直到间距为1.0mm的情况下 Until a distance of 1.0mm from the case. (2)Soldering iron method : 温度Temperature : 400 ± 10 °C 持续时间Duration : 3+1/-0 seconds	容量变化在初始值的±5%内 Capacitance change: Within ± 5% of initial capacitance 损失角≤ 规格值的130% Tanδ≤130%of the initial specified value. 等效串联电阻≤ 规格值的130% ESR ≤ 130% of the initial specified value. 漏电流≤0.2CV值或500μA中的任一个较大值 Leakage current ≤the larger values between 0.2CV and 500uA.
6.2.5	稳态湿热 (恒稳态) Resistance to damp heat (steady state)	温度Temperature : 60±2°C 相对湿度Relative humidity : 90% ~ 95% 持续时间Duration : 1000 (-0/+48) hrs 使用电压: 无负荷 Applied voltage : without load	电容变化在初始值的±20%内 Capacitance change within ±20% of initial value 损失角≤ 规格值的150% tan δ ≤ 150% of t he initial specified value. 等效串联电阻≤ 规格值的150% ESR ≤ 150% of the initial specified value. 漏电流≤0.2CV值或500μA中的任一个较大值 Leakage current ≤the larger values between 0.2CV and 500uA.

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序号 No.	项目 Item	测试方法 Test method	性能 Performance
6.2.6	快速变温 Rapid change of temperature	 使用电压：无负荷 Applied voltage : without load 循环次数：10次 Cycle number : 10 Cycles 测试图:Fig. 1 Test diagram: Fig. 1	容量变化：在初始值的±10%内 Capacitance change : Within ±10% of the initial capacitance 损失角：小于或等于规格值 $\tan\delta \leq \text{initial specified value.}$ 漏电流 $\leq 0.2CV$ 值或 $500\mu A$ 中的任一个较大值 Leakage current $\leq$ the larger values between $0.2CV$ and $500\mu A$.
6.2.7	浪涌电压 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6min，测试温度为15°C-35°C。测试电路如下图所示： 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 . Duration of one cycle is 6 minutes . Test temperature: 15°C-35°C The test circuit is as follows: Test circuit :  V : DC voltmeter R1: Protective resistor $1k\Omega$ R2: Discharging resistor $1k\Omega$ Cx: Capacitor under test (10pcs) 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.	漏电流 $\leq 0.2CV$ 值或 $500\mu A$ 中的任一个较大值 Leakage current $\leq$ the larger values between $0.2CV$ and $500\mu A$. 容量改变在初始值的±20%内 Capacitance change Within ±20% of the initial value 损失角 $\leq$ 规格值的150% $\tan\delta \leq 150\%$ of the initial value. 等效串联电阻 $\leq$ 规格值的150% ESR $\leq 150\%$ of the initial specified value.

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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°C.

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

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S	VZ	0J	M	221	E06	E00	R	AXXX
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)								

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

编码Code	VZ
系列编码Series Code	VZ

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

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

编码Code	470	221	331	471	561	681	821	122
电容量Capacitance (uF)	47	220	330	470	560	680	820	1200

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

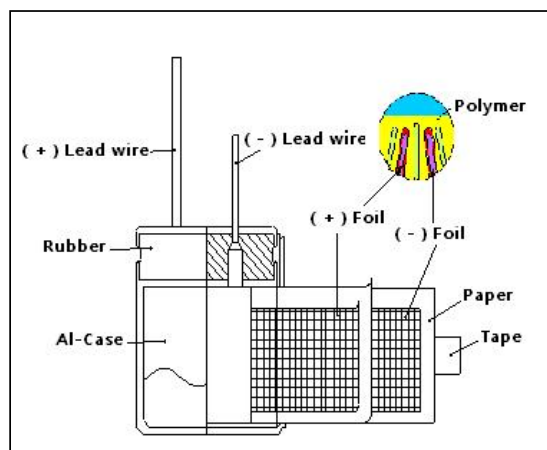
编码Code	D00	E00
其他 Other	贴片、散装SMD&Bulk	贴片、编带SMD&Taping

编码Code	S	R
捺印Marking	天蓝Sky blue	红色Red

“XXXX” 代表正常品, “XXXX” stands for normal products.

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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 withstand voltage above 600V)

膠帶：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

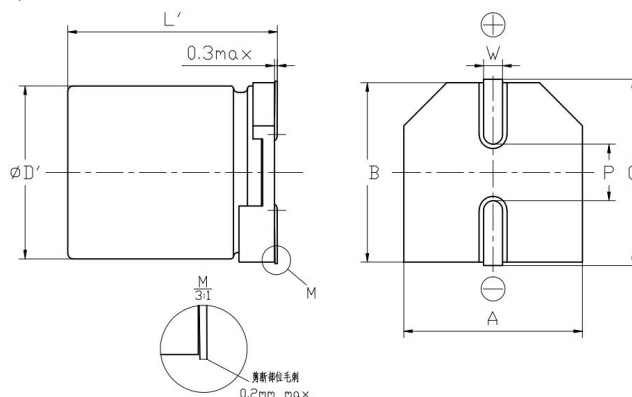
The outer most Al-foil spiral of the element is cathode.

导电高分子用作电解质

Conductive polymer is used as the electrolyte.

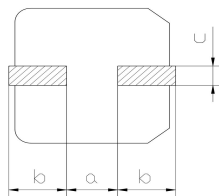
9.尺寸图Outer dimensions (单位Unit:mm)

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 N.O.	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	SVZ0JM221E06E00RAXXX	6.3	220	-20~+20	105	6.3*6	20	500	8	2800	2000

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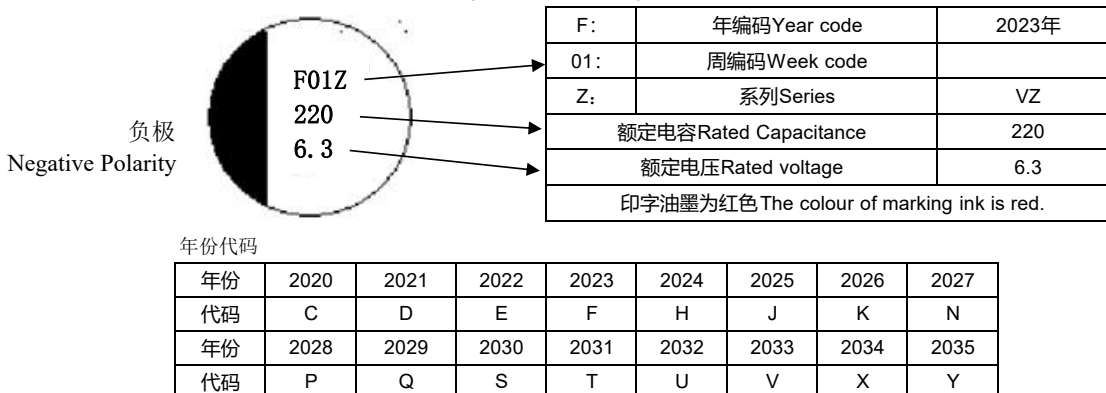
纹波电流频率系数Frequency coefficient for ripple current

频率Frequency	$120\text{Hz} \leq f < 1\text{ kHz}$	$1\text{ KHz} \leq f < 10\text{ kHz}$	$10\text{ KHz} \leq f < 100\text{ kHz}$	$100\text{ KHz} \leq f < 300\text{ kHz}$
系数Coefficient	0.05	0.3	0.7	1

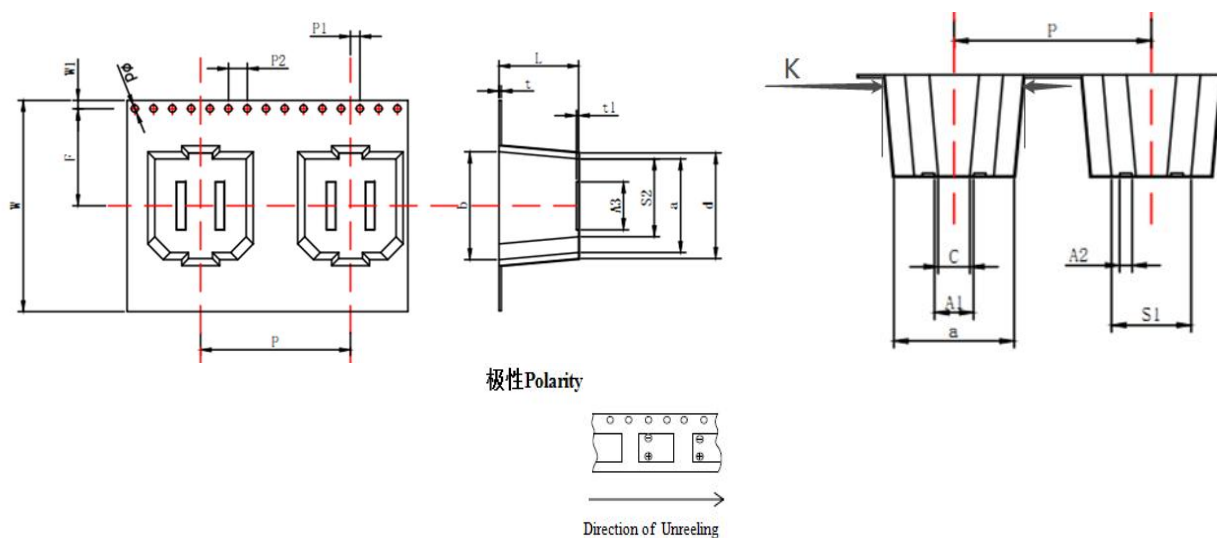
11.捺印Marking

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.



12. 匣盒帶Box cassette (單位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
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

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(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°C with load of 1 kΩ resistor.

(c)Reflow soldering回流焊接

用于SMD系列Use flow soldering for SMD type

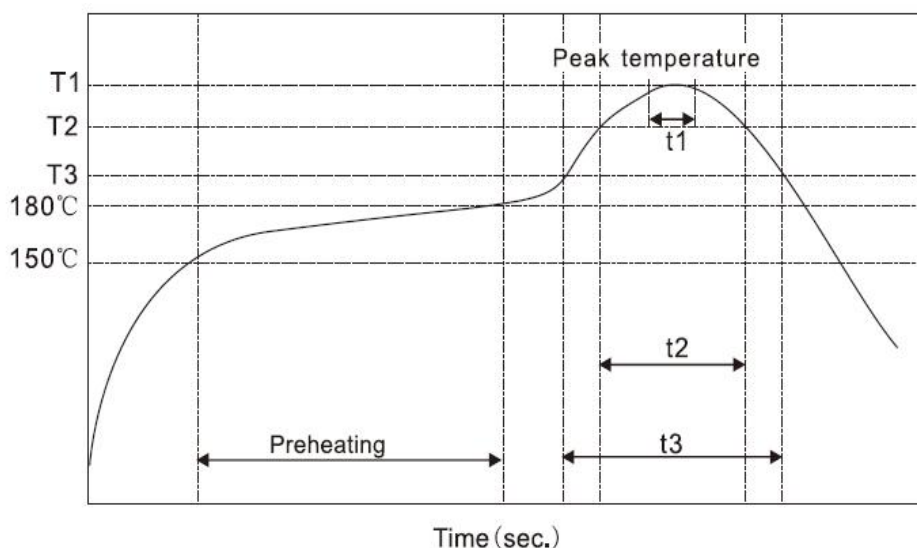
回流焊接Reflow soldering

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.

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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

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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 be less than the rated voltage. Peak value of 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.

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