

客户Customer:

日期Date: 2021年12月24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: SPZ0AM501B09O00RAXXX

系 列 SERIES: PZ

规 格 尺 寸 ITEM: 7.5V500uF(Φ5.5*9)

客户料号 Customer P/N: /

编 号 No. : CRS-FX-2112254

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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Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	2
STANDARD MANUAL						

1.概述Scope

此承认书使用于含有导电高分子电解质的PZ系列固态电解电容

These specifications specify PZ 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°C

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

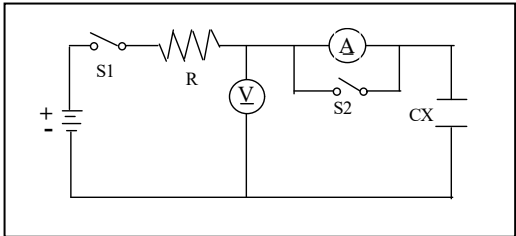
Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	3
STANDARD MANUAL						

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 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: 不得超过导针焊点2mm。 Measuring point : 2mm max from the surface of a sealing resin on the lead wire	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

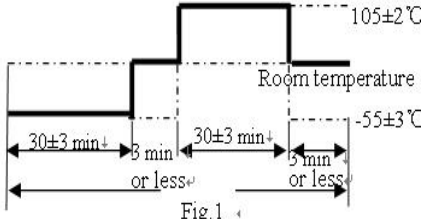
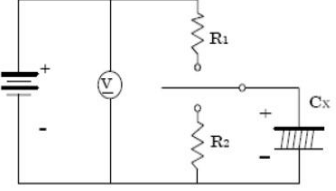
Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	4
STANDARD MANUAL						

6.2 耐受能力Endurance Performance

Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	5
STANDARD MANUAL						

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 K 8101); 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 the 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.

Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	6
STANDARD MANUAL						

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6 min, 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 1kΩ R2: Discharging resistor 1kΩ 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 specified value. 等效串联电阻 $\leq$ 规格值的150% ESR $\leq 150\%$ of the initial specified value.

Issued-date:

Name

Approval Sheet

2021/12/24

File No

PZ

Version

01

Page

7

STANDARD MANUAL

Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	8
STANDARD MANUAL						

7.物料编码PART No. SYSTEM

S	PZ	0A	M	501	B09	O00	R	AXXX
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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	PZ
系列编码Series Code	PZ

7.3 电压编码Voltage Code

编码Code	0E	0A	1C	1E	1V	1J	1K
电压编码VoltageCode(W.V)	2.5	7.5	16	25	35	63	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	221	501	561	681	821	122
电容量Capacitance (uF)	47	100	220	500	560	680	820	1200

7.6 尺寸编码Size Code

编码Code	D10	B09	E05	E08	E11	F09	F16	G12	K18
直径D (Φ)	5	5.5	6.3	6.3	6.3	8	8	10	13
高度H (mm)	10	9	5	8	11	9	16	12	18

7.7 成型方式编码 Terminal Code

编码Code	O00	C35	P35	C48
其他 Other	平豆散装 Platform rubber& Inbulk	平豆剪脚 Platform rubber & Lead Cut3.5±0.5mm	平豆编带 Platform rubber& Taping	平豆剪脚 Platform rubber& Lead Cut4.8±0.3mm

7.8 捺印编码Marking Code

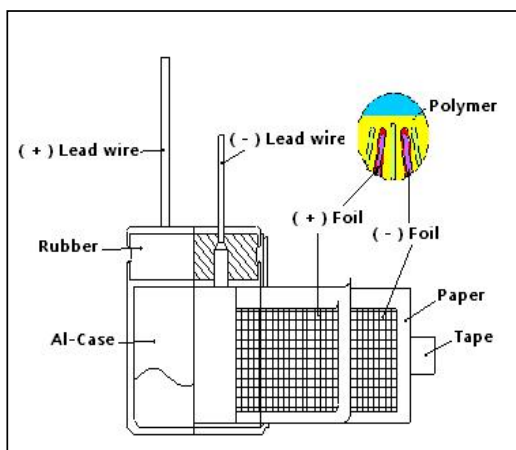
编码Code	S	R
捺印Marking	天蓝Sky blue	红色Red

7.9 特殊编码 Special Code

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

Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	9
STANDARD MANUAL						

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 AI-tab and the AI-foil are stitched to join together.

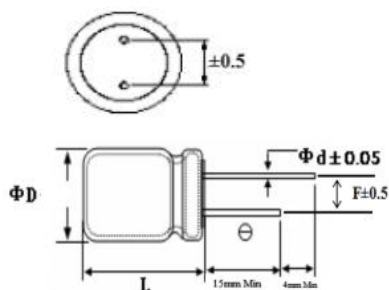
卷绕的素子外部以阴极箔包裹

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)



尺寸编码 Size Code	ΦD (mm)	ΦD(mm) Tolerance	L (mm)	L (mm) Tolerance	F (mm)	Φd (mm)
B09	5.5	-0.3~+0.3	9	0~+1	2.5	0.5

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	SPZ0AM501B09O00RAXXX	7.5	500	-20~+20	105	5.5*9	20	750	8	3600	2000

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

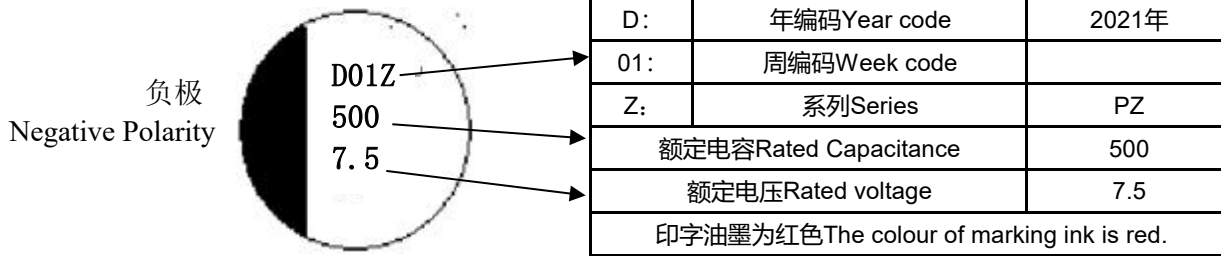
频率Frequency	$120\text{Hz} \leq f < 1\text{ kHz}$	$1\text{ kHz} \leq f < 10\text{ kHz}$	$10\text{ kHz} \leq f < 100\text{ kHz}$	$100\text{ kHz} \leq f < 300\text{ kHz}$
系数Coefficient	0.05	0.3	0.7	1

Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	10
STANDARD MANUAL						

12. 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.



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

13. 包装Packing

包装标签标示Packing Label Marked

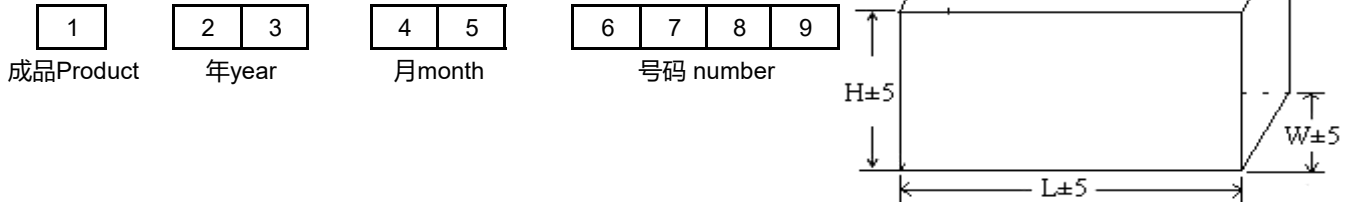
(下面的项目应该标志在标签上 the following items shall be marked on the label)

(盒内或包内 Inside box or bag)

1) 系列series 2) 料号P/N 3) 额定电容Rated capacitance 4) 额定电压Rated Voltage

5) 数量quantity 6) 尺寸size

7) 批号LOT Number :



13.1 散装包装In bulk Packing

散装Bulk: 标准Standard & 剪脚Cutting

分类Classification	标准品 Standard			剪脚品 Cutting		
尺寸 Case size D*L(mm)	袋Bag (pcs)	内盒Inner box 290x215x160 (mm)	外箱Outer carton 450x310x350 (mm)	袋Bag (pcs)	内盒Inner box 290x215x160 (mm)	外箱Outer carton 450x310x350 (mm)
φ5	1000	9000	36000	1000	12000	48000
φ5.5	1000	8000	32000	1000	9000	36000
φ6.3	1000	8000	32000	1000	9000	36000
φ8	500	4000	16000	1000	6000	24000
φ10	500	3000	12000	500	3000	12000

Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	11

Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	12
STANDARD MANUAL						

(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

Do not apply radial lead type capacitors to reflow soldering. 插件型产品不适用于回流焊接作业

(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.

Issued-date:	Name	Approval Sheet				
2021/12/24	File No	PZ	Version	01	Page	13
STANDARD MANUAL						

