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客户Customer: /

日期 Date: 2020.8.14

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：Part of VZ series

系列 SERIES：VZ

规格尺寸 ITEM：

客户料号 Customer P/N：

编号 No.：CRS-FX-2008124

审核 APPROVED BY

制作 PREPARED BY	审核 CHECKED BY	批准 APPROVED BY
段巧灵 技术部	叶军 技术部	邹志平 技术部

制定/修订履历表 Make/revised curriculum vitae

编号 NO.	版本 Version	日期 Date	目录 Content
CRS-FX-2008124	CRS-2020-VZ / 01	2020-8-14	新建

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

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. -55～+105℃（ 2.5V～100V ）

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℃ 相对湿度 Relative humidity：45 to 85%

大气力压 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℃ 相对湿度 Relative humidity：60 to 70%

大气压 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(℃)	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
10	105	11.5	10
16	105	18.4	16
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

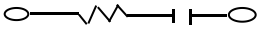
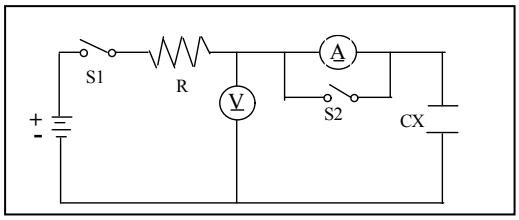
5. 高低温阻抗Impedance at high and low temperature

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

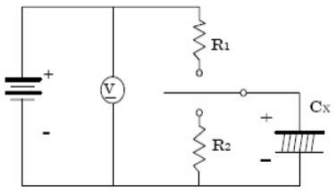
阻抗比Impedance ratio	性能Performance
Z (-55℃) / Z (+20℃)	≤1.25
Z (105℃) / Z (+20℃)	≤1.25

6.性能 Performance

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	额定电压 Rated voltage	DC:2.5V~63V	
6.1.2	电容量 Capacitance	测试频率 Measuring frequency: 120Hz 测试电路 Measuring circuit: 	参考特性表 Refer to characteristic table
6.1.3	损失角正切值 Dissipation Factor	等效串联电路 Series equivalent circuit 测试电压 Measuring voltage: 1.0Vrms 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℃  R : 1000±100Ω A :直流电流表 DC current meter S1： 开关 Switch S2： 保护当前表开关 S2 : 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

<table>
<tr>
<td>6.1.6</td>
<td>高温&低温性 Characteristics at Hight Temperature & Low Temperature</td>
<td>
<table>
<tr><th>步骤 Step</th><th>温度（℃） Temperature</th><th>时间（h） Time</th><th>测试项目 Measurement item</th></tr>
<tr><td>1</td><td>20±2</td><td>2</td><td>容量、损失角正切、阻抗 Capacitance,tan δ ,|Z|</td></tr>
<tr><td>2</td><td>-55±3</td><td>2</td><td>容量、阻抗 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 |Z| ,LC</td></tr>
<tr><td>5</td><td>20±2</td><td>2</td><td>容量、损失角正切 Capacitance,tan δ</td></tr>
</table>
备注 Remarks：
120Hz：Capacitance,tan δ
100KHz：|Z| ,ESR
</td>
<td>Step 1:容量、损失角在规格值内
Capacitance,tan δ shall meet the specified value
Step 2:容差±10%
Capacitance change :Within±10% of step1
阻抗比率小于 1.25
|Z|(-55℃)/|Z|(20℃)Less than 1.25
Step 4: 漏电小于规格值的 150%
Leakage current≤ 150% of the initial value.
阻抗比率小于 1.25
|Z|(105℃)/|Z|(20℃)Less than 1.25
Step 5: 容差±5%
Capacitance change :Within±5% of step1
损失角在规格值内
tan δ shall meet the specified value.</td>
</tr>
</table>

6.1.7	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℃-35℃。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℃-35℃ The test circuit is as follows: Test circuit ：  Ⓥ : 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≤规格值 Leakage current≤ initial specified value 容量改变在初始值的±20%内 损失角≤规格值的 150% Capacitance change Within±20% of the initial value tan δ ≤150% of the initial value. 等效串联电阻≤规格值的 150% ESR≤150% of the initial specified value.

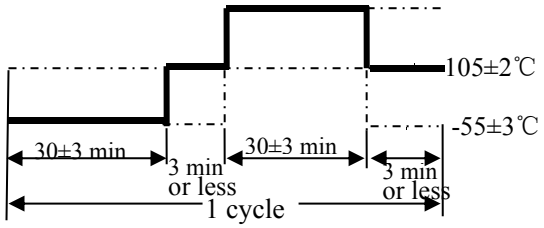
6.2 机械性能Mechanical Performance

序号 No.	项目 Item	测试方法 Test method	性能 Performance
6.2.1	振动 Vibration	依照 KS C 6421(W) 和 KS C 6035 To comply with KS C 6421(W) and KS C 6035 频率：10 到 55Hz(1 分钟间隔/10→55→10 Hz) 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)	性能：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 Performance :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

6.2.2	可焊性 Solder ability	温度：235 ± 5 ℃ Temperature : 235 ± 5 ℃
		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.%
			性能：至少95%的浸渍表面覆盖有新的焊料
			Performance: At least 95% of surface area of the dipped portion of the terminal shall be covered with new solder.

6.3 耐受能力Endurance Performance

序号 No.	项目 Item	测试方法 Test method	性能 Performance
6.3.1	耐焊接热 Resistance to soldering heat	测试条件 Test condition (1)汽相焊接的方法： 焊膏用于印刷电路板上后，再安装电容器，电容器应保持在气相液 260±5℃的温度下 10±1 秒。 Vapor phase soldering method: Solder paste should be applied to the printed wiring boards and then the capacitors are mounted on it. After that, the capacitor should be maintained in the vapor phase bath at a temperature of 260 ±5 ° C for 10 ±1 seconds. (2)焊接方法 Soldering iron method: 温度 Temperature: 400 ±10 ° C 持续时间 Duration: 3+1/-0seconds	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 150% Tanδ≤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≤规格值 Leakage current ≤initial specified value.

6.3.2	稳态湿热 (恒稳态) Resistance to damp heat (steady state)	温度 Temperature : 60±2℃ 相对湿度 Relative humidity : 90%～95% 持续时间 Duration : 2000 (-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≤规格值 Leakage current ≤initial specified value.
6.3.3	快速变温 Rapid change of temperature	 Fig.1 加载电压：无负载 Applied voltage: No load 循环次数：5 次 Cycle number: 5 CYCLES 测试图 Test diagram: Fig. 1	容量改变在初始值的±10%内 Capacitance change : Within ±10% of the initial capacitance 损失角≤规格值 Tan δ: Less than or equal to the specified value 漏电流≤规格值 Leakage current : Less than or equal to the specified value
6.3.4	负载寿命 Load Life	电容在105±2℃,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 ± 2 ℃ ,the measurements shall be performed after 2 hours exposed at room temperature	容量变化：在初始值的±20%内 Capacitance change within ±20% of the initial value 损失角：小于规格值的 150% tan δ ≤ 150% of the initial specified value. 阻抗≤规格值的 150% ESR ≤ 150% of the initial specified value. 漏电流≤规格值 Leakage current ≤ initial specified value. 外观：没有明显的损伤 Appearance:No significant damage

备注

如果有任何疑问，测量漏电压修复后的电流。

电压修复：直流额定电压加载到电容器上120分钟的105℃。

应在室温下冷却2小时后再测量

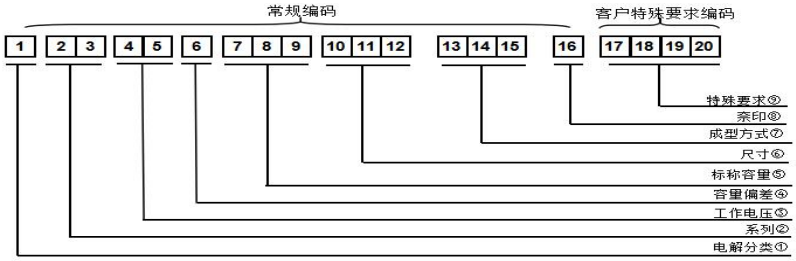
REMARKS

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. 成品物料编码原则(备注：当客户有特殊要求时会在料号后面增加“1 码”或“2 码”特殊码)



①电解分类 Category

电容类型 Type	代码 1 位
固态电容	S

②系列 Series code

系列		代码 2 位	代码 3 位
插件式 (Dip Type)	VZ	V	Z

③工作电压 Voltage ④容量偏差 Capacitance Tolerance

WV(V)	代码 4 位	代码 5 位
2.5	0	E
6.3	0	J
10	1	A
16	1	C
25	1	E
35	1	V
50	1	H
63	1	J
80	1	B
100	1	K

Tol. (%)	代码 6 位
-10～+10	K
-20～+20	M
-10～+30	Q
-10～+50	T
-10～+20	V
-8～+20	H
-0～+20	A
-0～+30	
-5～+20	C
+6～+20	J
-10～-20	B
-5～+5	D
-0～+10	E
-5～-20	F
-15～+5	N
-15～+15	W
-15~+20	G

⑤标称容量 Capacitance code

WV(V)	代码 7 位	代码 8 位	代码 9 位
4.7	4	R	7
15	1	5	0
22	2	2	0
33	3	3	0
47	4	7	0
56	5	6	0
68	6	8	0
82	8	2	0
100	1	0	1
150	1	5	1
220	2	2	1
330	3	3	1
470	4	7	1
560	5	6	1
680	6	8	1
820	8	2	1
1000	1	0	2
◦ ◦ ◦ ◦ ◦ ◦			

⑥尺寸 Size code

直径 ΦD±0.5	代码 10 位
6.3	E
8	F
10	G

高度 L±0.3	Code 11 位	Code 12 位
6	0	6
9	0	9
11.5	B	R
12.5	C	R

⑦成型方式 Terminal Code

描述 Specification	代码 13 位	代码 14 位	代码 15 位
贴片、座板	D	0	0
贴片、编带	E	0	0

⑧套印 Marking Code

捺印 Marking	代码 16 位
艾華(大红色)	R

⑨ 特殊要求 Special requirements

特殊要求码 Special requirements	代码 17 位	代码 18 位	代码 19 位	代码 20 位
正常品	A			
加工尺寸特殊	B			
DF 特殊	D			
ESR 特殊	E			
胶粒特殊	G			
直径特殊	C			
高度特殊	H			
LC 特殊	L			
CP 线径特殊	Q			
RC 特殊	R			
寿命特殊	S			
ESR+LC 特殊	E	L	1	1
LC+RC 特殊	L	R	1	1
ESR+RC 特殊	E	R		
省略位由大写字母 X 补齐				

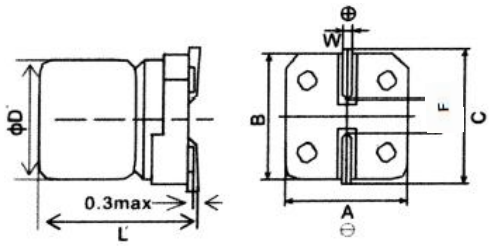
Issue Date	starts	File Description	Component No./rev
2020-8-14	Released	Approval Sheet-VZ	CRS-2020-VZ / 01

◆SPECIFICATIONS

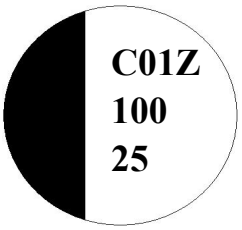
Items	Characteristics										
Category Temperature Range	-55 to +105℃										
Rated Working Voltage Range	2.5 to 100Vdc										
Nominal Capacitance Range	22~2200 μF										
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)										
DC Leakage Current	I≦0.2CV (at 20℃ after 2 minutes)										
	Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)										
Dissipation Factor (tan δ)	Rated Voltage (VDC)	2.5	6.3	10	16	25	35	50	63	80	100	(at 20℃, 120Hz)
	tanδ (Max.)	0.08	0.12								0.15	
ESR(100K~300KHz,20℃)	Value in characteristics table										
Temperature Characteristic (Impedance Ratio at 100KHz)	Z（+105℃）/ Z（+20℃）≦1.25 Z（-55℃）/ Z（+20℃）≦1.25										
Endurance	After applying rated voltage for 2000 hours at 105℃, the capacitors shall meet the following requirements.										
	Appearance	No significant damage									
	Capacitance Change	≤±20% of the initial value									
	D.F. (tanδ)	≤150% of the initial specified value									
	ESR	≤150% of the initial specified value									
	Leakage Current	≤The initial specified value									
Humidity Test	After subjecting 90 to 95% RH for 2000 hours at 60℃.no voltage, The capacitors shall meet the requirement as surge test.										
Surge Test	After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements.										
	Appearance	No significant damage									
	Capacitance Change	≤±20% of the initial value									
	D.F. (tanδ)	≤150% of the initial specified value									
	ESR	≤150% of the initial specified value									
	Leakage Current	≤The initial specified value									

*Note : 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 105C.

◆DIMENSIONS [mm]



◆ MARKING



C:年编码 Year code(C-2020)

01:周编码 Week code

Z:系列 Series(Z-VZ)

额定电容 Rated Capacitance (100-100uF)

额定电压 Rated voltage (25-25WV)

奈印油墨为红色 The color of marking ink is red.

Size Code	Φ 6.3x6	Φ 6.3x9	Φ8	Φ10
F±0.2	1.9	1.9	3.1	4.5
A±0.2	6.6	6.6	8.3	10.3
B±0.2	6.6	6.6	8.3	10.3
C±0.2	7.2	7.2	9	11
ΦR	0.65±0.15	0.65±0.15	0.9±0.2	0.9±0.2
L'	L'±0.5	L'±0.3	L'±0.3	L'±0.3

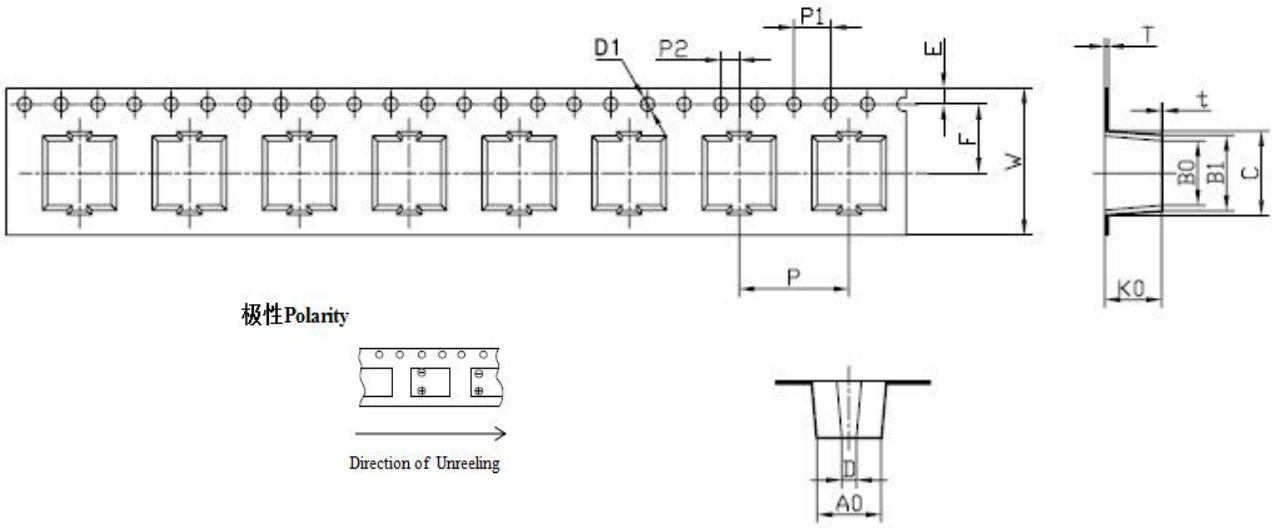
年份代码

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

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	1.00

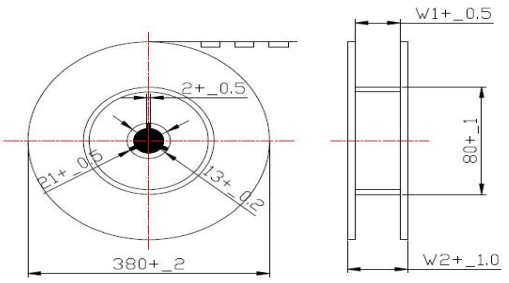
12. 匣盒带 Box cassette (单位 Unit:mm)



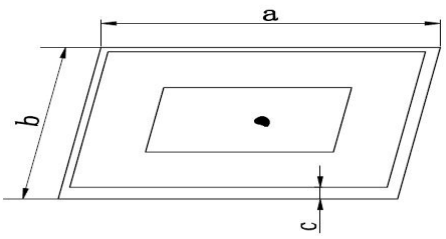
尺寸编码 Size Code	D1	K0	P	P1	P2	T	W	E	F	A0/B0	B1	D
	+0.1/-0	±0.1	±0.1	±0.1	±0.05	±0.1	±0.3	±0.1	±0.05	±0.2	±0.1	±0.1
Φ 6.3 * L	1.50	L+0.5/1.0	12.00	4.00	2.00	0.50	16.00	1.75	7.5	7.00	8.1	1.60
Φ 8 * L	1.50	L+0.5	16.00	4.00	2.00	0.50	24.00	1.75	11.5	8.7	9.9	2.00
Φ 10 * L	1.50	L+0.5	16.00	4.00	2.00	0.50	24.00	1.75	11.5	10.7	11.9	2.00

13. 包装 Packing

Taping：Standard



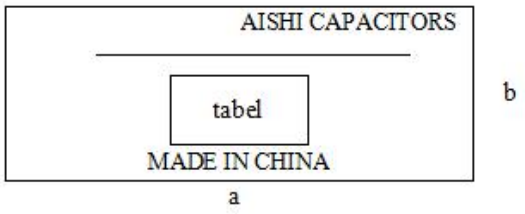
Direction of Unreeling



Paper carrier reel or plastic carrier reel

Zipper bag

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



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/（paper carrier reel） 390*225*390 (mm)	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
Φ6.3	1000	8	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
Φ8	500	6	26	32
Φ10	500	6	26	32

14. 操作注意事项Operating Precautions

14.1极性Polarity

Aishi CAP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High impedance circuits

2)耦合电路Coupling circuits.

3)时限恒量电路 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. or Aishi for usage of two or more AishiCAP in series for voltage proof.

14.3 过电压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，用保护电路。

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 lshort ,eakage 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贮藏一段时间后，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 a long period of time. In this case, apply rated voltage for 2 hours at 105 deg. C with load of 1 kohm resistor.

(c)流体焊接Reflow soldering

不可用于SMD系列Do not use flow soldering for SMD type

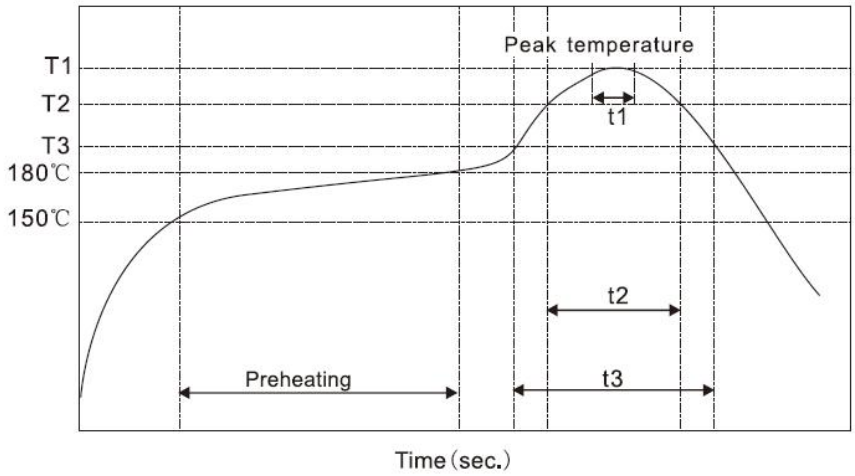
流体焊接Reflow soldering

焊接条件应该在下列范围内。

Soldering condition should be under the following ranges.

建议流体焊接条件

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

(d)焊接后处理 Handling after soldering

在这之后，不要倾斜，弯曲或扭曲 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 PCBs,make sure that the AishiCAP does not touch other PCBs or components.

不可将AishiCAP与其它物品堆放Do not dump the AishiCAP with objects.

14.6 AishiCAP用于工业设备 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 AishiCAP用于生命保障系统 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 Ai hua Group Co., Ltd or Aishi. Don't use without recognition document of Hunan Ai hua Group Co., Ltd or Aishi.

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。

2) 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

3) 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）

4) 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。

5) 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7天内 After seal : within 7 days 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.

14.10AishiCAP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的80%。纹波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 80% of the rated voltage. The peak value of the ripple voltage should be less than the 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.

VZ series

■STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size ΦD×L(mm)	ESR (mΩ,20℃,100kHz)(max)	Rated ripple current (mArms/105℃,100kHz)	Leakage current (μA)(max)	Part Number
2.5	220	6.3×4.5	20	2700	500	SVZ0EM221E4RE00RAXXX
	330	6.3×4.5	20	2700	500	SVZ0EM331E4RE00RAXXX
	330	6.3×6	20	2700	500	SVZ0EM331E06E00RAXXX
	390	6.3×6	20	2800	500	SVZ0EM391E06E00RAXXX
	470	6.3×6	20	2900	500	SVZ0EM471E06E00RAXXX
	560	6.3×6	20	3000	500	SVZ0EM561E06E00RAXXX
	680	6.3×9	15	4300	500	SVZ0EM681E09E00RAXXX
6.3	220	6.3×4.5	20	2700	500	SVZ0JM221E4RE00RAXXX
	220	6.3×6	20	2800	500	SVZ0JM221E06E00RAXXX
	270	6.3×6	20	3000	500	SVZ0JM271E06E00RAXXX
	330	6.3×6	20	2100	500	SVZ0JM331E06E00RAXXX
	470	6.3×9	15	3500	592	SVZ0JM471E09E00RAXXX
	560	6.3×9	15	3700	706	SVZ0JM561E09E00RAXXX
	1000	8×11.5	15	4300	1260	SVZ0JM102FBRE00RAXXX
	1500	8×11.5	15	4400	1890	SVZ0JM152FBRE00RAXXX
	2200	10×12.5	15	5600	2772	SVZ0JM222GCRE00RAXXX
10	100	6.3×4.5	50	2500	500	SVZ1AM101E4RE00RAXXX
	120	6.3×6	30	2700	500	SVZ1AM121E06E00RAXXX
	220	6.3×6	30	2700	500	SVZ1AM221E06E00RAXXX
	220	6.3×9	20	3000	500	SVZ1AM221E09E00RAXXX
	330	6.3×9	20	3100	660	SVZ1AM331E09E00RAXXX
	470	6.3×9	30	3400	940	SVZ1AM471E09E00RAXXX
	470	8×9.5	22	3400	940	SVZ1AM471F9RE00RAXXX
	560	8×11.5	20	3600	1120	SVZ1AM561FBRE00RAXXX
	560	10×12.5	20	5000	1120	SVZ1AM561GCRE00RAXXX
	1000	8×11.5	15	4200	2000	SVZ1AM102FBRE00RAXXX
	1000	10×12.5	15	4400	2000	SVZ1AM102GCRE00RAXXX
	1500	10×12.5	15	4400	3000	SVZ1AM152GCRE00RAXXX
16	47	6.3×4.5	50	2000	500	SVZ1CM470E4RE00RAXXX
	47	6.3×6	40	1700	500	SVZ1CM470E06E00RAXXX
	68	6.3×6	40	2000	500	SVZ1CM680E06E00RAXXX
	100	6.3×4.5	50	2000	500	SVZ1CM101E4RE00RAXXX
	100	6.3×6	30	2400	500	SVZ1CM101E06E00RAXXX
	120	6.3×4.5	50	2000	500	SVZ1CM121E4RE00RAXXX
	150	3.5×12	30	1000	500	SVZ1CM151S12ET0RAXXX
	150	6.3×6	30	2400	500	SVZ1CM151E06E00RAXXX
	150	6.3×9	25	2600	500	SVZ1CM151E09E00RAXXX
	180	6.3×6	60	2500	576	SVZ1CM181E06E00RAXXX
	180	6.3×9	25	2700	576	SVZ1CM181E09E00RAXXX
	220	6.3×9	25	2500	704	SVZ1CM221E09E00RAXXX
	270	6.3×9	25	2600	864	SVZ1CM271E09E00RAXXX
	270	8×9.5	25	2800	864	SVZ1CM271F9RE00RAXXX
	330	6.3×9	25	2600	1056	SVZ1CM331E09E00RAXXX
	330	8×11.5	20	4000	1056	SVZ1CM331FBRE00RAXXX
	330	10×12.5	20	5000	1056	SVZ1CM331GCRE00RAXXX
	560	8×11.5	20	3500	1792	SVZ1CM561FBRE00RAXXX
	680	10×12.5	20	4000	2176	SVZ1CM681GCRE00RAXXX
	1000	10×12.5	20	4100	3200	SVZ1CM102GCRE00RAXXX
25	22	6.3×4.5	100	400	500	SVZ1EM220E4RE00RAXXX
	22	6.3×6	80	1600	500	SVZ1EM220E06E00RAXXX
	27	6.3×6	50	1100	500	SVZ1EM270E06E00RAXXX
	33	6.3×4.5	100	400	500	SVZ1EM330E4RE00RAXXX
	47	6.3×4.5	100	400	500	SVZ1EM470E4RE00RAXXX
	47	6.3×6	50	1800	500	SVZ1EM470E06E00RAXXX
	47	6.3×9	35	2000	500	SVZ1EM470E09E00RAXXX
	56	6.3×4.5	60	1000	500	SVZ1EM560E4RE00RAXXX
	56	6.3×6	50	1800	500	SVZ1EM560E06E00RAXXX
	68	6.3×4.5	60	900	500	SVZ1EM680E4RE00RAXXX
	68	6.3×6	50	1800	500	SVZ1EM680E06E00RAXXX
	100	6.3×4.5	60	1000	500	SVZ1EM101E4RE00RAXXX
	100	6.3×6	50	2100	500	SVZ1EM101E06E00RAXXX
	100	6.3×9	30	2400	500	SVZ1EM101E09E00RAXXX
	150	6.3×9	30	2500	750	SVZ1EM151E09E00RAXXX
	220	6.3×9	30	2500	1100	SVZ1EM221E09E00RAXXX
	220	8×11.5	30	2600	1100	SVZ1EM221FBRE00RAXXX
	330	8×11.5	30	2700	500	SVZ1EM331FBRE00RAXXX
	330	10×12.5	22	2800	1650	SVZ1EM331GCRE00RAXXX
	470	8×11.5	30	2800	2350	SVZ1EM471FBRE00RAXXX
	470	10×12.5	22	3100	2350	SVZ1EM471GCRE00RAXXX
	560	10×12.5	22	3300	2800	SVZ1EM561GCRE00RAXXX
	680	10×12.5	22	3300	3400	SVZ1EM681GCRE00RAXXX
35	22	6.3×6	60	1100	500	SVZ1VM220E06E00RAXXX
	27	6.3×6	60	1100	500	SVZ1VM270E06E00RAXXX
	33	6.3×6	60	1100	500	SVZ1VM330E06E00RAXXX
	47	6.3×6	45	1100	500	SVZ1VM470E06E00RAXXX
	47	6.3×9	50	1500	500	SVZ1VM470E09E00RAXXX
	68	6.3×6	45	1100	500	SVZ1VM680E06E00RAXXX
	68	6.3×9	40	1800	500	SVZ1VM680E09E00RAXXX
	100	6.3×9	40	2100	700	SVZ1VM101E09E00RAXXX
	100	8×9.5	40	2800	700	SVZ1VM101F9RE00RAXXX
	100	8×11.5	30	3000	700	SVZ1VM101FBRE00RAXXX
	150	8×11.5	30	3000	1050	SVZ1VM151FBRE00RAXXX
	220	8×11.5	30	2400	1540	SVZ1VM221FBRE00RAXXX
	270	8×11.5	30	2500	1890	SVZ1VM271FBRE00RAXXX
	270	10×12.5	30	2700	1890	SVZ1VM271GCRE00RAXXX

	330	10×12.5	30	2700	2310	SVZ1VM331GCRE00RAXXX
	470	10×12.5	30	3000	3290	SVZ1VM471GCRE00RAXXX
50	22	6.3×6	80	800	500	SVZ1HM220E06E00RAXXX
	33	6.3×6	80	850	500	SVZ1HM330E06E00RAXXX
	47	6.3×9	60	1400	500	SVZ1HM470E09E00RAXXX
	68	8×11.5	30	2000	680	SVZ1HM680FBRE00RAXXX
	82	8×11.5	30	2000	820	SVZ1HM820FBRE00RAXXX
	82	10×12.5	30	2000	820	SVZ1HM820GCRE00RAXXX
	100	8×11.5	30	2000	1000	SVZ1HM101FBRE00RAXXX
	100	10×12.5	30	2100	1000	SVZ1HM101GCRE00RAXXX
	120	8×11.5	30	2000	1200	SVZ1HM121FBRE00RAXXX
	150	10×12.5	30	2100	1500	SVZ1HM151GCRE00RAXXX
	220	10×12.5	30	2300	2200	SVZ1HM221GCRE00RAXXX
63	22	6.3×6	80	450	500	SVZ1JM220E06E00RAXXX
	33	6.3×9	60	500	500	SVZ1JM330E09E00RAXXX
	47	8×9.5	60	1000	592	SVZ1JM470F9RE00RAXXX
	56	8×11.5	40	1400	706	SVZ1JM560FBRE00RAXXX
	100	10×12.5	40	1600	1260	SVZ1JM101GCRE00RAXXX
80	27	8×11.5	50	600	500	SVZ1BM270FBRE00RAXXX
	47	10×12.5	50	900	752	SVZ1BM470GCRE00RAXXX
	68	10×12.5	50	900	1088	SVZ1BM680GCRE00RAXXX
100	22	8×11.5	50	600	500	SVZ1KM220FBRE00RAXXX
	47	10×12.5	50	900	940	SVZ1KM470GCRE00RAXXX