KNSCHA
Empowering The World

广东科尼盛电子科技有限公司
KNSCHA ELECTRONICS CO., LIMITED

规格承认书

Specification For Approval

客户名称: (Customer Name)	
产品名称: (Product Name)	贴片铝电解电容 SMD Aluminum Electrolytic Capacitor
客户料号: (Customer part number)	
科尼盛料号: (KNSCHA number)	126RV0012
型号规格: (Specifications)	SMDE/C 16V/470μF 8*10.5mm VCE 5000H
日期: DATE	2025.6.18

制 造 Manufacture	
核 准 APPROVAL	制 作 PREPARED
王师	陆美秀

客户承认栏 CUSTOMER APPROVED		
核 准 APPROVED	确 认 CHECKED	经 办 DESIGNED

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承 样 列 表

额定容量 (μF)	额定电压 (V)	产品尺寸		容量误差 (%)	损失角 (%, 最大值)	泄漏电流 (μA, 最大值)	浪涌电压 (V)	等效阻抗 (Ω, 20℃, 100KHz)	额定纹波电流 (mA rms) (105℃, 100KHz)	耐久性 (Hrs, at 105℃)	P/N 料号
		直径 (mm)	高度 (mm)								
470	16	8	10.5	-20~+20%	16	75.2	18.4	0.17	450	5000	126RV0012

VCE Series Chip Aluminum Electrolytic Capacitors

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VCE

Extra Low Impedance
极低阻抗品

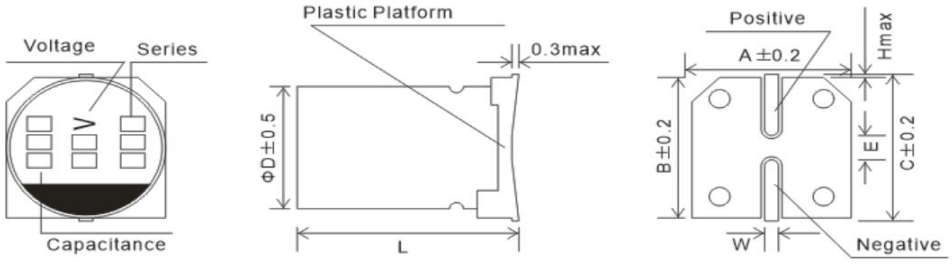
- 105℃,2000~5000 hours assured.
  105℃,负荷寿命 2000~5000 小时。
- Case diameter Φ4mm ~ Φ10mm.
  产品直径Φ4mm ~ Φ10mm.
- Available for high density surface mounting.
  适用于高密度表面组装。
- High stability and reliability.
  性能稳定，可靠性高。



■Specifications 特性表

Items 项目	Characteristics 主要特性
Rated Voltage Range 额定工作电压范围	6.3 ~ 100V_{dc}
Category Temperature Range 使用温度范围	-55 ~ +105℃
Capacitance Tolerance 静电容量允许偏差	±20% (M), at 20℃, 120Hz
Leakage Current (at 20℃, Application Rated Voltage) 漏电流(20℃环境下施加额定工作电压)	Rated Voltage 额定工作电压: 6.3 ~ 100V_{dc} Time 时间: After 2 minutes 施加电压 2 分钟后 Case Size 产品尺寸: Φ4 ~Φ10 Leakage Current 漏电流: ≤0.01CV or 3uA , whichever is greater ≤0.01CV or 3uA, 取较大值 Where, I : Max. leakage current (漏电流, μA), C : Nominal capacitance (静电容量, μF), V : Rated voltage (额定电压 V)
Dissipation Factor (Tanδ, at 20℃ ,120Hz) 损耗角正切值 (测试条件为 20℃,120Hz)	Rated voltage (V) 额定工作电压: 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100 Φ4 ~Φ10: 0.22 / 0.19 / 0.16 / 0.14 / 0.12 / 0.12 / 0.10 / 0.08 / 0.08 When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. 静电容量大于1000uF, 每增加1000uF, 损耗角正切增加0.02
Low Temperature Characteristics (Max. Impedance Ratio, 120Hz) 低温特性最大阻抗比	Rated voltage (V) 额定工作电压: 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100 Z(-25℃)/Z(20℃) Φ4 ~Φ10: 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 Z(-55℃)/Z(20℃) Φ4 ~Φ10: 5 / 4 / 4 / 2 / 2 / 2 / 2 / 2 / 2
Endurance 耐久性	The following specification shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the ripple current is applied for the specified period of time at 105℃. 在 105℃环境中,不超过额定电压的范围下叠加额定纹波电流, 连续加载规定时间的额定电压后, 待温度恢复到 20℃进行测量时, 应满足以下要求。 Test Time 测试时间: 2000Hrs-3,000Hrs / 5,000Hrs Case Size 产品尺寸: Φ4 ~Φ6.3x7.9 / Φ8~Φ10 Capacitance Change 静电容量变化率: Within ±30% initial value 初始值的±30%以内 / Within ±25% initial value 初始值的±25%以内 Dissipation Factor 损耗角正切: ≤300% of specified value 不大于规范值的 300% / ≤300% of specified value 不大于规范值的 300% Leakage Current 漏电流: ≤The initial specified value 不大于规范值
Shelf Life 高温贮存	After storage for 1000 hours at 105℃ with no voltage applied and then being stabilized at +20℃, capacitors shall meet the limits specified in Endurance. (Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of IEC 60384-4.) 在 105℃环境中, 无负荷放置 1,000 小时后待温度恢复到 20℃, 进行试验前处理(IEC 60384-4 4.1 项)后进行测量时, 电容器的特性符合高温负荷特性中所列的规格值。

■Drawing(Unit: mm) 外形图



Case Size 产品尺寸	Φ4 x 5.4	Φ5 x 5.4	Φ5 x 5.7	Φ6.3 x 5.4	Φ6.3 x 5.7	Φ6.3 x 7.7	Φ6.3 x 7.9	Φ8 x 10	Φ8 x 10.5	Φ10 x 10	Φ10 x 10.5
A	4.3	5.3	5.3	6.6	6.6	6.6	6.6	8.3	8.3	10.3	10.3
B	4.3	5.3	5.3	6.6	6.6	6.6	6.6	8.3	8.3	10.3	10.3
C	5.0	6.0	6.0	7.3	7.3	7.3	7.3	9.2	9.2	11.2	11.2
E	1.0	1.5	1.5	2.0	2.0	2.0	2.0	3.1	3.1	4.7	4.7
L	5.4±0.3	5.4±0.3	5.7±0.3	5.4±0.3	5.7±0.3	7.7±0.3	7.9±0.3	10±0.5	10.5±0.5	10±0.5	10.5±0.5
W	0.5 ~ 0.8							0.8 ~ 1.1			
H	0.5max.										

Scope 概述

Conformance Standard 参考标准

This specification covers “VCE series” miniature single-ended aluminum electrolytic capacitors. This approval sheet consulted the institute of IEC 60384-1 and IEC 60384-4. 本承认书规定了VCE系列径向引线引出铝电解电容器的技术规范。并参考 IEC 60384-1 和 IEC 60384-4 制定。

Operating Temperature Range 工作温度范围

Operating temperature range is the range of ambient temperature at which the capacitor can be operated continuously at rated voltage. 工作温度范围是电容器在施加额定工作电压条件下，可以长期可靠工作的环境温度范围。

Rated Voltage 额定电压	Temperature 温度范围
6.3 ~ 100 V.DC	-55 ~ +105℃

Condition of test 测试环境

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows. 如果没有其它规定，标准的测试、检验环境条件如下所示：

Ambient temperature 环境温度：15℃ to 35℃

Relative humidity 相对湿度：45% to 75%

Air pressure 大气压力：86Kpa to 106Kpa

If there may be doubt on the results, measurements shall be made within the following limits 如果对测试结果有异议，可以在以下条件测试：

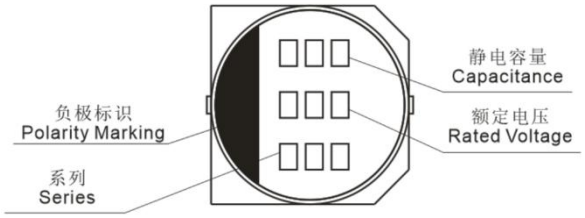
Ambient temperature 环境温度：20±1℃

Relative humidity 相对湿度：63% to 67%

Air pressure 大气压力：86Kpa to 106Kpa

Marking 印刷

a. The following items shall be marked on each capacitor 电容顶部印刷如下：



b. Marking color 印刷颜色：Black 黑色

Ripple Current Frequency Coefficient 纹波电流频率因子

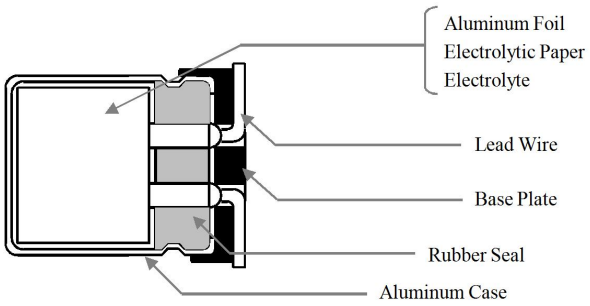
Frequency 频率 (Hz)			60Hz	120Hz	300Hz	1KHz	10KHz~
6.3 ~ 100v	Φ4 ~Φ10	0.1 ~ 1500uF	0.70	1.00	1.17	1.36	1.50

■Rated ripple current multipliers(Unit: mm) 额定纹波修正系数

Frequency 频率 (Hz)			60Hz	120Hz	300Hz	1KHz	10KHz~
6.3 ~ 100v	Φ4 ~Φ10	0.1 ~ 68uF	0.40	0.50	0.64	0.83	1.00
		100 ~ 3300uF	0.45	0.55	0.70	0.85	1.00

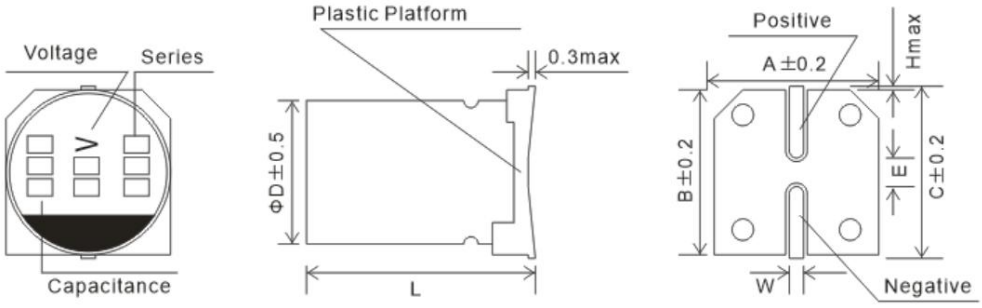
Construction & Drawing 结构与外形图

Construction 结构：



Parts Name 部件名称		Materials 材质
1	Aluminum Foil 铝箔	Aluminum 铝
2	Electrolytic Paper 电解纸	Manila Hemp 马里拉麻/西班牙草纸浆
3	Electrolyte 电解液	Ethylene Glycol, Gamma-Butyrolactone γ-丁内酯
4	Aluminum Case 镀膜铝壳	Aluminum、PET 铝及 PET
5	Rubber Seal 封口橡胶	Synthetic Rubber (IIR) 树脂橡胶
6	Lead Wire 引线	Bi Contained Tin Plate, Tinned Copper-Clad Steel Wire 镀锡铜包钢线
7	Base Plate 底座	Thermo-plastic Resin 热塑性树脂

Diagram of Dimensions 外形尺寸：



Case Size 产品尺寸	Φ4 x 5.4	Φ5 x 5.4	Φ5 x 5.7	Φ6.3 x 5.4	Φ6.3 x 5.7	Φ6.3 x 7.7	Φ6.3 x 7.9	Φ8 x 10	Φ8 x 10.5	Φ10 x 10	Φ10 x 10.5
A	4.3	5.3	5.3	6.6	6.6	6.6	6.6	8.3	8.3	10.3	10.3
B	4.3	5.3	5.3	6.6	6.6	6.6	6.6	8.3	8.3	10.3	10.3
C	5.0	6.0	6.0	7.3	7.3	7.3	7.3	9.2	9.2	11.2	11.2
E	1.0	1.5	1.5	2.0	2.0	2.0	2.0	3.1	3.1	4.7	4.7
L	5.4±0.3	5.4±0.3	5.7±0.3	5.4±0.3	5.7±0.3	7.7±0.3	7.9±0.3	10±0.5	10.5±0.5	10±0.5	10.5±0.5
W	0.5 ~ 0.8							0.8 ~ 1.1			
H	0.5max.										

Taping Specifications 编带规格

Carrier Tape 载带

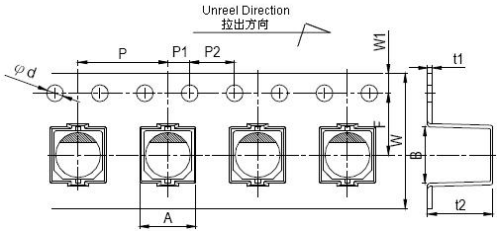


Fig.01

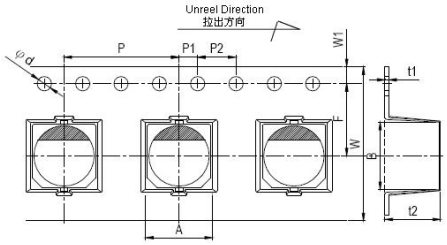


Fig.02

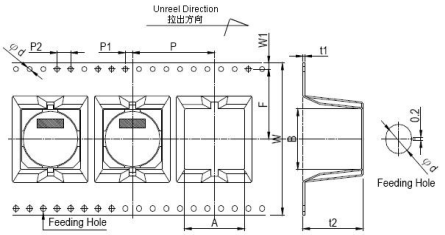
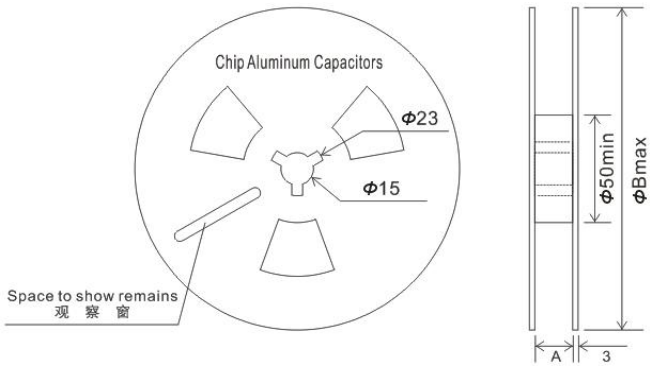


Fig.03

Case Size 产品尺寸	W (mm)	W1 (mm)	F (mm)	P (mm)	P1 (mm)	P2 (mm)	A (mm)	B (mm)	t1 (mm)	t2 (mm)
Φ4x5.4	12	1.75	5.5	8	2	4	4.7	4.7	0.4	5.8
Φ5x5.4	12		5.5	12			6	6		5.8
Φ5x5.7	12		5.5	12			6	6		5.8
Φ6.3x5.4	16		7.5	12			7	7		5.8
Φ6.3x5.7	16		7.5	12			7	7		5.8
Φ6.3x7.7	16		7.5	12			7	7		8.3
Φ6.3x7.9	16		7.5	12			7	7		8.3
Φ8x6.5	16		7.5	12			8.7	8.7		7
Φ8x10	24		11.5	16			8.7	8.7		11
Φ8x10.5	24		11.5	16			8.7	8.7		11
Φ10x10	24		11.5	16			10.7	10.7		11
Φ10x10.5	24		11.5	16			10.7	10.7		11
Tolerance	±0.3	±0.15	±0.1	±0.1	±0.1	±0.1	±0.2	±0.2	±0.1	±0.2

Reel 卷盘



Case Size 产品尺寸	Quantity/Reel 卷装数量	Quantity/Carton 盒装数量	A±0.3 (mm)	B±2 (mm)	Case Size 产品尺寸	Quantity/Reel 卷装数量	Quantity/Carton 盒装数量	A±0.3 (mm)	B±2 (mm)
Φ4x5.4	2000	20000	14	382	Φ8x10	500	5000	26	382
Φ5x5.4	1000	10000	14	382	Φ8x10.5	500	5000	26	382
Φ5x5.7	1000	10000	14	382	Φ10x10	500	5000	26	382
Φ6.3x5.4	1000	10000	18	382	Φ10x10.5	500	5000	26	382
Φ6.3x5.7	1000	10000	18	382					
Φ6.3x7.7	1000	10000	18	382					
Φ6.3x7.9	1000	10000	18	382					

Soldering Conditions 焊接条件

1. Radial lead and Snap-in Type 引线型及大型铝电解电容

1.1. Flow soldering: 260±5℃ for 10±1 seconds 波峰焊：波峰温度 260±5℃，10+1 秒以内

1.2. Hand soldering: 380±10℃ for 3±0.5 seconds 手工焊：焊枪温度 380±10℃，3+0.5 秒以内

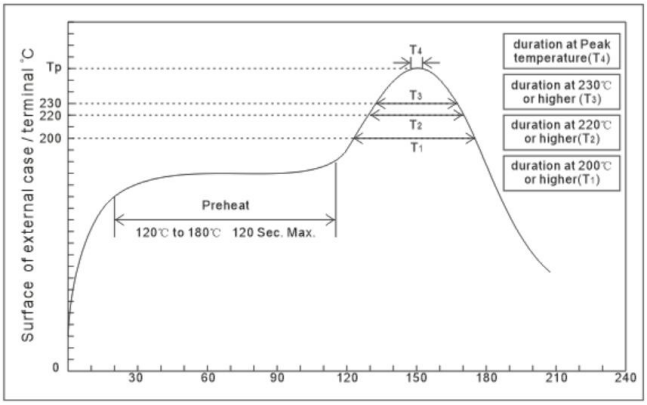
2. Surface Mount Type 贴片型非固体铝电解电容

The following conditions are recommended for air convection and infrared reflow soldering on the SMD products onto a glass epoxy circuit boards by cream solder. The temperatures shown are the surface temperature values on the top of the can and on the capacitor terminals.
当使用回流焊，在玻璃环氧树脂基板上进行焊接的时候，产品顶部及端子部分温度，时间的推荐范围如下表所示。

Reflow should be performed twice or less.
推荐回流次数不超过 2 次。

Please ensure that the capacitor became cold enough to the room temperature (5 to 35℃) before the second reflow.
如需要第 2 次焊接，请在第 1 次回流之后，必须确保电容器的温度已经完全冷却到室温(5~35℃)后方可进行第 2 次回流。

2.1. Recommended soldering heat conditions 回流焊推荐条件



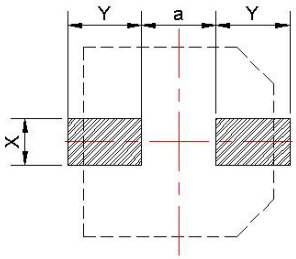
Note: 1). Average ramp-up rate is 5℃/second max. 温度上升平均每秒钟最多 5℃；

2). Ramp-down rate is 6℃/second max. 温度下降平均每秒钟最多 6℃；

3). Time from 25℃ to peak temperature is 6 minutes max. 从 25℃上升到峰值温度的时间最多 6 分钟。

Category 类别	Time maintained above 200℃ (T1) 200℃以上时间	Time maintained above 220℃ (T2) 220℃以上时间	Time maintained above 230℃ (T3) 230℃以上时间	Range of Peak 峰值范围		Reflow number 回流焊次数
				Temp. 温度	Times 时间	
Dia. 4~6.3mm general Φ4~6.3 一般品	60 sec.	50 sec.	30 sec.	260℃ Max.	5sec Max.	2 times or less 2 次以下
Dia. 8~10mm general Φ8~10 一般品	60 sec.	50 sec.	30 sec.	255℃ Max.		
125℃ Category Temp. 125℃高耐温品	60 sec.	40 sec.	30 sec.	250℃ Max.		

2.2. Recommended Solder Land on PC Board 推荐表面安装尺寸



Size 尺寸	X	Y	a
Φ4	1.6	2.6	1.0
Φ5	1.6	3.0	1.4
Φ6.3	1.6	3.5	2.1
Φ8	2.5	3.5	3.0
Φ10	2.5	4.0	4.0

Reliability Specification 可靠性

1. Rotational Temperature Test 温度变化

Conditions 测试条件：

Capacitor is placed in an oven whose temperature follow specific regulation to change. The specific regulation is "+25℃(3 min.) → -55℃(30 min.) → +25℃(3 min.) → +105℃(30 min.) → +25℃(3 min.)", and it is called a cycle. The test totals 50 cycles. And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made. 电容器被放置在一个烤箱中，其温度遵循特定的规则变化。具体的规则是"25℃（3 分钟）→-55℃（30 分钟）→+25℃（3 分钟）→+105℃（30 分钟）→+25℃（3 分钟）"为一个周期，共计 50 个循环，然后电容器在标准的大气条件下放置 4 小时，然后测量。

Specification 规格值：

Capacitance Change 容量变化	Within ±10% of initial value 在初始值的±10%以内
Tan δ 损耗角	Within specified value 规格值范围内
Leakage Current 漏电流	Within specified value 规格值范围内
Physical 外观	No broken and undamaged 无破损或损坏

2. High Temperature Endurance Life 高温负荷

Conditions 测试条件：

Apply the bias voltage and ripple current to the capacitor and place it in an oven at a temperature of 105℃ to the rated life time. Then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurement shall be made. 将电容施加基本电压及纹波电流，放置在温度为 105℃的烤箱中至额定寿命时间，然后在标准大气条件下放置 4 小时后测量。

Specification 规格值：

Capacitance Change 容量变化	Within ±30% of initial value 在初始值的±30%以内
Tan δ 损耗角	Less than 300% of specified value 小于 3 倍规格值
Leakage Current 漏电流	Within specified value 规格值范围内
Physical 外观	No broken and undamaged 无破损或损坏

3. High Temperature Unload Life Test 高温贮存

Conditions 测试条件：

After 1000+48/-0 Hrs test at 105 ℃ without rated working voltage. And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurement shall be made. 在不施加额定工作电压状态下，将电容放置到 105℃烤箱中放置 1000+48/-0 小时，然后在标准大气条件下放置 4 小时后测量。

Specification 规格值：

Capacitance Change 容量变化	Within ±30% of initial value 在初始值的±30%以内
Tan δ 损耗角	Less than 300% of specified value 小于 3 倍规格值
Leakage Current 漏电流	Within specified value 规格值范围内
Physical 外观	No broken and undamaged 无破损或损坏

4. Humidity Test 恒定温湿

Conditions 测试条件：

Capacitors shall be exposed for 1000+48/-0 hrs in an atmosphere of 90~95%RH at 60±3℃. And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurement shall be made. 将电容放在温度为 60±3℃、湿度为 90~95%RH 的环境中 1000+48/-0 小时，然后在标准大气条件下放置 4 小时后测量。

Specification 规格值：

Capacitance Change 容量变化	Within ±10% of initial value 在初始值的±10%以内
Tan δ 损耗角	Within specified value 规格值范围内
Leakage Current 漏电流	Within specified value 规格值范围内
Physical 外观	No broken and undamaged 无破损或损坏

5. Low Temperature Test 低温特性

Conditions 测试条件：

Capacitors are placed at -55±3℃ for 96±4 hrs. And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurement shall be made. 将电容放在温度为-55±3℃的环境中 96±4 小时，然后在标准大气条件下放置 4 小时后测量。

Specification 规格值：

Capacitance Change 容量变化	Within ±10% of initial value 在初始值的±10%以内
Tan δ 损耗角	Within specified value 规格值范围内
Leakage Current 漏电流	Within specified value 规格值范围内
Physical 外观	No broken and undamaged 无破损或损坏

6. Vibration Test 振动测试

Conditions 测试条件：

Fix it at the point 4mm or less form body. For ones of 12.5mm or more in diameter or 25mm or more length, use separate fixture. Direction and during of vibration: 3 orthogonal directions mutually each for 2 hrs. Frequency: 10 to 55 Hz reciprocation for 1 min. Total amplitude: 1.5mm. 固定点距离本体小于 4mm，当直径大于 25mm 或者高度高于 12.5mm 时，使用夹具固定。振动条件为：X、Y、Z 轴各 2 小时，频率变化为 1 分钟内有 10Hz 到 55Hz 再到 10Hz， 振幅为 1.5mm。

Specification 规格值：

Capacitance Change 容量变化	Within ±10% of initial value 在初始值的±10%以内
Tan δ 损耗角	Within specified value 规格值范围内
Leakage Current 漏电流	Within specified value 规格值范围内
Physical 外观	No broken and undamaged 无破损或损坏

7. Surge Voltage Test 浪涌电压

Conditions 测试条件：

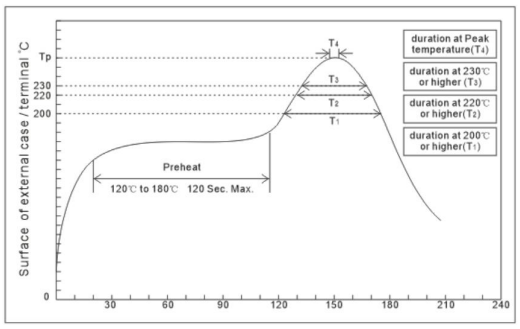
The Capacitor shall be subjected to 1000 cycles at room temperature. Protective series resistor a 1KΩ each consisting of a charge period of 30±5 seconds, followed by discharge period of approximately 5.5 minutes. 在室温下通过 1K 欧姆的保护电阻，施加浪涌电压 30±5 秒，放点 5.5 分钟。

Specification 规格值：

Capacitance Change 容量变化	Within ±20% of initial value 在初始值的±20%以内
Tan δ 损耗角	Less than 175% of specified value 小于 1.75 倍规格值
Leakage Current 漏电流	Within specified value 规格值范围内
Physical 外观	No broken and undamaged 无破损或损坏

8. Solder Heat-Resistance Test 耐焊接热

Conditions 测试条件：

IR Reflow 红外加热回流焊：(Refer to No. 7 page)	Solder iron method 手工焊接：
	a). Bit temperature 温度：350±5℃ b).Application time of solder Iron 焊接时间：3+1/-0sec.

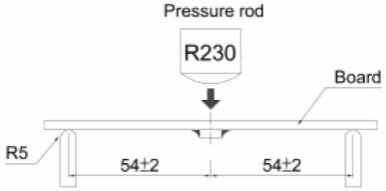
Specification 规格值：

Capacitance Change 容量变化	Within ±10% of initial value 在初始值的±10%以内
Tan δ 损耗角	Within specified value 规格值范围内
Leakage Current 漏电流	Within specified value 规格值范围内
Physical 外观	No broken and undamaged 无破损或损坏

9. Mechanical Characteristics Test

Conditions 测试条件：

Apply pressure in the direction of the arrow at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60s. The board shall be the test board “B” as specified in JIS C0051:2002. If the land area differs, the shall be specified clearly in the next item. 以每秒 0.5mm 的速率按压 PCB 至弯曲 2mm，并保持 60 秒。PCB 按照 JIS C 0051:2002 标准 B 进行测试，如果面积不同则在下一次测试中更换。



Specification 规格值：

Without mechanical damage such as breaks, Electrical characteristics shall be satisfied. If there are electrodes on both surfaces, above requirements shall be satisfied on whichever surface it may be fixated on. 没有机械损伤，电器特性良好，两电极仍在，则满足要求。

10. Solderability Test

After the lead wire fully immersed in the solder for 2±0.5secs at a temperature for 245±5℃, the solder coating must be more than 95%. 将引线插入 245±5℃的焊锡中 2±0.5secs，焊锡覆盖超过 95%。

11. Venting Test

Conditions 测试条件：

Applicable to the capacitors with case size is 8x10mm and larger. 适用于 8x10mm 以上制品。

a. AC test 交流电压测试法

The capacitor shall be connected across a applying 50 or 60Hz AC which is 0.7 times of rated voltage or 250Vrms AC whichever is the lower. 取 0.7 倍额定工作电压或 250V 交流电压中较小者，将其施加到电容两端。

b. DC test 直流电压测试法

Applying inverse DC rated voltage with current to the capacitor. Where case diameter:
按照以下直径要求对电容施加反向直流电压及电流：
D≤22.4mm: 1A DC max.
D>22.4mm: 10A DC max.

Note:

1). When the pressure relief vent operated, the capacitor shall avoid any danger of fire or explosion of capacitor element or cover. 当防爆阀开启时，不应有发生燃烧。

2). When the pressure relief device does not open with the voltage applied over 30 minutes, the test is considered to be passed. 当施加电压超过 30 分钟防爆阀仍未开启，则认为测试通过。

Important information for application 铝电解电容使用注意事项

1.1. Aluminum electrolytic capacitors are polarized. Make sure of the polarity, if used in reverse polarity, the circuit life may be shortened or the capacitor may be damaged. When the polarity in a circuit sometimes can be reversed or unknown, a bi-polar capacitor shall be used. 铝电解电容是有极性的，请按正确的极性使用。当反向接入线路时，会导致回路短路或电容损坏。当回路的有可能反向或极性不明时，请使用无极性电容。

1.2. Do not apply DC voltage, which exceeds the rated voltage of the capacitor and not be reverse voltage. If a voltage exceeding the capacitor's voltage rating is applied, the capacitor may be damaged as leakage current increase. Using capacitors at recommended working voltage prolongs capacitor life. The surge voltage rating is the maximum DC over-voltage to which the capacitors may be subjected of short periods. 不要施加反向电压或超过额定电压的直流电压，当施加电压超过额定电压时，漏电流会显著增加导致电容损坏。推荐在额定电压下使用以保证寿命。浪涌电压是电容能短时间承受的最高电压。

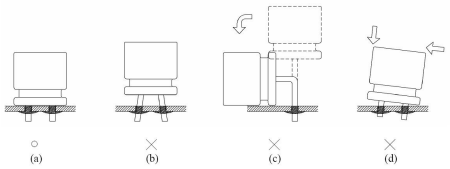
1.3. Use capacitors within rated ripple current. If excessive ripple current is applied on the capacitor, which will result in generating excessive heat inside, reducing capacitance and shortening life of capacitor. The combined value of DC voltage and the peak AC voltage shall not exceed the rated voltage. 纹波电流应小于额定值。施加纹波电流超过额定值后，会导致电容器本体过热，容量下降，寿命缩短。所施加纹波电压的峰值与直流电压之和应小于额定工作电压。

1.4. Use the capacitor according to the specified operating temperature range. If used the capacitor outside the maximum rated temperature will considerably shorten the life or cause the capacitor to vent. Usage at room ambient will ensure longer life. It is generally known that the life doubles for each 10℃ decrease in temperature. 请在额定温度范围内使用电容器。如果在上限温度以上使用电容器将会导致使用寿命大大缩短或防爆阀开启，在室温下使用会保证更长的使用寿命。科学统计，使用环境温度每下降 10 摄氏度其使用寿命增加一倍。

1.5. Leakage current tends to increase when aluminum capacitors have been stored for long period of time. The higher the storage temperature, the higher the leakage current increase. Please take caution when selecting the storage location. The leakage current will decrease gradually as voltage is applied to the capacitor. The capacitor is subjected to aging before using where increased leakage current may cause problems in the circuit. 当电容器长期贮存后，其漏电流会升高，贮存温度越高，漏电流上升愈快。因此应注意贮存环境，在电容器上施加电压后，漏电值将不断下降，如果漏电流值上升对电路有不良影响，请在使用前充电处理。

1.6. The capacitor is not suitable for a circuit in which charge and discharge are frequently repeated. The capacitance value may drop by forming oxide layer on the cathode foil, or the capacitor may be damaged by generating heat due to continuous rapid charge and discharge. 电容不适合用在频繁充放电的电路。容量会由于负极氧化膜的氧化而容量减小，或电容通过充放电产生的热量而损坏。

1.7. Defective mounting on PCB and improper external strength applied on the lead wires or case body after soldering (see below drawings) may damage inside structure of the capacitor and may cause short circuit, high leakage current or leakage problem. 不良的安装或者对引线施加应力会使产品内部结构损坏，导致漏电流高或者漏液问题。



a). Good soldering 焊接良好
b). Hole-to-hole space board differs from the lead space of lead wires. PCB 孔与孔之间的间距与引线间距不同
c). Lead wires are bent after soldering. 不要弯曲引线
d). Case body doesn't stand vertical on board after soldering, Do not bend or twist the capacitor's body after soldering. 当焊接不平时，不要弯曲或扭曲电容本体。

1.8. During soldering process, secondary shrinkage or sleeve crack may occur when soldering temperature is too high or soldering time is too long. 在进行浸锡或焊接时，其胶管可能因焊接时间过长、温度过高为发生破裂或者二次收缩。

1.9. The aluminum electrolyte capacitors should be fee halogenated solvents during board cleaning after soldering. Use solvent proof capacitors when halogenated solvents are used. After cleaned with the solvent which should proof the quality of capacitors, the capacitors should not be kept in solvent environments of non-ventilated places. Let the capacitors after cleaning dry with hot blast fully above 10mins and the temperature of hot blast should not be over than specified upper limit of capacitors. 铝电解电容器不能使用卤化有机物系列的清洗剂进行清洗。如果必须清洗，请使用能够保证电容器质量的清洗剂。对于能够保证清洗质量的清洗剂，清洗后请不要在清洗溶液或者密封容器中保管。清洗后的电容器和电路板一起在热风下干燥 10 分钟以上，热风的温度不可高于电容器的上限温度。

1.10. Do not use halogenated adhesives and coating materials to fix aluminum electrolytic capacitors. Do not cover up all the sealing area of capacitors with adhesives, fixative or coating materials, make coverage only partial. 请不要使用含有卤化有机物系列的固定剂及涂层剂。更不要让固定剂或涂层剂将电容器封口部位全部封住。

1.11. we recommend store with the temperature range between 15 to 35℃ , and the relative humidity of 75% or less , without direct sunshine and store in the package states if possible. Storage time within 12 month after shipment. If storage time more than 12 month, please check the electrical characteristics and solderability before using. 推荐储存在 5~35℃，相对湿度小于 75%RH 无阳光直射的环境。产品出厂储存期限为 12 个月。如果储存时间超过 12 个月，请检查电气特性及可焊性。

1.12. Please consult with a local industrial waste disposal specialist when disposing of aluminum electrolytic capacitors. 当电容器需要报废时，请联系当地的工业废弃物处理商。

1.13. For further details, please refer to EIAJ RCR-2367B (Guideline of notabilia for aluminum electrolytic capacitors for use in electronic equipment).更多详情，请参阅 EIAJ RCR-2367B。

与环境有关的物质不使用声明

兹证明以下各项：

我公司在此保证所有包括但不限于外围设备、附件或包装，交付给贵公司（包括您的子公司）产品，直接或间接不含下列任何物质。
遵守现行的 RoHS 指令 2011/65/EU，不作任何豁免。
“REACH 条例”第 191 条对所有商品和(或)材料不含有非常令人关切的物质(SVHC)作了定义。
遵守第 2006/22/EC 号指令(全氟辛酸/全氟辛烷磺酸)
遵守第 2005/84/EC(16 P)号指令
符合 Zek01.2-08（PAHs）的符合性
符合 SONYSS-00259V16 的要求

Declaration of Non-use of environment-related Substance

We are hereby to certify the followings:

Our company hereby warrants and guarantees that all of or part of products, including, but not limited to, the peripherals, accessories or package, delivered to your company (including your subsidiaries and affiliated companies) directly or indirectly by our company are free from any of the substances listed below.

☒ Compliance with the current RoHS Directive 2011/65/EU without any exemption.

☒ All merchandise and/or material do not contain Substances of Very High Concern (SVHC) are defined in Article 191 of REACH regulation.

☒ Compliance with Directive 2006/22/EC (PFOA/PFOS)

☒ Compliance with Directive 2005/84/EC (16P)

☒ Compliance with ZEK 01.2-08 (PAHs)

☒ Compliance with SONY SS-00259 V16