This product is completed the Lead-free & RoHS2.0 & Halogen-free.

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承认书 **No.**	**RD20240907001**

Customer :（客户） 鑫星海

SPECIFICATION FOR APPROVAL

承 认 书

No.	客户编号 (Customer No.)		规格 Description	ΦD x L
1		PKRM-025V221MG090	25V220μF	10X 9

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			客户签章栏 APPROVEDSIGNATUREFORCUSTOMER
核 准 APPROVAL	确 认 CHECK	作 成 DESIGN	承 认 APPROVED BY
R & D Sep.07.2024	R & D Sep.07.2024	R & D Sep.07.2024	

Please return one copy with your authorized signature when you accept these specifications.

DJS-SD-0013

Make/revised curriculum vitae 制订/修订履历表

Version 版本	Date 日期	修订者 Res.	Content 内容	Checked 确认
A0	2024-9-7	邝秀兰	新建	何东石

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1.Scope 概述

本承认书规定了 KRM 系列径向引线引出铝电解电容器的技术规范

This specification covers“KRM series” miniature single-ended aluminium electrolytic capacitors.

2.Operating Temperature Range 使用温度范围

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.Characteristics 特性

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℃

大气压 Air pressure：86kpa to 106kpa

4.Frequency Coefficient for Ripple Current 频率系数

Rated voltage (v)	Frequency (Hz) / Capacitance(μF)	50•60	120	1K	10K	100K
6.3 to 100	CAP≤10	0.80	1.00	1.30	1.65	1.70
	10<CAP≤100	0.80	1.00	1.23	1.48	1.53
	100<CAP≤1000	0.80	1.00	1.16	1.35	1.38
	1000<CAP	0.80	1.00	1.11	1.25	1.28
160 to 500	0.47 to 330	0.80	1.00	1.30	1.40	1.60

5.Coefficient of Temperature for Ripple Current 纹波电流温度系数

Temperature (℃) / Rated voltage (V)	70 or less	85	105
6.3 to 100	2.00	1.70	1.00
160 to 500	1.80	1.40	1.00

NOTE:Temperature coefficient is not used in life formula but for reference.

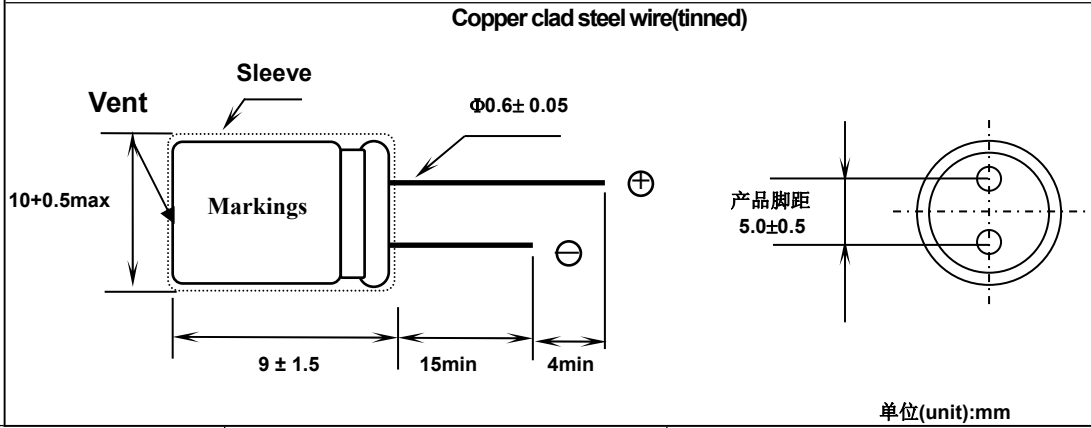
注：温度系数不使用在寿命计算公式中，只能作为参考.

6.Max. Impedance Ratio 阻抗比

Low temperature characteristics	Rated voltage(V)		6.3	10	16	25	35	50	63	100	160-250	350-500	120Hz
	Impedance ratio (max)	$Z_{(-25℃)}/ Z_{(+20℃)}$	4	3	2	2	2	2	2	2	3	3	
		$Z_{(-40℃)}/ Z_{(+20℃)}$	8	6	4	3	3	3	3	3	8	6	

7.Characteristics Table 特性表格

铝电解电容器制造仕样书 Aluminum Electrolytic Capacitor Specification				
制品名 Series	PKRM	25 V 220 μ F	制品记号 Part No.	PKRM-025V221MG090
客户型号 Customer No.			公称尺寸 Case size	ΦD 10 X L 9
规格 Specification	项目 Items		标准 Standard	
	使用温度范围 Operating temperature range		- 55~ + 105 ℃	
	容量偏差 Capacitance tolerance		±20% （20℃ ,120Hz ）	
	损耗因子 Dissipation factor (MAX)		小于(Less than ） 14% （20℃ ,120Hz ）	
	漏电流 Leakage current (MAX)		小于(Less than ） 55μA （20℃ 25V 2 min ）	
	ESR值 ESR(MAX)		/	
	纹波电流 Ripple current (MAX)		277mArms （120Hz ,105℃）	
	负荷寿命 Load life		2000 hrs	
产品外形 Outline	外形尺寸 （ Dimensions ）			

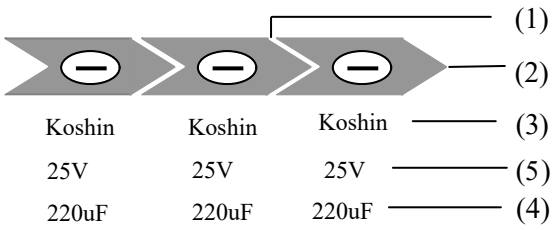


核 准 APPROVAL	确 认 CHECK	作 成 DESIGN
R&D Sep.07.2024	R&D	R&D

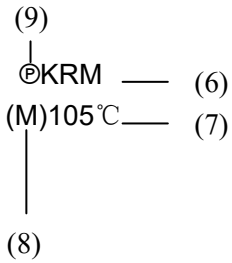
8．Marking 标识

8.1Marking on capacitors include:

在电容器本体上应注明如下内容:



Front Side (套管正面）



Back Side (套管反面）

序号 NO.	项目 ITEM
1	电流方向 direction of current
2	负极线 Polarity
3	牌名 Brand
4	标称容量 Capacity
5	标称电压 Voltage
6	系列 Series
7	温度 Temp
8	容差代码 Tolerance
9	ⓟ/ 套管材质 Sleeve material (PET)

8.2 Marking color 标记颜色：

Sleeve color: Black PET

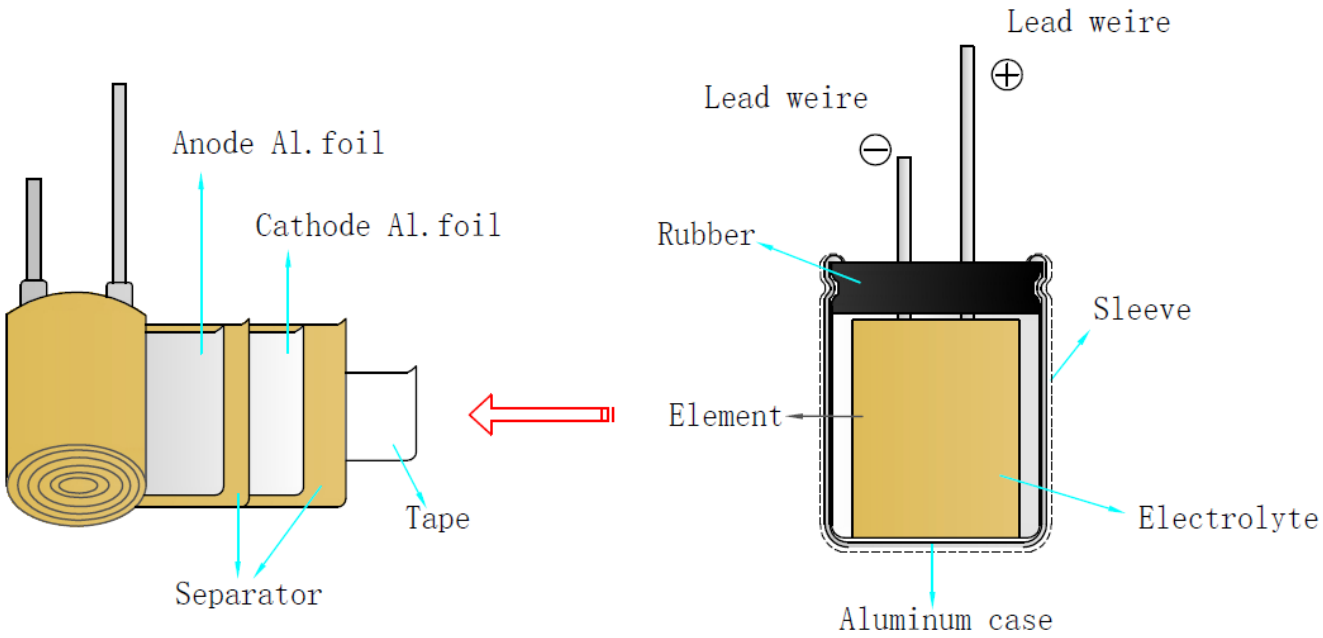
套管颜色：黑色 PET

Marking color: White

标记颜色：白色

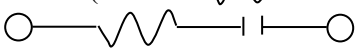
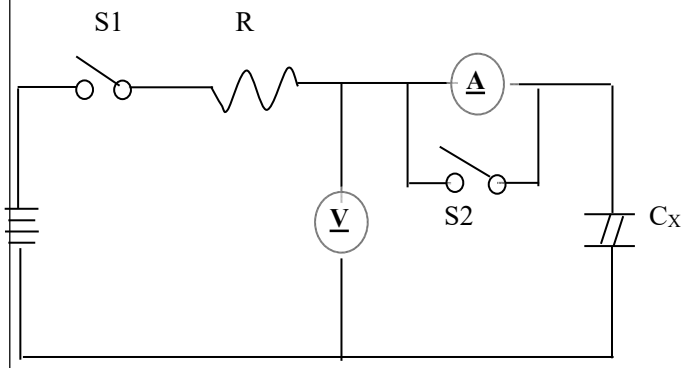
9.Inner conformation drawing and inner constitute parts(curtness drawing)

内部构造图以及内部构成部品（简略图）



构成部品(Composing Parts)	材质(Material)
正箔(Anode Foil)	铝箔(Aluminum Foil)
负箔(Cathode Foil)	铝箔(Aluminum Foil)
电解纸(Paper)	纤维素(Cellulose)
引线（Lead Wire）	镀锡铜包钢线(Fe+Al+Cu+Sn)
引线（Lead Wire）	镀锡铜包钢线(Fe+Al+Cu+Sn)
封口材(Seal)	橡胶(Rubber)
铝壳(Case)	铝(Aluminum)
套管(Sleeve)	PET
电解液(Electrolyte)	EG 溶液
素子专用胶带（Tape）	OPP

10. Electrical characteristics 电气特性:

<table>
<tr><th>NO.</th><th>ITEM 项目</th><th>TEST METHOD 测试方法</th><th>SPECIFICATION 规格</th></tr>
<tr><td>10.1</td><td>Rated voltage
额定电压</td><td>电压：直流电压值+交流电压峰值≤额定电压
Voltage: DC voltage + peak ripple voltage≤Rated voltage</td><td>See 6.Characteristics Table
见 6.特性表</td></tr>
<tr><td>10.2</td><td>Capacitance
静电容量</td><td rowspan="2">1.Measuring frequency:120Hz±12Hz
测定频率:120Hz±12Hz
2.Measuring voltage:≤0.5Vrms+0.5VDC~2.0VDC
测定电压:≤0.5Vrms+0.5VDC~2.0VDC
3.Measuring circuit: ()
测定电路: ()</td><td>Capacitance tolerance : ±20%
电容量允许偏差范围 ：±20%</td></tr>
<tr><td>10.3</td><td>Dissipation factor
散逸因素
（损失角）</td><td>See 6.Characteristics Table
见 6.特性表</td></tr>
<tr><td>10.4</td><td>Leakage current
泄漏电流</td><td>DC leakage current shall be measured after 1~2minutes application of the DC rated working voltage through the 1000Ω resistor at 20℃
在 20℃通过 1000Ω的电阻施加直流工作电压 1~2 分钟后测定直流泄漏电流


R: 1000Ω
A: DC current meter
直流电流计
V: DC voltage meter
直流电压计
S1:Switch 开关
S2:Switch for protect of current meter
直流电流计的保护开关
C_X: Testing capacitor
测试电容</td><td>6.3V-100V
Less than 0.01CV or 3μA, whichever is large（at 20℃, 2 minutes)
6.3V-100V
小于或等于 0.01CV 或者 3μA，取较大值（在 20℃，充电 2 分钟后测试)

160V-500V
Less than 0.03CV or 3μA, whichever is large（at 20℃, 1 minutes)
160V-500V
小于或等于 0.03CV 或者 3μA，取较大值（在 20℃，充电 1 分钟后测试)

I：Leakage current(μA)
I：漏电流（μA）
C：Capacitance(μF)
C：容量（μF）
V：Rated voltage (V)
V：额定工作电压（V）</td></tr>
<tr><td>10.5</td><td>Temperature characteristics
温度特性</td><td>
<table>
<tr><th>STEP
步骤</th><th>TEMPERATURE
温度</th><th>STORAGE TIME
放置时间</th></tr>
<tr><td>1</td><td>20℃±2℃</td><td>30minutes</td></tr>
<tr><td>2</td><td>-40℃±3℃ -55℃±3℃</td><td>2hours</td></tr>
<tr><td>3</td><td>20℃±2℃</td><td>4hours</td></tr>
<tr><td>4</td><td>105℃±2℃</td><td>2hours</td></tr>
</table>
Step1.Measure the capacitance and impedance.
测定静电容量及阻抗.(Z , 20℃,120Hz±2HZ)
Step2. Measure the impedance at thermal balance after 2 hours.
达到热平衡 2 小时后测定阻抗。
(Z , -40℃ -25℃ 120Hz±2HZ)
Step4.Measure the leakage current at thermal balance after 2 hours
达到热平衡 2 小时后测定漏电流。
</td><td>Step2.
Low temperature impedance stability
Less than specified value.
低温稳定阻抗比：低于规定值。
Step4.
Capacitance change:
within ± 10% of the initial measured value.
静电容量变化：最初测量值的±10%以内。
Dissipation factor:
Less than specified value.
损失角：低于规定值。</td></tr>
</table>

<table>
<tr><th>NO.</th><th>ITEM
项目</th><th>TEST METHOD 测试方法</th><th>SPECIFICATION 规格</th></tr>
<tr><td>10.6</td><td>Surge test
突破试验</td><td>Rated surge voltage shall be applied (switch on)for 30±5 second and then shall be applied (switch off) with discharge for 5.5min at room temperature. This cycle shall be repeated for 1000 cycles. Duration of one cycle is 6±0.5 minutes

在常温下施加（合上开关）额定涌浪电压 30±5 秒，然后停止施加（断开开关）涌浪电压并且放电 5.5 分钟。这个循环要重复 1000 次。以 6±0.5 分钟为一个循环周期
Surge voltage
浪涌电压
<table>
<tr><td>Working voltage(V)
工作电压(V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td></tr>
<tr><td>Surge voltage (V)
浪涌电压(V)</td><td>8</td><td>13</td><td>20</td><td>32</td><td>44</td><td>63</td><td>79</td><td>100</td><td>125</td></tr>
</table>
</td><td>Capacitance change:
within±15% of the initial specified value.
静电容量变化：
最初规定值的±15%以内。

Dissipation factor:
Less than specified value.
损失角：低于最初规定值。
Leakage current:
Within initial specified value.
泄漏电流：在最初规定值以内</td></tr>
</table>

11.Mechanical characteristics 机械特性:

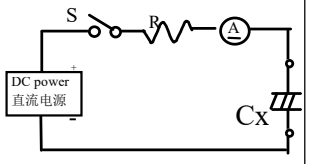
<table>
<tr><th>NO.</th><th>ITEM 项目</th><th>TEST METHOD 测试方法</th><th>SPECIFICATION 规格</th></tr>
<tr><td>11.1</td><td>Lead strength
导针强度</td><td>(A)Tensile strength 拉伸强度：
wire lead terminal 导针型：
<table>
<tr><td>d(mm)</td><td>≤0.5</td><td>0.5<d≤0.8</td><td>0.8＜d≤1.25</td></tr>
<tr><td>load(kg)</td><td>0.5</td><td>1.0</td><td>2.0</td></tr>
</table>
The capacitor shall withstand the constant tensile force specified between the body and each lead for 10seconds without damage either mechanical or electrical.
电容器各端子要承受规定的荷重 10 秒，不能有电气或机械特性上的损伤。

（B）Bending strength 弯曲强度：
wire lead terminal 导针型：
<table>
<tr><td>d(mm)</td><td>≤0.5</td><td>0.5<d≤0.8</td><td>0.8＜d≤1.25</td></tr>
<tr><td>load(kg)</td><td>0.5</td><td>0.5</td><td>1.0</td></tr>
</table>
with the capacitor in a vertical position apply the load specified axially to each lead. The capacitor shall be rotated slowly from the vertical to the horizontal position, back to the vertical position. The 90° in the opposite direction and back the original position. Performance of capacitor shall not have change and leads shall be undamaged.
给在竖直位置的电容器的每一端子以轴方向施加规定荷重，慢慢将电容器由竖直位置转至水平位置。然后向相反方向弯曲 90°，再回到原来位置。电容器性能不能有变化及端子不能有损伤。</td><td>When the capacitance is measured, there shall be no intermittent contacts, or open-or short-circuiting.
测定静电容量时，不能有接触不良，开路或短路。
There shall be no such mechanical damage as terminal damage etc.
不能有如端子受损之类的机械特性上的损伤。</td></tr>
</table>

NO.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格
11.2	Vibration resistance 耐振性	The frequency of the vibration shall vary uniformly within the range 10 to 55 Hz with the amplitude of 0.75mm, completing the cycle in the internal of one minute. The capacitor shall be securely mounted by its leads with hold the body of capacitor. The capacitor shall be vibrated in three mutually perpendicular directions for a period of 2 hours in each direction. 振动频率要均匀，范围为 10Hz 到 55Hz，振幅为 0.75mm，在 1 分钟内完成该 循环。 电容器将由端子牢固地固定。 电容器会被向三个互相垂直的方向每个方向振动 2 小时。	Capacitance: no unsteady. 静电容量：要稳定。 Appearance: no abnormal. 外观：无异常。 Capacitance change: within±5% of initial measured value. 容量变化：最初规定值的±5%之内。
11.3	Solder -ability 焊锡性	The leads are dipped in the solder bath of Sn at 245℃±5℃for 2±0.5 seconds. The dipping depth should be set at 1.5~2.0 mm. 端子浸没在 245℃±5℃的锡中 2±0.5 秒。浸没深度设定为 1.5~2.0 mm.	The solder alloy shall cover the 95% or more of dipped lead's area. 锡液要覆盖导针浸入表面积的 95%以上。

12. Reliability 信赖度:

NO.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格
12.1	Soldering heat resistance 焊锡耐热性	The leads immerse in the solder bath of Sn at 260℃±5℃ for 10±1seconds until a distance of 1.5~2.0mm from the case. 导针在 260℃±5℃的锡中浸没至离本体 1.5~2.0mm 的地方 10±1 秒钟.	No visible damage or leakage of electrolyte. 无明显的损伤或电解液漏出。 Capacitance change: Within ± 5% of the initial measured value 容量变化：最初测定值的±5%以内。 Tan δ: Less than specified value. 损失角：低于规定值的。 Leakage current: Less than specified value 泄漏电流：低于规定值。
12.2	Moisture Resistance 耐湿性 稳定状态	Subject the capacitor to 40℃±2℃ and 90% to 95% relative humidity for 504 hours. 电容器在 40℃±2℃ 及相对湿度 90% 到 95%的条件下经历 504 小时.	Capacitance change: Within ± 20% of the initial measured value 容量变化:最初测定值的 20%以内. Tan δ: Less than 1.2 specified value. 损失角：低于 1.2 倍规定值。 Leakage current: Less than specified value 泄漏电流：低于规定值。

NO.	ITEM项目	TEST METHOD 测试方法	SPECIFICATION 规格
12.3	Load life 高温负荷	After 2000 hours continuous application of DC rated working voltage and rated ripple current at 105℃±2℃, Measurements shall be performed after 16 hours exposed at room temperature. 在105℃±2℃环境当中连续施加直流定格电压与额定纹波电流2000小时后，测试在室温漏置16小时后进行。	Capacitance change: within±20% of the initial specified value. 静电容量变化： 最初规定值的±20%以内。 Dissipation factor: Less than 200% of the initial specified value. 损失角：低于最初规定值的200%。 Leakage current: Within initial specified value. 泄漏电流：在最初规定值以内
12.4	Shelf life 高温无负荷	After storage for 1000 hours at 105℃±2℃ without voltage application ,Measurements shall be performed after exposed for 16 hrs at room temperature after application of Testing 在105℃±2℃环境当中不施加直流定格电压1000小时后，测试在室温漏置16小时，直接进行测试。	
12.5	Storage at low temperature 低温贮存	The capacitor shall be stored at temperature of -55℃±3℃ for 16 hours, during which time be subjected to standard atmospheric conditions for 16 hours or more. After which measurements shall be made. 电容器在-55℃±3℃环境当中贮存16小时，其间不施加电压。之后，在标准大气压中漏置16小时以上，然后进行测试。	Capacitance change: Within ± 10% of the initial value. 容量变化：最初值的±10%以内 Tan δ :less than specified value 损失角：低于规定值。 Leakage current: Less than specified value. 泄漏电流:低于规定值。 Appearance :no Abnormal. 外观：无异常。
12.6	Pressure relief 防爆试验	DC test 直流测试 Send the following electricity while applying the inverse voltage. 施加反向电压时通入下记电流: Where case size(外壳尺寸(D直径) D≤22.4mm:1 A d.c.max D＞ 22.4mm:10 A d.c.max Note: 1.This requirement applies to capacitors with a diameter of 6 mm or more. 2. When the pressure relief device does not open even 30 minutes after commencement of test, the test may be ended. 注：1、此要求对于直径6MM或以上之电容器适用。 2、试验开始，经30分钟后防爆装置仍不动作，试验终止。	DC test circuit 直流试验回路  S : Switch 开关 Ⓐ: DC current meter 直流电流计 Cx: testing capacitor 供试电容器 The pressure relief device shall open in such a way as to avoid any damage of fire or explosion of capacitor elements(terminal and metal foil etc.) or cover. 防爆装置将会动作(因此要防止金属片飞溅，爆炸及火灾的发生)。

13.Koshin Part No 东佳料号

Part Number System 编码原则

PKRM-025V 221 M G 090

① ② ③ ④ ⑤ ⑥

(1) Series 系列

KC3	K3S	K3N	KCL	KR2	KRJ	KRN	KLS	KZL	KSH	KSJ	KLJ	KR1	KLP	KRM	KHP	KAG	KZM	KHT	KRB	KZB
KBP	KRL	KLL	KJH	KLH	KZH	KCH	KZF	KRH	KLF	KLG	KLW	KLE	KRF	K2A	K3A	KA3	KBD			

(2) Voltage(WV)电压

Voltage(WV)	4	6.3	10	16	25	35	50	63	80	100	110	115
Code	004	6R3	010	016	025	035	050	063	080	100	110	115

Voltage(WV)	125	160	165	200	220	250	330	350	400	450	500	550
Code	125	160	165	200	220	250	330	350	400	450	500	550

(3) Capacitance 容量

Capacitance is show in microfarads (μF)

μF	0.1	0.47	1	2.2	22	220	2200	22000	21～25(KLT)
Code	0R1	R47	010	2R2	220	221	222	223	21T25

(4) Capacitance tolerance 容差

Tolerance %	±5	±10	±15	±20	-0 to +100	-0 to +20	-10 to +20	-10 to +100
Code	J	K	L	M	P	R	V	W

Tolerance %	-15 to +20	-20 to +40	-20 to +80	-20 to +5	+5 to +20	-10 to +5	-30 to +20	-15 to +5
Code	N	X	E	A	B	C	D	F

Diameter	3	4	5	6	6.3	7	8	10	12.5	13	16	18	20	22	25	30	34
Code	A	B	C	D	E	1E	F	G	H	I	J	K	L	M	N	O	P

(5) Case（D：mm）直径

Diameter	35	36.5	40	42	45	46	50	51	52.3	55	60	63.5	65.5	76	90	100
Code	Q	R	S	T	U	V	W	X	Y	Z	1A	1B	1C	1D	1E	1F

Part Number System 编码原则

(6) Case（L：mm）高度

Description	5	7	9	12.5	25	35.5	40	100	110	111	120	130	140	150	220	250
Code	050	070	090	125	250	355	400	A00	A10	A11	A20	A30	A40	A50	B20	B50

(7) Lead treatment 加工方式

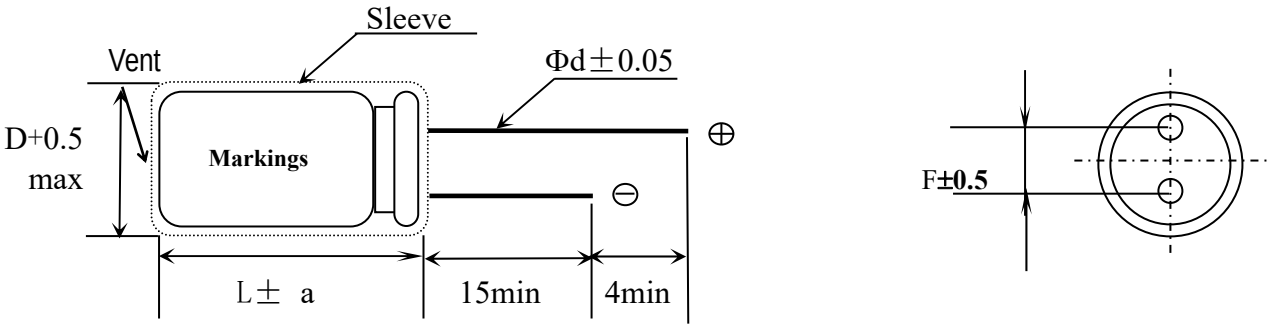
Description	Taping(F:2.5mm) Ammo Packing	Taping(F:3.5mm) Ammo Packing	Taping(F:5.0mm) Ammo Packing	Taping(F7.5mm) Ammo Packing
Code	T2.5(T/A2.5)	T/A3.5	T/A5.0(S)	T/A7.5

Description	Lead cut		Lead forming cut			Lead forming cut	Lead forming cut	Frog forming cut
Code	F10	L/C	F4	F12	F/C	S1	F/S	F/W

Note：PET sleeve capacitors adding “P” in Part No. System before.

备注：使用 PET 材质套管的电容在料号前加“P”

14. Product processing diagram 产品加工示意图:

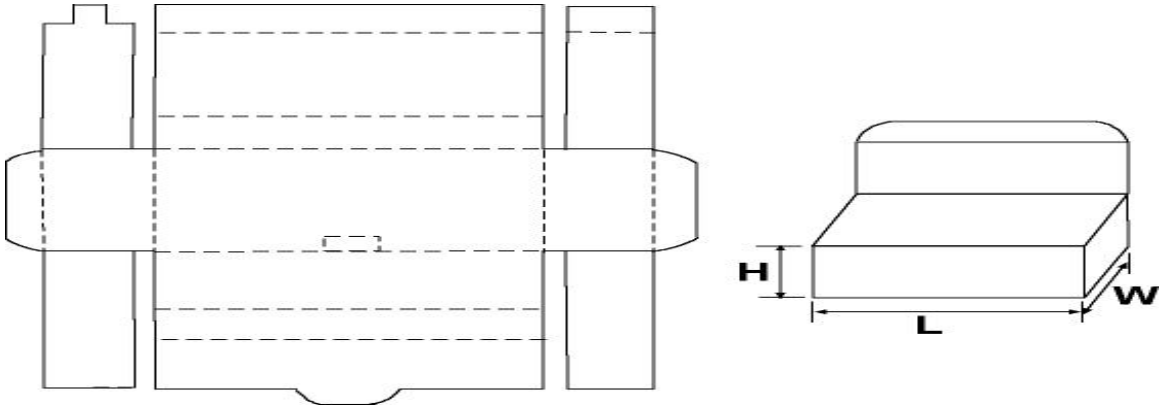


ΦD	5	6.3	8	10	12.5	16	18	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	12.0
Φd	0.5	0.5	0.6/0.5	0.6	0.6	0.8	0.8	0.8/1.0	0.8/1.0
a	1.5			1.5for L16max 2.0for L20min					

15. Packing 包装

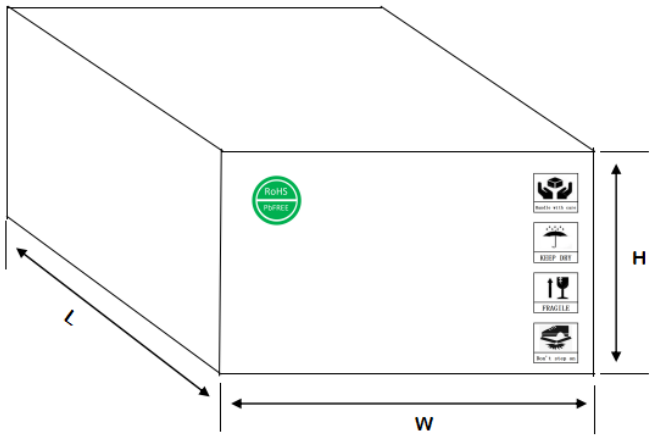
Packing Standards 包装标准: standards of the carton 纸箱标准

1. Standards of the inner box of bulk products 散装内盒标准.



规　格 Specification	尺寸 Size±2 (mm) L×W×H	包装形式 Packing form	材 质 Textures	内袋数量 Quantity of inner bags(PCS)	内盒数量 Quantity of inner boxes(PCS)
SR-286B	286×227×121	袋装 In bags	A3A	250	2K

2．散装与编带外箱标准 Standards of the outer box of bulk and tapping products.



规　格 Specification	尺寸 Size ±2 (mm) L×W×H	包装形式 Packing form	材 质 Textures	外箱数量 Quantity of outer boxes(PCS)
SW-470C	470X290X240	散装 bulk	K=K	8K

3．标签 Label:

系列 series	尺寸 Size(mm)	样图
标签 Label	90×40	如下

Koshin Electrolytic Capacitors

OPN: ××××

③ ⑧

Type: ⑤⑥⑦ Qty: ⑨ pcs

CPN: ④ 生产日期:

① ②

KS2020011302460

①客户名 Customer name ⑥标称电压 Voltage

②传票编号 Work order number Lot NO. ⑦标称容量 Capacity

③本厂 PART No. Koshin Part No. ⑧产品尺寸 Size

④客户的 PART No. Customer Part No. ⑨数量 Quantity

⑤系列 Series

②制造传票”上的编号 Lot NO.：

“制造传票”上的编号 编码原则为：产品类型+“-”+年份+月份+日期+工单流水号+“-”+制造传票流水号

1、产品类型：2511 液态产品，2513 固态产品，2515 SMD 产品

2、年份由 2 位数组成，例：2022 年用“22”表示，2023 年用“23”表示，依此类推。

3、月份由 2 位数组成，例：1 月份用“01”表示，2 月份用“02”表示，依此类推。

4、日期由 2 位数组成，例：1 号用“01”表示，10 号用“10”表示，依此类推。

5、工单流水号由四位数组成，从 0001、0002、0003……编号。

6、制造传票流水号由两位数组成，从 01、02、03……编号。

铝电解电容器使用注意事项

Cautions for Using Aluminum Electrolytic Capacitors

1. 直流铝电解电容器应按正确的极性使用 DC aluminum electrolytic capacitors are normally polarized
   当直流铝电解电容器按反极性接入电路时，电容器会导致电子线路短路，由此产生的电流会引致电容器损坏。若电路中有可能在负引线施加正电压，请选无极性产品。
   When reverse voltage is applied on DC aluminum electrolytic capacitor ,the circuit will be short out and the capacitor will be damaged due to abnormal current flows through the capacitor.Please use non- polar types of capacitors when the positive voltage is applied on the cathode terminal.

2. 在额定工作电压以下使用 Use capacitor within rated voltage
   当电容器上所施加电压高于额定工作电压时，电容器的漏电流将上升，其电气特性将在短时内劣化直至损坏。请注意电压峰值勿超出额定工作电压。
   When capacitor is used at higher voltage than the rated voltage, leakage current increased,characteristics drastically deteriorated and damaged in a short period may occur as a result.Please take extra caution that the peak voltage should not exceed the rated voltage.

3. 作快速充放电使用 Sudden charge and discharge
   当常规电容器被用作快速充电用途,其使用寿命可能会因为容量下降,温度急剧上升等而缩减。
   When aluminum electrolytic capacitors for general purpose-use are employed in rapid charge and discharge application, its life expectancy may be shortened resulted from capacitance decrease, heat rise, etc.

4. 电容器储存 Storage of the capacitor
   ①请保管在室温 5～35℃，湿度 75%以下的环境。
   We recommend the following conditions for storage:
   Ambient temperature：5~35℃ ,Ambient humidity：<75%RH;
   a) 产品储存期限: ≤12 个月；
      Storage life: ≤ 12 months;
   b) **产品储存期限>12 个月时，需充电后再使用；**
      If storage life >12 months，the products need to be charged again before using;
   c) 存放时间超过 3 年的电解电容器应报废处理；
      If Storage time >three years, the products need to be discarded;
   d) 库存有效期以产品套管上印刷的时间开始计算；
      Expiry Date: calculating from the date marked on the sleeve;
   e) 请尽量以包装状态保管； Please keep capacitors in the original package;
   f) 请避免在以下环境下保管: Avoid storing the capacitors under such circumstances:
   ※ 溅水、高温高湿及结露的环境。 With water and oil or damp &dewing location.
   ※ 溅油、或者充满气体油成分的环境。 With gas and oil.
   ※ 充满酸性有毒气体（硫化氢，亚硫酸，亚硝酸，氯，溴，溴化甲烷等）的环境。
   With toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine and methane.
   ※ 直射阳光、臭氧、紫外线及放射线照射的环境。
   With direct sunlight, Ozone, ultraviolet rays or radiation.

5. 施加纹波电流应小于额定值 Use capacitor within rated ripple current

施加纹波电流超过额定值后，会导致电容器体过热，容量下降，寿命缩短。电容器上标注了额定电压，请将和直流电压叠加的纹波电压的峰值控制在额定工作电压以下。

If excessive ripple current is applied on the capacitor, excessive heat will be generated inside,the capacitance will be reduced and capacitor's life shall be shortened. Rated voltage has been marked on the capacitor; therefore, the peak value of the ripple voltage should be less than the rated voltage.

6. 使用环境温度 Ambient temperature

铝电解电容器的使用寿命会受到环境温度的影响。据科学统计，使用环境温度下降 10℃其使用寿命增加 1 倍。

Life of aluminum electrolytic capacitor is affected by the ambient temperature. It is generally known that the life doubles for each 10℃ decrease in temperature.

7. 引出线强度 Tensile strength of lead wire

当拉力施加到电容器引出线，该拉力将作用于电容器内部，这可能导致电容器内部短路，开路或漏电流上升。在电容器焊装到电路板，请勿强烈摇动电容器。

When a strong force is applied to the lead wires or terminals, stress is put on the internal connections, which may result in short circuit, open circuit or increased leakage current. So it is not advisable to bend or handle a capacitor after it has been soldered to the PC board.

8. 焊接过程耐热性 Heat resistance at the soldering process

铝电解电容器装至电路板进行浸焊或波峰焊时，其塑料套管可能因焊接时间过长、温度过高而发生破裂或二次收缩。

During soldering process, secondary shrinkage or sleeve crack may occur when soldering temperature is too high or soldering time is too long.

9. 电路板的安装孔孔距及安装位置 Hole pitch and position of PC board

电路板安装孔的设计应与产品说明书的引线脚距相一致，如果将电容器强行插入孔距不配套的电路板，那么会有应力作用于引出线，这可能导致短路或漏电流上升。

When designig a PC board , its hole pitch should be designed to coincide with the lead pitch(lead spacing) of the capacitor specified in the catalog or specifications.When a capacitor is forcibly inserted into an unmatched hole pitch,a force will put on the leads and which could result in a short circuit or increased leakage current.

10. 关于焊接以后的清洗 Cleaning after soldering

① 电容器不能用卤化有机物系列的清洗剂进行清洗。如果必须进行清洗，请使用能够保证电容器质量的清洗剂。

The aluminum electrolyte capacitors should be fee halogenated solvents during board cleaning after soldering. Use solvent proof capacitors when halogenated solvents are used.

② 对于能够保证电容器质量的清洗剂，清洗后请不要在清洗溶液或者密封容器中保管。清洗后的电容器请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规定上限温度。

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.

11. 关于固定剂以及镀层（涂层剂）Adhesives、fixative and coating materials(coating agent)

① 请不要使用含有卤化有机物系列的固定剂及镀层（涂层剂） 。

Do not use halogenated adhesives and coating materials to fix aluminum electrolytic capacitors.

② 请不要让固定剂及镀层（涂层剂）将电容器封口部位（端子一侧）全部封住。

Do not cover up all the sealing area of capacitors with adhesives 、 fixative or coating materials(coating agent), make coverage only partial

12. 认证证书 Certificates

① ISO 9001:2008 质量管理体系认证　　ISO 9001:2008 Certificate

② ISO 14001:2004 环境管理体系认证　　ISO 14001:2004 Certificate

③ ISO/TS 16949:2009 质量管理体系（汽车行业生产件与相关服务件）认证 ISO/TS 16949:2009 Certificate

④ OHSAS 18001:2007　职业健康安全管理体系认证　OHSAS 18001:2007 Certificate

※ 符合 RoHS2.0　　RoHS compliance

符合欧盟 RoHS2.0 的最新标准，若客户有特殊要求，按照双方签订的相关协议为准.

Accord with the latest standard of RoHS2.0 , if customers have any special requirments, according to the relevant agreements which signed by both parts.