

RX SERIES V-chip Aluminum Electrolytic Capacitors

承 认 书

APPROVED FOR SHEET

制品名称： 贴片型铝电解电容器
 Product name: V-chip Aluminum Electrolytic Capacitors
 发行日期
 Release Date: 2021-8-21
 料号:
 Material NO: RX SERIES V-chip Aluminum Electrolytic Capacitors
 产品系列:
 SERIES: RX1500UF10V90RV0042
 规格
 DESCRIPTION RX 10V1500 10*10.5

厂商承认 Supplier Approval			
核准 Approved by	审核 Checked by	拟制 Prepared By	
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客户承认 Customer Approval			(加盖公章)
核准 Approved by	会签 Countersign	审核 Checked by	

RX SERIES V-chip Aluminum Electrolytic Capacitors

序号 No	目录 INDEX	页 page
1	物料清单 PaRXs lists	3
2	范围: Scope	5
3	参考标准: Reference Standard	5
4	环境保护标准: Environmental Protection Standard	5
5	主要技术性能 SPECIFICATION	5~9
6	标识/尺寸: Marking , Dimensions	10
7	编带规格: Packaging Specifications	11
8	表面安装推荐尺寸: Surface Mount Type Recommended Land Pattern	12
9	符合 RoHS 及 REACH 法规: Conforming to RoHS and European REACH Regulation	13
10	焊接条件及回流焊接条件: Soldering Condition and Reflow Soldering Condition	13
11	引线原材料: The Raw Materials of Lead Wire	14
12	产品料号说明: Explanation of PaRX Number	15
13	结构: Construction	15
14	规格尺寸及最大纹波电流 Dimensions & Maximum permissible ripple current	16
15	额定纹波电流的频率系数: Frequency Coefficient of Allowable Ripple Current	16
16	片式铝电解电容器一般使用注意事项 Application guideline for V-CHIP aluminum electrolytic capacitors	17~21

RX SERIES V-chip Aluminum Electrolytic Capacitors

1. 范围: Scope

适用“RX 系列”立式片式铝电解电容器

This specification covers “RX Series” V-chip aluminum electrolytic capacitors.

2. 参考标准: Reference Standard

国际标准 IEC 60384-4 与日本工业标准 JIS C-5101-1

The international standard IEC 60384-4 and Japanese industrial standard JIS C-5101-1.

3. 环境保护标准: Environmental Protection Standard

遵照欧盟指令 2002/95/EC.

Comply with the EU directive 2002/95/EC.

4. 主要技术性能 SPECIFICATION

NO	项目 Items	性能 Performance Characteristics	试验方法 test method(JIS C 5101-1)					
1	使用温度范围 Operating temperature range	- 55 ~ +105°C						
2	额定工作电压范围 Voltage Range	6.3 ~ 50 (VDC)						
3	泄漏电流 Leakage Current	$I \leq 0.01 CV$ 或 $3 \mu A$ (2 分钟取大值)	whichever is greater (after 2 minutes)					
4	静电容量允许偏差 Capacitance Tolerance	±20 (%)	(120 Hz, +20°C)					
5	损失角正切值 Tan δ (120 Hz, +20°C)	Rated Voltage (VDC)额定电压						
			6.3	10	16	25	35	50
		Tan δ (max.)	Ø4~Ø6.3	24	20	18	16	14
		Ø8~Ø10	26	24	20	18	16	14
Exceeding 1000 μ F + 0.02 every 1000 μ F								

RX SERIES V-chip Aluminum Electrolytic Capacitors

NO	项目 Items	性能 Performance Characteristics	试验方法 test method(JIS C 5101-1)						
6	温度特性 Temperature Characteristics	温度试验阶段 temperature test							
		Step	T (°C)	H(min)		Measurement (120 Hz)			
		1	20±2	3		CAP/DF/ESR			
		2	-25、-55(+0、-2)	分别放置 30		ESR			
		3	15~35	15					
		4	105(+2、-0)	30		CAP/DF			
		5	20±2	3					
		Step1 时, Impedance Ratio: CAP±20% , DF、LC 在规格值内							
		Step2 时, Impedance Ratio:							
		Rated Voltage (V)		6.3	10	16	25	35	50
Impedance Ratio ZT/Z20 (max.)	Z-25°C /Z+20°C	3	2	2	2	2	2		
	Z-55°C /Z+20°C	5	4	4	3	3	3		
Step4 时, Impedance Ratio:									
静电容量变化率 Capacitance Change				±15% of the value in Step1					
损耗角正切值 Tan δ				initial specified value					
Step5 时, Impedance Ratio:									
静电容量变化率 Capacitance Change				±30% of the value in Step1					
损耗角正切值 Tan δ				initial specified value					
7	浪涌测试 Surge Voltage Test	Rated Voltage (VDC)额定电压							
		6.3	10	16	25	35	50		
		Surge Voltage (VDC)浪涌电压							
		7.5	11	18	27	38	55		
After surge voltage applied at a cycling rate of 30 seconds charge and 5.5 minutes discharge 1000 successive test cycle. Test temperature: 15~35°C.									
judgement:									
a. 容量 ΔC/C ≤ ±30 %				b. 损耗角正切 DF ≤ 100 % 之规格值					
c. 漏电流 LC 应 ≤ 规格值				d. 产品外观无任何异常					

RX SERIES V-chip Aluminum Electrolytic Capacitors

NO	项目 Items	性能 Performance Characteristics	试验方法 test method(JIS C 5101-1)
8	可焊性 Solderability	焊料润湿试验表面 95%区域, 焊锡应光亮均匀 A minimum of 95% of the surface being immersed	The capacitor shall be tested under the following conditions: Soldering temperature: 245±5°C Dipping depth: 2mm Dipping speed: 25±2.5mm/s Dipping time: 3±0.5s
9	低温贮存 Low temperature storage	电容量变化 Capacitance Change: Within ±20% of initial value. 外观无损坏 Appearance: There shall be no leakage of electrolyte.	电容器放置在-40°C的环境中 4±0.5 小时, 即对电容器测试须满足左要求: Capacitors placed in the environment of - 40°C for 4±0.5 hours, that is to say, the capacitor test must satisfy the left requirement
10	标示耐溶剂性 Solvent Resistance of the Marking	标示应清晰可辨 There shall be no damage and legibly marked can be deciphered easily	在 20~25°C 条件下将电容器本体浸入异丙醇中 30±5S 后, 目视检查 Class of Reagent:Isopropyl Alcohol; Test Temperature:20~25°C;Immersing Time:30±5S
11	耐焊接热 Solder Heat Resistance Test	判定: a. 容量变化量 ≤ ±15 % ΔC/C ≤ ±15% ; b. 外观不得有损坏现象 Appearance: No significant change can be observe	经过回流焊后(参见第 14 页)在室温中恢复后, 电容器满足如左要求 After reflow soldering according to Reflow Soldering Condition (see page 14) and restored at room temperature, they meet the characteristics listed.
12	耐湿性 Humidity Test	A.容量变化量 ΔC/C≤± 15% b. 损耗角正切值 DF ≤ 100 % initial specified value c. 漏电流 LC≤ 100 % initial specified value d. 产品外观无损坏 Appearance:No significant change can be observe	电容器放置在湿度 90 - 95 % 温度 40°C的环境中 240 小时 ± 8 小时, 电容器取出恢复 1~2 小时后电容器满足左要求: Capacitors shall be exposed for 240 ± 8 hrs in an atmosphere of 90 - 95 % R.H.at40°C And then the Capacitor shall be subjected to standard atmospherejc Conditions for 1-2hours, after which measurements Shall be made.
13	标示耐溶剂性 Solvent Resistance of the Marking	标示应清晰可辨 There shall be no damage and legibly marked. Marking can be deciphered easily.	试剂: 异丙醇 Class of Reagent: Isopropyl Alcohol 温度: 20~25°C Test Temperature: 20~25°C 浸入时间: 5 分钟 Immersing Time: 5 minutes

RX SERIES V-chip Aluminum Electrolytic Capacitors

14	<p>高温负载 High Temperature Load Life Test</p>	<table border="1"> <tr> <td>容量变化量 $\Delta C/C$</td> <td>$\leq \pm 30\%$ 初始值内 $\leq \pm 30\%$ initial specified value</td> <td>容量变化量 $\Delta C/C$</td> </tr> <tr> <td>损耗角正切值 Tan δ</td> <td>$\leq 300\%$ 初始规定值 $\leq 300\%$ initial specified value</td> <td>损耗角正切值 Tan δ</td> </tr> <tr> <td>漏电流 LC</td> <td>\leq 初始规定值 \leq initial specified value</td> <td>漏电流 LC</td> </tr> </table>	容量变化量 $\Delta C/C$	$\leq \pm 30\%$ 初始值内 $\leq \pm 30\%$ initial specified value	容量变化量 $\Delta C/C$	损耗角正切值 Tan δ	$\leq 300\%$ 初始规定值 $\leq 300\%$ initial specified value	损耗角正切值 Tan δ	漏电流 LC	\leq 初始规定值 \leq initial specified value	漏电流 LC	<p>105°C 施加额定电压 2000 小时(6.3V.DC:3000 小时, $\phi 8 \times 10.5$ 与 10×10.5 5000 小时), 让其在室温下冷却恢复后检查, 电容器应满足如左要求 After 2000 hours(6.3V.DC:3000hours, $\phi 8 \times 10.5$ and 10×10.5 5000hours) application of rated voltage at 105°C, capacitors meet the characteristics requirements listed.</p>
容量变化量 $\Delta C/C$	$\leq \pm 30\%$ 初始值内 $\leq \pm 30\%$ initial specified value	容量变化量 $\Delta C/C$										
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漏电流 LC	\leq 初始规定值 \leq initial specified value	漏电流 LC										
15	<p>高温存储 Shelf life</p>	<table border="1"> <tr> <td>容量变化量 $\Delta C/C$</td> <td>$\leq \pm 30\%$ 初始值内 $\leq \pm 30\%$ initial specified value</td> <td>容量变化量 $\Delta C/C$</td> </tr> <tr> <td>损耗角正切值 Tan δ</td> <td>$\leq 300\%$ 初始规定值 $\leq 300\%$ initial specified value</td> <td>损耗角正切值 Tan δ</td> </tr> <tr> <td>漏电流 LC</td> <td>\leq 初始规定值 \leq initial specified value</td> <td>漏电流 LC</td> </tr> </table>	容量变化量 $\Delta C/C$	$\leq \pm 30\%$ 初始值内 $\leq \pm 30\%$ initial specified value	容量变化量 $\Delta C/C$	损耗角正切值 Tan δ	$\leq 300\%$ 初始规定值 $\leq 300\%$ initial specified value	损耗角正切值 Tan δ	漏电流 LC	\leq 初始规定值 \leq initial specified value	漏电流 LC	<p>105°C 1000 小时后高温放置后, 让其在室温下冷却恢复后, 电容器应满足如左要求. After storage for 1000 hours at 105°C, capacitors meet the characteristics requirements listed.</p>
容量变化量 $\Delta C/C$	$\leq \pm 30\%$ 初始值内 $\leq \pm 30\%$ initial specified value	容量变化量 $\Delta C/C$										
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漏电流 LC	\leq 初始规定值 \leq initial specified value	漏电流 LC										
16	<p>振动 Vibration</p>	<p>容量 Capacitance: 在测试的 30 分钟内, 观测电容量测试值无明显变化 During test, measured value shall be stabilized (measured several times within 30 min. Before completion of test) 外观 Appearance: 无可见损伤 No significant change can be observe 容量变化 Capacitance change: 容量变化率在 $\pm 10\%$ 范围内 Within $\pm 10\%$ of initial measured value</p>	<p>频率: 10 到 55 Hz, 每分钟互换 Frequency: 10~55Hz reciprocation for 1 min 振幅: 0.75mm Total amplitudes: 0.75mm 在互相垂直的 3 个方向上, 每个方向振动 2 小时, 共 6 小时. Direction and during of vibration: 3 orthogonal directions, Mutually each for 2hrs total 6hrs</p>									

RX SERIES V-chip Aluminum Electrolytic Capacitors

NO	项目 Items	性能 Performance Characteristics	试验方法 test method(JIS C 5101-1)																								
17	压力释放 Pressure release (仅适用于客户有要求的产品) Applicable only to products required by customers	不允许出现爆炸和着火 (Not appear detonate and be on fire) 防爆装置要打开, 不允许从封口卷边处释放气体 (Vent should be opened, the gas not be allowed be set free from rubber) 不允许出现电容器外壳和芯子飞溅的危险状态 (the case and the pistil of the capacitor can't be splashed) 测试方法: (1) 交流电压法 AC voltage <table border="1" data-bbox="427 835 1345 1010"> <thead> <tr> <th>标称容量 C/μF</th> <th>串联电阻 R/Ω</th> <th>标称容量 C/μF</th> <th>串联电阻 R/Ω</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1000±100</td> <td>100~1000</td> <td>1±0.1</td> </tr> <tr> <td>1~10</td> <td>100±10</td> <td>1000~10000</td> <td>0.1±0.01</td> </tr> <tr> <td>10~100</td> <td>10±1</td> <td>10000 以上</td> <td>*</td> </tr> </tbody> </table> 施加电压: 以额定电压 0.7 倍的电压或 250Vmax 两者中取小值, 但是 30Amax 以上时调整到 30Amax Apply AC voltage 0.7 time the rated voltage or AC 250V(effective value), whichever is smaller, through a 30A fuse and 1Ω resister. (2) 直流反向电压法 DC Inverse voltage <table border="1" data-bbox="427 1227 1358 1373"> <thead> <tr> <th>标称外形直径 Diameter /mm</th> <th>直流电流 DC Current /A</th> <th>标称外形直径 Diameter /mm</th> <th>直流电流 DC Current /A</th> </tr> </thead> <tbody> <tr> <td>22.4 以下 less</td> <td>1</td> <td>22.4 以上 more</td> <td>10</td> </tr> </tbody> </table>	标称容量 C/μF	串联电阻 R/Ω	标称容量 C/μF	串联电阻 R/Ω	1	1000±100	100~1000	1±0.1	1~10	100±10	1000~10000	0.1±0.01	10~100	10±1	10000 以上	*	标称外形直径 Diameter /mm	直流电流 DC Current /A	标称外形直径 Diameter /mm	直流电流 DC Current /A	22.4 以下 less	1	22.4 以上 more	10	
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18	端子强度 Terminal strength	(1) 拉力(tensile) <table border="1" data-bbox="427 1447 1378 1621"> <thead> <tr> <th>d(mm)</th> <th>[N]</th> <th>Duration time</th> </tr> </thead> <tbody> <tr> <td>0.3<d≤0.5</td> <td>5</td> <td rowspan="3">10±2sec(秒)</td> </tr> <tr> <td>0.5<d≤0.8</td> <td>10</td> </tr> <tr> <td>0.8<d≤1.25</td> <td>20</td> </tr> </tbody> </table> (2) 抗弯强度(Bending) 端子应该在每一方向上折弯一次, 总共两次 The terminal shall be subjected to 1 bend in each direction to give a total 2 bends. <table border="1" data-bbox="427 1787 1342 1962"> <thead> <tr> <th>d(mm)</th> <th>[N]</th> </tr> </thead> <tbody> <tr> <td>0.3<d≤0.5</td> <td>2.5 (0.25KG)</td> </tr> <tr> <td>0.5<d≤0.8</td> <td>5.0 (0.51KG)</td> </tr> <tr> <td>0.8<d≤1.25</td> <td>10.0(1.0KG)</td> </tr> </tbody> </table>	d(mm)	[N]	Duration time	0.3<d≤0.5	5	10±2sec(秒)	0.5<d≤0.8	10	0.8<d≤1.25	20	d(mm)	[N]	0.3<d≤0.5	2.5 (0.25KG)	0.5<d≤0.8	5.0 (0.51KG)	0.8<d≤1.25	10.0(1.0KG)							
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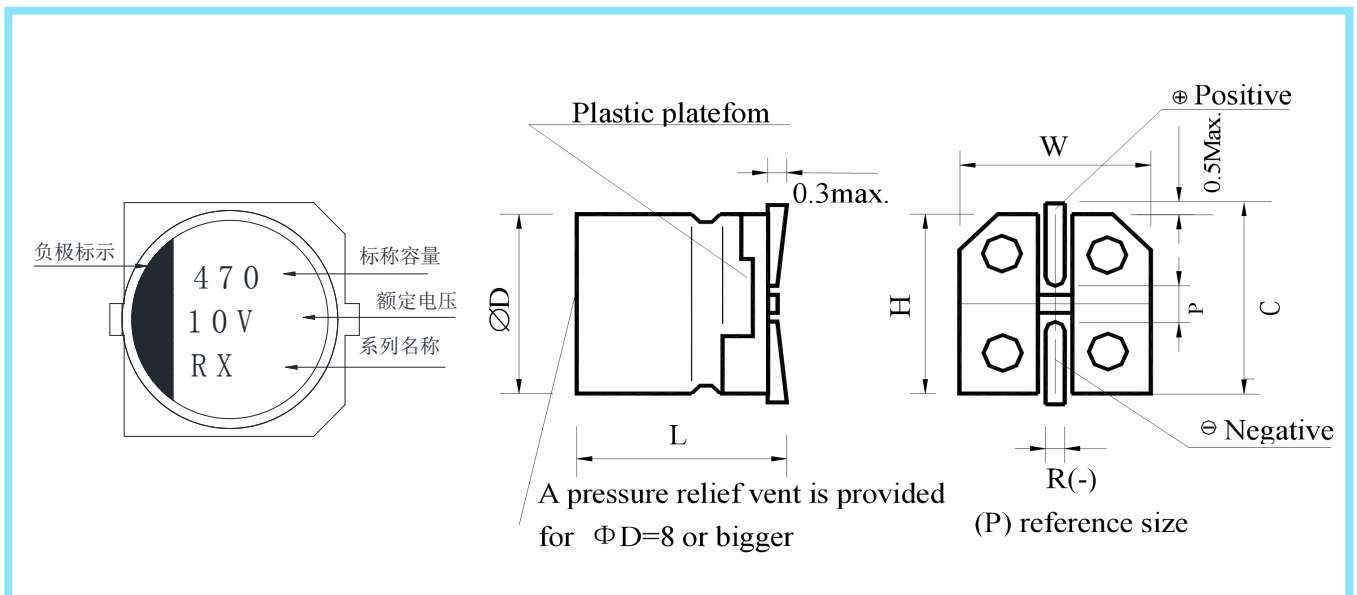
RX SERIES V-chip Aluminum Electrolytic Capacitors

5. 标识/尺寸: Marking, Dimensions

电容器标识内容如下:

Capacitors shall be legibly marked with the following:

- 1) 产品系列: Manufacture's mark
- 2) 额定电压和标称容量: Rated voltage and nominal capacitance
- 3) 负极标识: Negative polarity
- 4) 黑体字印刷: Black print on the case top



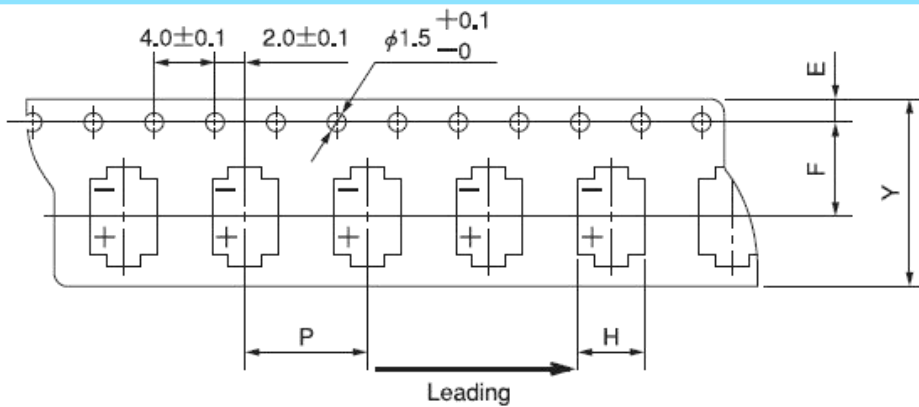
D ±0.5	L	W ±0.2	H ±0.2	C ±0.2	R	P ±0.2
4	5.8±0.4	4.3	4.3	5.1	0.5to0.8	1.0
5	5.8±0.4	5.3	5.3	6.1	0.5to0.8	1.3
6.3	5.8±0.4	6.6	6.6	7.3	0.5to0.8	2.2
6.3	7.7±0.4	6.6	6.6	7.3	0.5to0.8	2.2
8	6.5±0.5	8.3	8.3	9.2	0.7to1.2	3.1
8	10.5±0.5	8.3	8.3	9.2	0.7to1.2	3.1
10	10.5±0.5	10.3	10.3	11.2	0.7to1.2	4.4

RX SERIES V-chip Aluminum Electrolytic Capacitors

6. 编带规格: Packaging Specifications

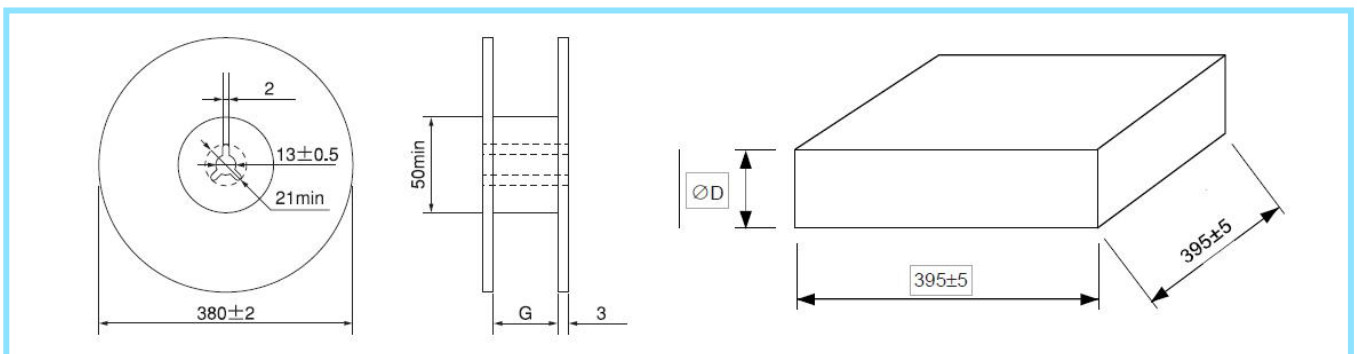
符合标准 JIS C0806 与 IEC 602863.(Applicable standard JIS C0806 and IEC 60286)

1. 表面贴装盒带规格:Surface Mount Type Taping Specifications (Unit:mm)



Size(φD × L)	γ±0.3	H±0.2	W±0.2	P±0.1	E±0.1	F±0.1	T±0.2	S±0.1
φ4 × 5.8	12.0	5.0	5.0	8.0	1.75	5.5	6.5	—
φ5 × 5.8	12.0	6.0	6.0	12.0	1.75	5.5	6.5	—
φ6.3 × 5.8	16.0	8.7	8.7	12.0	1.75	7.5	6.5	—
φ6.3 × 7.7	16.0	8.7	8.7	12.0	1.75	7.5	8.2	—
φ8 × 6.5	16.0	8.7	8.7	12.0	1.75	7.5	7.2	—
φ8 × 10.5	24.0	8.7	8.7	16.0	1.75	11.5	11.5	—
φ10 × 10.5	24.0	10.7	10.7	16.0	1.75	11.5	11.5	—

2. 卷芯及包装箱: Reel dimensions and Packaging Box

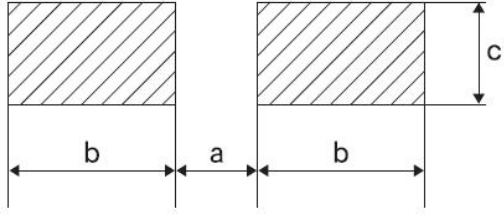


RX SERIES V-chip Aluminum Electrolytic Capacitors

最小包装数量: Minimum Packing Quantity

Size(ϕ D \times L)	Quantity of 1 Reel	Reels/Box	Quantity/Box	G $^{\pm 0.2}$	D $^{\pm 5}$
$\phi 4 \times 5.4$	2000	12	24000	14	260
$\phi 5 \times 5.4$	1000	12	12000	14	260
$\phi 6.3 \times 5.4$	1000	10	10000	18	260
$\phi 6.3 \times 7.7$	1000	10	10000	18	260
$\phi 8 \times 6.5$	1000	10	10000	18	260
$\phi 8 \times 10.5$	500	10	5000	26	340
$\phi 10 \times 10.5$	500	10	5000	26	340

7. 表面安装推荐尺寸: Surface Mount Type Recommended Land Pattern

Land Pattern (Unit:mm)	size	a	b	C
	$\phi 4$	1.0	2.6	1.8
	$\phi 5$	1.4	3.0	1.8
	$\phi 6.3$	1.9	3.5	1.8
	$\phi 8 \times 6.5$	3.0(2.2)	4.0	2.5
	$\phi 8$	3.0	4.0	2.5
	$\phi 10$	4.0	4.5	2.5

RX SERIES V-chip Aluminum Electrolytic Capacitors

8. 符合 RoHS 及 REACH 法规: Conforming to RoHS and European REACH Regulation

电容器不故意含有“RoHS Directive:(EU) 2015/863”中所列的禁用物质 (Cd、Pb、Hg、Cr(VI)、Pbb、Pbde、DEHP、BBP、DBP、DIBP), 其浓度小于规定值.

我们的产品是根据 2008 年 5 月 26 日出版的“没有任何有意释放的物品”;它们不适用于欧洲 REACH 法规第 7(1)条的“注册”.

The capacitors do not intentionally contain the banned substances (Cd, Pb, Hg, Cr(VI), PBB, PBDE, DEHP, BBP, DBP, DIBP) listed in “RoHS directive : (EU) 2015/863” and its concentration is less than the threshold values.

Our products are “aRXicles without any intended releas” besed published on 26 May2008. They are not applicable for “Registration” for European REACH Regulation ARXicle 7 (1).

9. 焊接条件及回流焊接条件: Soldering Condition and Reflow Soldering Condition

1. 焊接条件: Soldering Condition

用烙铁焊接:除非规范中另有规定, 否则在 350°C下 3 秒钟内进行.

Soldering with a soldering iron : within 3 seconds at 350°C unless otherwise specified in the spec.

流动焊接:在 260°C下 10 秒钟内进行, 除非规范中另有规定(不要用 SMD 型流动焊接).

Flow soldering : within 10 seconds at 260°C unless otherwise specified in the spec. (Do not flow soldering with SMD type.)

热固化炉:环境温度 150°C以下 2 分钟

Thermal curing oven : within 2 minutes at below 150°C ambient.

2. 回流焊接条件: Reflow Soldering Condition

2.1 应采用红外线及热风回流焊接, 不宜采用汽相加热回流焊接

A thermal condition system such as infrared radiation (IR) or hot blast should be adopted, and vapor heat transfer systems (VPS) are not recommended.

2.2 回流焊接的最大循环是两次;第二个循环必须在充分冷却时间超过一小时后进行, 以将电路板和组件的温度恢复到室温.

The maximum cycle of reflow soldering is two times. The second cycle must be done after sufficient cooling time for more than one hour to return the temperatures of circuit boards and components back to room temperature

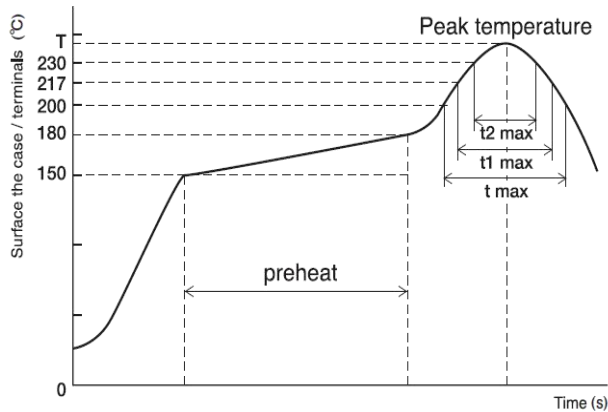
2.3 无铅回流焊, 请符合下述条件:

For lead-free type reflow soldering, please observe proper conditions below:

RX SERIES V-chip Aluminum Electrolytic Capacitors

● Profile 1

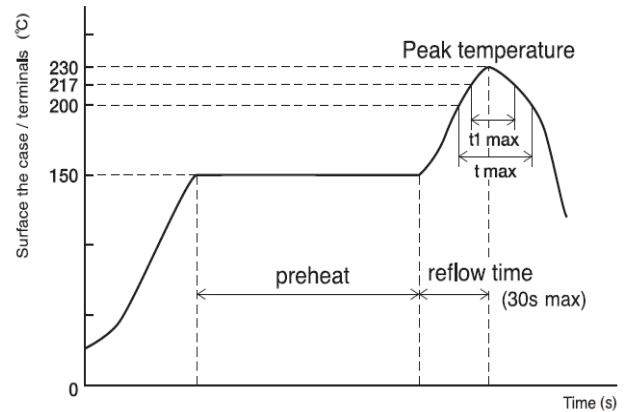
AIR reflow and IR reflow



Preheat ; 150°C to 180°C, Within 120sec.

● Profile 2

AIR reflow and IR reflow



Preheat ; 150°C, Within 120sec.

Voltage (V)	Size	200°C T Max	217°C T1 Max	230°C T2 Max	TP 5S Max	Profile
4 to 63	Φ 4 to Φ 6.3	Within 70sec.	Within 60sec.	Within 40sec.	250°C	1
	Φ 8 Φ 10,	Within 60sec.	Within 50sec.	Within 30sec.	245°C	1
	Φ 12.5	Within 50sec.	Within 40sec.	Within 20sec.	240°C	1
	Φ 16,	Within 50sec.	Within 30sec.	Within 15sec.	235°C	1

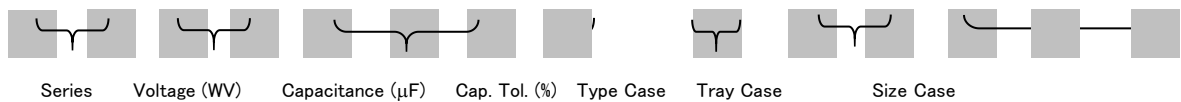
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10. 引线原材料: The Raw Materials of Lead Wire

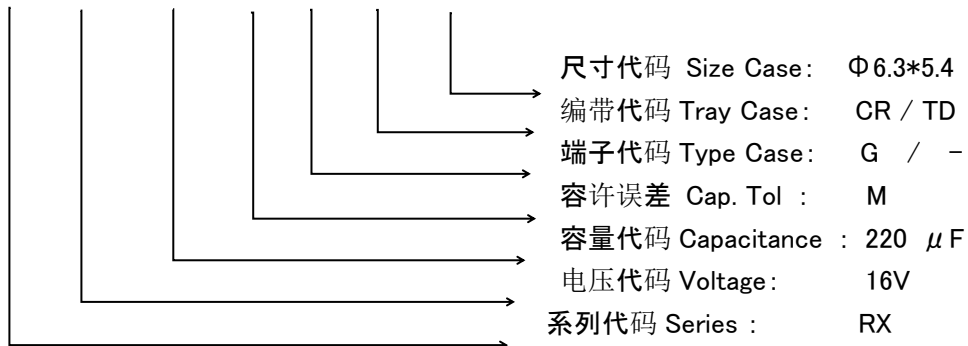
Name	Material	Percentage
TPCS	Fe	71.35%
	Cu	20%
	Sn	8.65%

11. 产品料号说明: Explanation of PaRX Number

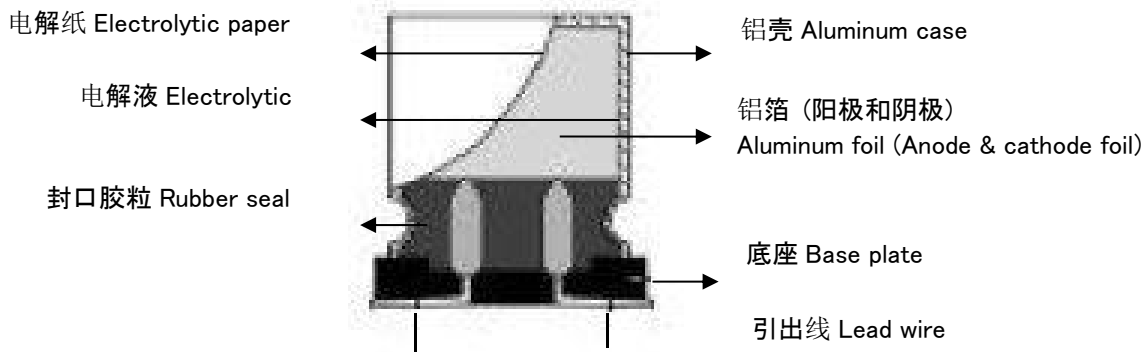
1 2 3 4 5 6 7 8 9 10 11 12 13 14



Example: RX 1C 221 M - CR E54



12. 结构: Construction



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13. 规格尺寸及最大纹波电流: Dimensions & Maximum permissible ripple current

μF	V	6.3			10			16			25			35			50		
		Case size	Impedance	Rated ripple current	Case size	Impedance	Rated ripple current	Case size	Impedance	Rated ripple current	Case size	Impedance	Rated ripple current	Case size	Impedance	Rated ripple current	Case size	Impedance	Rated ripple current
10																4×5.8	2.30	85	
																5×5.8	0.88	165	
22													4×5.8	0.85	160	5×5.8	0.88	165	
33											4×5.8	0.85	160	5×5.8	0.36	240			
47							4×5.8	0.85	160	5×5.8	0.36	240	5×5.8	0.36	240	6.3×5.8	0.68	195	
68					4×5.8	0.85	160	5×5.8	0.36	240	5×5.8	0.36	240	6.3×5.8	0.26	300			
100		4×5.8	0.85	160			5×5.8	0.36	240	6.3×5.8	0.26	300	6.3×5.8	0.26	300	6.3×7.7	0.34	350	
150					5×5.8	0.36	240	6.3×5.8	0.26	300	6.3×7.7	0.16	600	6.3×7.7	0.16	600			
220		5×5.8	0.36	240	6.3×5.8	0.26	300	6.3×5.8	0.26	300	6.3×7.7	0.16	600				8×10.5	0.18	670
330		6.3×5.8	0.26	300	6.3×7.7	0.16	600	6.3×7.7	0.16	600				8×10.5	0.08	850	10×10.5	0.12	450
390											8×10.5	0.08	850	8×10.5	0.08	850			
470		6.3×7.7	0.16	600	6.3×7.7	0.16	600	8×6.5	0.16	600	8×10.5	0.08	850						
560											8×10.5	0.08	850	10×10.5	0.06	1100			
680		6.3×7.7	0.16	600			8×10.5	0.08	850				10×10.5	0.06	1190				
820							8×10.5	0.08	850	10×10.5	0.06	1190							
1000					8×10.5	0.08	850	10×10.5	0.06	1190	10×10.5	0.06	1190						
1200										10×10.5	0.06	1190							
1500		8×10.5	0.08	850	10×10.5	0.06	1190												
2200		10×10.5	0.06	1190															

Case size: φDxL(mm)

Impedance(Ω)
max at 100kHz, 20°C

Rated ripple current
mA rms(100kHz, 105°C)

RX SERIES V-chip Aluminum Electrolytic Capacitors

15. 片式铝电解电容器一般使用注意事项

Application guideline for V-CHIP aluminum electrolytic capacitors

A) 电路设计: Circuit Design

1) 充分考虑电容器使用和安装条件在产品目录的规定范围内.

Please make sure the environmental and mounting conditions to which the capacitor will be exposed are within the conditions specified in catalogue.

2) 工作温度和施加的纹波电流应在产品目录的规定范围内.

Operating temperature and applied ripple shall be within specification.

3) 在设计电路时, 应选择符合寿命要求的产品.

Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.

4) 铝电解电容器是有极性的, 不应加反向电压或交流电压。对可能出现反向电压的电路, 应选择双极性电容器。注意: 即使双极性电容器, 也不能直接用于纯交流电路.

Aluminum electrolytic capacitors are polar. Make sure that no reverse voltage or AC voltage is applied to the capacitors. Please use bi-polar capacitors for a circuit that can possibly see reversed polarity.

Note: Even bi-polar capacitors cannot be used for AC voltage application.

5) 对需要快速和频繁充放电的电路, 不应使用铝电解电容器而应选择特别设计的具有长寿命的电容器.

Do not use aluminum electrolytic capacitors in a circuit that requires rapid and very frequent charge / discharge.

In this type of circuit, it is necessary to use a special design capacitor with eRXended life characteristics.

6) 不应使用过载电压. Do not apply excess voltage.

A. 直流电压与纹波电压叠加后的峰值电压不应超过额定工作电压.

Please pay attention to that the peak voltage, which is DC voltage overlapped by ripple current, will not exceed the rated voltage.

B. 若 2 个以上电容器串联, 应确保施加电压低于额定值, 而且要并联一个平衡电阻, 以使每个电容器所加电压相等.

In the case where more than 2 aluminum electrolytic capacitors are used in series, please make sure that applied voltage will be lower than rated voltage and the voltage will be applied to each capacitor equally by using a balancing resistor in parallel with the capacitor

7) 电容器不能应用于下述环境条件下:

Aluminum electrolytic capacitors shall not be used under the following environmental conditions:

A.(a) 电容器被暴露于水(包括浓缩液)、盐水或油中.

Capacitors will be exposed to water (including condensation), brine or oil.

(b) 周围环境中存在有硫化氢、亚硫酸、亚硝酸、氯气、溴气、溴化甲烷、氨气等有毒气体.

Ambient conditions that include toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonium, etc.

(c) 周围环境中存在有臭氧、紫外线及辐射.

RX SERIES V-chip Aluminum Electrolytic Capacitors

Ambient conditions that expose the capacitor to ozone, ultraviolet ray and radiation.

B. 严重的振动及机械冲击超过产品目录的规定范围.

Severe vibration and physical shock conditions that exceed specification.

振动的测试条件如下

Vibration test condition:

振动频率范围 : 10-55-10Hz

vibration frequency range : 10~55~10Hz

扫描频率 : 10-55-10Hz/分钟

sweep rate : 10~55~10Hz/minute

扫描方式 : 对数

sweep method : logarithmic

振幅或加速度 : 1.5mm (最大加速度为 10G)

amplitude or acceleration : 1.5mm (max. acceleration is 10G)

振动方向 : X、Y、Z 方向

direction of vibration : X, Y, Z direction

测试时间: 每个方向 2 小时

testing time: 2 hours per each direction

冲击一般不适用.

Shock is not applicable normally.

如有特殊要求, 请与我们销售部门联系.

If a particular condition is required, please contact our sales office.

- 8) 电解液主要化学溶剂及电解纸为易燃物, 且电解液导电。当电解液与 PC 板接触时, 可能会腐蚀 PC 板上的线路, 或造成短路, 以致产生烟或着火。因此在电容器封口下端不应有任何线路。

The main chemical solution of the electrolyte and the separator paper used in the capacitors are combustible. The electrolyte is conductive. When it comes in contact with the PC board, there is a possibility of pattern corrosion or short circuit between the circuit pattern, which could result in smoking or catching fire. Do not locate any circuit pattern beneath the capacitor end seal.

- 9) 设计线路板时应确保发热元器件不靠近铝电解电容器或 PC 板的另一面, 避免其正好在电容器下面。

Do not design a circuit board that the heat generating components are placed near the aluminum electrolytic capacitor or on the reverse side of PC board, if that just under the capacitor.

- 10) 设计线路板时应考虑到电容器的电性能可能随温度和频率的变化而变化。

Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.

- 11) 当 2 个以上电容器并联时, 应考虑到通过这些电容器的电流平衡。

When you install more than 2 capacitors in parallel, please consider the balance of current flowing into the capacitors.

- 12) 在双面线路板上安装电容器时, 电容器的安装位置应避开多余的基板孔和过孔。

While mounting capacitors on double-side PC board, the capacitors should be away from those unnecessary base plate holes and connection holes.

RX SERIES V-chip Aluminum Electrolytic Capacitors

B) 安装:Mounting

- 1) 一旦电容器经过安装及加载, 不要再试图用于其他线路板或其他用途。
Once a capacitor has been assembled in the set and power applied, do not attempt to re-use the capacitor in other circuits or application.
- 2) 贮存超过 2 年的电容器, 其漏电流可能增大。若漏电流增大, 请使用 1K Ω 电阻做充电处理。
Leakage current of the capacitors that have been stored for more than 2 years may increase. When leakage current has increased, please perform a voltage treatment using a 1k Ω resistor.
- 3) 在将电容器安装在 PC 板之前, 请确认其规格和极性。
Please confirm specifications and polarity before installing capacitors on the PC board.
- 4) 不要将电容器掉在地上, 或不要使用掉在地上的电容器。
Do not drop capacitors on the floor, nor use a capacitor that was dropped.
- 5) 安装时请不要损伤电容器。
Do not deform the capacitor during installation.
- 6) 请注意贴片机的吸头、产品检测夹具或对中装置对电容器的机械冲击。
Please pay attention to the mechanical shock to the capacitor by suction nozzle of the automatic inseRXion machine or automatic mounter, or by product checker, or by centering mechanism.
- 7) 回流焊:
Reflow soldering
 - A. 请遵守产品目录中的回流焊条件。
Please follow "Reflow Soldering Conditions" in catalogue.
 - B. 当使用红外线加热时, 请注意加热程度, 因为红外线吸收率会随着电容器颜色和大小不同而改变。
When an infrared heater is used, please pay attention to the eRXent of heating since the absorption rate of infrared will vary due to difference in the color and size of the capacitor.
- 8) 将电容器焊接在 PC 板后, 不要倾斜或扭动电容器。
Do not tilt lay down or twist the capacitor body after the capacitor are soldered to the PC board.
- 9) 不要抓住焊接后的电容器搬动 PC 板。
Do not carry the PC board by grasping the soldered capacitor.
- 10) 不要让任何物品接触焊接后的电容器, 如果 PC 板堆放储存, 请确保 PC 板或其他零部件不触到电容器。
Please do not allow anything to touch the capacitor after soldering. If PC boards are stored in stack, please make sure the PC board or other components away from the capacitor.
- 11) 焊接后的电容器不应受到任何已焊接 PC 板或其他元器件热辐射的影响。
The capacitors shall not be effected by any radiated heat from the soldered PC board or other components after soldering.
- 12) 清洗:
Cleaning
 - A. 不能用卤化清洗剂清洗电容器。如必须使用卤化清洗剂, 请与我们销售部门联系。
Do not clean capacitors with halogenated cleaning agent. However, if it is necessary to clean with halogenated cleaning agent, please contact our sales office.
 - B. 推荐清洗方法:

RX SERIES V-chip Aluminum Electrolytic Capacitors

Recommended cleaning method

使用范围: 任何类型及规格

Applicable : Any type, any ratings

清洗方法: 浸泡、超声波或其他方法的总清洗时间应在 2 分钟内。清洗剂温度应在 40°C 以下。清洗后, 应将电容器与 PC 板一起用热风吹至少 10 分钟。热风温度应低于电容器工作温度。水洗后若不充分吹干, 可能导致外观不良, 如座板发胀等。

Cleaning conditions : Total cleaning time shall be within 2 minutes by immersion, ultrasonic or other methods. Temperature of the cleaning agents shall be 40°C or below. After cleaning, capacitors should be dried by using hot air for the minimum 10 minutes along with the PC board mounted. Hot air temperature should be within the maximum operating temperature of the capacitor. Insufficient dryness after water rinse may cause appearance problems, such as bottom-plate bulge and etc.

C. 避免使用破坏臭氧层的清洗剂以保护环境。

Avoid using ozone destructive substances as cleaning agents for protecting global environment.

C) 安装后

In the Equipment

1) 不要直接用手接触电容器正负极。

Do not directly touch terminal by hand.

2) 不要在正负极之间用导体连接, 也不要再在电容器及其附近溅撒导电液体, 如酸碱溶液等。

Do not link positive terminal and negative terminal by conductor, nor spill conductible liquid such as alkaline or acidic solution on or near the capacitor.

3) 在使用环境中应避免溅上水或油, 避免阳光直射、紫外线照射、辐射、有毒气体、振动或机械冲击。

Please make sure that the ambient conditions where the set is installed are free from spilling water or oil, direct sunlight, ultraviolet rays, radiation, poisonous gases, vibration or mechanical shock.

D) 维护和检验

Maintenance and Inspection

请定期检测安装在工业设备上的电容器。检测项目如下:

Please periodically inspect the aluminum capacitors that are installed in industrial equipment. The following items should be checked:

外观: 明显缺陷, 如防爆阀打开、电解液泄露等。

Appearance: remarkable abnormality such as pressure relief vent opening, electrolyte leaking, etc.

电性能: 电容量、损耗角正切、漏电流等, 具体数据参见产品目录和相关产品规格书。

Electrical characteristics: capacitance, dielectric loss tangent, leakage current and etc., which are specified in catalogue or alternate product specification.

E) 紧急情况 In an Emergency

RX SERIES V-chip Aluminum Electrolytic Capacitors

1) 若看见因防爆阀动作而产生的烟气, 请关闭主开关或拔开离合器.

If you see smoke due to operation of safety vent, please turn off the main switch or pull out the plug from the outlet.

2) 若吸入气体或咽下电解液, 应立即用水清洗口腔和喉咙.

If you breathe the gas or ingest the electrolyte, please wash out your mouth and throat with water immediately.

3) 若皮肤沾上电解液, 请用肥皂和水清洗干净.

If your skin is exposed to the electrolyte, please wash it away using soap and water.

F) 储存 Storage

1) 不要将电容器储存在温度和湿度高的地方, 储存环境应为温度: 5°C~35°C, 相对湿度: <75%, 储存地点: 室内.

Do not keep capacitor in high temperature and high humidity atmosphere.

Storage conditions should be:

Temperature: 5°C~35°C Humidity: lower than 75% Place : Indoor

2) 避免电容器的储存环境中水、盐水或油。

Avoid ambient conditions where capacitors are covered with water, brine or oil.

3) 避免电容器暴露在臭氧、紫外线或辐射中。

Avoid ambient conditions where capacitors are exposed to ozone, ultraviolet ray or radiation.

G) 处置 Disposal

请用下面任何一种方法处置电容器:

Please take either of the following methods in disposing capacitors.

1) 在电容器壳体上开孔或将电容器压碎后焚烧.

Incinerate them after crushing capacitors or making a hole on the capacitor body.

2) 如不能进行焚烧, 请交给废物处理机构进行填埋.

If incineration is not applicable, hand them over to a waste disposal agent and have them buried in landfills.

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[AEA1010221M035R](#) [AHC0811221M025R](#) [AEA1010681M010R](#) [AEA1010470M080R](#) [AHC0609150M063R](#) [AEA0810101M050R](#)
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[AEH0810101M035R](#)