



承 认 书

PRODUCT SPECIFICATION

No:HW2311040001

客 户: Blume Elektronik Distribution GmbH 日 期: 2023-11-6

CUSTOMER:

DATE:

品名: 导电高分子混合型铝电解电容器

PARTNAME: Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

型号/规格: GV - 35V-220 μ F ϕ 8 $\times$ 12.5mm

用户承认 User

Approved by

注: RoHS 指令 (2011/65/EU) 已对应完毕

对此承认书确认后, 在用户承认栏注明确认印, 返传一份与敝公司

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文件内容修改历史记录
RECORD OF REVISION

生效版本 REV. NO.	变更原因 REASON	修改内容 CONTENTS	承认时间 DATE OF APPROVAL	拟制 Prepared	备注 REMARKS
1		新版发行	2023-11-6	钱卢苏蒙	
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规格表 Table

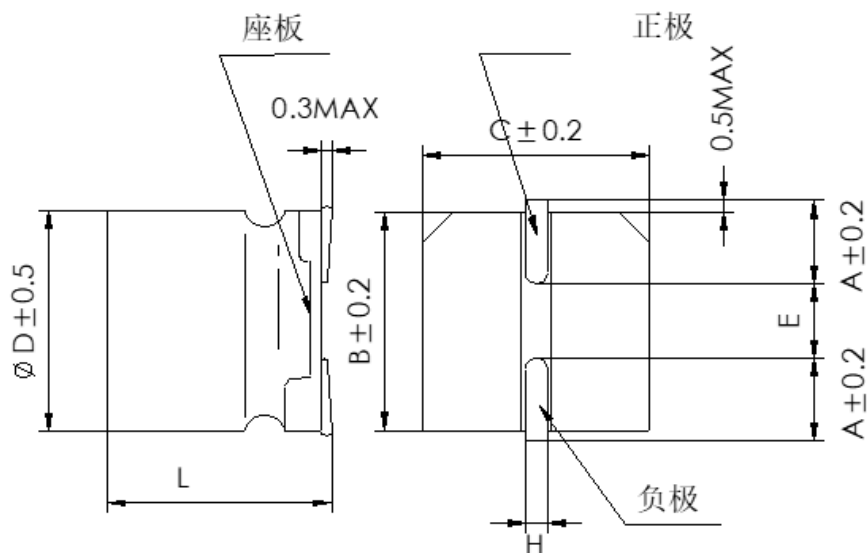
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一、范围 Scope

GV 导电高分子混合型铝电解电容器（贴片品）

GV Conductive Polymer Hybrid Aluminum Electrolytic Capacitors (Surface Mount Type)

二、外形示意图及尺寸表 Case size table



■ Size table

	6.3×5.8	Φ6.3×7.7	Φ8×12.5	Φ10×10.5	Φ10×12.5
A	2.4	2.4	2.9	3.2	3.2
B	6.6	6.6	8.3	10.3	10.3
C	6.6	6.6	8.3	10.3	10.3
E	2.2	2.2	3.1	4.5	4.5
L	5.8(±0.3)	7.7(±0.3)	12.5(±0.5)	10.5(±0.5)	12.5(±0.5)
H	0.5~0.8		0.8~1.1		

三、技术性能 Specifications

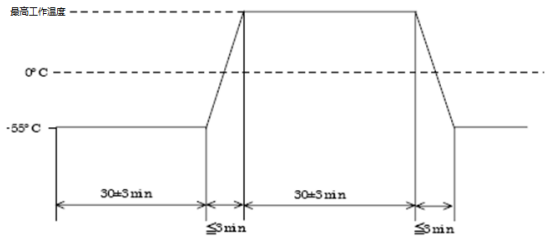
项目 Items	特性 Characteristics
工作温度范围 Operating temperature Range	-55°C ~+125°C
额定电压范围 Rated voltage Range	16V ~80V DC
标称电容量范围 Nominal Capacitance Range	10~ 560μF
标称电容量允许偏差 Nominal Capacitance Tolerance	±20% (20°C, 120Hz)
漏电流 Leakage Current	LC≤0.05CV(μA) or 3μA, whichever is greater 20°C, 2 分钟 at 20°C, after 2 minutes LC: 漏电流(μA)、C: 静电容量(μF)、V: 额定电压(VDC)
损耗角正切 (tanδ) Dissipation Factor (Max)	参照规格表
ESR	≤初始规定值 Not to exceed the value specified
低温特性比 Characteristics of impedance ratio at low temp.	要求在 100KHZ Based the value at 100KHZ Z (-25°C) / Z (+20°C) ≤1.5 Z (-55°C) / Z (+20°C) ≤2.0

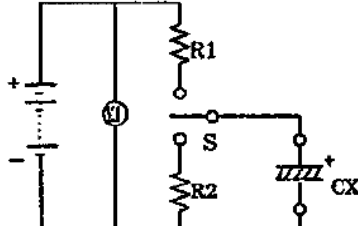
纹波电流修正系数 Ripple Current Multiplier

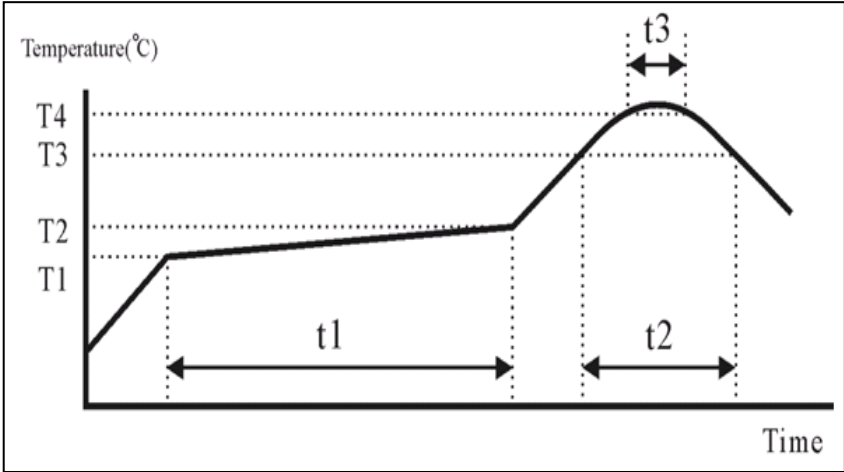
频率的修正系数 Frequency coefficient

Frequency (KHz)	0.1≤Freq.≤0.5	0.5<Freq.≤1	1<Freq.≤5	5<Freq.≤10	10<Freq.≤50	50<Freq.<100	100≤Freq.≤300
Coefficient	0.1	0.30	0.4	0.6	0.75	0.9	1

四、试验方法及要求 Tests

耐久性 Load Life	在 125℃环境中, 连续加载额定电压 4000 小时, 待温度恢复到 20℃后进行测试, 电容器应满足以下要求: The capacitor shall be subjected to application of the D.C. voltage with full rated ripple current at +125 °C for 4000 hours. After stabilizing at 20 °C, the capacitor shall not exceed the specified limits. (The sum of DC voltage and ripple peak voltage shall not exceed the rated voltage.)	
	电容量变化率 Capacitance Change	±25%初始值以内 Within ±25% of the initial value
	损耗角正切 Dissipation Factor	≤ 200%初始规定值 Not to exceed 200% of the value specified
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not to exceed 200% of the value specified
	漏电流 Leakage Current	≤ 初始规定值 Not to exceed the value specified
稳态湿热 Damp heat(Steady state)	60℃±5℃, 90~95% RH, 不加电压 240 小时 60℃±5℃, 90~95% RH, 240 hours, No applied voltage.	
	电容量变化率 Capacitance Change	±25%初始值以内 Within ±25% of the initial value
	损耗角正切 Dissipation Factor	≤ 200%初始规定值 Not to exceed 200% of the value specified
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not to exceed 200% of the value specified
	漏电流 Leakage Current	≤ 初始规定值 Not to exceed the value specified
高温贮存 Shelf Life	在 125℃±2℃环境中, 无负荷放置 1000H 后, 待温度恢复到 20℃后进行测试, 电容器应满足以下要求: After storage for 1000 hours at +125℃±2℃ with no voltage applied and then being stabilized at +20℃ the capacitor shall not exceed the specified values listed below.	
	电容量变化率 Capacitance Change	±25%初始值以内 Within ±25% of the initial value
	损耗角正切 Dissipation Factor	≤ 200%初始规定值 Not to exceed 200% of the value specified
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not to exceed 200% of the value specified
	漏电流 Leakage Current	≤ 初始规定值 Not to exceed the value specified
温度循环试验 Rapid temperature change	电容器要图一的温度循环要求下保持 5 个循环。然后在标准条件下放 1 到 2 小时后进行测量。 The characteristics of a capacitor kept under the temperature cycle indicated in Figure1 for 5 cycles . And then the capacitor shall be subjected to standard atmospheric conditions for 1to 2hours, after which measurement shall be made.	
		
	电容量变化率 Capacitance Change	±15%初始值以内 Within ±15% of the initial value
	损耗角正切 Dissipation Factor	≤ 150%初始规定值 Not to exceed 150% of the value specified
	阻抗 Equivalent Series Resistance	≤ 150%初始规定值 Not to exceed 150% of the value specified
	漏电流 Leakage Current	≤ 初始规定值 Not to exceed the value specified

低温试验 Low temperature test	电容器要在温度-55℃条件下存放 72±2 个小时。然后在标准条件下下放 1 到 2 小时后进行测量。 the capacitor shall be stored at a temperature of -55℃ for 72±2hours。And then the capacitor shall be subjected to standard atmospheric conditions for 1 to 2hours, after which measurements shall be made					
	电容量变化率 Capacitance Change	±25%初始值以内 Within ±25% of the initial value				
	损耗角正切 Dissipation Factor	≤ 150%初始规定值 Not to exceed 150% of the value specified				
	阻抗 Equivalent Series Resistance	≤ 150%初始规定值 Not to exceed 150% of the value specified				
	漏电流 Leakage Current	≤ 初始规定值 Not to exceed the value specified				
浪涌测试 Surge test	15~35℃，循环测试 1000 次，每次充电 30±5 秒，放电 5 分 30 秒。在标准温度条件下存放使其稳定，然后测试。 The capacitor shall be subjected to 1000cycles at 15~35℃,each consisting of a charge period of 30±5sec, followed by a discharge period of approx. 5min30sec. And the capacitor shall be stored under standard conditions thermal to obtain stability,after which measurements shall be made.measurement circuit(测试电路图)					
		SV:浪涌电压 Surge voltage R1:保护电阻（1KΩ） Protective series resistor CX:测试电容 Test capacitor	V1:直流电压 DC voltmeter R2:放电电阻器 Discharge resistor S:开关 Switch			
	电压设定					
	<table><tr><td>RATED VOLTAGE(VDC)</td><td>35</td></tr><tr><td>SURGE VOLTAGE(VDC)</td><td>40.25</td></tr></table>		RATED VOLTAGE(VDC)	35	SURGE VOLTAGE(VDC)	40.25
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	损耗角正切 Dissipation Factor	≤ 150%初始规定值 Not to exceed 150% of the value specified				
	阻抗 Equivalent Series Resistance	≤ 150%初始规定值 Not to exceed 150% of the value specified				
漏电流 Leakage Current	≤ 初始规定值 Not to exceed the value specified					

可焊性 Solder ability	IEC 60384-4 试验 Ta: 焊料槽温度为 260±5℃，浸渍深度占整个引出线的 95%，浸渍持续时间为 2±0.5 秒。 IEC 60384-4 Test Ta: Tank temperature : 260±5℃; Impregnating depth: ≥95% of the total lead wire; Impregnating time: 2±0.5s.	引出端的良好镀层，焊料自由流动，引出端湿润。 焊料覆盖率≥95% The lead wire is coated by tin and wet; Impregnating coverage rate≥95%																																										
高温回流焊 Solder Resistance Test	回流焊 Reflow  <table><tr><td rowspan="2">Preheat 预热</td><td>Temp. (T1-T2, °C)</td><td colspan="3">150~180</td></tr><tr><td>Time(t1).(Max sec)</td><td colspan="3">120</td></tr><tr><td rowspan="2">Duration 时间</td><td>Temp.(T3, °C)</td><td>200</td><td>217</td><td>230</td></tr><tr><td>Time(t2) . (sec)</td><td>70</td><td>50</td><td>40</td></tr><tr><td rowspan="2">Peak 最高点</td><td>Temp. (T4, °C)</td><td colspan="2">250</td><td>260</td></tr><tr><td>Time.(t3,secs)</td><td colspan="2">5</td><td></td></tr><tr><td colspan="2">Reflow cycles</td><td colspan="2">2</td><td>1</td></tr></table> <table><tr><td>电容量变化率 Capacitance Change</td><td>±10%初始值以内 Within ±10% of the initial value</td></tr><tr><td>损耗角正切 Dissipation Factor</td><td>初始规定值以内 Within the initial value</td></tr><tr><td>漏电流 Leakage Current</td><td>初始规定值以内 Within the initial value</td></tr><tr><td>阻抗 Equivalent Series Resistance</td><td>初始规定值以内 Within the initial value</td></tr><tr><td>物理特性 Physical</td><td>完好无破损 No broken and undamaged</td></tr></table>		Preheat 预热	Temp. (T1-T2, °C)	150~180			Time(t1).(Max sec)	120			Duration 时间	Temp.(T3, °C)	200	217	230	Time(t2) . (sec)	70	50	40	Peak 最高点	Temp. (T4, °C)	250		260	Time.(t3,secs)	5			Reflow cycles		2		1	电容量变化率 Capacitance Change	±10%初始值以内 Within ±10% of the initial value	损耗角正切 Dissipation Factor	初始规定值以内 Within the initial value	漏电流 Leakage Current	初始规定值以内 Within the initial value	阻抗 Equivalent Series Resistance	初始规定值以内 Within the initial value	物理特性 Physical	完好无破损 No broken and undamaged
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五、标志 Marking



220 represent rated capacitance, the unit is μF .
 35 represent rated voltage, the unit is V.
 GVM36 represent series
 On the left side of the red area represent cathode

六、铝电解电容器的使用注意事项 Guidelines For Using Aluminum Electrolytic Capacitor

为使您获得导电高分子混合型铝电解电容器的最佳性能和延长使用寿命,在使用电容器前,请务必阅读本注意事项。
 Upon using Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, please proper handing and observing to following important points will insure optimum capacitor performance and long life.

1. 直流电解电容器是有极性的 DC electrolytic capacitors are polarized.
 确定极性,极性标志在电容器的基体上。以免因极性反可能引起电路短路或电容器损坏,当极性不固定或不确定的,使用双极性电容器。注意直流电解电容器不能使用于交流。
 Make sure of the polarity. The polarity is marked on the body of the capacitor .Application of the reversed voltage cause a short circuit or damage to the capacitor. Use bipolar capacitors when the polarity is not determined or unknown. Note that DC electrolytic capacitors can not be used for AC application.
2. 使用电压不要大于额定电压 Do not apply voltage greater than rated voltage.
 使用电压大于额定电压,漏电流会增大,可能损坏电容器。建议工作电压为额定电压的百分之七十~八十,电容器在建议的工作电压下使用可延长电容器的寿命。
 If a voltage exceeding the rated voltage is applied, the leakage current will increase, which damage the capacitor. Recommended working voltage is 70 to 80 percent of rated voltage. Using capacitors at recommended working voltage prolongs capacitor life.
3. 不要使过量的纹波电流通过电容器 Do not allow excessive ripple current through the capacitor.
 流过电容器的纹波电流超过许可值,将会引起电容器发热,电容量减少,损害电容器。通过电容器的纹波电流不要大于允许值。
 The flow of ripple current over permissible ripple current will cause heat of the capacitor, which may decrease the capacitance and damage the capacitor. Ripple current on the capacitor must be at or bellow allowable level.
4. 快速的充放电电路中,使用专门设计的电容器 Use specially designed capacitors for the circuits where charge and discharge are frequency repeated.
 在经受快速的周期性充放电电路中,电容器可能受损害,它的寿命因容量下降、温升等原因而缩短,在这种电路中,一定要使用专门设计的电容器。
 In the circuit subjected to rapid charge cycles, capacitors may be damaged, its life may be shortened by capacitance decrease, heat rise, etc. Be sure and use special capacitors in these applications.
 导电高分子铝固体电解电容器有急速充放电所产生的超负荷高峰电流通过时,有时会导致短路、开路或大漏电流,请注意不要让高峰电流超过 10A。

If excess a rush current due to drastic charge/dis-charge was applied to conductive polymer aluminum solid electrolytic capacitors, it may cause a short circuit、open circuit or an increase in leakage current. Therefore, please do not apply a rush current that is larger than 10A.

5. 工作温度范围 Operating temperature range.

电容器的特性随工作温度而变化，在温度较高的情况下，容量、漏电流增大，损耗减少；在低温情况下，容量和漏电流下降，损耗增大。电容器在较低的温度下使用会确保延长寿命。

The characteristics of capacitors change with the operating temperature. The capacitance and leakage current increase and $\tan\delta$ decrease at higher temperatures. The capacitance and leakage current decrease and $\tan\delta$ at increase lower temperature. Usage at lower temperature will ensure longer life.

6. 核对工作频率 Check operating frequency.

电解电容器的容量通常是在 100Hz 或 120Hz 下测得的。然而要记住容量随频率的升高而下降， $\tan\delta$ 随频率的升高而增大，并使周围温度升高。

The capacitance of electrolytic capacitors is usually measured at 100Hz or 120Hz. However, remember that capacitance decrease and $\tan\delta$ increase as the applied frequency becomes higher whereas the ambient temperature becomes higher.

7. 长时间存放的电容器，在使用前加额定直流电压处理（期限：一年）

Capacitors stored for a long time should be treated with rated DC voltage before use (with a shelf life of one year)

长时间的存放，实际对电容器的容量和 $\tan\delta$ 没有多大的影响，然而往往会使漏电流增大，耐压降低。长时间存放后的电容器处理，首先逐渐施加直流电压至额定电压，然后再使用。

Long periods of storage have virtually no effect on a capacitor's capacitance and $\tan\delta$. Such periods tend however, to increase leakage current and decrease withstand voltage. After removing capacitors from long-duration storage, first apply a gradually increasing DC voltage to rated voltage and then use them.

8. 电容器外壳与阴极端是不绝缘的 The capacitor case is not insulated from the cathode terminal.

电容器外壳与阴极端是通过电解液连接的，如果电容器的外壳必须与线路绝缘，则电容器的安装位置处，一定要采取绝缘措施。

The capacitor's case and cathode terminal connect through the electrolyte. If the case is to be completely insulated, that insulation must be at the capacitor's mounting point.

9. 电容器的端子或引线上不要施加过大的力 Do not apply excessive force to the terminals and leads.

过大的力施加到端子和引线上，可能引起引线的断裂或端子分裂，转而会引起内部连接的破坏。

The excessive strong force applied to the terminals and lead wires may cause leads to break or terminals to separate and, in turn, cause the internal contact to fail.

七、有害物质管理目录表 List of Hazardous Substance Management Catalogues

物质名称(中文名)	物质名称 (英文名)	含量标准 (化学精密法)		含量标准(XRF)
铅以及它的化合物	Lead and its compounds	<40PPM (非金属类) <80PPM (金属类)		<90PPM (非金属类) <450PPM (金属类)
镉以及它的化合物	Cadmium and its compounds	<5PPM		<50PPM
汞及其化合物	Mercury and its compounds	禁止使用		<100PPM
六价铬以及它的化合物	Hexavalent chromium and its compounds	禁止使用		Cr<350PPM
聚溴联苯	Polybrominated biphenyls	禁止使用		
聚溴二苯醚 (包含十溴联苯醚)	Polybrominated diphenylethers	禁止使用		
邻苯二甲酸酯	DEHP,BBP,DBP,DIBP Phthalates	总和<1000ppm 所有材料 (除金属、陶瓷材料外)		
溴	Bromine(Br)	700PPM	1000	<350PPM
氯(PVC 套管不适用)	Chlorine(Cl) (PVC sleeve not applicable)	700PPM	PPM	<600PPM
高度关注物质	REACH SVHC Substances of High Concern 以欧盟化学品管理局官网 https://echa.europa.eu/candidate-list-table 公布的 SVHC 授权清单为准	<1000PPM		

Note.

- 原则上按照公司的《HW207005 环境管理物质技术标准》管理规定，但由管理总部提出按根据 Buyer 等交易商的要求制定的另行有害物质管理目录来执行的要求时，应优先按照管理总部的管理目录来记载。
- 确认合作企业现在是否在使用这类物质，应记录使用与否。