

承 认 书

APPROVING SHEET

CUSTOMER

客 户:

PART NAME : Aluminum Electrolytic Capacitor

品 名: 引线铝电解电容器SERIES:

系 列: CD110

SPECIFICATION:

规格: 25V-470uF 8*12

DATE

日 期: 2024.08.15

制 造		客 户	
MANUFACTURE		CUSTOMER	
拟 制 FORMULATE	批 准 APPROVAL	检 验 CHECK	批 准 APPROVAL
李梅	梁承乾		

ALUMINUM ELECTROLYTIC CAPACITORS

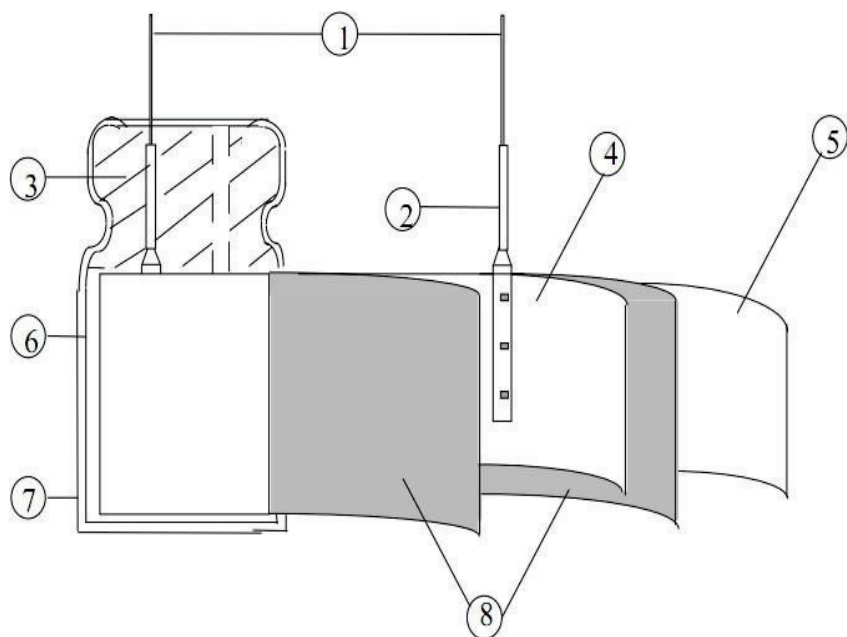
一、SPECIFICATIONS

Used Spec 型号规格	470uf 25v	Leakage Current 漏电流	117.5UA
Size $\phi D \times L$ (mm) 外型尺寸	8*12	Operating Temperature Range 使用温度	-40 \approx +105 $^{\circ}$ C
Rated ripple current Marms/120HZ 最大耐纹波电流	538MA		
Rated Voltages Range(V) 额定电压	25V	Capacitance Tolerance(20 $^{\circ}$ C,120Hz) 容量范围 \pm 20%	376uF \approx 564uF
Lead Spacing and Wine Diameter(mm) 型状及尺寸		$\Phi D \pm \beta$ (Diameter)	8mm \pm 0.5
		$L \pm a$ (Height)	12mm \pm 1.0
		$P \pm 0.5$ (Pitch)	3.5mm \pm 0.5
		$D \pm 0.005$	0.5mm \pm 0.005

2: TABLE1 RATING&CHARACTERISTIC.

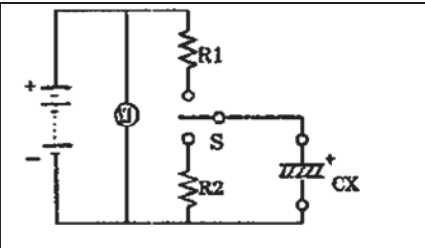
1	Leakage current	$I \leq 0.01CV$ or $3 \mu A$, Whichever is greater (2minutes)										
2	Dissipation factor($\text{tg } \delta$)(120Hz)	UR	6.3V	10V	16V	25V	35V	50V	100V	200V	400V	450V
		$\text{tg } \delta$	0.2	0.20	0.16	0.14	0.14	0.1	0.15	0.15	0.24	0.24
3	Load life(105 $^{\circ}$ C)	After appyng rated voltage with specified ripple current for 2000hours at+105 $^{\circ}$ C and then resun 16hours; Capacitance change: $\leq \pm 20\%$ of the initial measured value Loakge current: \leq The initial specified value Dissipation factor: $\leq 150\%$ of the iniaial specified value										
4	Temperature characteristics (120Hz)	120Hz										
		UR(V)		6.3	10	16	25	50	200	400	450	
		ZT/Z20max)	Z-25 $^{\circ}$ C/Z+20 $^{\circ}$ C		2	2	2	2	2	2	3	8
		Z-40 $^{\circ}$ C/Z+20 $^{\circ}$ C		4	4	4	3	3	3	4	9	
5	Shelf Life	After storage for 1000hours at +105 $^{\circ}$ C then resumed 16hours Capacitance change:With $\pm 20\%$ of the initial measured value Leakage current: Not more than 200% of the initial specified value Dissipation factor: Not more than 120% of the initial specified value										

二. 构造图及材料表 (Frame drawing and Material list):



序号 No.	部件名称 Parts	材料名称 Material	主要供应厂家名称 Main supply Factory
1	引出线	铝+CP 线 Aluminum + Cpwire	宇雅/金飞达
2	橡胶塞	合成橡胶 Synthetic rubber	四川坤茂电子科技有限公司
3	铝壳 CASE	铝 Aluminum case	益阳市达明电子材料有限公司
4	阳极箔 AL - foil(+)	铝 Aluminum	东阳光
5	阴极箔 AL - foil(-)	铝 Aluminum	富奕达/飞乐
6	电解液 Electrolyte	乙二醇+己二酸铵+硼酸 EG+boric acid	泽业
7	电解纸 Separstor paper	电解电容器纸 Electrolytic Capacitor paper	凯恩/鲁南
8	套管 Sleeve	PET	益阳弘泰环保塑胶有限公司

1	额定电压 (rated voltage)	25v-450v										
2	工作温度范围 Operating temperature range operating	工作温度范围是指电容器在额定电压下能持续工作的所允许外部环境的温度范围 operating temperature range is the range of ambient temperature at which the capacitor can be operated continuously at rated voltage SPEC:-40~+105°C										
3	电容容量 capacitance	测量等效电路图 measuring circuit equivalent series circuit										
		测量温度 20°C	measuring temperature									
		测量频率 120HZ	measuring frequency									
		测量电压 0.5Vrms	measuring voltage									
		标称电容容量允许偏差: ±20% MAX	Nominal Capacitance Tolerance: ±20% MAX									
4	损耗角正切 tangent of the loss angle	损耗角正切的测量应要和测量电容容量一样的条件下进行 Measurement should be made under the same conditions as those given for the measurement of capacitance SPEC:										
		损耗 Dissipation Factor	工作电压 WV (V)	25	35	50	63	100	160	200	250	350
		损耗 DF%	14	12	10	10	10	15	15	15	20	20
5	漏电流 leakage current	25~400V					450~500V					
		I ≤ 0.02CV + 10 μA (2 分钟) I ≤ 0.02CV + 10 μA (2 minutes)					I ≤ 0.03CV + 10 μA (2 分钟) I ≤ 0.03CV + 10 μA (2 minutes)					
		I=漏电流 (μA) Leakage Current		C=额定静电容量 (uf) Rated Capacitance			V=额定电 (V) Rated Voltage					
6	允许最大纹波电流 Maximum permissible ripple current	在规定的某一频率下的最大交流电流, 在该电流下电容器连续工作。即使在测过第 11 项下的耐久性后, 此要求仍要满足。在此, DC 电压加上最大纹波电压小于等于额定电压。 The maximum sinusoidal alternating current of a frequency specified below, at which the capacitor can be operated continuously. This requirement shall be satisfied even after the measurement of clause 16(electrical endurance) Where(DC voltage +peak ripple voltage) ≤ rated voltage										

7	温度特性 Characteristics of temperature	<table border="1"> <thead> <tr> <th>步骤 step</th> <th>温度 temperature</th> <th>持续时间 Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20±2℃</td> <td>15 分钟 15 min</td> </tr> <tr> <td>2</td> <td>最低工作温度 minimum operating temperature</td> <td>2 小时 2 hours</td> </tr> <tr> <td>3</td> <td>20±2℃</td> <td>15 分钟 15 min</td> </tr> <tr> <td>4</td> <td>最高工作温度 maximum operating temperature</td> <td>2 小时 2 hours</td> </tr> </tbody> </table> <p> 步骤 1: 测量容量, 损耗角正切和阻抗 Step1: Capacitance, tangent of the loss angle impedance shall be measured. 步骤 2: 在电容器存放 2 小时后, 测量容量, 损耗角正切和阻抗 Step2: After the capacitor being stored for 2hours, Capacitance, tangent of the loss angle and impedance shall be measured. 步骤 3: 电容器在 20±2℃下存放 15 分钟 Step3: The capacitor being stored fro 15min at20±2℃ 步骤 4: 在电容器存放 2 小时后, 测量容量和漏电流。 Step4: After the capacitor being stored for 2hours, capacitance and leakage current shall be measured </p> <table border="1"> <thead> <tr> <th>额定电压 rated voltage</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Z-(-25℃/Z (+20℃)</td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z-(-40℃/Z (+20℃)</td> <td>15</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table>	步骤 step	温度 temperature	持续时间 Duration	1	20±2℃	15 分钟 15 min	2	最低工作温度 minimum operating temperature	2 小时 2 hours	3	20±2℃	15 分钟 15 min	4	最高工作温度 maximum operating temperature	2 小时 2 hours	额定电压 rated voltage	4	6.3	10	16	25	35	50	63	80	100	Z-(-25℃/Z (+20℃)	7	4	3	2	2	2	2	2	2	2	Z-(-40℃/Z (+20℃)	15	8	6	4	4	3	3	3	3	3
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8	浪涌测试 Surge test	<p> 在规定温度下, 循环测试 1000 次, 每次充电 30±5 秒, 在放电大约 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 a temperature specified below, 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. </p> <p>measurement circuit(测试电路图)</p>  <table border="1"> <tbody> <tr> <td>VS:浪涌电压 Surge voltage</td> <td>V1:直流电压 DC voltmeter</td> </tr> <tr> <td>R1:保护电阻 (1KΩ) Protective series resistor</td> <td>R2:放电电阻器 Discharge resistor</td> </tr> <tr> <td>CX:测试电容 Test capacitor</td> <td>S:开关 Switch</td> </tr> </tbody> </table> <p> SPEC: 1) $\Delta C/C \leq 15\%$ 2) $\text{tg } \delta < \text{规定值}$ 3) 电压 </p> <table border="1"> <tbody> <tr> <td>RATED VOLTAGE (V_{DC})</td> <td>4</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_{DC})</td> <td>5</td> <td>8</td> <td>13</td> <td>20</td> <td>32</td> <td>44</td> <td>63</td> <td>72</td> <td>92</td> <td>115</td> </tr> </tbody> </table>	VS:浪涌电压 Surge voltage	V1:直流电压 DC voltmeter	R1:保护电阻 (1KΩ) Protective series resistor	R2:放电电阻器 Discharge resistor	CX:测试电容 Test capacitor	S:开关 Switch	RATED VOLTAGE (V _{DC})	4	6.3	10	16	25	35	50	63	80	100	SURGE VOLTAGE (V _{DC})	5	8	13	20	32	44	63	72	92	115																				
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9	<p>稳态湿热 Damp heat</p>	<p>电容器要在温度 $40\pm 2^{\circ}\text{C}$，相对湿度 90%到 95%条件下存放 500 ± 8 个小时。然后在标准条件下放 1 到 2 小时后进行测量。</p> <p>the capacitor shall be stored at a temperature of $40\pm 2^{\circ}\text{C}$ and relative humidity of 90 to 95% for 500 ± 8hours. And then the capacitor shall be subjected to standard atmospheric conditions for 1 to 2hours, after which measurements shall be made</p> <p>SPEC:1) 电容量的变化 change in capacitance: $\pm 15\%$初始值以内 within $\pm 15\%$of the initial value; 2) 损耗角正切 tangent of loss angle: 小于等于初始规定值 The initial specified value or less; 3) 漏电流 leakage current: 小于等于初始规定值 The initial specified value or less</p>						
10	<p>高温储存 shelf life</p>	<p>在 105°C 环境中, 无负荷放置 1,000 小时后、特温度恢复到 20°C 进行测量时, 应满足以下要求。</p> <p>The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing then for 1,000 hours at 105°C without voltage applied.</p> <table border="1" data-bbox="352 936 1422 1346"> <tr> <td data-bbox="352 936 927 1037"> 静电容量变化率 Capacitance Change </td> <td data-bbox="927 936 1422 1037"> 初始值的 $\pm 20\%$ 以内 Within $\pm 20\%$ of the initial value. </td> </tr> <tr> <td data-bbox="352 1037 927 1189"> 损耗角正切值 Dissipation Factor </td> <td data-bbox="927 1037 1422 1189"> 规格值的 200% 以下 Not more than 200% of the specified value. </td> </tr> <tr> <td data-bbox="352 1189 927 1346"> 漏电流 Leakage Current </td> <td data-bbox="927 1189 1422 1346"> 规格值的 200% 以下 Not more than 200% of the specified value. </td> </tr> </table>	静电容量变化率 Capacitance Change	初始值的 $\pm 20\%$ 以内 Within $\pm 20\%$ of the initial value.	损耗角正切值 Dissipation Factor	规格值的 200% 以下 Not more than 200% of the specified value.	漏电流 Leakage Current	规格值的 200% 以下 Not more than 200% of the specified value.
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11	<p>耐久性 load life</p>	<p>在 105°C 环境中, 不超过额定电压的范围内叠加额定纹波电流, 连续加载 2000 小时后, 待温度恢复到 20°C 进行测量时, 应满足以下各项要求。</p> <p>The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to rated DC voltage and rated ripple current at 105°C after 2000 hours.</p> <table border="1" data-bbox="352 1626 1422 2033"> <tr> <td data-bbox="352 1626 927 1727"> 静电容量变化率 Capacitance Change </td> <td data-bbox="927 1626 1422 1727"> 初始值的 $\pm 30\%$ 以内 Within $\pm 30\%$ of the initial value. </td> </tr> <tr> <td data-bbox="352 1727 927 1881"> 损耗角正切值 Dissipation Factor </td> <td data-bbox="927 1727 1422 1881"> 规格值的 300% 以下 Not more than 300% of the specified value. </td> </tr> <tr> <td data-bbox="352 1881 927 2033"> 漏电流 Leakage Current </td> <td data-bbox="927 1881 1422 2033"> 规格值的 300% 以下 Not more than 300% of the specified value. </td> </tr> </table>	静电容量变化率 Capacitance Change	初始值的 $\pm 30\%$ 以内 Within $\pm 30\%$ of the initial value.	损耗角正切值 Dissipation Factor	规格值的 300% 以下 Not more than 300% of the specified value.	漏电流 Leakage Current	规格值的 300% 以下 Not more than 300% of the specified value.
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ALUMINUM ELECTROLYTIC CAPACITORS

二、 Specifications Of Product Parking

Diameter	Bag (PCS)	Box (PCS)	Remarks
Φ4	1000	100000	The inner and outer packaging can be customized according to your company's requirements
Φ5	1000	50000	
Φ6	1000	40000	
Φ8	500	20000	
Φ10	500	10000	
Φ13	250	5400	
Φ16	100	2000	
Φ18	100	1000	
Φ22			

三、 Product size

uF C _R U _R	6.3V	10V	16V	25V	35V	50V	63V	100V	160V	250V	400V
0.1						5×11					
0.22						5×11					
0.33						5×11					
0.47						5×11		5×11			
1						5×11		5×11	6.3×11	6.3×11	6×16.5
2.2						5×11		5×11	6.3×11	6.3×11	8×12
3.3						5×11		5×11	6.3×11	8×12	8×14
4.7						5×11		5×11	8×12	8×12	10×16
10			5×11	5×11	5×11	5×11	5×11	6.3×11	8×14	10×16	13×20
22			5×11	5×11	5×11	5×11	6.3×11	8×12	10×16	13×20	8×17.3
33			5×11	5×11	5×11	6.3×11	6.3×11	8×14	10×17.5	13×20	16×22
47		5×11	5×11	5×11	6.3×11	6.3×11	8×12	10×16	13×25	13×25	18×25
100	5×11	5×11	6.3×11	6.3×11	8×12	8×12	8×14	13×20	16×25	16×30	18×35
220	6.3×11	5×12	6.3×11	8×12	8×12	10×14	10×16	16×25	18×35		
330	6.3×11	6.3×12	8×12	8×14	10×12	10×16	10×22	16×25			
470	6.3×12	6.3×12	8×12	8×12	10×16	10×22	13×20	16×30			
1000	8×14	8×14	10×16	10×20	13×20	13×25	16×25	22×35			
2200	10×16	10×20	10×20	13×21	16×25	16×35	18×35				
3300	10×22	13×20	13×25	16×25	16×35	18×35					
4700	13×20	13×25	16×25	16×35	18×35	22×35					
6800	13×25	16×25	16×30	18×35	22×35						

How to order

CD11X 	7 	470 	M 	630 	B 	8X12
Series code	Number of characters for capacitance (47uF=2, 470uF=3)	Capacitance (47uF=470, 471 = 470UF, 3300uF=332, 33000uF=333)	Capacitance tolerance (M+/-20% K +/-10%)	Voltage code (6.3V=6R3, 10V= 100, 25V=250, 63V=630, 100V=101)	Package (B: Bulk pack, A : Ammo Pack)	Size code