



样品承认书

SPECIFICATION FOR APPROVAL

客 户: _____
(Customer)
品 名: Aluminium Electrolytic Capacitor
(Product Name)
型 号: **RTE SERIES**
(Series)
日 期: _____
(Date)

贵公司承认:
Approval Signature

批 准 :
Approved

审 核:
Checked

制 作:
Prepared

珠海华冠电容器有限公司
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RTE Series Type (系列)

(105°C,1000H)

Electrical Requirements 电解电容器规格书:

1	Capacitance Tolerance 容量偏差	±20% at 120Hz,20°C																																											
2	Operation Temperature Range 工作温度	6.3V~100V -40°C~+105°C						160V~250V -25°C~+105°C																																					
3	Rated Working Voltage And Surge Voltage 额定电压与浪涌电压	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 5%;">W.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>100</td> <td>160</td> <td>200</td> <td>250</td> </tr> <tr> <td>S.V.</td> <td>7.3</td> <td>11.5</td> <td>18.4</td> <td>29</td> <td>40</td> <td>58</td> <td>73</td> <td>115</td> <td>184</td> <td>230</td> <td>287</td> </tr> </table>											W.V.	6.3	10	16	25	35	50	63	100	160	200	250	S.V.	7.3	11.5	18.4	29	40	58	73	115	184	230	287									
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4	Leakage Current 漏电流	<p>After DC Voltage is applied to capacitor through the series protective resistance(1K Ω),and then terminal voltage may reach the rated working voltage. The leakage current when measured after 2 minutes (6.3-400V)shall be below the value of the following equation. 串联(1K Ω)保护电阻后,对产品施加额定直流工作电压(6.3~250V)两分钟后,漏电流值不大于下列规定值。</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 50%; padding: 5px;"> 6.3~100V $I \leq 0.01CV$ or $3 \mu A$ (取较大值) Whichever is greater </td> <td style="width: 50%; padding: 5px;"> 160~250V $I \leq 0.03CV + 10 (\mu A)$ </td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;">Where</td> <td style="padding: 5px;">I=Leakage Current(μ A)</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;">C=Capacitance(μ F)</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;">V=Rated DC Working Voltage(V)</td> </tr> </table>											6.3~100V $I \leq 0.01CV$ or $3 \mu A$ (取较大值) Whichever is greater	160~250V $I \leq 0.03CV + 10 (\mu A)$	Where	I=Leakage Current(μ A)		C=Capacitance(μ F)		V=Rated DC Working Voltage(V)																									
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5	Dissipation Factor 损耗角正切值 (at 120Hz,20°C)	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 5%;">Rated Voltage</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> <td>200</td> <td>250</td> </tr> <tr> <td>Tan δ (max)</td> <td>0.22</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.08</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> </tr> </table> <p>标称容量大于 1000 μ F 时, 每增加 1000 μ F, 损耗角正切值增加 0.02。</p>											Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	Tan δ (max)	0.22	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.15	0.15									
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6	温度特性 Temperature Characteristic Impedance Ratio (at 120Hz)	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 5%;">wv</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> <td>250</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>≤4</td> <td>≤7</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td colspan="4">≤5</td> <td colspan="3">≤4</td> <td>-</td> <td colspan="2">-</td> </tr> </table>											wv	6.3	10	16	25	35	50	63	100	160	250	Z(-25°C)/Z(+20°C)	-	-	-	-	-	-	-	-	≤4	≤7	Z(-40°C)/Z(+20°C)	≤5				≤4			-	-	
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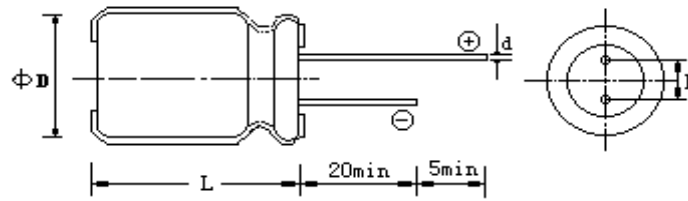
Endurance characteristic 特性检测:

No.	Item 测试项目	Conditions 测试条件	Specification 特性要求	
1	Rotational Temperature Test 温度快速变化	Capacitor is place in an oven whose temperatures follow specific regulation to change. The specific regulation is “+20°C (3 min)→-40°C (30 min)→+20°C (3 min)→+105°C (30 min)→+20°C (3 min)”, and it is called a cycle. The test totals 5 cycles. And then the capacitor shall be subjected to standard atmospheric Conditions for 16 hours, after which measurement shall be made. 电容器在规定的温度范围内循环如下: “+20°C (3 min)→ -40°C (30 min) → +20°C (3 min) → +105°C (30 min)→+20°C (3 min)”, 以上循环运行 5 次后, 将电容器放置于标准气候中恢复 16 小时测量其值满足特性要求。	Physical 外观	No broken and undamaged 无可见损伤及泄漏
2	High Temperature Load Life Test 耐久性	Capacitors shall be placed in oven with application of ripple current and rated voltage for 1000hrs at 105°C. 在 105°C 条件下, 对电容器施加带有额定纹波电流的额定工作电压 1000 小时后, 在标准气候下恢复 16 小时测量。	Capacitance Change 容量变化	Within +/-20% of the initial value 初始值的 ±20% 以内
			TAN δ 损耗角正切	Less than 200% of specified value 不大于规定值的 200%
			Leakage Current 漏电流	Within specified value 不大于规定值
			Physical 外观	No broken and undamaged 无可见损伤及泄漏
3	High Temperature Unload Life Test 高温储存特性	After 500 hrs test at 105°C without rated working voltage. And then the capacitor shall be subjected to standard atmospheric conditions for 16 hours, after which measurements shall be made. 将电容器无负载放置于 105°C 条件, 500 小时后取出, 放置于标准气候下恢复 16 小时测量	Capacitance Change 容量变化	Within +/-20% of the initial value 初始值的 ±20% 以内
			TAN δ 损耗角正切	Less than 200% of specified value 不大于规定值的 200%
			Leakage Current 漏电流	Less than 200% of specified value 不大于规定值的 200%
			Physical 外观	No broken and undamaged 无可见损伤及泄漏
4	Humidity Test 稳态湿热	Capacitors shall be exposed for 500 ± 6 hrs in an atmosphere of 90~95% R.H. at 40°C. And then the capacitor shall be subjected to standard atmospheric conditions for 16 hours, after which measurements shall be made. 电容器放置于 湿度 90~95%	Capacitance Change 容量变化	Within +/-10% of the initial value 初始值的 ±10% 以内
			TAN δ 损耗角正切	Less than 200% of specified value 不大于规定值的 200%
			Leakage Current 漏电流	Within specified value 不大于规定值

		R.H., 温度 40℃ 的大气中 500±6 小时。取出后在标准气候下恢复 16 小时测量	Physical 外观	No broken and undamaged 无可见损伤及泄漏
5	Vibration Test 振动测试	<p>1.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.</p> <p>2.Direction and during of vibration: 3 orthogonal directions Mutually each for 2hrs total 6hrs.</p> <p>3.Frequency:10to 55Hz reciprocation for1 min.</p> <p>4. Total amplitude: 0.75mm.</p> <p>1.安装点距产品 4mm 以上。</p> <p>2.在三个互相垂直轴的每一方向各振动 2 小时，共 6 小时。</p> <p>3.频率: 10 到 55Hz 每分钟互换。</p> <p>4.振幅: 0.75mm.。</p>	Capacitance Change 容量变化	Within+/-10% of the initial value 初始值的±10%以内
			TAN δ 损耗角正切	Within specified value 不大于规定值
			Leakage Current 漏电流	Within specified value 不大于规定值
			Physical 外观	No broken and undamaged 无可见损伤及泄漏
6	Solder Heat-Resistance Test 耐焊接热	<p>The section of lead below 4mm form the body of capacitor must be immersed in 260℃+/-5℃ liquid tin 10+/-1 seconds. Then. after removing the following specifications shall be satisfied when capacitor terminal is restored to 20℃ within two hours or over an hour.</p> <p>距电容器本体 4mm 以下浸入 260℃±5℃ 的液体中 10±1 秒. 取出后放入标准气候下恢复 1~2 小时测量。.</p>	Capacitance Change 容量变化	Within+/-5% of the initial value 初始值的+/-5%以内
			Physical 外观	No broken and undamaged 无可见损伤及泄漏
7	Surge Voltage Test 浪涌电压	<p>After surge voltage applied at a cycling rate of 30 seconds charge and 5.5 minutes discharge 1000 successive test cycle.</p> <p>加 1.15 倍额定电压充电 30 秒后放电 5 分 30 秒，连续循环 1000 次后测量。</p>	Capacitance Change 容量变化	Within+/-15% of the initial value 初始值的+/-15%以内
			TAN δ 损耗角正切	Within specified value 不大于规定值
			Leakage Current 漏电流	Within specified value 不大于规定值
			Physical 外观	No broken and undamaged 无可见损伤及泄漏
8	Solderability Test 可焊性	<p>After the lead wire fully immersed in the solder for 2+/-0.1secs at a temperature of 235+/-2℃,the solder coating must be more than 95%</p> <p>引线浸入 235+/-2℃ 的焊料中，持续 2+/-0.1 秒，拔出后引线表面被焊料覆盖的面积不少于浸入面积的 95%。</p>		

<p>9</p>	<p>Mechanical Characteristics Test 引出端的强度</p>	<p>1.The test is about lead tabs strength. 1.本测试主要测试引出端的强度。 2.Tension Test: The lead tabs shall not be broken or any malformed condition after fixing capacitor vertically and pressing the following weight on the lead tabs of capacitor for 10+/-1 secs. 2.拉力测试: 垂直固定电容器后, 在引出端施加以下重量 10+/-1 秒钟, 引出端不允许出现任何损伤和变形。</p> <table border="1" data-bbox="758 488 1353 667"> <thead> <tr> <th>Lead tabs diameter 引出端直径(mm)</th> <th>Weight 重量(Kg)</th> </tr> </thead> <tbody> <tr> <td>0.5</td> <td>0.5</td> </tr> <tr> <td>0.6、0.8</td> <td>0.8</td> </tr> </tbody> </table> <p>3.Bending Test: The capacitor is held in vertical position. Attach a weight to the lead tabs, slowly rotate the capacitor 90° to a same way in the opposite direction. Repeat it again(5secs per cycle). The lead tabs shall not be broken or cracked. 3.弯曲测试: 竖直放置电容器, 在其引出端悬挂下表重量的重物, 转动电容器 90 度, 恢复后, 向相反方向转动 90 度, 再恢复为一个周期, 重复 1 次(每个循环 5 秒钟)。引线不会损伤破损。</p> <table border="1" data-bbox="758 936 1375 1124"> <thead> <tr> <th>Lead tabs diameter 引出端直径(mm)</th> <th>Weight 重量(Kg)</th> </tr> </thead> <tbody> <tr> <td>0.5</td> <td>0.5</td> </tr> <tr> <td>0.6、0.8</td> <td>0.8</td> </tr> </tbody> </table>	Lead tabs diameter 引出端直径(mm)	Weight 重量(Kg)	0.5	0.5	0.6、0.8	0.8	Lead tabs diameter 引出端直径(mm)	Weight 重量(Kg)	0.5	0.5	0.6、0.8	0.8
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<p>10</p>	<p>Standards 引用标准</p>	<p>Satisfies Characteristic of GB2693, IEC383、IEC384</p>												

11. Diagram of Dimensions&Ripple current:



(mm)

D	± 0.5			± 1.0			
	5	6.3or6	8	10	13	16	18
$F \pm 0.5$	2.0	2.5	3.5	5.0	5.0	7.5	7.5
$L \pm 2.0(\text{max})$	11	11or12	11.5,11,16	12,16,17,20	14,20,25	25,32,36	36,40
$d \pm 0.05$	0.5	0.5	0.5or0.6	0.6		0.8	

Nominal capacitance, rated voltage, rated ripple current and case size table

WV UF	6.3(0J)			10 (1A)			16 (1C)			25 (1E)			35 (1V)		
	$\Phi D \times L$	mA	$Z(\Omega)$	$\Phi D \times L$	mA	$Z(\Omega)$	$\Phi D \times L$	mA	$Z(\Omega)$	$\Phi D \times L$	mA	$Z(\Omega)$	$\Phi D \times L$	mA	$Z(\Omega)$
10										5×11	56	2.1			
33										5×11	81	2.8	5×11	89	2.3
47							5×11	90	2.4	5×11	97	2	6.3×11	121	1.4
100				5×11 6.3×11	123 207	1.4 0.7	6.3×11	149	1.2	6.3×11	161	0.9	8×11.5 6.3×11	210 180	0.8
220				6.3×11	207	0.7	8×11	263	0.5	8×11	284	0.4	10×12 8×11	354 300	0.35
330				6.3×11	254	0.5	8×11.5	322	0.4	10×12	396	0.28	10×16 8×16	490 432	0.23
470				8×11	360	0.28	10×12 8×12	438 385	0.245 0.268	10×16 8×16	534 471	0.20	10×20 10×17	645 600	0.16
1000	8×12	580	0.16	10×17	693	0.14	10×20 10×17	796 722	0.125	13×20 10×20 12×17	996 859 887	0.09 0.125 0.105	13×25	1203	0.08
2200				13×20	1206	0.065	13×25	1410	0.05	16×25 13×25	1695 1508	0.04	16×32 18×26	1982 1935	0.035 0.045
3300				13×25	1545	0.042	16×25	1830	0.035	16×32	2102	0.03	18×36	2569	0.032
4700				16×26	1976	0.036	16×32 18×25	2244 2154	0.032 0.024	18×36	2704	0.028			

U UF	WV	50 (1H)			63 (1J)			100 (2A)			160 (2C)			250 (2E)		
		ΦD×L	mA	Z(Ω)	ΦD×L	mA	Z(Ω)	ΦD×L	mA	Z(Ω)	ΦD×L	mA	Z(Ω)	ΦD×L	mA	Z(Ω)
0.47		5×11	12	40.00				5×11	12	35.00						
1		5×11	17	20.00				5×11	17	20.00				6.3×11	15	18.00
2.2		5×11	26	16.00				5×11	26	15.00	6.3×11	29	18.00	8×11.5	26	14.00
3.3		5×11	32	12.00				5×11	32	10.00	6.3×11	36	14.00	8×11.5	32	10.00
4.7		5×11	38	8.000				5×11	38	6.000	8×11.5	51	8.000	10×12	44	4.200
10		5×11	55	4.500	5×11	55	4.000	6.3×11	62	3.500	10×12	84	3.400	10×20	80	1.700
22		5×11	81	2.800	6.3×11	93	2.450	8×11.5	110	2.300	10×20	156	1.800	13×20	137	1.400
33		6.3×11	113	1.850	6.3×11	113	1.600	10×12	153	1.600	13×20	222	1.400	13×20	168	0.900
47		6.3×11	135	1.300	8×11.5	161	1.150	10×16	207	0.450	13×20	264	1.200	16×25	250	0.700
100		8×11.5	235	0.600	10×12	267	0.540	13×20	386	0.200	16×25	478	0.700	16×36	878	0.450
220		10×16	448	0.280	10×20	494	0.245	16×25	709	0.150	18×36	878	0.400			
330		10×20	605	0.185	13×20	701	0.160	16×25	868	0.100						
470		13×20	836	0.130	13×25	922	0.115	16×32	1122	0.055						
1000		16×25	1511	0.060	16×32	1637	0.055									
2200		16×36 18×36	2482 2648	0.040												

I~額定紋波電流 Rated ripple current: (mA, 105°C, 120Hz) 阻抗 Impedance: (Ω, 20°C, 100KHZ)

A. Marking:

Capacitor shall be marked with Capacitance, Rated Working Voltage, Max Operating Temperature and Polarity.

All marking shall be legible and permanent.

B. Remark:

Customers' specification will be accorded on request.