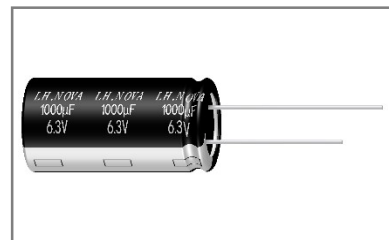


## ■LY 系列铝电解电容器

### LY Series Aluminum Electrolytic Capacitor

#### ◆特征 Features

- \* 寿命: 105℃ 4000~10000 小时  
Load life: 105℃ 4000~10000 hours.
- \* 超低阻抗  
Ultra low impedance.
- \* 符合 RoHS  
Compliant to the RoHS Directive.



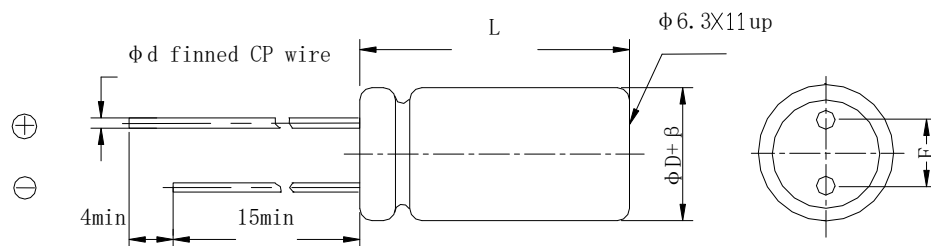
#### ◆应用 Application

- \* 适用于各类开关电源等电子产品  
Ideally designed for all kinds of switching power supply and other electronic products.

#### ◆型号表示法 Part Number

8		220		LF		M		0511		LY		N		0		1		1		0			
代码 Code		产品类别 Type		代码 Code		电压 Voltage		代码 Code		尺寸 Dimensions ΦDxL(mm)		代码 Code		商标 Trademark		代码 Code		内码 Internal Code		代码 Code		产品脚型 Lead Forming Type	
8		成品 Product		LA		6.3		0511		Φ5x11		N		LH.NOVA		1		105℃		0		散装品 Bulk	
				LB		10		AA12		Φ6.3x12										P		直脚方式 编带品 original type(vertical tape)	
				LD		25		0812		Φ8x12													
				LE		35		1020		Φ10x20													
				LF		50		AB20		Φ12.5x20													
				LG		63		1840		Φ18x40													
				MA		100																	

代码 Code		标称容量 Nominal Capacitance		代码 Code		误差 Tolerance		代码 Code		型号 Series		代码 Code		胶管颜色 Sleeve Color		代码 Code		内码 Internal Code	
1R0		1uF		K		±10%		LY		LY		0		黑色 Black		1		普通品 regular	
220		22uF		V		± <sup>20</sup> <sub>10</sub> %						1		深蓝色 Deep-blue		E		PET 胶管 平台胶粒	
501		500uF		M		±20%						7		棕色 Brown		F		PET 胶管 凸台胶粒	
183		18000uF		Q		± <sup>30</sup> <sub>10</sub> %						9		绿色 Green					

**◆产品结构 Product Structure**


β(mm)	±0.5			±1.0				
ΦD(mm)	5	6.3	8	10	12.5	16	18	22
F±0.5(mm)	2.	2.5	3.5	5.0		7.5		10.0
Φd±0.1(mm)	0.5		0.6			0.8		
L(mm)	11,12		12,16	12,16,	16,20,25	16,20,25,30,35	20,25,30,35,40	25,30,35,40
	L±2.0							

**◆主要特性表 Main specifications**

项目 Item	主要特性 Performance Characteristics	
额定工作电压范围 Rated Voltage Range	6.3~100V.DC	
使用温度范围 Operating Temperature Range	$-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$	
标称静电容量范围 Nominal Capacitance Range	1~18000 $\mu\text{F}$	
静电容量允许偏差 Capacitance Tolerance	$\pm 20\%$ (M, $+20^{\circ}\text{C}$ , 120Hz)	
漏电流 Leakage Current ( $20^{\circ}\text{C}$ )	额定工作电压(V) Rated working voltage	6.3~100
	漏电流 Leakage current	2 分钟后 $I \leq 0.01\text{CV}$ 或 $3(\mu\text{A})$ , 取最大值 After 2 min. $I \leq 0.01\text{CV}$ or $3(\mu\text{A})$ , Whichever is greater.
C: 标称静电容量 ( $\mu\text{F}$ ) Nominal Capacitance in $\mu\text{F}$ V: 额定工作电压 (V) Rated working voltage in V		
损耗角正切 DF Dissipation Factor	额定工作电压(V) Rated working voltage	6.3   10   16   25   35   50   63   100
	DF(MAX) ( $20^{\circ}\text{C}$ , 120Hz)	0.18   0.16   0.14   0.12   0.12   0.10   0.09   0.08
当容量值大于 1000 $\mu\text{F}$ 时, 每增加 1000 $\mu\text{F}$ , DF 值加 0.02 For capacitance of more than 1000 $\mu\text{F}$ , add 0.02 for every increase of 1000 $\mu\text{F}$ .		

浪涌电压 Surge Voltage Test	额定工作电压(V) Rated working voltage	6.3	10	16	25	35	50	63	100
	浪涌电压(V) Surge voltage	8	13	20	32	44	63	79	125
	施加表中所示浪涌电压, 充电 30± 5 秒, 放电 5.5± 0.5 分钟作为一个周期, 共进行 1000 次。测试温度: 15℃-35℃然后在标准大气条件下放置达到热稳定, 测试各参数。								
	Application of DC surge Voltage stated at table,1000 times of charging for 30 ± 5 sec.,discharging with a period of 5.5± 0.5 min.. Test temperature: 15℃ -35℃And the capacitor shall be stored under standard atmospheric conditions to obtain thermal stability, after which measurements shall be made.								
	容量变化: 在初始值的± 20%以内。损耗角正切值不大于规定值的 200%。漏电流: 不大于初始规定值								
	Capacitance change:Within ± 20% of the initial value Dissipation factor:Not more than 200% of the specified value.Leakage current: more than the initial specified value								
温度特性 Temperature Stability	额定工作电压(V) Rated working voltage		6.3	10	16	25~100			
	阻抗比(120Hz)	z-25℃/z+20℃	4	3	2	2			
	Impedance Ratio	z-40℃/z+20℃	8	6	4	3			
高温负荷特性 Load life	在+105℃ 环境中施加额定工作电压和最大允许纹波电流 4000~10000 小时后,电容器的性能符合下面要求:								
	After application of rated working voltage with max permissible ripple current specified at +105 ℃ for 4000~10000 hours, capacitors meet the characteristics requirements measured at +20℃ listed at below:								
	1、电容量变化率:±25%初始测量值以内								
	Capacitance change: ±25% initial measured value								
	2、漏电流: ≤初始规定值								
	Leakage current: ≤initial specified value								
	3、损耗角正切值≤200%倍初始规定值								
	Dissipation factor: ≤200% initial specified value								
	外径 Case Dia	时间(hrs) Life Time							
		6.3~10WV		16~100WV					
	ΦD≤8	4000		5000					
	ΦD=10	6000		7000					
	ΦD≥12.5	8000		10000					
高温贮存特性 Shelf life	在+105℃环境无负荷放置 1000 小时后, 根据 JIS-C-5101-4, 加额定电压 30min.,常温放置 24~48 小时后测试, 电容器的性能符合下面要求:								
	After leaving capacitors under no load at +105 ℃ for 1000 hours, According to JIS-C-5101-4, apply the rated DC voltage for 30 minutes and store the capacitors under room temperature for 24-48 hours. The capacitors meet the characteristics listed as below:								
	1、电容量变化率:±20%初始测量值以内								
	Capacitance change : ±20% initial measured value								
	2、漏电流: ≤初始规定值								
	Leakage current:≤initial specified value								
	3、损耗角正切值≤200%倍初始规定值								
	Dissipation factor: ≤200% initial specified value								

<p>稳态湿热 Resistance to damp heat (steady state)</p>	<p>试验温湿度：40±2℃，90~95%RH            试验时间：500±10h            试验后，电容器在标准大气条件下2小时，然后测试参数            Test temperature and humidity：40±2℃，90~95%RH            Test time：500±10h            After completion of test, the capacitor shall be subjected to standard atmospheric conditions for 2 hours, after which measurements shall be made.</p> <p>外观：无异状            Appearance: No remarkable abnormality            容量变化：在初始值±10%范围内            Capacitance change: Within ±10% of the initial value.            损耗角正切值：不大于初始规定值            Dissipation factor: ≤initial specified value            漏电流：不大于初始规定值            Leakage current: ≤initial specified value</p>
<p>耐焊接热 Resistance to soldering heat</p>	<p>焊锡温度：260±5℃，浸入时间：10±1秒，浸入深度：1.6mm            Solder bath temperature：260±5℃, Immersion time：10±1sec.            Immersion depth: 1.6mm</p> <p>外观：无异状            Appearance: No remarkable abnormality            容量变化：在初始值±10%范围内            Capacitance change: Within ±10% of the initial value.            损耗角正切值：不大于初始规定值            Dissipation factor: ≤ initial specified value            漏电流：不大于初始规定值            Leakage current: ≤initial specified value</p>
<p>防爆试验 Safety vent</p>	<p>以下试验只适用于铝壳直径≥Φ8产品。            The following tests only apply to those products with vent products at diameter≥Φ8 with vent.            在电容器两极施加反向直流电压，其中通过的电流为1A，在测试时防爆装置应能在30分钟内动作。            DC Application test: The capacitor shall be subjected to a reverse DC voltage. The current flowing through the capacitor shall be 1A. If the vent does work with the voltage applied for 30 minutes, the test is considered to be passed.</p> <p>应无引线、铝箔等散射，无火花产生            The safety vent is actuated under the test conditions, thereby preventing terminals, metal pieces, etc, of the capacitor from scattering due to burst, the case from separating from the seal packing, or the capacitor from producing flame.</p>

端子强度 Terminal strength	端子抗拉强度：沿电容器端子引线方向施加拉力(如下表)，10±1 秒。												
	<table><tr><td>引线直径 Φ</td><td>0.45</td><td>0.50</td><td>0.60</td><td>0.80</td><td>1.00</td></tr><tr><td>拉力 N</td><td>5</td><td>5</td><td>10</td><td>10</td><td>20</td></tr></table>	引线直径 Φ	0.45	0.50	0.60	0.80	1.00	拉力 N	5	5	10	10	20
	引线直径 Φ	0.45	0.50	0.60	0.80	1.00							
	拉力 N	5	5	10	10	20							
	Tensile strength of terminal: A static load shall be applied to the terminal in the axial direction and acting in a direction away from the body for 10±1 sec.												
端子抗弯强度：在电容器引线施加固定重力（如下表），然后 5 秒内完成将电容体弯折 90° 后回到原位，再向相反方向弯折 90° 后回到原位。													
<table><tr><td>引线直径 Φ</td><td>0.45</td><td>0.50</td><td>0.60</td><td>0.80</td><td>1.00</td></tr><tr><td>拉力 N</td><td>2.5</td><td>2.5</td><td>5</td><td>5</td><td>10</td></tr></table>	引线直径 Φ	0.45	0.50	0.60	0.80	1.00	拉力 N	2.5	2.5	5	5	10	
引线直径 Φ	0.45	0.50	0.60	0.80	1.00								
拉力 N	2.5	2.5	5	5	10								
	Bending strength of terminal: Hang the specified dead weight, in about 5 sec then bend the body through 90°, return to the original position. Next bend it in opposite direction through 90° with the same speed, again return to the original position												
	外观：无可见机械损伤												
	Appearance: no visible mechanical damage												
	电容器应无接触不良开路或短路												
	The capacitor shall be no intermittent contacts, or open or short circuiting												
可焊性 Solder ability	焊锡温度：235±5℃												
	浸入时间：2±0.5 秒												
	Temperature of solder: 235±5℃												
	Dipping time: 2±0.5sec.												
	This specification shall be met after the capacitors are stored under standard atmospheric conditions for 6 months.												
	浸入焊锡的引线表面积约 90%以上应附着新锡。												
	At least 90% of circumferential surface of the dipping portion of terminal shall be covered with new solder.												
振动试验 Resistance to vibration	在 3 个互相垂直的方向分别施加 2 小时振动，共 6 小时。												
	频率：10-55Hz												
	振幅峰-峰值：1.5mm.												
	振速：1 分钟内振速 10~55~10Hz												
	Direction and duration of vibration: 3 orthogonal directions mutually each for 2h , Total 6h.												
	Vibration frequency range :10-55Hz.												
	Peak to peak amplitude: 1.5mm												
	Sweep rate :10 to 55 to 10Hz in about 1 min.												
	外观：无可见机械损伤												
	Appearance: no visible mechanical damage												
电容器应无接触不良开路或短路													
The capacitor shall be no intermittent contacts, or open or short circuiting													

**◆尺寸表、允许纹波电流、纹波电流频率因子**
**Dimensions and ripple current and frequency coefficient**

\*纹波电流频率因子

Ripple current frequency coefficient

Freq (Hz) Cap(μF)	50 (60)	100 (120)	1K	10K	≥100K
6.8~33	0.30	0.42	0.70	0.90	1.00
39~270	0.35	0.50	0.73	0.92	1.00
330~680	0.40	0.55	0.77	0.94	1.00
820~1800	0.45	0.60	0.80	0.96	1.00
2200~18000	0.50	0.70	0.85	0.98	1.00

\*尺寸表与允许纹波电流

Dimensions and ripple current

Rated voltage	Rated capacitance	Case size	ESR(Ω)	Rated ripple current
额定电压(V)	标称容量(μF)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
6.3	150	5×11	0.58	200
	330	6.3×12	0.25	330
	470	6.3×9	0.25	480
	470	6.3×12	0.18	480
	560	8×12	0.15	580
	680	8×12	0.13	640
	820	8×12	0.12	780
	820	10×12	0.08	865
	1000	8×16	0.087	840
	1200	8×20	0.069	1050
	1200	10×16	0.06	1210
	1500	10×20	0.046	1400
	1800	12.5×16	0.049	1450
	2200	10×20	0.042	1650
	2700	10×30	0.031	1910
	3300	12.5×20	0.035	1900
	3900	12.5×25	0.027	2230
	5600	12.5×35	0.02	2880
	5600	16×20	0.027	2530
	6800	16×25	0.021	2930
	8200	16×30	0.017	3450
10	100	5×11	0.6	180
	100	6.3×12	0.6	210

Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
	220	5×11	0.6	220
	220	6.3×12	0.26	330
	330	6.3×12	0.2	450
	470	6.3×12	0.15	550
	470	8×12	0.14	640
	470	8×16	0.14	640
	560	8×16	0.11	700
	680	8×16	0.087	840
	680	10×12	0.08	865
	820	10×12	0.08	950
	820	10×12	0.85	1000
	1000	10×12	0.09	1050
	1000	10×16	0.06	1210
	1000	10×20	0.06	1210
	1200	10×20	0.046	1400
	1500	10×20	0.069	1650
	1500	12.5×16	0.06	1210
	1800	12.5×20	0.033	1650
	2200	12.5×20	0.035	2100
	2700	12.5×25	0.043	2210
	3300	12.5×25	0.027	2230
	3900	12.5×30	0.024	2650
	5600	16×35	0.021	2930
	6800	16×35	0.017	3450
	8200	16×35	0.015	3610
	10000	18×35	0.014	4220
	12000	18×40	0.012	4280
16	56	5×11	0.58	210
	100	6.3×12	0.25	320
	150	6.3×12	0.58	210
	220	6.3×12	0.19	320
	330	8×12	0.13	640
	470	8×16	0.087	840
	470	8×20	0.084	840
	470	10×12	0.08	865
	560	8×14	0.095	840
	560	8×16	0.085	860
	680	8×20	0.069	1050
	680	10×12	0.08	1210

Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
	680	10×16	0.06	1210
	820	10×12	0.06	1250
	820	10×16	0.07	1260
	1000	10×16	0.06	1300
	1000	10×20	0.046	1400
	1000	12.5×16	0.049	1450
	1200	10×20	0.042	1650
	1500	10×20	0.055	1910
	1500	10×30	0.031	1910
	1500	12.5×20	0.035	1900
	1800	12.5×25	0.03	2100
	2200	10×25	0.047	2100
	2200	12.5×20	0.055	2100
	2200	12.5×25	0.027	2230
	2700	12.5×30	0.024	2650
	3300	12.5×25	0.05	2880
	3300	12.5×35	0.02	2290
	3900	16×25	0.021	2930
	5600	16×35	0.015	3610
	6800	18×35	0.014	4080
	8200	18×35	0.014	4220
	10000	18×40	0.012	4280
25	47	5×11	0.58	210
	56	5×11	0.58	212
	68	5×11	0.98	100
	100	5×11	0.25	330
	100	6.3×12	0.25	335
	100	8×12	0.18	340
	150	6.3×12	0.35	400
	220	8×12	0.13	640
	220	10×12	0.13	700
	270	8×16	0.11	700
	330	8×12	0.11	840
	330	8×16	0.087	865
	330	10×12	0.08	865
	470	8×20	0.069	1050
	470	10×12	0.065	1200
	470	10×16	0.06	1210
	560	10×16	0.088	980



Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
	560	10×16	0.058	1280
	680	8×20	0.078	1100
	680	10×20	0.046	1400
	820	10×20	0.042	1650
	1000	10×20	0.048	1750
	1000	10×30	0.031	1910
	1000	12.5×20	0.035	1900
	1200	16×20	0.043	2210
	1500	12.5×20	0.035	2200
	1500	12.5×25	0.027	2230
	1800	12.53	0.024	2650
	2200	12.5×25	0.05	2700
	2200	16×20	0.05	2700
	2200	12.5×35	0.02	2880
	2700	16×25	0.021	2930
	3300	16×30	0.042	3650
	3900	16×35	0.015	3610
	5600	18×40	0.012	4280
	8200	16×40	0.055	4000
35	6.8	5×11	2.5	55
	10	5×11	1	40
	33	5×11	0.8	80
	47	5×11	0.75	100
	56	6.3×12	0.25	340
	68	6.3×12	0.45	280
	100	6.3×12	0.2	450
	100	8×12	0.18	500
	150	8×12	0.13	640
	220	8×12	0.095	800
	220	8×12	0.095	800
	220	8×16	0.087	840
	220	10×12	0.08	865
	270	8×20	0.069	1050
	330	8×16	0.07	1120
	330	10×12	0.07	1120
	330	10×16	0.06	1210
	470	10×20	0.046	1400
	470	12.5×16	0.049	1450
	470	12.5×20	0.049	1450

Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
	560	10X16	0.06	1650
	560	10×20	0.042	1660
	680	10×20	0.085	1800
	680	10×30	0.031	1910
	680	12.5×20	0.035	1900
	820	12.5×20	0.035	1900
	1000	10×20	0.05	2050
	1000	12.5×20	0.035	2150
	1000	12.5×25	0.027	2230
	1200	12.5×30	0.024	2650
	1500	12.5×30	0.035	2880
	1500	16×20	0.035	2890
	1500	12.5×35	0.02	2900
	1800	16×25	0.021	2930
	2200	16×25	0.035	3200
	2200	16×30	0.025	3450
	2700	16×35	0.015	3610
	3300	18×30	0.042	4000
	3300	18×35	0.014	4220
	3900	18×40	0.012	4280
50	1	5×11	5	22
	2.2	5×11	2.5	42
	3.3	5×11	2.3	47
	4.7	5×11	2	110
	6.8	5×11	1.9	88
	10	5×11	1.4	124
	15	5×11	1.4	124
	22	5×11	1	80
	22	6.3×12	0.8	85
	33	6.3×12	0.48	230
	47	6.3×12	0.35	380
	47	8×12	0.45	300
	56	6.3×12	0.35	280
	68	8×12	0.23	350
	82	8×12	0.23	350
	100	8×12	0.17	555
	100	8×16	0.13	500
	120	8×12	0.13	730
	120	8×16	0.12	730

Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
	150	8×12	0.15	700
	150	10×12	0.12	760
	180	8×20	0.091	910
	180	10×12	0.12	900
	220	8×16	0.095	900
	220	8×20	0.09	950
	220	10×14	0.095	950
	220	10×16	0.084	1050
	270	10×20	0.06	1220
	330	10×16	0.08	1300
	330	10×20	0.055	1440
	330	12.5×16	0.055	1440
	390	10×25	0.055	1500
	470	10×30	0.043	1690
	470	12.5×16	0.08	1500
	470	12.5×20	0.045	1660
	470	16×16	0.065	1660
	560	12.5×16	0.056	1950
	560	12.5×20	0.055	1960
	680	10×30	0.045	1980
	680	12.5×30	0.03	2310
	820	12.5×25	0.03	2300
	820	12.5×35	0.025	2570
	820	16×20	0.035	2570
	1000	12.5×20,25	0.065	2555
	1000	16×25	0.025	2560
	1200	16×30	0.022	3010
	1500	16×35	0.019	3150
	1800	18×30	0.021	3635
	2200	18×35	0.017	3680
	2700	18×40	0.014	3800
63	4.7	5×11	2	110
	6.8	5×11	1	80
	10	5×11	1	80
	22	5×11	1.8	62
	22	6.3×12	0.8	100
	33	6.3×12	0.8	240
	47	6.3×9	0.65	180
	47	6.3×15	0.55	200

Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
	56	8×12	0.5	260
	68	8×12	0.45	280
	82	10×12	0.42	340
	100	8×16	0.3	350
	100	10×12	0.3	350
	120	8×14	0.28	408
	120	8×20	0.26	408
	120	10×16	0.25	400
	150	8×20	0.25	400
	180	10×16	0.18	518
	180	10×20	0.17	518
	180	12.5×16	0.18	527
	220	10×12	0.16	595
	220	10×16	0.16	595
	220	10×20	0.13	700
	270	10×20	0.13	700
	270	12.5×16	0.15	700
	270	12.5×20	0.13	765
	330	10×20	0.25	750
	330	10×25	0.13	750
	330	12.5×16	0.11	765
	390	12.5×20	0.1	850
	470	12.5×20	0.09	880
	470	12.5×30	0.08	1010
	560	12.5×25	0.065	1350
	560	16×20	0.065	1350
	560	16×25	0.065	1350
	680	16×20	0.062	1410
	680	16×25	0.062	1420
	680	18×20	0.062	1430
	820	12.5×35	0.07	1500
	820	12.5×40	0.055	1600
	820	16×30	0.049	1650
	1000	16×25	0.05	1900
	1200	18×35	0.036	1890
	1500	18×35	0.032	2470
	1800	18×40	0.032	2470
	2200	18×40	0.038	3860
	2700	18×40	0.035	3800

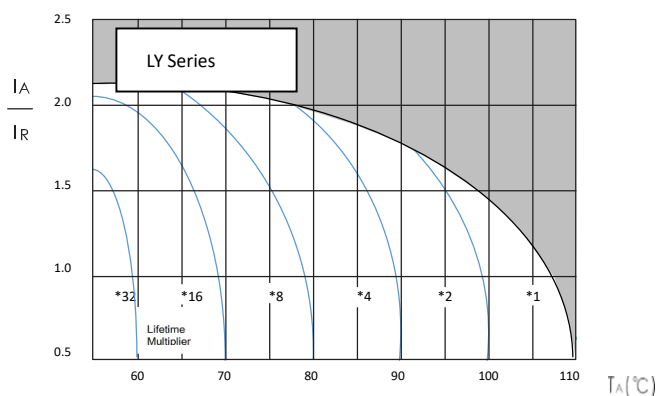
Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
80	4.7	5×11	2	110
	6.8	5×11	1	80
	10	5×11	1	80
	10	5×11	1.8	62
	22	6.3×12	0.8	100
	33	8×12	0.55	250
	47	8×9	0.45	250
	47	8×12	0.6	320
	56	8×12	0.55	250
	68	8×12	0.45	280
	82	8×12	0.15	550
	82	10×12	0.17	450
	100	10×12	0.4	500
	100	10×14	0.3	550
	100	10×16	0.13	580
	120	8×20	0.26	400
	150	10×16	0.25	400
	180	10×14	0.1	1000
	180	10×20	0.1	750
	180	12.5×16	0.25	650
	220	10×20	0.17	700
	220	12.5×20	0.18	900
	270	12.5×16	0.13	760
	270	12.5×20	0.12	765
	330	12.5×20	0.072	1100
	330	12.5×25	0.09	1100
	390	12.5×16	0.095	750
	390	12.5×20	0.09	1200
	470	12.5×25	0.09	1000
	470	16×20	0.075	1400
	470	16×25	0.065	1300
	560	18×20	0.062	1500
	680	16×30	0.05	1500
	820	16×30	0.05	1500
	1000	16×30	0.05	2030
	1200	16×30	0.035	2130
	1500	16×40	0.025	2510
100	2.2	5×11	3.5	60
	3.3	5×11	3.5	60

Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
	4.7	5×11	2.5	70
	6.8	5×11	1.9	92
	10	6.3×12	1.5	200
	10	6.3×12	1	126
	15	8×12	1.3	180
	22	6.3×12	0.7	180
	22	8×12	1.3	250
	33	8×12	0.6	250
	33	8×16	0.8	350
	47	8×12	0.38	280
	47	8×16	0.35	300
	47	10×12	0.34	325
	56	8×16	0.28	380
	56	8×20	0.26	408
	68	10×12	0.35	300
	68	8×16	0.35	300
	68	8×20	0.35	400
	68	10×16	0.25	400
	82	10×20	0.17	518
	100	10×16	0.17	555
	100	10×20	0.16	595
	100	12.5×25	0.15	600
	120	10×25	0.13	765
	120	12.5×16	0.14	770
	120	12.5×20	0.15	775
	150	10×20	0.15	580
	150	12.5×20	0.2	895
	150	16×16	0.11	895
	180	12.5×25	0.096	875
	220	10×30	0.08	1220
	220	10×40	0.08	1010
	220	12.5×25	0.09	1220
	220	12.5×30	0.07	1450
	270	12.5×35	0.07	1140
	330	16×20	0.078	1300
	330	18×20	0.072	1350
	390	12.5×35	0.045	1660
	390	16×25	0.04	2900
	470	16×30	0.04	1900

Rated voltage	Rated capacitance	Case size	ESR( $\Omega$ )	Rated ripple current
额定电压(V)	标称容量( $\mu$ F)	尺寸 D×L (mm)	等效串联电阻	额定纹波电流
			at 20°C, 100 kHz	(mA rms/105°C/100kHz)
	470	16×35	0.04	1900
	470	18×25	0.045	1900
	560	18×35	0.036	2130
	680	18×35	0.036	1890
	820	18×40	0.032	2470

### ◆产品特征曲线 Product Characteristic Curve

Lifetime Diagram



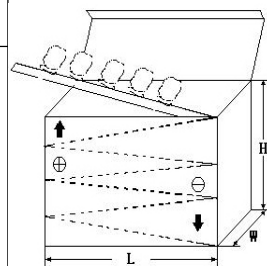
$I_A$  = 120Hz 时的实际纹波电流,  $I_R$  = 120Hz 时的额定纹波电流, 105°C

使用寿命系数与环境温度和纹波电流负载的函数关系。

### ◆包装 Packaging

\* 编带产品包装规范与数量 Taped packaging quantity

直径 $\Phi D$ (mm)	数量(只) Qty. (Pcs)	L(电容高度) $\leq 22$ mm	L(电容高度) $= 25 \pm 2$ mm
		L×W×H(mm)	L×W×H(mm)
$\Phi 5$	2000	328×235×50	328×235×57
$\Phi 6.3$	1500		
$\Phi 8$	1000		
$\Phi 10$	600		
$\Phi 12.5$	400		
$\Phi 16$	250		
$\Phi 18$	200		



\* 散装品包装数量 Bulk packaging quantity

直径ΦD(mm) Diameter	高度 L(mm) Length	数量 (只/袋) Quantity (pcs/bag)	袋/盒 bag/box	内箱/外箱 Inner box/outer box	(只/箱) psc/box
Φ4	7-8	1000	15	4	60000
Φ5	5-7	1000	12	4	48000
Φ5	11	1000	10	4	40000
Φ6.3	5-7	1000	10	4	40000
Φ6.3	8-15	1000	8	4	32000
Φ6.3	15-20	1000	6	4	24000
Φ8	5-12	500	8	4	16000
Φ8	14-16	500	8	4	16000
Φ8	20	500	6	4	12000
Φ10	9-13	500	6	4	12000
Φ10	14-16	250	8	4	8000
Φ10	17-20	250	8	4	8000
Φ10	25-30	200	8	4	6400
Φ10	31-35	200	6	4	4800
Φ12-Φ13	16-28	200	6	4	4800
Φ12-Φ13	30-40	100	8	4	3200
Φ12-Φ13	45-55	100	6	4	2400
Φ16	15-20	100	8	4	3200
Φ16	21-30	100	6	4	2400
Φ16	31-40	50	10	4	2000
Φ18	15-20	100	6	2	1200
Φ18	25-30	50	8	2	800
Φ18	35-40	50	6	2	600
Φ18	41-50	25	10	2	500
Φ20	25-40	50	10	2	1000
Φ22	25-35	50	5	2	500
Φ22	≥40	25	10	2	500

◆ 贮存方法 Storage Methods

- \* 请保管在室温 5℃~35℃，湿度 75%RH 以下的环境
- \* (1) 产品储存期限：≤12 个月；Storage life: ≤12 months
- \* (2) 产品储存期限超 12 个月时，需充电后再使用
- \* (3) 产品储存时间超过 3 年的应报废处理
- \* (4) 库存有效期以套管上印刷的时间开始计算
- \* (5) 请尽量以包装状态保管
- \* (6) 当电容器长期储存后，漏电流会升高，温度越高，漏电流上升越快，因此应注意储存环境。如铝电解电容器的漏电流上升对电路有不良影响，请在使用前充电处理
- \* (7) 请避免在以下环境中保管
  - ① 溅水、高温高湿及结露的环境；



- ② 溅油、或者充满气体油成分的环境;
- ③ 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;

\* We recommend the following conditions for storage: Ambient temperature: 5°C~35°C, Ambient humidity: Less than 75% RH.

\* (1) Storage life: ≤12 months;

\* (2) If storage life time is over 12 months, the products need to be recharged;

\* (3) If storage life time is over three years, the product need to be discarded;

\* (4) Expiry date: calculating from the date marked on the sleeve;

\* (5) Please keep capacitors in the original package;

\* (6) Leakage current tends to increase when capacitors have been stored for long period of time. The higher temperature, the faster leakage current rises. Please take caution when selecting the storage location. The leakage current decreases gradually as voltage is applied to the capacitor. If the rising leakage current may cause problems in the circuit, please charge the capacitor before using.

\* (7) Avoid storing the capacitors under such circumstances:

- ① Environment of water splashing, high temperature, high humidity and dewing;
- ② The environment that splashes oil, or is filled with gas oil;
- ③ With full of acid toxic gases environment such as (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, etc.

## ◆ 铝电解电容器使用注意事项

### Important information on the application of aluminum electrolytic capacitors

\* (1) 直流铝电解电容器应按正确的极性使用

当直流铝电解电容器被反极性接入电路时, 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极电压, 请选用无极性产品

\* (2) 在额定工作电压以下作用

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间内劣化直至损坏。注意电压峰值请勿超出额定工作电压

\* (3) 常规产品禁止作快速充放电使用

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。

\* (4) 施加纹波电流应小于额定值

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。所施加纹波电压的峰值应小于额定工作电压。

\* (5) 使用环境温度

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°C 其使用寿命增加 1 倍。

\* (6) 引出线强度

当拉力施加到电容器引出线, 该拉力将作用于电容器内部, 这将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。

\* (7) 焊接过程耐热性

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。

\* (8)电路板的安装孔距及安装位置

电路板安装孔的设计应与产品说明书的引线脚距一致，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，这将导致短路或漏电流上升。

\* (9)铝电解电容可能会有残留电压，请在使用前对电容器进行放电。

(1) DC aluminum electrolytic capacitors should be used according to the correct polarity

When a DC aluminum electrolytic capacitor is connected to a circuit with reverse polarity, the capacitor will cause a short circuit in the electronic circuit, and the resulting current will cause damage to the capacitor. If it is possible to apply positive voltage to the negative lead in the circuit, please choose a non-polar product.

(2) Function below rated operating voltage

When capacitor is used at higher voltage than the rated voltage, leakage current increases, characteristics drastically deteriorate and damage in a short period may occur as a result. Please take extra caution that the peak voltage should not exceed the rated voltage.

(3) Conventional capacitors are prohibited from being used for fast charging and discharging

When aluminum electrolytic capacitors for general purpose are employed in rapid charge and discharge application, its life may be shorted by capacitance decreasing, heat rising, etc.

(4) The applied ripple current should be less than the rated value

Excessive heat will reduce capacitance and result in shortened life of capacitor if ripple currents exceeding the specified rated value are applied. The peak value of the ripple voltage should be less than the rated voltage.

(5) Operating ambient temperature

Its ambient temperature closely affects the life of an aluminum electrolytic capacitor. It is generally stated, that life doubles for each 10°C decrease in temperature.

(6) Terminal Strength

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

(7) Heat resistance during welding process

In the dip soldering process of PCB board with aluminum electrolytic capacitors mounted, secondary shrinkage or crack of PVC sleeve may be observed when solder temperature is too high or dipping time is too long.

(8) Installation pitch-row and installation position of circuit boards

PCB board must be designed so its hole coincides with the lead pitch (lead spacing) of the capacitor specified by the catalog or specifications. When a capacitor is forcibly inserted into an unmatched hole, a stress is put on the leads. This could result in a short circuit or increased leakage current.

(9) Aluminum electrolytic capacitors may have residual voltage, please discharge the capacitor before use.

◆推荐安装/焊接方法 Recommended Installation/Welding Methods

\*波峰焊接条件

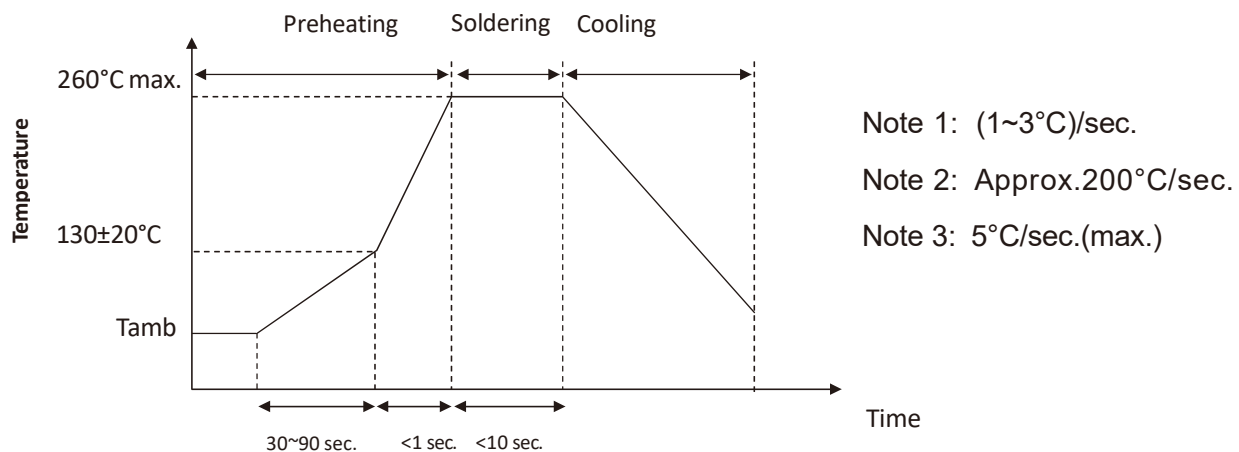
预热: 105°C

波峰焊: 260±5°C 10±1 秒以下 (或 380±10°C 3±0.5 秒以下: 手焊)

\*Wave Soldering Conditions

Preheating: 105°C

Wave Soldering: 260±5°C for ≤10±1 seconds (or 380±10°C for ≤3±0.5 seconds for manual soldering)



#### ◆其它说明 Others

\*本产品不含铅、镉等元素

This product does not include Plumbum or Cadmium.

[illegible]

Note: The content provided above is the product specification. Fenghua reserves the right to modify this content without prior notice when the product remains unchanged. Any product changes will be notified to customers via PCN.