

SPECIFICATION

DESCRIPTION: Aluminium Electrolytic Capacitors

SERIES: LF 3000-5000

ITEM:

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1、概述 SCOPE

本承认书规定了 LF 系列径向引线引出铝电解电容器的技术规范。

This specification covers “LF series” radial type aluminum electrolytic capacitors.

2、参考标准 APPLI CABLE SPECIFICATION

本承认书参考 GB/T2693 和 GB/T5993 制定。

This approval sheet consulted the institute of GB/T2693 and GB/T5993

3、工作温度范围 OPERATING TEMPERATURE RANGE

工作温度范围是电容器在施加额定工作电压条件下，可以长期可靠工作的环境温度范围

-40°C~+105°C

Operating temperature range is the range of ambient temperature at which the capacitor can be operated continuously at rated voltage

-40°C~+105°C

4、测试环境 ATMOSPHERIC COND I T I O N OF MEASUREMENTS:

如果没有其他规定，标准的测试、检验环境条件如下所示：

环境温度：15 至 35°C

相对湿度：45 至 75%

大气压力：86kpa 至 106kpa

如果对测试结果有异议，可以在以下条件测试：

环境温度：25±2°C

相对湿度：60 至 70%

大气压力：86kpa 至 106kpa

Unless otherwise specified, the standard range of atmospheric conditions for making

Measurements and tests are as follows

Ambient temperature :15 to 35°C

Relative humidity : 45 to 75%

Air pressure: 86kpa to 106kpa

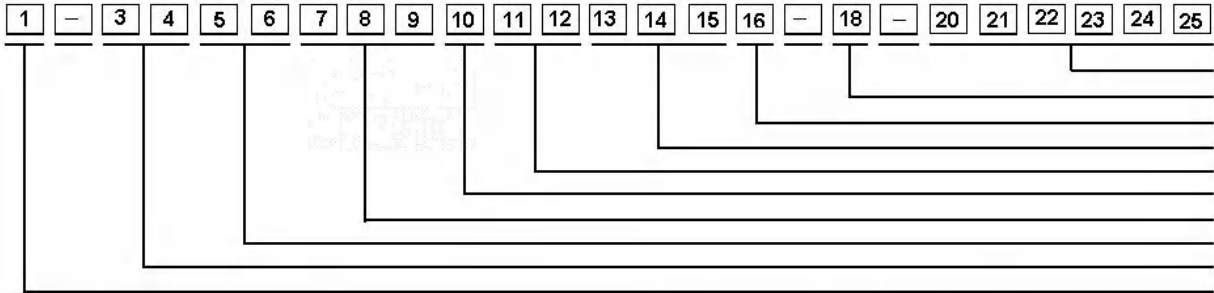
If there may be doubt on the results, measurements shall be made within the following limits.

Ambient temperature :25 ±2°C

Relative humidity : 60 to 70%

Air pressure: 86kpa to 106kpa

物料编码 PART NO. SYSTEM



特殊代码
脚型
套管材质
产品高度
产品直径
容量偏差
容量
电压
系列
成品H

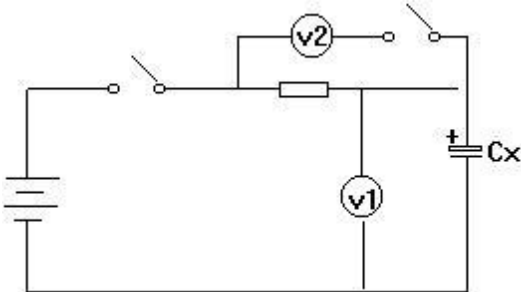
系列	代码	电压	代码	容量	代码	容量偏差	代码	直径	代码	高度	代码	特殊代码	代码
CD11GD	GD	6.3	0J	0.1	R10	-10~+20%	Y	5	05			容量特性范围	W
CD11GL	GL	10	1A	0.22	R22	±10%	K	6.3	06	7	070	低阻抗值	Z
CD11GK	GK	16	1C	1	010	±20%	M	8	08	9.5	095	低ESR值	E
CD11GE	GE	25	1E	2.2	2R2	-10~+30%	Q	10	10	11.5	115	胶管电压	V
CD11GR	GR	35	1V	10	100	0~+10%	A	12	12	12	120	胶管容量	C
CD11GS	GS	50	1H	47	470	-0~+20%	R	13	13	12.5	125	低漏电流	L
CD11GT	GT	63	1J	100	101	±5%	D	16	16	13	130	特殊寿命	H
PS	PS	100	2A	470	471	±7%	H	18	18	16	160	材质限定	M
RF	RF	120	2T	1000	102	±15%	L	22	22	30	300	特殊脚距	F
RS	RS	160	2C	4700	472	注: 如容量偏差未包含在以上内容内, 则统一用特殊代码标示, 以下限范围为准进行设定套用“10”码		脚型		代码		尺寸限高	S
RW	RW	200	2D	10000	103							胶管温度	P
RZ	RZ	250	2E									胶管系列	X
		350	2V							35	350		
		400	2G							35.5	355		
		420	2X										
		450	2W										
		500	2H										
						胶管材质		代码					
						PET		T					
						PVC		V					
								成型(切脚、双K、卧式)				C	
								编带				P	

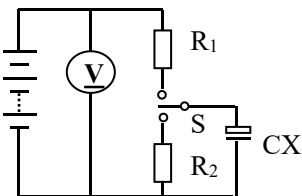
示例:

H	-	G	D	2	G	2	R	2	M	0	6	0	9	0	T	-	L											
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--

CD11GD 400V2.2uF ±20% 6.3*9 PET 长脚

5. Reliability Test:

序号 NO	项目 Item	条 件 Conditions	规 格 Specifications
5.1	电容量 Capacitance	测试频率:120HZ±20% 测试电路:串联等效 测试电压:0.5Vrms 以下 Measuring frequency : 120HZ±20% Measuring circuit: Series equivalent circuit Measuring voltage: 0.5Vrms or less +1.5 to 2.0 VDC	静电容量允许偏差 -20~+20% Capacitance Tolerance -20~+20%
5.2	损耗角正切值 Dissipation Factor	测试条件与 5.1 电容量测试相同 Testing condition are the sane as 5.1 for capacitance	Refer to table 1.
5.3	漏电流 Leakage current	电容器接 1000±10Ω.的保护电阻施加电压 2 分钟后的测试电流。 The rated voltage shall be applied across the capacitor and its protective resistor which shall be 1000±10Ω.The leakage Current shall then be measured after an electrocution period of 2 min. The leakage current shall be calculated by the following equation. 漏电流: (I) =E/Rs Leakage current: E: 直流电压表的电压值 Voltage measured with DC voltmeter Rs:标准电阻的电阻值 Resistance of the protective resistor 测定电路 measurement circuit  电压将下法 voltage drop method) Rs:标准电阻的电阻值 (1000±10Ω) protective resistor 直流电压表或电子电压表 DC voltmeter or electronic voltmeter S1:开关 switch S2:电压表保护用变换开关 Protective switch for a voltmeter CX:待测电容器 test capacitance	$I_C \leq 0.02CV + 10(\mu A)$ IC: 漏电流(μA) C: 容量(μF) V: 额定工作电压(V) $I_C \leq 0.02CV + 10(\mu A)$ IC: Leakage current(μA) C: Capacitance (μF) V: Rated voltage(V)

NO	项 目 Items	条 件 Conditions	规 格 Specifications
5.4	浪涌电压 Surge Voltage	<p>在下面规定的温度下，通过指定的浪涌电压(Page 6,table 1), 6.0 分钟(充电 30 秒, 放电 5 分 30 秒)为一周，往返 1000 回合，常温常湿下放置 1-2 小时达到热平衡状态测定满足</p> <p>The capacitor shall be subjected to 1000 cycles at a temperature specified below, each consisting of a charge period of 30±5s, followed by a discharge period of approx 5min.30 s. And the capacitor shall be stored 1-2 hours under standard atmospheric conditions to obtain thermal stability , after which measurement shall be made</p> <p>应加电压: 见 3 项 Test voltage: see 3</p> <p>温度:15~30°C Test Temperature : 15~30°C</p> <p>测试回路 Measurement circuit</p>  <p>R1: 串联保护电阻 (1KΩ) Protective series resistor (1KΩ)</p> <p>V: 直流电压表 DC Voltage</p> <p>R2: 放电电阻 Discharge resistor (1KΩ)</p> <p>S: 切换开关 Switch</p> <p>Cx: 待测电容器 Test Capacitor</p>	<p>漏电流: 不超过规定值 Leakage Current: Not more than the specified value</p> <p>容量变化: 初始值的±15%以内 Capacitance change: Within ±15% of the initial value</p> <p>损耗角正切: 不超过规定值 Dissipation Factor : Not more than the specified value</p>
5.5	防爆试验 Safety vent Test	<p>电容器上应加 1A 逆向直流电，防爆壳正常动作，无金属片飞散、起火、爆炸。</p> <p>The capacitor is shall be connected in inverse polarity, and applied DC current at 1A constant, The pressure relief device shall open in such a way as to avoid any danger of fire or explosion of capacitor elements (Terminal and mental foil etc.) or cover</p>	

5.6	温度特性 Temperature Characteristic	<p>电容器根据下表的次序处理。 The capacitor shall be subjected in turn to the procedures specified below.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>阶段</th> <th>温度</th> <th>时间</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20±2℃</td> <td>热平衡状态</td> </tr> <tr> <td>2</td> <td>-25℃</td> <td>2h</td> </tr> <tr> <td>3</td> <td>20±2℃</td> <td>热平衡状态</td> </tr> <tr> <td>4</td> <td>105℃</td> <td>2h</td> </tr> <tr> <td>5</td> <td>20±2℃</td> <td>热平衡状态</td> </tr> </tbody> </table> <p>电容器放置在每一温度下，待阻抗或电容量稳定后方可测试。 * The capacitor should be stored at each temperature until measured impedance or capacitance are stabilized .</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <tbody> <tr> <td rowspan="2" style="width: 15%;">阶段 2 Step 2</td> <td style="width: 55%;">阻抗比（对阶段 1） Impedance ratio</td> <td style="width: 30%;">见表 1 (Page 6) refer to table 1</td> </tr> <tr> <td>静电容量变化率（对阶段 1） Change in capacitance</td> <td>within -20~+20% of step 1</td> </tr> <tr> <td>阶段 4 Step 4</td> <td>静电容量变化率（对阶段 1） Change in capacitance</td> <td>within -20~+20% of step 1</td> </tr> </tbody> </table> <p>阶段 1：测定容量，损耗和阻抗值。 Step 1: Capacitance, Dissipation Factor and impedance shall be measured. 阶段 2：放置 2 小时后，达到热平衡状态再测。 Step 2 : After the capacitor being stored for 2 hours, Capacitance, Dissipation Factor and impedance shall be Measured. The measurement shall be made at thermal stability. 阶段 4：放置 2 小时后，达到热平衡状态再测。 Step 4 : After the capacitor being stored for 2 hours, Capacitance, Dissipation Factor and impedance shall be Measured. The measurement shall be made at thermal stability.</p>	阶段	温度	时间	1	20±2℃	热平衡状态	2	-25℃	2h	3	20±2℃	热平衡状态	4	105℃	2h	5	20±2℃	热平衡状态	阶段 2 Step 2	阻抗比（对阶段 1） Impedance ratio	见表 1 (Page 6) refer to table 1	静电容量变化率（对阶段 1） Change in capacitance	within -20~+20% of step 1	阶段 4 Step 4	静电容量变化率（对阶段 1） Change in capacitance	within -20~+20% of step 1
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5.7	高温负荷 Load life	<p>在 105±2℃ 的恒温箱内，电容器施加最大允许纹波电流，施加直流电压和交流电压的峰值的和要等于额定电压，时间 10000 小时，试验结束后，在标准状态下放置 16 小时后进行测试。</p> <p>The capacitor shall be placed in a circulating air oven at an ambient temperature of 105±2℃。 It must not be subjected to direct radiation from heating elements. DC voltage and the rated ripple current shown in table shall be applied for a period of 10000 hours. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitor. It shall be subjected to standard atmospheric for 16 hours, after which measurement shall be made.</p>	<p>漏电流：不超过规定值 容量变化：初测值的±30 % 以内 损耗角正切：不超过规定值的 3 倍</p> <p>Leakage current : Not more than Initial specified value Capacitance change : Within ±30 % of initial value dissipation factor : Not more than 300% of initial specified value</p>										
5.8	高温存储 Shelf life	<p>在 105±2℃ 环境下无负荷贮存 1000 h，至少恢复 16 小时后。</p> <p>The capacitors are then stored with no voltage at a temperature of 105±2℃ for 1000 h and then resumed 16 hours.</p>	<p>漏电流：不超过规定值的 2 倍 容量变化：初测值的±20 % 以内 损耗角正切：不超过规定值的 2 倍</p> <p>Leakage current : Not more than 200% of initial specified value Capacitance change : Within ±20 % of initial value dissipation factor : Not more than 200% of initial specified value</p>										
5.9	可焊性 Solder ability	<p>浸渍时间 Solder press time: 2.5±0.5s 焊接温度 Solder temperature: 255+5/-0℃</p>	<p>浸渍面积 90%以上附着 At least 90% of Circumferential surface of the dipped portion of termination shall be covered with new solder</p>										
5.10	端子强度 terminal Strength	<p>端子抗拉强度： 沿电容器端子引线方向施加固定重力*1N 10 秒钟。</p> <table border="1" data-bbox="437 1630 1021 1720"> <tr> <td>引线直径Φ</td> <td>0.5</td> <td>0.6</td> <td>0.8</td> <td>1.0</td> </tr> <tr> <td>拉力 N</td> <td>5.0</td> <td colspan="2">10</td> <td>20</td> </tr> </table> <p>端子抗弯强度： 在电容器引线施加固定重力*2N,然后,将电容体弯折 90°后回到原位。 上述过程在 5 秒内完成。</p>	引线直径Φ	0.5	0.6	0.8	1.0	拉力 N	5.0	10		20	<p>测量静电容量时，应无接触不良、开路或短路以及无可见机械损伤</p> <p>When the capacitance is measured, there shall be no intermittent contacts or open –or short –circuiting . There shall be no such mechanical damage as terminal damage etc.</p>
引线直径Φ	0.5	0.6	0.8	1.0									
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引线直径Φ	0.5	0.6	0.8	1.0									
拉力 N	5.0	10	20										
5.11	振动试验 Resistance to Vibration	<p>依据 IEC60068-2-6 试验。 在 3 个互相垂直的方向分别施加 2 小时振动，共 6 小时 To comply with IEC60068-2-6 Direction and duration of vibration: 3 orthogonal directions mutually each for 2h,Total 6h.</p>	<p>测量静电容量时，应无接触不良、开路或短路以及无可见机械损伤 When the capacitance is measured, there shall be no intermittent contacts or open –or short –ciruiting . There shall be no such mechanical damage as terminal damage etc.</p>										
序号 NO	项目 Item	试验方法 Experiment method	特性 Performance										
5.12	耐焊接热 Resistance to soldering heat	<p>温度:270+2/-0°C Test Temperature: 270±5°C 时间:10±0.5 s Test time: 10±0.5s</p>	<p>容量变化:在初始值±10%范围内 损耗角正切值: 不超过规定值 漏电流: 不超过规定值 外观:无异状 Variation of capacitance: Within ±10% of the initial value Dissipation factor: Not more than the specified value. Leakage current: Not more than the specified value. Appearance: No remarkable abnormality.</p>										
5.13	稳态湿热 Resistance to damp heat (steady state)	<p>依据 IEC60068-2-3 进行试验 试验温度: 40±2°C 试验时间: 240±8h 相对湿度: 90~95% 试验后，电容器在标准大气条件下 1~2 小时，然后测试参数 To comply with IEC60068-2-3 Test temperature: 40±2°C Test time : 240±8h Relative humidity: 90~95% After completion of test, the capacitor shall be subjected to standard atmospheric conditions for 1 to 2 hours, after which measurements shall be made.</p>	<p>容量变化: 在初始值±15%范围内。 损耗角正切值: 不超过规定值。 漏电流: 不超过规定值 外观:无异状 Variation of capacitance: Within ±15% of the value before test. Dissipation factor: Not more than the specified value Leakage Current :Not more than the specified value Appearance: No remarkable abnormality.</p>										

6 其它说明 Others

6.1 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 DC electrolytic capacitors are polarized

当直流铝电解电容器按反极性接入电路时，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，请选正极性产品。

When reverse voltage is applied on DC electrolytic capacitor, the capacitor will become short circuited please use non polarized capacitors in the circuit are damage due to abnormal current flows through the capacitors since the circuit where the positive voltage may be applied to the cathode terminal.

(2) .在额定工作电压以下使用 Use capacitor within rated voltage

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。请注意电压峰值勿超出额定工作电压。

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) .作快速充放电使用 Charge and discharge application

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。

When aluminum electrolytic capacitors for general purpose are employed in rapid charge and discharge application, its life expectancy may be shortened by capacitance decrease, heat rise, etc.

(4) .电容器贮存 Store the capacitor

当铝电解电容器作了长期贮存后,其漏电流通常升高.贮存温度愈高,漏电流上升愈快.因此应注意贮存环境的选择,在电容器上施加电压后,漏电流值将不断下降,在铝电解电容器的漏电流值上升对电路有不良影响的,请在使用前充电处理.

I creased leakage current is common in aluminum capacitors which have been stored for long period of time .The higher the storage temperature, the higher the leakage current increase therefore please take precautions concerning the storage location. The leakage current causes problems in the circuit, apply voltage (aging) before using.

(5).施加纹波电流应小于额定值 Ripple current applied to capacitor should not exceed the rated value.

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.

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.

(6)、引出线强度 Lead stress

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。

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 PC board.

(7)、焊接过程耐热性 Heat resistance at the soldering process

铝电解电容器装至电路板进行浸焊或波焊时，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。

In the dip soldering process of PC 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)、电路板的安装孔孔距及安装位置 Hole pitch and position of PC board.

电路板的安装孔的设计应与产品说明书的引线脚距相一致，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。

A PC board must be designed so its hole pitch 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 pitch ,a stress is put on the leads This could result In a short circuit or increased leakage current.

6.2 本产品无铅、无污染 This product is lead free and environmental friendly

本产品（包括所有构件）完全符合欧盟 RoHS 要求，即 6 种有害物质的最大含量均不超过如下要求：

This product is according to the standard of RoHS , it means the max capacitance of six harmful material not over the following request:

Cd (镉) -100PPM

PB (铅) -1000PPM

Hg (汞) -1000PPM

Cr⁴ (6 价铬) -1000PPM

PBBs (多溴联苯) -1000PPM

PBDEs (多溴联苯醚) -1000PPM

LF series

Minature Aluminum Electrolytic Capacitors

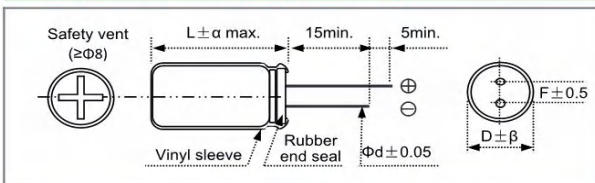
- Load life:105°C 3,000~5,000hours.
- 105°C high-temperature resistance,high ripple current and long life.
- Suitable for LED lighting driver and the electronic ballast.
- Rohs Compliance.
- 壽命: 3,000~5,000小時。
- 105°C耐高溫,耐高紋波及長壽命品
- 適用LED驅動及電子鎮流器。



SPECIFICATIONS 規格表

Item 項目	Performance Characteristics 特性參數														
Operation Temperature Range 工作溫度範圍	-40 to +105°C							-25 to +105°C							
Rated Working Voltage Range 額定電壓範圍	6.3 to 100VDC							160 to 450VDC							
Nominal Capacitance Range 靜電容量範圍	0.47 to 22,000µF							1 to 470µF							
Capacitance Tolerance 靜電容量允許偏差	±20%(120Hz,+20°C)							±20%(120Hz,+20°C)							
Leakage Current 漏電流	LC≤0.01CV or 3(µA) Which is greater.(After 2 minutes application of DC rated voltage at +20 °C)							LC≤0.03CV+10 or 3(µA) after 2 minutes application of DC rated voltage at +20 °C							
Dissipaom Factor (tan δ) 損失角正切值 (120Hz,+20°C)	Working Voltage(v)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	tan δ(max)	0.2	0.18	0.16	0.14	0.12	0.1	0.09	0.07						
	Working Voltage(v)	160	200	250	350	400	450								
	tan δ(max)	0.2	0.2	0.2	0.24	0.24	0.24								
	For capacitance value >1000µF, add 0.02 per another 1000µF 標稱容量值超過1000uF, 則每增加1000uF, 損失角正切值增加0.02														
Low Temperature characteristics 溫度特性(阻抗比)	Impedance ratio max. at 120 Hz 阻抗比最大值														
	Working Voltage(V)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	Z(-40°C)/Z(+20°C)	8	6	4	4	3	3	3	3	-	-	-	-	-	-
	Z(-25°C)/Z(+20°C)	4	4	3	2	2	2	2	2	4	4	4	6	6	6
High Temperature Loading (Endurance) 高溫負荷壽命(耐久性)	Test conditions 試驗條件(+105°C)							Post test requirements at +20°C 試驗後特性應滿足如下要求							
	Size	ΦD ≤5	ΦD ≤6	ΦD=8,10	ΦD=13	ΦD ≥16	Leakage current 漏電流	≅ Initial specified value 初始規格值							
	Duration 持續時間	3,000	3,000	4,000	4,000	5,000	Cap. Change 靜電容量變化率	within ±25% of initial measured value 初始測試值的±25%內							
	Applied voltage 施加電壓	DC voltage with maximum permissible ripple current specified at +105°C 施加直流電壓與額定紋波電流(所加電壓峰值[DC+AC]不超過額定工作電壓)					D.F.(tan δ) 損失角正切值	≤200% of initial specified value 2倍初始規格值							
	Before test requirement: Resumed 16 hours at normal temperature 測試前將電容在常溫中放置16小時														
Shelf Life 高溫儲存壽命	Test conditions 試驗條件							Post test requirements at +20°C 試驗後特性應滿足如下要求							
	Duration 持續時間	1,000 hours					Leakage current 漏電流	≅ Initial specified value 初始規格值							
	Ambient temp. 環境溫度	+105°C					Cap. Change 靜電容量變化率	within ±25% of initial measured value 初始測試值的±25%內							
	Applied voltage 施加電壓	(None) 無					D.F.(tan δ) 損失角正切值	≤200% of initial specified value 2倍初始規格值							
	◆(Before the measurements, the capacitor shall be pretreated by applying DC working voltage for 30min, after discharged and then stored under standard atmospheric conditions for 24-48 hours) 測試前應將電容在常溫中施加工作電壓30分鐘, 放電後在標準氣壓下放置24~48小時														
Other 其他	JIS C-5101 (IEC 60384)														

CASE SIZE TABLE 尺寸圖 (Unit: mm)



ΦD	5	6.3	8	10	13	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8
α	(L<20) 1.5				(L≥20) 2.0			
β	(D<20) 0.5				(D≥20) 1.0			

Multiplier for Ripple Current vs. Frequency 紋波電流頻率修正係數

Frequency Coefficient 頻率係數

Rated Voltage(v)	Cap(µF)	Frequency(HZ)				
		50HZ	120HZ	1KHZ	10KHZ	≥20K
≤ 100	Cap < 100	0.40	0.50	0.70	0.85	1.00
	100 ≤ Cap < 1000	0.55	0.65	0.80	0.90	1.00
	Cap ≥ 1500	0.65	0.75	0.90	0.95	1.00

●STANDARD RATINGS

Dimension:ΦDXL(mm)

Ripple Current: (mA/rms)at 105℃,100KHz; IMP: (Ωmax) at 20℃ 100KHz.

WV(V) (Code)	6.3(7.2)			10(12)			16(18)			25(30)		
Ite μF	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current
33										5*11	1.000	105
47				5*11	0.750	95	5*11	0.750	105	5*11	0.700	185
100	5*11	0.700	155	5*11	0.550	185	5*11	0.650	195	6.3*12	0.550	325
220	5*11	0.250	210	6.3*12	0.300	340	6.3*12	0.550	415	6.3*12	0.400	550
330	6.3*12	0.200	385	6.3*12	0.250	485	8*12	0.450	585	8*12	0.300	710
470	6.3*12	0.180	510	8*12	0.150	710	8*12	0.300	765	10*13	0.250	850
680	8*12	0.150	650	8*12	0.100	785	8*16	0.150	910	10*17	0.120	1200
							10*13	0.150	910			
1000	8*12	0.100	850	10*13	0.085	910	10*17	0.100	1200	10*20	0.095	1450
1500	10*13	0.080	1050	10*17	0.075	1250	10*20	0.070	1500	13*17	0.065	1750
2200	10*17	0.065	1300	10*20	0.055	1480	10*20	0.055	1800	13*25	0.055	2050
3300	13*17	0.055	1650	13*17	0.045	1850	13*20	0.050	2150	16*25	0.045	2400
4700	13*20	0.040	1850	13*25	0.035	2150	16*25	0.035	2450	16*30	0.030	2750
6800	13*25	0.035	2100	16*25	0.030	2450	16*30	0.025	2650	18*35	0.020	2950
10000	16*25	0.030	2350	16*30	0.025	2850	16*35	0.020	2900			
15000	16*35	0.025	2750	18*30	0.020	3000	18*40	0.019	3100			
22000	18*35	0.020	2950	18*40	0.018	3250						
WV(V) (Code)	35(40)			50(57)			63(73)			100(115)		
Ite μF	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current
1				5*11	5.500	20	5*11	10.000	18	5*11	15.000	15
2.2				5*11	5.000	35	5*11	8.000	30	5*11	10.000	25
3.3				5*11	4.800	45	5*11	7.500	40	5*11	7.000	30
4.7				5*11	2.500	65	5*11	6.500	60	5*11	5.500	50
10				5*11	2.000	85	5*11	2.500	85	6.3*12	2.300	75
22	5*11	0.900	85	5*11	1.800	115	6.3*12	2.000	175	8*12	1.800	155
33	5*11	0.750	155	6.3*12	1.500	195	6.3*12	1.800	210	8*12	1.500	185
47	5*11	0.550	205	6.3*12	1.000	205	8*12	1.400	285	10*13	0.750	260
68	6.3*12	0.450	305	8*12	0.850	260	8*12	1.000	355	10*16	0.600	340
100	6.3*12	0.200	395	8*12	0.650	365	10*13	0.850	385	10*17	0.450	365
							10*16	0.750	410	10*20	0.400	405
150	6.3*12	0.150	510	10*13	0.500	450	10*16	0.650	550	13*17	0.350	525
220	8*12	0.100	710	10*16	0.350	550	10*20	0.350	710	13*25	0.250	650
330	10*16	0.070	950	10*20	0.300	700	13*17	0.300	810	16*25	0.150	780
							13*20	0.280	860			
470	10*20	0.065	1150	13*17	0.250	850	13*25	0.150	1250	16*30	0.100	1050
680	13*17	0.055	1300	13*25	0.150	950	16*20	0.100	1500	18*30	0.085	1200
1000	13*20	0.045	1650	16*25	0.095	1300	16*30	0.085	1750	18*40	0.065	1450
1500	13*25	0.040	1850	16*35	0.090	1650	16*35	0.075	1950			
2200	16*20	0.030	2150	18*35	0.065	2050	18*40	0.055	2250			
3300	16*30	0.025	2700									
4700	16*35	0.022	2950									
6800	18*35	0.020	3150									

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●STANDARD RATINGS

Dimension:ΦDXL(mm)
Ripple Current: (mA/rms)at 105℃,100KHz; IMP: (Ωmax) at 20℃ 100KHz.

WV(V) (Code)	160(180)			200(230)			250(285)		
Item μF	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current
1							5*11	25.00	30
2.2							5*12	18.00	45
							6.3*12	15.00	65
3.3	5*11	13.00	65	5*11	12.00	75	6.3*12	11.50	75
4.7	6.3*12	11.00	75	6.3*12	9.50	90	6.3*12	8.50	95
6.8	6.3*12	8.50	95	6.3*12	8.00	105	8*12	6.80	125
10	8*12	6.50	125	8*12	6.00	135	8*12	4.50	175
22	10*13	5.50	185	10*13	5.00	285	10*17	3.50	325
33	10*16	5.00	375	10*16	4.50	410	10*20	3.00	435
47	13*17	4.50	520	13*17	4.00	525	13*20	2.50	605
68	13*20	2.50	620	13*20	2.00	710	13*25	1.80	755
100	13*25	1.80	850	13*25	1.50	905	16*25	1.40	950
120	16*20	1.60	900	16*25	1.30	955	16*25	1.20	980
150	16*25	1.50	950	16*30	1.10	1050	16*30	1.00	1050
220	16*35	1.30	1050	16*35	1.00	1100	18*30	0.90	1150
330	18*35	1.00	1200	18*35	0.95	1250	22*35	0.80	1200
470	18*40	0.85	1300	22*35	0.80	1350	22*40	0.75	1250
680	22*40	0.70	1450						
WV(V) (Code)	350(400)			400(450)			450(500)		
Item μF	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current
1	5*11	18.00	25	6.3*12	17.00	30	/	/	/
				8*12	16.00	35	/	/	/
2.2	6.3*12	13.00	30	6.3*12	11.00	40	8*12	10.00	55
				8*12	10.50	45			
3.3	6.3*12	10.00	45	8*12	7.50	55	8*12	8.50	65
4.7	8*12	7.50	65	8*12	6.50	75	8*12	8.00	75
							10*13	7.50	80
6.8	8*12	6.00	75	8*12	5.50	85	10*13	6.80	105
	10*13	5.50	85	10*13	5.00	95			
10	10*17	4.50	135	10*13	4.00	140	10*17	5.00	165
15	10*20	4.00	165	10*17	3.50	175	13*17	4.50	220
22	13*17	3.50	265	13*20	3.00	275	13*20	2.50	350
33	13*20	2.80	380	13*25	2.80	410	13*25	2.00	420
47	13*25	2.30	550	16*25	2.10	510	16*25	1.70	520
56	16*25	2.10	610	16*25	1.80	630	16*30	1.50	650
68	16*25	1.75	720	16*30	1.50	750	16*35	1.30	720
100	16*30	1.20	850	18*30	1.00	900	18*30	0.85	810
120	18*30	1.15	900	18*30	0.95	950	18*35	0.75	850
150	18*35	0.95	950	18*35	0.80	1000	22*35	0.65	900
220	22*35	0.85	1050	22*35	0.75	1100	22*40	0.60	1000
330	22*40	0.75	1100						

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