LORIDA SEMICONDUCTOR 深圳市龙瑞达科技有限公司
SHENZHERN LORUIDA TECHNOLOGY CO.,LTD

SPECIFICATION

DESCRIPTION: Aluminium Electrolytic Capacitors

SERIES: HGD 5000-8000

ITEM:

APPROVED BY
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PREPARED BY	CHECKED BY	APPROVED BY

1、概述 SCOPE

本承认书规定了 HGD 系列径向引线引出铝电解电容器的技术规范。

This specification covers“HGD 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℃~+105℃

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

-40℃~+105℃

4、测试环境 ATMOSPHERIC COND I T I ON 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℃

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℃

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℃

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℃

Relative humidity : 60 to 70%

Air pressure: 86kpa to 106kpa

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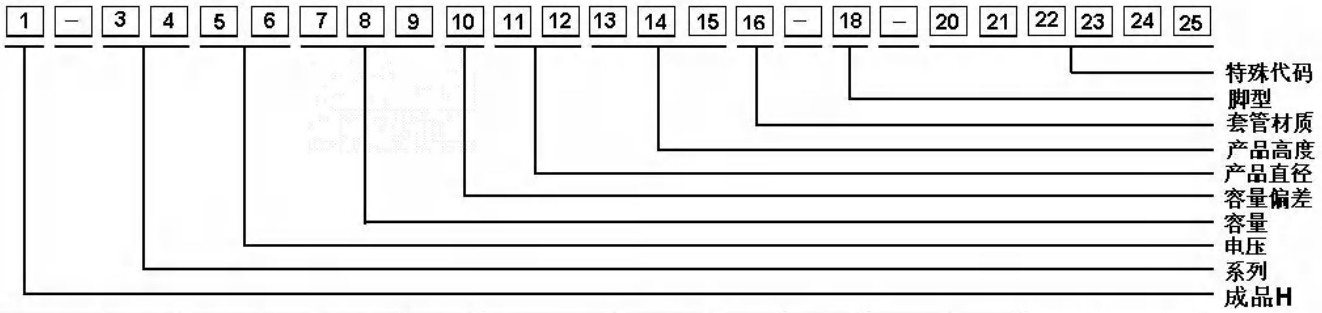
物料编码 PART NO. SYSTEM



系列	代码
CD11GD	GD
CD11GL	GL
CD11GK	GK
CD11GE	GE
CD11GR	GR
CD11GS	GS
CD11GT	GT
PS	PS
RF	RF
RS	RS
RW	RW
RZ	RZ

电压	代码
6.3	0J
10	1A
16	1C
25	1E
35	1V
50	1H
63	1J
80	1B
100	2A
120	2T
160	2C
200	2D
250	2E
350	2V
400	2G
420	2X
450	2W
500	2H

容量	代码
0.1	R10
0.22	R22
1	010
2.2	2R2
10	100
47	470
100	101
470	471
1000	102
4700	472
10000	103

容量偏差	代码
-10~+20%	V
±10%	K
±20%	M
-10~+30%	Q
0~+10%	A
-0~+20%	R
±5%	D
±7%	H
±15%	L

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

胶管材质	代码
PET	T
PVC	V

直径	代码
5	05
6.3	06
8	08
10	10
12	12
13	13
16	16
18	18
22	22

高度	代码
7	070
9.5	095
11.5	115
12	120
12.5	125
13	130
16	160
30	300
35	350
35.5	355

脚型	代码
直脚	L
成型（切脚、双K、卧式）	C
编带	P

特殊代码	代码
容量特性范围	W
低阻抗值	Z
低 ESR 值	E
胶管电压	V
胶管容量	C
低漏电流	L
特殊寿命	H
材质限定	M
特殊脚距	F
尺寸限高	S
胶管温度	P
胶管系列	X

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

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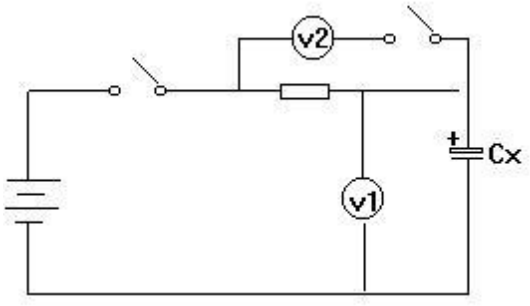
5. Reliability Test:

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	$I_C \leq 0.02CV+10(\mu A)$ I_C: 漏电流(μA) C: 容量(μF) V: 额定工作电压(V) $I_C \leq 0.02CV+10$ (μA) I_C: Leakage current(μA) C: Capacitance (μF) V: Rated voltage(V)

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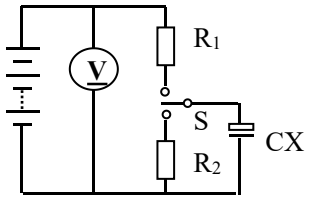
NO	项　目 Items	条　件 Conditions	规　格 Specifications
5.4	浪涌电压 Surge Voltage	在下面规定的温度下，通过指定的浪涌电压(Page 6,table 1)，6.0 分钟（充电 30 秒，放电 5 分 30 秒）为一周，往返 1000 回合，常温常湿下放置 1-2 小时达到热平衡状态测定满足 The capacitor shall be subjected to 1000 cycles at a temperature specified below, each consisting of a charge period of 30±5s, 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 应加电压：见 3 项 Test voltage: see 3 温度:15～30℃ Test Temperature : 15～30℃ 测试回路 Measurement circuit  R1：串联保护电阻（1KΩ） Protective series resistor（1KΩ） V：直流电压表　DC　Voltage R2：放电电阻 Discharge resister（1KΩ） S：切换开关 Switch Cx：待测电容器 Test Capacitor	漏电流：不超过规定值 Leakage Current: Not more than the specified value 容量变化：初始值的±15%以内 Capacitance change: Within ±15% of the initial value 损耗角正切：不超过规定值 Dissipation Factor : Not more than the specified value
5.5	防爆试验 Safety vent Test	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。 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	

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<table>
<tr>
<td>5. 6</td>
<td>温度特性
Temperature Characteristic</td>
<td>
电容器根据下表的次序处理。
The capacitor shall be subjected in turn to the procedures specified below.
<table>
<tr><th>阶段</th><th>温度</th><th>时间</th></tr>
<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>
</table>
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 .
<table>
<tr><td rowspan="2">阶段 2
Step 2</td><td>阻抗比（对阶段 1）
Impedance ratio</td><td>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>
</table>
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.
</td>
</tr>
</table>

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<table>
<tr>
<td>5.7</td>
<td>高温负荷
Load life</td>
<td>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。
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.</td>
<td>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

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</td>
</tr>
<tr>
<td>5.8</td>
<td>高温存储
Shelf life</td>
<td>在 105±2℃环境下无负荷贮存 1000 h，至少恢复 16 小时后。
The capacitors are then stored with no voltage at a temperature of 105±2℃for 1000 h and then resumed 16 hours.</td>
<td>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
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</td>
</tr>
<tr>
<td>5.9</td>
<td>可焊性
Solder ability</td>
<td>浸渍时间 Solder press time: 2.5±0.5s
焊接温度 Solder temperature: 255+5/-0℃</td>
<td>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</td>
</tr>
<tr>
<td>5.10</td>
<td>端子强度
terminal Strength</td>
<td>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.
<table>
<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>
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。</td>
<td>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 –circuiting .
There shall be no such mechanical damage as terminal damage etc.</td>
</tr>
</table>

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		<table><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> Tensile strength of termination: A static load of* IN shall be applied to the terminal in the axial direction and acting in a direction away from the body for 10 sec. Bending strength of termination: Hang the specified dead weight of*2N,then bent the body through 90°with The same speed ,again return to the original position Carry out this operation in 5 sec.	
5.11	振动试验 Resistance to Vibration	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.	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 –circuiting . There shall be no such mechanical damage as terminal damage etc.
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	温度:270+2/-0℃ Test Temperature: 270±5℃ 时间:10±0.5 s Test time: 10±0.5s	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.
5.13	稳态湿热 Resistance to damp heat (steady state)	依据 IEC60068-2-3 进行试验 试验温度：40±2℃ 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℃ Test time : 240±8h Relative humidity: 90~95% After completion of test, the capacitor shall be subjected to standard atmospheric conditions for l to 2 hours, after which measurements shall be made.	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.

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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.

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（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
Cr^{4} (6 价铬) -1000PPM	PBBs (多溴联苯) -1000PPM	PBDEs (多溴联苯醚) -1000PPM

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HGD series

Miniature Aluminum Electrolytic Capacitors

- Load life:105℃ 5,000~8,000 hours.
- 105℃ high-temperature resistance,high ripple current and long life.
- Suitable for LED lighting driver and the electronic ballast.
- RoHS Compliant.
- 壽命: 5,000~8,000小時。
- 105℃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℃	-25 to +105℃
Rated Working Voltage Range 額定電壓範圍	6.3 to 100V	160 to 450V
Capacitance Tolerance 靜電容量允許偏差	±20%(120Hz,+20℃)	
Leakage Current 漏電流	LC≤0.01CV or 3(μA) Whichever is greater measured after 2 minutes application of rated working voltage at +20 ℃ 施加額定工作電壓充電2分鍾後讀數，二者取大值。 [C：靜電容量	LC≤0.03CV (μA) Whichever is greater measured after 2 minutes application of rated working voltage at +20 ℃ 施加額定工作電壓充電2分鍾後讀數，二者取大值。 [C：靜電容量(uF)，V：額定電壓(V)]

Dissipaiom Factor (tan δ) 損失角正切值 (120Hz,+20℃)

Working Voltage(v)	6.3	10	16	25	35	50	63	100
tan δ(max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08
Working Voltage(v)	160	200	250	350	400	450		
tan δ(max)	0.15	0.15	0.15	0.15	0.2	0.2		

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
Z(-40℃)/ Z(+20℃)	8	6	4	3	3	3	3	3
Working Voltage(V)	160	200	250	350	400	450		
Z(-25℃)/ Z(+20℃)	3	3	3	5	5	6		

High Temperature Loading (Endurence) 高溫負荷壽命(耐久性)

Test conditions 試驗條件(+105℃)

Case Size		ΦD≦6.3	ΦD=8,10	ΦD=13	ΦD≧16
Duration 持續時間	6.3~35V	5,000	5,000	5,000	5,000
	50~100V	5,000	5,000	6,000	7,000
	160~450	5,000	5,000~6,000	7,000	8,000
Applied voltage 施加電壓	DC voltage with maximum permissible ripple current specified at +105℃ 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)				

Post test requirements at +20℃ 試驗後特性應滿足如下要求

Leakage current 漏電流	≦Initial specified value 初始規格值
Cap. Change 靜電容量變化率	within ±25% of initial measured value 初始測試值的±25%內
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

Duration 持續時間	1,000 hours
Ambient temp. 環境溫度	+105℃
Applied voltage 施加電壓	(None) 無

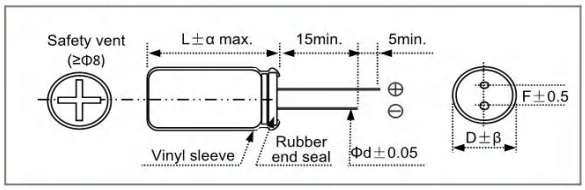
Post test requirements at +20℃試驗後特性應滿足如下要求

Leakage current 漏電流	≦Initial specified value 初始規格值
Cap. Change 靜電容量變化率	within ±25% of initial measured value 初始測試值的±25%內
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分鍾，放電後在標准氣壓下放置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 紋波電流頻率修正系數

Frequency Coefficient 頻率系數 低压

Cap(μF)	120Hz	1K Hz	10k Hz	100k Hz
≦150	0.40	0.75	0.90	1.00
220~560	0.50	0.85	0.94	1.00
680~1800	0.60	0.87	0.95	1.00
2200~3900	0.75	0.90	0.95	1.00

中高压

Rated Voltage(V)	120HZ	1KHZ	10K~20K	30K~100K
160~250	0.55	0.85	0.9	1.0
350~450	0.5	0.8	0.9	1.0

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•STANDARD RATINGS

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

UR(S V) Code	6.3(7.2) (0J)			10(13) (1A)			16(20) (1C)		
Item / μF	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current
47							5*11	0.570	160
100				5*11	0.570	170	5*11	0.400	280
150	5*11	0.530	180	5*11	0.450	250	6.3*12	0.300	320
220	6.3*12	0.350	260	6.3*12	0.240	320	6.3*12	0.180	355
330	6.3*12	0.220	360	6.3*12	0.280	400	8*12	0.130	650
470	8*12	0.180	380	6.3*12	0.150	550	8*12	0.100	700
560	8*12	0.170	530	8*12	0.150	700	8*16	0.100	830
680	8*12	0.120	650	8*12	0.095	830	10*17	0.080	980
1000	10*13	0.095	840	10*13	0.085	950	10*20	0.055	1270
1500	10*20	0.053	1400	10*20	0.059	1420	13*21	0.040	1670
2200	10*25	0.045	1640	13*21	0.038	1650	13*25	0.034	1970
3300	13*21	0.039	1650	13*21	0.032	1815	13*25	0.028	2165
4700	13*25	0.028	2130	13*25	0.023	2165	16*25	0.022	2710
5600	13*25	0.028	2095	16*22	0.027	2392	16*25	0.017	2690
6800	16*25	0.025	2570	18*25	0.022	2750	16*36	0.012	3526
							18*32	0.017	3632
8200	16*32	0.020	3020	18*32	0.019	3340	18*35	0.016	3670
10000	18*25	0.020	2750	18*35	0.017	3670	18*40	0.015	3810
WV(V) (Code)	25(32) (1E)			35(44) (1V)			50(63) (1H)		
Item / μF	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current
10	5*11	1.100	80	5*11	1.600	100	5*11	1.600	105
15	5*11	1.100	98	5*11	1.100	110	5*11	1.600	114
22	5*11	1.100	120	5*11	1.100	160	5*11	1.400	170
33	5*11	0.570	150	5*11	0.570	180	5*11	0.440	204
47	5*11	0.570	175	5*11	0.490	265	6.3*12	0.400	270
68	5*11	0.420	175	6.3*12	0.300	320	6.3*12	0.360	350
100	6.3*12	0.350	295	6.3*12	0.220	400	8*12	0.250	475
150	8*12	0.250	400	8*12	0.170	410	10*13	0.250	490
220	8*12	0.150	580	8*12	0.130	424	10*13	0.240	700
				10*13	0.130	450	10*17	0.120	550
330	10*13	0.100	760	10*17	0.072	1060	10*20	0.081	1139
470	10*13	0.100	1150	10*17	0.054	1220	10*20	0.070	1430
	10*17	0.070	1090	10*20	0.052	1230	13*21	0.058	1550
680	10*17	0.055	1247	10*20	0.042	1590	13*21	0.060	1610
				13*21	0.042	1600			
1000	10*20	0.051	1441	13*25	0.033	1960	16*25	0.035	2250
	13*21	0.040	1670						
2200	13*25	0.027	2165	16*25	0.022	2710	18*36	0.029	2970
3300	16*32	0.023	3020	18*36	0.020	3690	22*30	0.020	3410
	18*25	0.024	2750	18*40	0.019	3730			
4700	18*36	0.019	3690	22*30	0.019	3496			
6800	18*36	0.011	3680						
8200	18*40	0.010	3735						

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product please be sure to contact our sales offices or agents immedlately

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•STANDARD RATINGS

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

WV(V) (Code)	63(79) (1J)			100(125) (2A)			160(200) (2C)	
Item / μF	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Impedance Ωmax	Ripple Current	SIZE DXL(mm)	Ripple Current
0.47	5*11	3.000	22	5*11	3.000	23		
1	5*11	3.000	33	5*11	3.000	34	5*11	45
2.2	5*11	3.000	44	5*11	3.000	46	6.3*12	60
3.3	5*11	3.000	58	5*11	1.500	61	8*12	72
4.7	5*11	3.000	95	5*11	1.500	100	8*12	75
6.8	5*11	1.800	85	5*11	1.500	100	8*12	75
10	5*11	1.800	110	6.3*11	1.500	120	10*13	100
15	5*11	1.200	120	6.3*11	1.300	106	10*13	205
22	6.3*11	1.000	160	6.3*12	1.000	240	10*20	300
47	8*12	0.400	250	10*17	0.290	480	13*21	400
100	10*13	0.255	550	10*20	0.260	709	16*26	680
150	10*17	0.220	680	13*21	0.250	950	16*32	1670
220	10*20	0.136	958	13*25	0.096	1220	18*32	1050
330	13*17	0.081	1151	16*32	0.066	1660	18*35	2201
	13*21	0.090	1260	18*22	0.060	1425		
470	13*21	0.070	1425	18*25	0.056	1823		
680	16*25	0.060	1820	18*32	0.033	2340		
1000	16*25	0.039	2460	22*36	0.031	3160		
	18*22	0.043	2550					
1500	16*32	0.035	2695					
2200	18*36	0.035	3110					
3300	22*40	0.020	3410					

WV(V) (Code)	250(300) (2E)		400(450) (2G)		450(500) (2W)	
Item / μF	SIZE DXL(mm)	Ripple Current	SIZE DXL(mm)	Ripple Current	SIZE DXL(mm)	Ripple Current
1	6.3*12	65	6.3*12	46	6.3*12	50
2.2	6.3*12	70	8*12	62	8*12	70
3.3	8*12	80	8*12	70	8*12	85
4.7	8*12	85	8*12	77	8*12	80
					10*13	87
6.8	8*12	90	10*13	128	10*17	130
10	10*17	130	10*17	190	13*21	250
15	10*17	250	10*20	243	13*21	277
22	10*20	290	13*17	380	13*21	410
33	13*21	416	16*22	365	16*25	476
47	13*21	480	16*25	533	18*22	566
56	13*25	567	18*22	589	18*25	620
68	16*22	535	16*32	584	16*36	730
	16*25	565	18*25	691	18*32	750
100	16*25	700	18*40	930	18*40	950
150	18*30	1150	22*35	1200	22*40	1273
220	18*40	1340				
330						
470						

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