

承認書編號 NO: SFAK1-2108000611 TO: 格能 台照

承認書

## **APPROVAL SHEET**

## FOR AL. ELECTROLYTIC CAPACITORS

承 認 APPROVED BY:

料號 (Customer)	料號 (CapXon)	規格 Description	D φ *L	加工形式 (mm)
	GH101M050F115A	100μF/50V	μF/50V 8X11.5	

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核 准 APPROVED BY:



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# CapXon

豐賓電子(深圳)有限公司
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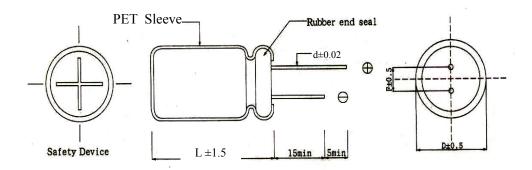


## CAPXON ELECTRONIC (SHEN ZHEN) CO., LTD

#### FOR APPROVAL

	Aluminum Electrolytic Capacitors <b>GH</b> Type												
Electric Characteristics													
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$													
GH101M050F115A	100	-20~20	50	58	10	540	50	0.28	-55~105	8X11.5	7000		

## 2.Diagram of Dimensions (Unit=mm)



D	8
L	11.5
F	3.5
d	0.5

## Part Number Explain

Series	Сар	Tol.	Voltage	Case D	Case L	Туре	Lead Treatm.	Special
GH	101	M	050	F	115	Α		
	=100µF	=-20~20%	=50V	=8mm	=11.5mm			



#### 一. 注意事项 Information

- 1. 最大均方根纹波电流 Maximum RMS ripple current
- 1.1.最大均方根纹波电流值是指+105°C 100kHz 测试值。

Maximum RMS ripples current at +105°C, 100kHz

1.2. 当电容器的使用温度及频率不是+105°C, 100kHz 时,该纹波电流值须乘附表 3 所示的系数进行换算。

When capacitors are operated at temperatures other than  $+105^{\circ}$ C, and frequency other than 100kHz the maximum RMS ripple currents must be multiplied by the factors shown in table 3.

1.3 当频率与上面规定条件不同时,纹波电流不能超过允许纹波电流值乘以上表系数所得值。纹波电流验证方法参照 JIS-C-5101-1(2010) No.: 4.23.

When frequency is different from specified condition shown as above, do not exceed the value obtained by multiplying the permissible maximum ripple current by the multiplier above. The ripples current verify methods according to JIS-C-5101-1(2010) No.: 4.23.

☆注意: (1).纹波电流要对应工作频率 Ripple current corrected with working frequency.

(2) 当电路中纹波电流很难测量时,电容器自身的温升应在5℃以内。

Check the generated heat of capacitor when ripple current is hard to measure in the circuit. Promoted temperature by self-generating heat should be within 5℃.

#### 2.工作电压 Working Voltage (WV)

电容器的应用电压要保证不可过压(也就是高于额定电压)。

Make sure that no excess voltage (that is, higher than the rated voltage) is applied to capacitor. Please pay attention so that the peak voltage, which is DC voltage, overlapped by ripple current, will not exceed the rated voltage.

#### 3.绝缘性 Insulating

铝电解电容器普通品表面套有乙烯基或类似材料的套管,这种套管一般是用来标示的。如果铝壳需要绝缘,建议采用为绝缘设计的特殊类型的电容器。

General types of aluminum electrolytic capacitors are covered with a vinyl sleeve or the like. And this Sleeve is used for marking. When the internal element or the container is needed to be insulated, capacitors specially designed for insulation requirement are recommended to be used.

#### 4.焊锡 Soldering

**4.1** 在将各种元器件焊接在 PC 板上时,过高的焊接温度或是过长的焊接时间都会引起套管二次收缩 ,导致破洞,并且必须 在 PC 板的反面进行焊锡。

When soldering a PC board with various components, too high soldering temperature or too long dipping time may cause secondary shrinking of the sleeve and then the container unnecessarily exposed. The soldering must be done on the reverse of PC board.

4.2 如果套管与电路板接触,在焊锡时可能熔化或损坏套管,因此建议电容器与电路板保持一定的距离。

Soldering may melt or break the sleeve when the sleeve is contacted with circuit boards. So the capacitors are recommended to be slightly apart from the circuit boards.

#### 5.防爆 Vent

电容器 (Φ≥10mm) 在铝壳底部设置了一个防爆装置,当误操作时防爆阀会打开以释放内部较高的压力。

The capacitor (Φ≥10mm) is provided with a safety vent on the bottom of the container. The vent would rupture in the event of the unsafe usage or misusage to relieve the internal higher pressure.

#### 6.高海拔 High Altitude

该电容器可以在-55~105℃ 的温度环境和 20,000 英尺的海拔高度运输。

The capacitors can withstand those transportation conditions that temperature may range from -55~105°C and the altitude can reach 20,000 feet.

#### 7.清洗剂 Cleaning agents:

如果用含卤元素的有机溶剂清洗电容器,溶剂可能会渗入电容内部导致腐蚀。

If the capacitor is cleaned in halogenated agents for organic removing solder flux solvent, the agents may penetrate into the inside of capacitor, and may generate corrosion.

#### 8.环保方针 Environment-friendly policy

本公司依蒙特利尔协议书之规定,于生产过程中不使用破坏臭氧层之药品。在电容器生产的整个制程中,包括生产、包装、存储和运输,我司始终遵守环保和 ROHS 的相关法律法规。

None of ozone depleting chemicals (ODC) under the Montreal Protocol is used in manufacturing process of CapXon Electronic industrial CO., Ltd. In the entire process of capacitor's production, including manufacture, packaging, storage and transportation, our company always complies with the related Environmental Protection Laws and Regulations of RoHS.

9. 本公司品质量依 JIS-C-5101-1 标准考核,其信性试验方法依 JIS-5101-4(非 SMD 液态), -18 (液态 SMD) 之规范为基准。 CapXon's Products meet or exceed quality standards specified by JIS-C5101-1 Wand with reliability Requirements refer to JIS-C-5101-4(non-SMD liquid capacitor),-18(liquid SMD capacitor).





### 二. 技术性能 Technical Feature

测试环境 Testing Environment:

方案 Precept 环境条件 Condition	无特别规定及判定无疑问 No special regulation and judgment doubt	无特别规定而判定有疑问 No special regulation but have judgment doubt	在标准室内测试仍有争议 Under the standard room testing but have dispute
温度 Temperature	15∼35℃	<b>25±10</b> ℃	<b>20±1</b> ℃
湿度 Humidity	25~75%RH	40 ∼60%RH	63∼67%RH
气压 Air pressure	86KPa∼106KPa	86KPa∼106KPa	86KPa∼106KPa

序号 NO.	试验项目 Item	实验条件及判定 Conditions and Criterion
1	工作温度范围 Range of working temperature	-55~105 ( ℃)
2	电容容量 Capacitance	实验条件 Conditions: 测量温度 Temperature: 20±2℃ 测量频率 Frequency: 120Hz 测量电压 Voltage: 0.5Vrms 判定标准 Criterion: 容量偏差 Tolerance: -20~20%
3	损耗角正切 Dissipation factor (tanδ)	实验条件 Conditions: 测量温度 Temperature: 20±2℃ 测量频率 Frequency: 120Hz 测量电压 Voltage: 0.5Vrms 判定标准 Criterion: See Table 1
4	漏电流 Leakage Current	实验条件 Conditions: 将额定电压加在电容和 1000Ω±10% 的保护电阻上充电 2 分钟后测试。 The rated voltage shall be applied across the capacitors and its protective resistor which shall be 1000Ω±10%. The leakage current shall then be measured after an electrification period of 2 min. 判定标准 Criterion: I≤ 50 (μA)



5	引线强度 Terminal strength	A static load of N shall b 端子线径 Diameter mm 0.35 <d≤0.5 0.5<d≤0.8 0.8<d≤1.25 SNAP-IN型端号 引线抗弯折强度 Bending 在电容器引线施加固定了 90度后回到原位。如此搜 A static load of N appli original position. Next s</d≤1.25 </d≤0.8 </d≤0.5 	E加下表重力 N, 10±1S。 e applied to the terminal in th 重力 Gravity (±10%) 5N 10N 20N	重锤重量 Weight (±10%) 0.51Kg 1.02Kg 2.04Kg 4.08Kg  F 90 度后回到原位,再向标至规定次数。注意弯曲时不nt the body through 90°, rion through 90° with the signal of the s	目反方向弯折 可扭转端子。 return to the same speed,
		Do it for specified cycles 端子线径 Diameter mm 0.35 < d≤0.5 0.5 < d≤0.8 0.8 < d≤1.25 LUG端子 SNAP-IN型端子不做抗乳 判定标准 Criterion: 端子不得有松动、断裂及 The terminal should not	is forbidden.  重锤重量 Weight (±10%) 2.5N 5N 10N 20N ,折弯度角 45℃。		
6	温度特性 Temperature characteristic	1 2 Lower Ca 3 Upper Ca 要求达到热平衡后测量, Testing when thermal ec 判定标准 Criterion: 1.阻抗比不能超出表 2 所 2.LC≤800%初始规格值	且度 Temperature  20±2℃ 下限类别温度 ategory temperature ±3°C 上限类别温度 ategory temperature ±2°C  并且阻抗在同一频率下测试 quilibrium and Impedance mus	not exceed the values show	
7	高温负荷 High temperature load	实验时间 Test time 测试条件 Test condition 判定标准 Criterion: 1.容量的变化: △C/C ≤:	ate: △C/C ≤±25% of initial va %规格值 :200% of specified value pecified value.	、时后进行测试 atmospheric conditions fo	r 16 hours.



8	高温储存 High Temperature Exposure(Storage)	实验条件 Conditions: 实验温度 Temperature: 105℃ 施加电压 Applied voltage: None 实验时间 Test time: 1000H 测试条件 Test condition: 在标准大气压下保存 16 小时后进行测试 Test after keep on standard atmospheric conditions for 16 hours. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes. 判定标准 Criterion: 1.容量的变化: △C/C ≤±25%初始值 Capacitance Change Rate: △C/C ≤±25% of initial value 2.损耗角正切: DF ≤200%规格值 Dissipation Factor: DF ≤200% of specified value. 3.漏电流: LC ≤规格值 Leakage Current: LC ≤specified value. 4.外观: 无明显损伤 Appearance: No visible damage
9	浪涌试验 Surge Test	实验条件 Conditions: 实验温度 Temperature: 15~35℃ 施加电压 Applied voltage: 58V 周期 Period: 充电 30 秒,放电 330 秒为一个周期。 Charge for 30 seconds,discharge for 330 seconds as a cycle 循环次数 Cycles: 1000 测试条件 Test Condition: 在标准大气压下保存 16 小时后进行测试。 Test after keep on standard atmospheric conditions for 16 hours. 判定标准 Criterion: 1.容量的变化: △C/C ≤±15%初始值 Capacitance Change Rate: △C/C ≤±15% of initial value 2.损耗角正切: DF ≤规格值 Dissipation Factor: DF ≤ Original Spec value 3.漏电流: LC ≤规格值 Leakage Current: LC ≤original Spec value 4. 外观: 无明显损伤 Appearance: No visible damage
10	振动 Vibration	实验条件 Conditions: 频率范围 Frequency Scope: 10~55HZ 振幅 Amplitude: 0.75mm 加速度 Acceleration: 98 m/s² (10g) 振动时间 Vibration Time: X、Y、Z各方向循环各 2 小时、共计 6 小时 X,Y,Z directions each for 2 Hrs, total 6 Hrs. 测试条件 Test Condition: 从振动仪上取下电容后在 30 分钟内测试 Testing within 30 minutes after take it down from vibration machine 判定标准 Criterion: 1.容量的变化: △C/C ≤±5%初始值 Capacitance Change Rate: △C/C ≤±5% of initial value 2.损耗角正切: DF ≤规格值 Dissipation Factor: DF ≤ Original Spec value 3.漏电流: LC ≤规格值 Leakage Current: LC ≤original Spec value 4. 外观: 无明显损伤 Appearance: No visible damage



11	可焊性 Solderability	实验条件 Conditions: 焊锡种类 Kind of solder: Sn: 96.5%, Ag: 3%, Cu Sn: 96.5%, Ag: 3%, Cu: 0.5% or equal article 锡炉温度 Solder stove temperature: 245±5℃ 浸锡时间 Immerse time: 2.0±0.5S 浸入或移出速度 Speed of immerse or leave: 25±2.5 浸入深度 Immerse depth: 浸入深度保持在电容本体 1.5~2.0mm between the capacitor body and the so 试验次数 times: 1. 测试条件 Test Condition: 从锡炉中取出后 2 小时测 Testing after 2 hours for taking it out from the solde 判定标准 Criterion: 新锡附着度应大于 95%。 Above 95% area of surroundings surface shall be constituted.	5mm/s 与焊锡之间距离在 1.4 lder. 试。 r stove.	
12	耐焊接热 Resistance to soldering heat	实验条件 Conditions: 焊锡种类 Kind of solder: Sn: 96.5%, Ag: 3%, Cu Sn: 96.5%, Ag: 3%, Cu: 0.5% or equal article 锡炉温度 Solder stove temperature: 260 (0~3) ℃ 浸锡时间 Immerse time: 10±1S 浸入或移出速度 Speed of immerse or leave: 25±2.5 浸入深度 Immerse depth: 浸入深度保持在电容本体 1.5~2.0mm between the capacitor body and the so 试验次数 times: 1. 测试条件 Test Condition: 从锡炉中取出后 2 小时测Testing after 2 hours for taking it out from the solde 判定标准 Criterion: 1.容量的变化: △C/C ≤±5%初始值 Capacitance Change Rate: △C/C ≤±5% of initial v 2.损耗角正切: DF ≤规格值 Dissipation Factor: DF ≤ Original Spec value 3.漏电流: LC ≤规格值 Leakage Current: LC ≤original Spec value	5mm/s 与焊锡之间距离在 1.4 lder. 试。 r stove.	5~2.0mm。
13	防爆试验 Vent (仅适用于有防爆 要求产品)	实验条件 Conditions:		保持电流 Current 1A 10A ash, flame, spark or



		实验条件 Condition	ns:						
		阶段 Step	温度 Temp.	时间 Time (Min)					
		1	下限类别温度 <b>±3</b> ℃	30±3					
		2	<b>25±5</b> ℃	3					
		3	上限类别温度 <b>±2</b> ℃	30±3					
		4	<b>25±5</b> ℃	3					
14	温度循环 Temperature Cycling	Referring to JIU 判定标准 Criterion:							
		1.容量的变化: △C/C ≤±5%初始值 Capacitance Change Rate: △C/C ≤±5% of initial value 2.损耗角正切: DF ≤规格值 Dissipation Factor: DF ≤ Original Spec value 3.漏电流: LC ≤规格值 Leakage Current: LC ≤original Spec value 4. 外观: 无明显损伤 Appearance: No visible damage							
15	稳态湿热 High temp and humidity	Test after keep on 判定标准 Criterion: 1.容量的变化: △C Capacitance Chan △C/C ≤±10% of in 2.损耗角正切: DF Dissipation Factor: 3.漏电流: LC ≤规	40±2℃ -95%RH ed Time: 500H dition: 在标准大气压下保存 16 小时 standard atmospheric conditions fo C/C ≤±10%初始值 ge Rate: itial value ≤1.2 倍规格值 DF ≤ 1.2 times of the original Spec 各值 _C ≤original Spec value 伤	or 16 hours.					

#### 三. 标示说明 MARKING:

例:

(1) CapXon: 制造商标 Brand

(2) **50V:** 电压 Rated Voltage

(3) 100 μ F: 容量 Nominal Capacitance

(4) - - > : (-)负极指示 Polarity(Cathode Indicate)

(5) **105℃:** 最高工作温度(Maximum Operating Temp.)

(6) **GH:** 系列 Series 背面 Back:

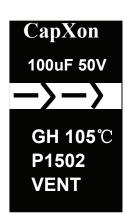
(7) **P1502:** 生产周期 Date Code

(P:PET,15:2015年Year; 02:第2周Week)

(8) **VENT**: 安全标示 Safety Vent

(注: 1.直径<6.3Φ, 无此标示VENT

2.直径=6.3Φ 且L<11(不含)无此标示VENT 3.直径>6.3Φ 且 L<7(不含) 无此标示 VENT)



正面 Front:



#### 四. CHARACTERISTICS TABLE

#### 1. 损失角 DF Dissipation Factor (表 1 TABLE 1)

Working Voltage(VDC)	6	10	16	25	35	50	63	80	100
D.F. (%)max.	22	19	16	14	12	10	9	9	10

For capacitance>1000uF,add 2% per another 1000uF.

#### 2. 阻抗比值表 (表 2. TABLE 2)

Impedance ratio max

Working Voltage	6	10	16	25	35	50	63	80	100
Z-25℃ / Z+20℃	4	3	2	2	2	2	2	2	1.5
Z-40°C / Z+20°C	6	4	3	3	2	2	2	2	2
Z-55°C / Z+20°C	8	6	5	5	4	4	4	4	4

For capacitance>1000uF, add 0.5 per another 1000uF for -25  $^{\circ}$ C/+20  $^{\circ}$ C add 1 per another 1000uF for -40°C/+20°C add 1.5 per another 1000uF for -55  $^{\circ}\mathrm{C}/\!+\!20\,^{\circ}\mathrm{C}$ 

#### 3. 频率系数表 (表 3 TABLE 3)

Multiplier for Ripple Current vs. Frequency:

CAP(uF) / Frequency(Hz)	120	400	1K	10K	100K	
CAP≦10	0.40	0.52	0.60	0.92	1.00	
10 <cap≦100< td=""><td>0.67</td><td>0.80</td><td>0.83</td><td>0.94</td><td>1.00</td></cap≦100<>	0.67	0.80	0.83	0.94	1.00	
100 <cap≦1000< td=""><td>0.75</td><td>0.84</td><td>0.88</td><td>0.95</td><td>1.00</td></cap≦1000<>	0.75	0.84	0.88	0.95	1.00	
1000 <cap< td=""><td>0.82</td><td>0.87</td><td>0.92</td><td>0.95</td><td>1.00</td></cap<>	0.82	0.87	0.92	0.95	1.00	

1. Specification and description for the component(s) are subject to change without notice.

Operation conditions (ambient temperature, ripple current, thermal resistance, etc.) may affect the lifetime of a capacitor, please consult Capxon for lifetime calculation in your application.

For aerospace or military application and for life-saving or life-sustaining applications please consult us before design-in in your application.
 Under no circumstance, Capxon warrants that any Capxon product is suitable for the purposes intended for your application, even Capxon knows the application.
 It is buyer's duty and obligation to check and make sure that Capxon's products are suitable for the purposes intended and select the correct and proper Capxon product.

5. Except for the written express warranties, Capxon DO NOT, impliedly, by assumption or whatever else, warrant, undertake, promise any other warranty or guaranty for capxon's Products.
6. Further information please read our technical information in our web site: <a href="www.capxongroup.com">www.capxongroup.com</a>

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NCD681K10KVY5PF NEV1000M25EF-BULK NEV100M35DC NEV100M63DE NEV220M25DD-BULK NEV.33M100AA

NEV4700M50HB NEV.47M100AA NEVH1.0M250AB NEVH3.3M250BB NEVH3.3M450CC KM4700/16 KME50VB100M-8X11.5

SG220M1CSA-0407 ES5107M016AE1DA ESMG160ETD102MJ16S ESX472M16B 227RZS050M 476CKH100MSA 477RZS050M

UVX1V101KPA1FA UVX1V222MHA1CA KME25VB100M-6.3X11 VTL100S10 VTL470S10 VTL470S16A 511D336M250EK5D

052687X ECE-A1CF471 NRE-S560M16V6.3X7TBSTF RGA221M1CTA-0611G ERZA630VHN182UP54N UPL1A331MPH

SK035M0100AZS-0611 MAL214658821E3 NEV1000M6.3DE NEV100M16CB NEV100M50DD-BULK NEV2200M16FF NEV220M50EE

NEV2.2M50AA NEV330M63EF NEV4700M35HI NEV4.7M100BA