

NO:TH-23877

承认申请书

APPLICATION FOR APPROVAL

产品符合欧盟 RoHS 环保要求

CUSTOMER: 深圳市立创电子商务有限公司
PART NAME: 瓷介电容器
DRAUGHT BY: 宋桂涛
CHECKED BY: 秦建国
APPROVERED BY: 刘祥峰
DATE: Oct. 13, 2023

APPROVAL	FIELD

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YINAN DON'S ELECTRONIC COMPONENT CO., LTD.

变 更 清 单
REVISION LIST

序号 NO.	日 期 DATE	变更内容 CHANGE CONTENT	变更标记 REMARK
1	2023-10-13	首次提供 First provides	-----
2			
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交流瓷介电容器

用途

该产品主要用于家用电器、办公设备、电子仪器、汽车电子及其它电子产品作跨电源线、消火花、天地线耦合和旁路电容等。

AC CERAMIC CAPACITORS

Application

Using as jumper wire、spark killer、antenna coupling、ground coupling、and bypass capacitors in household appliances、office equipment、electronic equipment、automotive electronics and other electronic products.

安全认证 (safe authentication)

认证名称 Certification name	认证标记 Mark	认证类别 Categories	认证电容量分类 scope	认证标准 standards	证书编号 NO.
中国 CQC CHINA CQC		X1: AC250/400V Y1: AC250/400V	2pF~4700pF	GB/T6346.14-2015	CQC02001002287
		X1: AC250/400V Y2: AC250/300V	2pF~10000pF		CQC02001002289
美国 UL USA UL		X1: AC400V Y1: AC250/400V	2pF~4700pF	UL60384-14	E145038
		X1: AC400V Y2: AC250/300V	100pF~10000pF		
德国 VDE Germany VDE		Y1: AC250/400V	2pF~4700pF	DIN EN 60384-14 (VDE 0565-1-1):2014-04 EN 60384-14:2013-08 DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04 EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016	135256
		Y2: AC250V	100pF~10000pF		
		X1: AC400V	2pF~10000pF		
加拿大 CSA Canada		X1: AC400V Y1: AC250/400V	2pF~4700pF	CAN/CSA-E60384-14:14 CAN/CSA-E60384-1:14	2492570
		X1: AC400V Y2: AC250V	100pF~10000pF	CAN/CSA-E60384-14:14 CAN/CSA-E60384-1:14 UL 60384-14-2014 IEC 60384-1:2008	2492571
韩国 KTL Korea KTL		Y1: AC250V	2pF~4700pF	KC60384-1 (2015-09) KC60384-14 (2015-09)	SU03029-7001E
		X1: AC400V	2pF~10000pF		SU03029-7002E
		Y2: AC250V	100pF~10000pF		SU03029-7003D
挪威 NEMKO Norway NEMKO		X1: AC400V Y1: AC250/400V	2pF~4700pF	EN 60384-14:2013:A1	P19223898/A1
瑞典 SEMKO Sweden SEMKO		X1: AC400V Y1: AC250/400V	2pF~4700pF	EN 60384-14:2013+A1:2016	SE-S-1917430R1
芬兰 FIMKO Finland FIMKO		X1: AC400V Y1: AC250/400V	2pF~4700pF	EN 60384-14:2013+A1:2016	FI/40432/A1
丹麦 DEMKO Denmark DEMKO		X1: AC400V Y1: AC250/400V	2pF~4700pF	EN 60384-14:2013/A1:2016 EN 60384-14:2013	D-09127-A1

□外观及结构(Appearance and Structure)

编码 CODE	品 名 CODE NO.	Dmax (mm)	Tmax (mm)	F (mm)	d (mm)
	CT81-250VAC-06b-2E4-102M-X1Y2-2	6.5	5.0	7.5	0.55
	CT81-250VAC-08b-2E4-222M-X1Y2-2	8.5	5.0	7.5	0.55
	CT81-250VAC-07b-2B4-471K-X1Y2-2	7.5	5.0	7.5	0.55
	CT81-400VAC-08b-2E4-152M-X1Y1-3	8.5	6.0	10.0	0.55
	CT81-400VAC-09b-2E4-222M-X1Y1-3	9.5	6.0	10.0	0.55
	CT81-400VAC-07d-2B4-101K-X1Y1-3	7.5	6.0	10.0	0.55
	CT81-400VAC-07d-2B4-221K-X1Y1-3	7.5	6.0	10.0	0.55
	CT81-400VAC-08d-2B4-331K-X1Y1-3	8.5	6.0	10.0	0.55
	CT81-400VAC-08d-2B4-471K-X1Y1-3	8.5	6.0	10.0	0.55

外观结构
STYLE

b 式 (Type b)

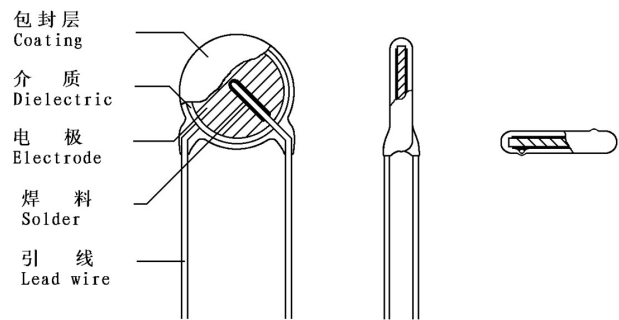
d 式 (Type d)

侧面 Side

□标记 (Marking)

示例 (Example)	项目 (Item)	
	CT81	种 类 (Class)
	102	标称容量 (Rated Capacitance)
	M	容量误差 (Tolerance of Capacitance)
	LY	公司代号 (Manufacturer's Code)
		UL 认证标记 (UL Recognized Mark)
		CSA 认证标记 (CSA Monogram)
		VDE 认证标记 (VDE Approval Mark)
		CQC 认证标记 (CQC Approval Mark)

□结构(Structure)



包封层(Coating) : 环氧树脂(Epoxy Resin)

介 质(Dielectric): 陶 瓷 (Ceramic)

电 极(Electrode : 银 (Silver)

焊 料(Solder) : 锡(Alloy Tin)

引 线(Lead Wire) : 镀锡引出线(Lead)

□主要材料(Main Material)

SrCO₃ BaCO₃ TiO₂ Bi₂O₃ CaCO₃ Nb₂O₅ MgO

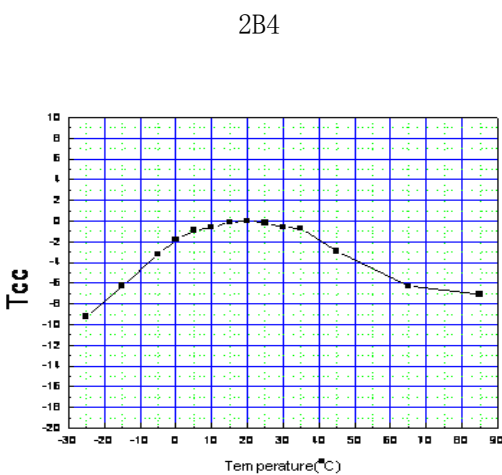
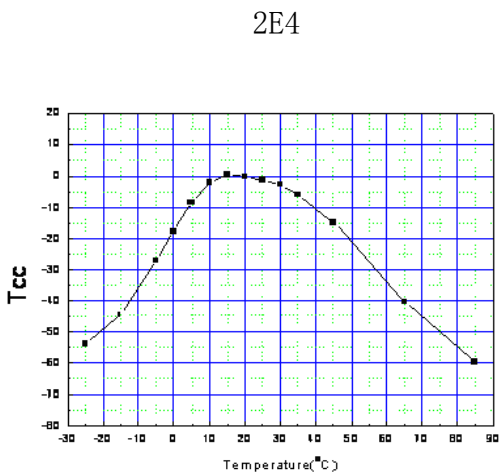
银膏(Silver paste) 环氧树脂(Epoxy Resin)

□测试条件(Test Condition)

温度(Temp.): 常规测试 (Routine test): 15~35℃,
有疑义时测试 (Test in case of disagreement): 20±2℃
相对湿度(R. H.): 45~75%

电压(Vol.): 1.0±0.2Vrms 频率(Freq.): 1±0.2KHz

□容量—温度变化曲线 Cap.—Temp. Curve



□命名方法 Part Code Designation

CT81-250VAC-06 b-2E4-102 M-X1Y2-2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①种类 Class

代码 Code	种类 Class
CT81	Ⅱ类高压 Class II High-Voltage

②额定电压 Rated Voltage

代码 Code	额定电压 Rated Vol.	代码 Code	额定电压 Rated Vol.
250VAC	AC250V		
400VAC	AC400V		

③主体外径 Body Diameter

代码 Code	最大外径 Max Diameter of Body	代码 Code	最大外径 Max Diameter of Body
06	6.5mm	09	9.5mm
07	7.5mm		
08	8.5mm		

④引线形式 Lead Shape

代码 Code	形式 Shape
b	直脚 Straight
d	短直脚 Straight Short

⑤温度特性 Temperature Characteristic

代码 Code	容量变化 Cap. Change
2E4	-56~+22%
2B4	-10~+10%

⑥标称容量 Rated Capacitance

代码 Code	静电容量 Capacitance	代码 Code	静电容量 Capacitance
101	100 pF		
221	220 pF		
以此类推 And so on			

⑦容量允差 Tolerance

代码 Code	容量允差 Tolerance
K	± 10%
M	± 20%

⑧试验电压类别 Type of Test Voltage

代码 Code	试验电压 Test Voltage
X1Y2	AC2600V
X1Y1	AC4000V

⑨引线间距 Lead spacing

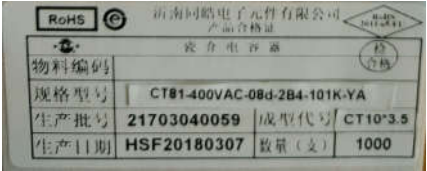
代码 Code	间距 spacing
1	5.0mm
2	7.5mm
3	10.0mm

□包装 (packing)

1、包装数量 (packing quantity):

成型方式 Molding mode	袋装数量(支) Quantity per bag (PCS)	备注 Remark
b/d	1000 ± 1/500 ± 1	塑料袋尺寸: Size of plastic bag 1#: 275×200mm 2#: 215×160mm

2、包装标识 (packing marking):

示例(Example)	项 目(Item)	
		公司商标 (Manufacturer's Marking)
		环保标识 RoHS Designation
	物料编码 Code	用户要求时 When the customer require
	规格型号 Model	详见如上表格, (Please see the detail in the upper sheet)
	生产批号 Product lots	生产批号 Product lots
	成型代号 lead shape	用户要求时 When the customer require
	生产日期 Productive date	产品生产时间 the produce time of the product
	数 量 Quantity	每盒的包装数量 the packing quantity per plastic bag

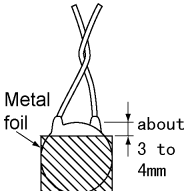
3、外包装 (over-wrap packing):

内包装箱 (internal packing boxes) (A1:360×200×140mm、A2:198×177×138mm)

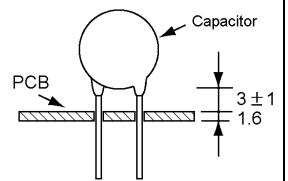
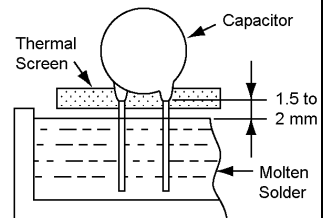
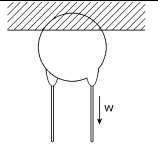
外包装箱 (over-wrap boxes) (B1:460×380×220mm、B2:425×380×170mm)

装箱数量应为最小包装的整数倍。(The packing quantity should be integral multiple of minimal packaging.)

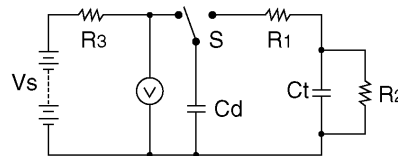
□规格及试验方法 Specification and Test Method

项 目 ITEM		规 格 SPECIFICATION	试 验 方 法 及 条 件 TEST METHOD AND CONDITION																	
1. 使用温度范围 Operating Temp. Range		-40℃~+125℃																		
2. 外观尺寸 Appearance and Dimension		外观无可见损伤 尺寸在规格内 Appearance has no marked defect. Dimensions shall be within specified tolerance.	外观用目视法观测 尺寸用游标卡尺测量 Appearance be watched on sight Dimension be measured by caliper																	
3. 标识 Mark		应清晰可见 Should be discerned easily.	用目视法观测 Be watched on sight																	
4. 静电容量 Capacitance		在规格范围内 Within specified tolerance	温度 Temp. 20±2℃ 电压 Vol. 1.0±0.2Vrms 频率 Freq. 1±0.1KHz																	
5. 损耗因数 Dissipation Factor		E: 2.5% max B: 2.5% max	同上 Same condition as capacitance																	
6. 绝缘电阻 Insulation Resistance		大于 10,000MΩ 10,000MΩmin	500±50V. DC 的电压充电一分钟。 The insulation Resistance shall be measured with 500±50V. DC within 60±5 sec of charging.																	
7. 耐电压 Dielectric Strength	端子间 Between Lead Wires	无不良 No failure.	施加 2.6KVAC 电压 1 分钟 (充放电电流≤50mA) (X1Y1:4.0 KVAC) Apply a voltage of 2.6KVAC for 1 min. between the lead wires. (Charge/discharge current≤50mA) (X1Y1:4.0 KVAC)																	
	端子与外壳间 Body Insulation	无不良 No failure.	将电容器的引线连在一起, 主体外紧包一金属箔, 边缘距引线约 3~4mm, 施加 2.6KVAC 的电压于电容器的引线和金属箔之间。 (充放电电流≤50mA) (X1Y1:4.0 KVAC) The terminals of the capacitor shall be connected together. A metal foil shall be closely wrapped around the body of the capacitor to the distance of about 3 - 4 mm from each terminal. A Voltage of 2.6KVAC is applied between the capacitor lead wires and metal foil. (Charge/discharge current <50mA) (X1Y1:4.0 KVAC) 																	
8. 容量温度特性 Temperature Characteristic		E: -56~+22% B: -10~+10%	静电容量测试须依下列顺序进行。 预处理: 在 85±2℃ 下放置 1 小时后取出, 在室内条件下放置 24±2 小时。 The capacitance shall be measured at each step as following. Pre-treatment: Capacitor shall be stored at 85±2℃ for 1 hour, then placed at room condition for 24±2hours before initial measurements. <table><tr><td>步骤(Step)</td><td>①</td><td>②</td><td>③</td><td>④</td><td>⑤</td></tr><tr><td>温度(Temp.)</td><td>20±2℃</td><td>-25±2℃</td><td>20±2℃</td><td>85±2℃</td><td>20±2℃</td></tr></table>						步骤(Step)	①	②	③	④	⑤	温度(Temp.)	20±2℃	-25±2℃	20±2℃	85±2℃	20±2℃
步骤(Step)	①	②	③	④	⑤															
温度(Temp.)	20±2℃	-25±2℃	20±2℃	85±2℃	20±2℃															
9. 阻燃试验 Flame Test		第一至第二次循环不会产生 30 秒以上的燃烧现象, 第三次时不会产生 60 秒以上的燃烧现象。 The capacitor flame shall be discontinued not more than 30sat cycle 1 to 2 and 60 sec. At cycle 3.	将电容器放入直径 9.5mm, 高度 19mm 的火焰中烤 15 秒后取出, 在空气中停留 15 秒后再放入火焰中进行三次循环。 The capacitor should be put into the flame with diameter 9.5mm and height 19mm for 15 sec. and then removed for 15 sec. In air until 3 cycles.																	

项 目 ITEM	规 格 SPECIFICATION		试 验 方 法 及 条 件 TEST METHOD AND CONDITION
10. 易焊性 Solder ability of lead wires	导线上沾锡面积大于 90%。 Lead wire shall be soldered with uniformly coated on the axial direction over 90% of the circumferential direction .		导线须浸入助焊剂后再浸入 $245 \pm 5^{\circ}\text{C}$ 的熔锡内, 松香浓度 25%wt, 距离主体 2.0~2.5mm, 时间 2 ± 0.5 秒。 The lead wires of the capacitor shall be dipped into a alcohol solution of 25% wt rosin and then into molten solder of $245 \pm 5^{\circ}\text{C}$ for 2 ± 0.5 sec. In both case the depth of dipping is up to about 2.0 to 2.5 mm from the root of the lead wires.
11. 端子强度 Strength of Lead Wires (c 式不做此项 Type c none)	抗拉强度 Pull	导线不断裂 电容器不破损 Lead wire shall not cut off and capacitor shall not be damaged	把制品固定, 在端子引出方向施加负荷 10N 保持 10 ± 1 秒。 Fix the body of the capacitor and apply a tensile weight gradually to each lead wire in the radial direction of capacitor up to 10N, and keep it for 10 ± 1 sec.
	弯曲强度 Bending		在端子间施加 5N 负荷并弯曲 90° , 回复原后反向弯曲 90° , 每次弯曲时间为 2 至 3 秒, 连续 2 次。 Each lead wire shall be subjected to 5N weight and then a 90° bend, at the point of egress, in one direction return to original position, and then a 90° bend in the opposite direction at the rate of one bend in 2-3 s for 2times.
12. 耐焊接热 Soldering Effect	外观 Appearance	无显著异常 No marked defect	将端子浸入温度为 $260 \pm 5^{\circ}\text{C}$ 的熔锡内, 外保留 1.5~2.0mm 距离主体边缘, 并保持 5.0 ± 0.5 秒。 试验前: 电容器应放置在 $125 \pm 2^{\circ}\text{C}$ 的温度下 1 小时, 然后在常温下恢复 24 ± 2 小时后测试。 试验后: 室内条件下恢复 24 ± 2 小时。
	容量变化 Capacitance Change	E: $\pm 20\%$ max B: $\pm 10\%$ max	The lead wires shall be immersed into the melted solder of $260 \pm 5^{\circ}\text{C}$ up to about 1.5 to 2.0 mm from the main body for 5.0 ± 0.5 sec.
	抗电强度 Dielectric Strength	按第七条。 Per Item 7.	Pre-treatment: The capacitor shall be placed at $125 \pm 2^{\circ}\text{C}$ for 1 hour, then placed at room condition for 24 ± 2 hours before initial measurement. Post-treatment: Capacitor shall be stored for 24 ± 2 hours at room condition.
13. 耐振性 Vibration Resistance	外观 Appearance	无显著异常 No marked defect	电容器须焊锡固定好, 固定点距电容器主体 $3 \pm 1.0\text{mm}$, 并经 $10\text{Hz} \rightarrow 500\text{Hz}$ 之振动频率, 全振幅 1.5mm, 振动时间为 6 小时, 往 X、Y、Z 轴三个方向(各 2 小时)。 试验前: 电容器应放置在 $125 \pm 2^{\circ}\text{C}$ 的温度下 1 小时, 然后在常温下恢复 24 ± 2 小时后测试。 试验后: 在室内条件下恢复 24 ± 2 小时测试。
	容量变化 Capacitance Change	E: $\pm 15\%$ max B: $\pm 10\%$ max	The capacitor shall firmly be soldered to the supporting lead wires about 3 ± 1.0 mm from the body of the capacitor and vibration which is 10 to 500Hz in the vibration frequency range, 1.5mm in total amplitude, for a total of 6 hours, 2 hours each in three mutually perpendicular directions. pre-treatment: The capacitor shall be placed at $125 \pm 2^{\circ}\text{C}$ for 1 hour, then placed at room condition for 24 ± 2 hours before initial measurement. Post-treatment: Capacitor shall be stored for 24 ± 2 hours at room conditions.
14. 湿热循环 Humidity Cycling	外观 Appearance	无显著异常 No marked defect	电容器在温度 $40 \pm 2^{\circ}\text{C}$, 湿度 $95 \pm 3\%\text{RH}$ 下放置 8 小时, 室温下放置 16 小时, 循环 5 次。 试验后: 在室内条件下恢复 1 至 2 小时。
	容量变化 Capacitance Change	E: $\pm 20\%$ max B: $\pm 10\%$ max	Set the capacitor for 8 hours at $40 \pm 2^{\circ}\text{C}$ in $95 \pm 3\%$ RH, then placed at room condition for 16 hours, circulating for 5 times.
	损耗因数 D.F.	E: 5.0% max B: 5.0% max	Post-treatment: The capacitor shall be stored for 1 to 2 hours at room condition.
	绝缘电阻 I. R.	$1500\text{M}\Omega$ min	
	抗电强度 Dielectric Strength	按第七条。 Per Item 7.	



项 目 ITEM	规 格 SPECIFICATION		试 验 方 法 及 条 件 TEST METHOD AND CONDITION				
15. 碰撞试验 Collision Resistance	外观 Appearance	无显著异常 No marked defect	电容器须焊锡固定好,固定点距电容器主体 $3 \pm 1.0\text{mm}$,并施加一加速度为 390m/s^2 ,脉冲时间为 6ms 的碰撞,次数为 4000 次。 试验前: 电容器应放置在 $125 \pm 2^\circ\text{C}$ 的温度下 1 小时,然后在常温下恢复 24 ± 2 小时后测试。 试验后: 在室内条件下恢复 24 ± 2 小时测试。 The capacitor shall firmly be soldered to the supporting lead wire about $3 \pm 1.0\text{mm}$ from the body of the capacitor and a collision which is 390m/s^2 in the acceleration, 6ms in the pulse cycle for 4000 times. pre-treatment: The capacitor shall be placed at $125 \pm 2^\circ\text{C}$ for 1 hour, then placed at room condition for 24 ± 2 hours before initial measurement. Post-treatment: Capacitor shall be stored for 24 ± 2 hours at room conditions				
	容量变化 Capacitance Change	E: $\pm 15\%$ max B: $\pm 10\%$ max					
	损耗因数 D.F.	E: 2.5% max B: 2.5% max					
16. 温度循环 Temp Cycling	外观 Appearance	无显著异常 No marked defect	将电容器放入高低温箱,按下列步骤循环 5 次。 试验前: 在 $125 \pm 2^\circ\text{C}$ 温度下放置 1 小时,在常温下恢复 24 ± 2 小时后测试。 试验后: 在室内条件下恢复 24 ± 2 小时测试。 The capacitor shall be introduced into the test chamber, and shall be exposed to the temperature conditions as shown in table at 5 cycles. pretreatment: The capacitor shall be placed at $125 \pm 2^\circ\text{C}$ for 1 hour, then placed at room condition for 24 ± 2 hours before initial measurement. Post-treatment: Capacitor shall be stored for 24 ± 2 hours at room conditions.				
	容量变化 Capacitance Change	E: $\pm 20\%$ max B: $\pm 10\%$ max					
	损耗因数 D.F.	E: 5.0% max B: 5.0% max					
	绝缘电阻 I.R.	$1000\text{M}\Omega$ min					
			步骤(STEP)	1	2	3	4
			温度(TEMP.)	$-40 \pm 3^\circ\text{C}$	$20 \pm 2^\circ\text{C}$	$125 \pm 3^\circ\text{C}$	$20 \pm 2^\circ\text{C}$
			时间(TIME)	$30 \pm 3\text{min.}$	3min. max	$30 \pm 3\text{min.}$	3min. max
17. 耐湿性 Humidity	外观 Appearance	无显著异常 No marked defect	电容器在温度 $40 \pm 2^\circ\text{C}$,湿度 $95 \pm 3\%\text{RH}$ 下放置 500 ± 12 小时。施加额定电压时,样本一半施加额定电压 (UR),样本另一半不施加电压。 试验前: 电容器应放置在 $125 \pm 2^\circ\text{C}$ 的温度下 1 小时,然后在常温下恢复 24 ± 2 小时后测试。 试验后: 在室内条件下恢复 24 ± 2 小时。 Set the capacitor for 500 ± 12 hours at $40 \pm 2^\circ\text{C}$ in $95 \pm 3\%\text{RH}$. When applying rated voltage, half of the sample is subjected to rated voltage (UR), while the other half is not subjected to voltage. pre-treatment: The capacitor shall be placed at $125 \pm 2^\circ\text{C}$ for 1 hour, then placed at room condition for 24 ± 2 hours before initial measurement. Post-treatment: The capacitor shall be stored for 24 ± 2 hours at room condition.				
	容量变化 Capacitance Change	E: $\pm 20\%$ max B: $\pm 10\%$ max					
	损耗因数 D.F.	E: 5.0% max B: 5.0% max					
	绝缘电阻 I.R.	$1500\text{M}\Omega$ min					
	抗电强度 Dielectric Strength	按第七条。 Per Item 7.					
18. 寿命试验 Life Test	外观 Appearance	无显著异常 No marked defect	脉冲电压 进行寿命试验前,每只电容器应接受 5kv 电压冲击 3 次。(X1Y1: 8KV) 在 $125 \pm 2^\circ\text{C}$ 下放置 1000 ± 48 小时,并施加 425VAC ,每小时升高到 1000V. AC 持续 0.1 秒。(X1Y1: 680VAC) 试验前:在 $125 \pm 2^\circ\text{C}$ 放置 1 小时,在室内条件下恢复 24 ± 2 小时。 试验后:在室内条件下恢复 24 ± 2 小时。 Impulse voltage Each individual capacitor should be subjected to a 5kv impulses for three times. Then the capacitors are applied to life test. (X1Y1: 8KV) Apply a voltage of 425V. AC , except that once each hour the voltage is increased to 1000V. AC for 0.1sec. that shall be maintained for 1000 ± 48 hours at $125 \pm 2^\circ\text{C}$. (X1Y1: 680VAC) Pre-treatment: Capacitor shall be stored at $125 \pm 2^\circ\text{C}$ for 1 hour, then placed at room condition for $24 \pm 2\text{H}$ before initial measurements. Post-treatment: Capacitor shall be stored for 24 ± 2 hours at room condition.				
	容量变化 Capacitance Change	E: $\pm 20\%$ max B: $\pm 10\%$ max					
	损耗因数 D.F.	E: 5.0% max B: 5.0% max					
	绝缘电阻 I.R.	$1500\text{M}\Omega$ min					
19. 放电试验 Discharge Test	外观 Appearance	无显著异常 No marked defect	如图,由 Cd 经 Vs 充电后向被测电容 Ct 放电,充放电时间均为 5 秒,一共 50 次。 As in figure, discharge is made 50 times at 5 sec. intervals from the capacitor (Cd) charged at DC voltage of specified. Ct: 被测电容 Capacitor under test S: 高压开关 High-voltage switch R1: 1000Ω R2: $4\text{M}\Omega$ R3: 浪涌电阻 Surge resistance Cd: 1nF Vs: 10KVDC				
	绝缘电阻 I.R.	大于 $1000\text{M}\Omega$ $1000\text{M}\Omega$ min					
	抗电强度 Dielectric Strength	按第七条。 Per Item 7.					



□瓷介电容器使用注意事项 Ceramic capacitor use matters needing attention :

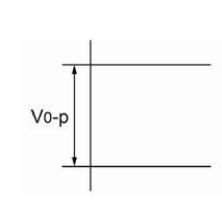
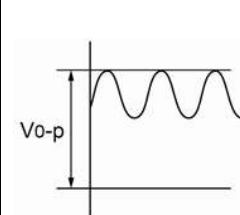
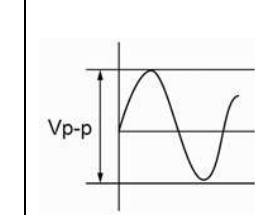
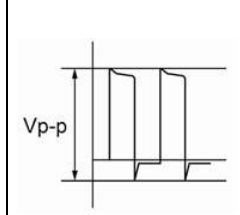
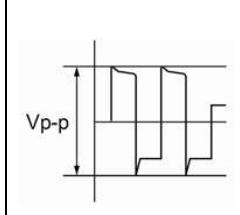
1. 工作电压 Operating voltage:

在交流电路或纹波电流电路中使用直流额定电压电容器时, 请务必确保外加电压的 V_{p-p} 值或包含直流偏置电压的 V_{0-p} 值保持在额定电压范围内.

若向电路施加电压, 开始或停止时可能会因谐振或切换产生暂时的不规则电压. 请务必使用额定电压范围大于此不规则电压的电容器.

Be sure to maintain the V_{p-p} value of the applied voltage or the V_{0-p} which contains DC bias within the rated voltage range.

When the voltage is started to apply to the circuit or it is stopped applying, the irregular voltage may be generated for a transit period because of resonance or switching. Be sure to use a capacitor within rated voltage containing this irregular voltage.

直流电压 DC voltage	直流+交流电压 DC+AC voltage	交流电压 AC voltage	冲击电压 (1) Pulse voltage(1)	冲击电压 (2) Pulse voltage(2)
				

2. 工作温度和自身发热 Operating temperature and self-generated heat:

电容器的表面温度应保持在额定工作温度范围的上限以下. 务必考虑到电容器自身发出的热量. 电容器在高频电流、冲击电流等中使用可能会因介电损耗自身发热. 所施加之正弦波电压的频率应低于200kHz. 外加电压应使自身发热等负荷在25℃周围温度条件下不超过20℃范围. 测量时应使用 $\phi 0.1\text{mm}$ 小热容量的 (K) 的热电偶, 而且电容器不应受到其它组件的散热或周围温度波动影响.

过热可能会导致电容器特性及可靠性下降. (切勿在冷却风扇运转时进行测量, 否则无法确保测量数据的精确性.)

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range.

Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a high-frequency current, pulse current or the like, it may have the self-generated heat due to dielectric-loss.

The frequency of the applied sine wave voltage shall be lower than 200kHz. Applied voltage should be the load such as self-generated heat is within 20℃ on the condition of atmosphere temperature 25℃. When measuring, use a thermocouple of small thermal capacity-K of $\phi 0.1\text{mm}$ and be in the condition where capacitor is not affected by radiant heat of other components and wind of surroundings.

Excessive heat may lead to deterioration of the capacitor's characteristics and reliability. (Do not measure when the cooling fan is running, otherwise unable to ensure the accuracy of the measurement data.)

3. 耐电压的测试条件 Test condition for withstanding voltage:

3.1 测试设备 Test equipment:

交流耐电压的测试设备应具有能够产生类似于50/60Hz正弦波的功能, 如果施加变形的正弦波或超过规定电压值的超载电压, 则可能会导致故障.

Test equipment for AC withstanding voltage shall be used with the performance of the wave similar to

50/60 Hz sine waves.

If the distorted sine wave or over load exceeding the specified voltage value is applied, the defective may be caused.

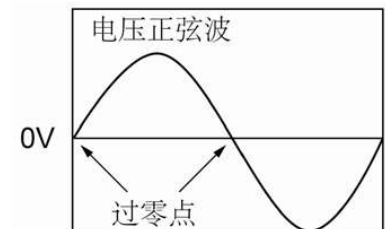
3.2 电压外加方法Voltage applied method:

施加耐电压时, 电容器的引线或端子应与耐电压测试设备的输出端连接牢固, 然后再将电压从近零增加到测试电压.

如果测试电压不从近零逐渐提高而是直接施加在电容器上, 则施加时应包含过零点*. 测试结束时, 测试电压应降到近零, 然后再将电容器引线或端子从耐电压测试设备的输出端取下.

如果测试电压不从近零逐渐提高而是直接施加在电容器上, 则可能会出现浪涌电压, 从而导致故障.

*过零点是指电压正弦通过0V的位置. 参见右图:



When the withstanding voltage is applied, capacitor's lead or terminal shall be firmly connected to the output of the withstanding voltage test equipment, and then the voltage shall be raised from near zero to the test voltage.

If the test voltage without the raise from near zero voltage would be applied directly to capacitor, test voltage should be applied with the *zero cross. At the end of the test time, the test voltage shall be reduced to near zero, and then capacitor's lead or terminal shall be taken off the output of the withstanding voltage test equipment.

If the test voltage without the raise from near zero voltage would be applied directly to capacitor, the surge voltage may arise, and therefore, the defective may be caused.

ZERO CROSS is the point where voltage sine wave pass 0V. - See the right figure.

4. 失效安全性Fail-Safe:

如果电容器破损, 会导致短路电路故障. 务必在本产品上适当提供例如保险丝等自动防故障功能, 以免导致电击、火灾、或冒烟等.

When capacitor would be broken, failure may result in a short circuit. Be sure to provide an appropriate fail-safe function like a fuse on your product if failure would follow an electric shock, fire or fume.

5. 储存环境Storage condition:

电容器的绝缘涂层不具有良好密封作用. 因此, 请勿将电容器存放在腐蚀性气体中, 尤其是存在氯气、硫气、酸、碱、盐等的场所. 同时应防潮. 在对本产品进行清洗、覆膜或封膜前, 请先在指定设备上测试经清洗、覆膜或封膜的产品的性能, 以确定上述过程不会影响产品质量. 电容器应存放在下列条件的场所:

环境温度: -25℃——+50℃; 相对湿度: 40℃时不大于90%; 气压: 40——106KPA

请在12个月内使用电容器, 若超期须重新提交检验.

使用本品时如忽略上述警告事项, 则在严重情况下可能导致短路, 并引起冒烟或局部离散.

The insulating coating of capacitors does not form a perfect seal; therefore, do not use or store capacitors

in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. And avoid exposure to moisture. Before cleaning, bonding, or molding this product, verify that these processes do not affect product quality by testing the performance of a cleaned, bonded or molded product in the intended equipment. Capacitors should be stored in the following conditions:

The environment temperature : $-25^{\circ}\text{C}\sim+50^{\circ}\text{C}$; Relative humidity : 40°C is not greater than 90%

Air pressure : $40\sim106\text{KPA}$

Use capacitors within 12 months, If exceed the time limit need to submit inspection.

Failure to follow the above cautions may result, worst case, in a short circuit and cause fuming or partial dispersion when the product is used.

6. 焊接、安装与使用Soldering 、mounting and use:

6.1 振荡与冲击Vibration and impact

使用时请勿使电容器或引线受到过度冲击或振荡.

When using do not make the capacitor or lead by excessive impact or vibration.

6.2 焊接Soldering

将该产品焊接在PCB/PWB上时, 不应超出电容器的耐焊接热规格, 本产品过热会使内部接点锡焊料熔化, 导致温度骤变, 而造成陶瓷组件产生裂纹.

当使用烙铁焊接电容器时, 应遵循以下条件:

烙铁头温度: 最高 400°C ;烙铁功率: 最大50W;焊接时间: 最多3.5秒

When soldering this product to a PCB/PWB, do not exceed the solder heat resistance specification of the capacitor. Subjecting this product to excessive heating could melt the internal junction solder, Lead to temperature shock , Resulting in the ceramic element to produce crack.

When soldering capacitor with a soldering iron, it should be performed in following conditions:

Temperature of iron-tip: 400 degrees C. max.

Soldering iron wattage: 50W max.

Soldering time: 3.5 sec. max.

7. 清洗（超声波清洗）Cleaning (ultrasonic cleaning):

进行超声波清洗时, 应遵守下列条件:

洗涤槽容量: 20瓦特输出功率 / 每升或以下;洗涤时间: 最多5分钟;

不得直接振荡PCB/PWB. 过度的超声波洗涤会导致引线的超载损坏.

To perform ultrasonic cleaning, observe the following conditions.

Rinse bath capacity: Output of 20 watts per liter or less. Rinsing time: 5 minutes max.

Do not vibrate the PCB/PWB directly. Excessive ultrasonic cleaning may lead to fatigue destruction of the lead wires.

□运输Transport:

电容器在运输途中, 要注意避免阳光直射, 雨、雪、雾、水浸透等.

In transit, Capacitors should be avoided direct sunlight, rain, snow, fog, water soaked and so on.