

编号: GH-ZD4132C

版本号: 1



广东风华高新科技股份有限公司
GUANGDONG FENGHUA ADVANCED TECHNOLOGY HOLDING CO., LTD.

承 认 书

APPROVAL SHEET

客户名称

CUSTOMER : _____

产品名称

片 式 排 容

PART NAME: _____ **MLCC Arrays**

规格

SPECIFICATION: _____ **0603×4 TYPE**

版本

VERSION: _____

日期

DATE OF ISSUE: _____

| 制 造 MANUFACTURER | | | 客 户 CUSTOMER | | |
|---------------------|-------------|----------------|-----------------|-------------|----------------|
| 拟制 DESIGN | 审核 CHECK | 批准 APPROVAL | 检验 INSPECTOR | 审核 CHECK | 批准 APPROVAL |
| | | | | | |



片式排容系列 (C-ARRAY SERIES)

一、优点 FEATURE

※节约空间: 可以节省高达 50% 的 PCB 空间位置, 提高装配密度

Space saving: CA can save 50% space of the PC board and improve the assembling density.

※更高的体积比容: 安装一块 CA 等于安装 4 块 0603 片容, 减少安装次数, 提高安装效率

Provide more capacitance per volumetric area: Efficiently use the side margins and thickness. Promoting mounting efficiency. One chip of CA equals to four chips of 0603 type capacitor. So it can reduce times of picking and placing.

※降低成本: 减少放置的次数; 缩短生产时间; 减少设备管理费用; 减少 PCB 费用

Cost saving: Reduce times for picking and placing, reduce manufacturing time, reduce the cost for manage the equipments and reduce the cost of PCB.

※安装简易: 可进行 SMT 编带包装, 由贴片机高速贴片

Easy to picking and placing: SMT package, easy to mounting.

※提高线路板工作效率: 可以减少印刷的线路。提高线路板的运转速度, 提高工作效率

Improve the working efficiency of the printed board: Reduce the amount of printed circuits and promote the working speed of the printed circuit.

二、用途 APPLICATIONS

※适用于对元器件空间要求严格的 PCB, 如手提电脑、PDA、无绳电话

Applied in PCB which require strictly about space speed, such as notebook computer, PDA and portable telephone, etc.

※特别适用于输入、输出接口电路

CA is best suitable to use in I/O interface circuit.

三、型号规格表示方法及温度特性

HOW TO ORDER & Temperature Coefficient /Characteristics

6124 B 103 K 500 N T
① ② ③ ④ ⑤ ⑥ ⑦

① 产品尺寸及产品类型:

PRODUCT SIZE AND PRODUCT TYPE

| 代码 Code | 长(英寸) L(inch) | 宽(英寸) W(inch) | 内置单元 Elements Inside |
|------------|------------------|------------------|-------------------------|
| 6124 | 0.06 | 0.12 | 4 |
| 5084 | 0.05 | 0.08 | 4 |
| 5082 | 0.05 | 0.08 | 2 |



② 介质种类 DIELECTRIC STYLE

| | | | | | | |
|-----------------------|-----|-----|-----|-----|-----|-----|
| 介质种类(Dielectric Code) | CG | CH | B | X | E | F |
| 介质材料 (Dielectric) | COG | COH | X7R | X5R | Z5U | Y5V |

③ 标称容量 NOMINAL CAPACITANCE

单位(unit): pF

| 表示方式 (Express Method) | 实际值 (Actual Value) | 注：头两位数字为有效数字，第三位数字为0的个数；R为小数点。 Note: the first two digits are significant; third digit denotes number of zeros; R=decimal point. |
|--------------------------|-----------------------|---|
| 0R5 | 0.5 | |
| 1R0 | 1.0 | |
| 102 | 10×10^2 | |
| ... | ... | |

④ 容量误差 CAPACITANCE TOLERANCE

| 代码 (Code) | A | B | C | D | F | G | J | K | M | S | Z |
|-------------------|-------------|-------------|-------------|------------|-----------|-----------|-----------|------|------|--------------|--------------|
| 误差 (Tolerance) | ± 0.05pF | ± 0.10pF | ± 0.25pF | ± 0.5pF | ± 1.0% | ± 2.0% | ± 5.0% | ±10% | ±20% | +50% -20% | +80% -20% |

备注：A、B、C、D级误差适用于容量≤10pF的产品。

Note: These capacitance tolerance A, B, C, D are just applicable the capacitance that equals to or less than 10pF.

⑤ 额定电压 RATED VOLTAGE

单位(unit): V

| 表示方式 (Express Method) | 实际值 (Actual Value) | 注：头两位数字为有效数字，第三位数字为0的个数；R为小数点。 Note: the first two digits are significant; third digit denotes number of zeros; R=decimal point. |
|--------------------------|-----------------------|---|
| 6R3 | 6.3 | |
| 500 | 50×10^0 | |
| 201 | 20×10^1 | |
| 102 | 10×10^2 | |
| ... | ... | |

⑥ 端头材料 TERMINAL MATERIAL STYLES

| 端头类别 (Termination Styles) | 表示方式 (Express Method) |
|--------------------------------------|--------------------------|
| 纯银端头 (Silver Solderable Termination) | S |
| 纯铜端头 (Copper Solderable Termination) | C |
| 三层电镀端头 (Nickel Barrier Termination) | N |



⑦ 包装方式 PACKAGE STYLES

| | |
|----------------|-----------------------|
| B | T |
| 散包装 (Bulk Bag) | 编带包装 (Taping Package) |

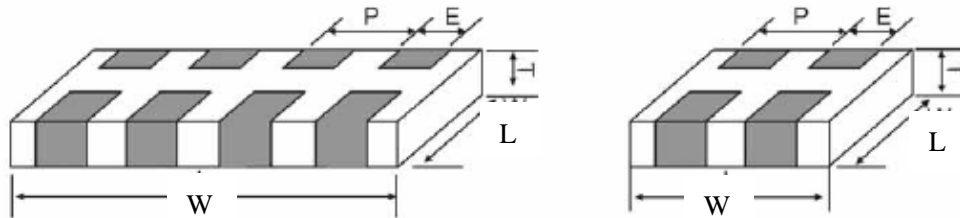
温度系数/特性 Temperature Coefficient /Characteristics

| 介质种类 Dielectric | 参考温度点 Reference Temperature Point | 标称温度系数 Temperature Coefficient | 工作温度范围 Operation Temperature Range |
|--------------------|--------------------------------------|-----------------------------------|---------------------------------------|
| COG | 20°C | 0±30 ppm/°C | -55°C~125°C |
| X7R | 20°C | ±15% | -55°C~125°C |
| X5R | 20°C | ±15% | -55°C~85°C |
| Z5U | 20°C | -56%~+22% | 10°C~85°C |
| Y5V | 20°C | -80%~+30% | -25°C~85°C |

备注：I类电容器标称温度系数和允许偏差是采用温度在20°C和85°C之间的电容量变化来确定的。

Note: Nominal temperature coefficient and allowed tolerance of class I are decided by the changing of the capacitance between 20°C and 85°C.

四、外形尺寸



| 规格型号 | 尺寸 (mm) | | | | |
|------|-----------|-----------|-----------|-----------|-----------|
| | L | W | T | P | E |
| 5082 | 1.25±0.20 | 2.00±0.20 | 0.80±0.10 | 1.00±0.10 | 0.50±0.05 |
| | | | 1.00±0.10 | | |
| 5084 | 1.25±0.20 | 2.00±0.20 | 0.80±0.10 | 0.50±0.05 | 0.25±0.05 |
| | | | 1.00±0.10 | | |
| 6124 | 1.60±0.20 | 3.20±0.20 | 0.80±0.10 | 0.80±0.20 | 0.40±0.10 |
| | | | 1.00±0.10 | | |



五、电容量范围

| 项目 | 6124 | | | | | | | | | | |
|---------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| 材料 | COG | | | | X7R | | | | Y5V | | |
| 工作电压 | 16V | 25V | 50V | 100V | 16V | 25V | 50V | 100V | 16V | 25V | 50V |
| 电容量 | | | | | | | | | | | |
| 0.5PF | Yellow | Green | Yellow | | | | | | | | |
| 5 PF | Yellow | Green | Yellow | | | | | | | | |
| 10 PF | Yellow | Green | Yellow | | | | | | | | |
| 15 PF | Yellow | Green | Yellow | | | | | | | | |
| 20 PF | Yellow | Green | Yellow | | | | | | | | |
| 22 PF | Yellow | Green | Yellow | | | | | | | | |
| 33 PF | Yellow | Green | Yellow | | | | | | | | |
| 47 PF | Yellow | Green | Yellow | | | | | | | | |
| 100 PF | Yellow | Green | Yellow | Green | Yellow | Green | Yellow | | | | |
| 150 PF | Yellow | Green | Yellow | | Yellow | Green | Yellow | | | | |
| 220 PF | Yellow | Green | Yellow | | Yellow | Green | Yellow | | | | |
| 330 PF | Yellow | Green | Yellow | | Yellow | Green | Yellow | | | | |
| 470 PF | Yellow | Green | Yellow | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 1000 PF | Yellow | Green | Yellow | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 2.2nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 3.3nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 4.7nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 6.8nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 10 nF | | | | | Yellow | Green | Yellow | Green | Yellow | Green | Yellow |
| 22 nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 33 nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 47 nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 68 nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 100 nF | | | | | Yellow | Green | Yellow | | Yellow | Green | Yellow |
| 220nF | | | | | | | | | | | |



五、电容量范围

| 项目 | 5084 | | | | | | | | |
|---------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| | COG | | | X7R | | | Y5V | | |
| 工作电压 | 16V | 25V | 50V | 16V | 25V | 50V | 16V | 25V | 50V |
| 电容量 | | | | | | | | | |
| 0.5PF | Yellow | Green | Yellow | | | | | | |
| 5 PF | Yellow | Green | Yellow | | | | | | |
| 10 PF | Yellow | Green | Yellow | | | | | | |
| 15 PF | Yellow | Green | Yellow | | | | | | |
| 20 PF | Yellow | Green | Yellow | | | | | | |
| 22 PF | Yellow | Green | Yellow | | | | | | |
| 33 PF | Yellow | Green | Yellow | | | | | | |
| 47 PF | Yellow | Green | Yellow | | | | | | |
| 100 PF | Yellow | Green | Yellow | Green | Yellow | Green | | | |
| 150 PF | | | | Green | Yellow | Green | | | |
| 220 PF | | | | Green | Yellow | Green | | | |
| 330 PF | | | | Green | Yellow | Green | | | |
| 470 PF | | | | Green | Yellow | Green | | | |
| 1000 PF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 2.2nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 3.3nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 4.7nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 6.8nF | | | | | | | Yellow | Green | Yellow |
| 10 nF | | | | | | | Yellow | Green | Yellow |
| 22 nF | | | | | | | Yellow | Green | Yellow |
| 33 nF | | | | | | | | | |
| 47 nF | | | | | | | | | |
| 68 nF | | | | | | | | | |
| 100 nF | | | | | | | | | |
| 220nF | | | | | | | | | |



五、电容量范围

| 项目 | 5082 | | | | | | | | |
|---------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| 材料 | COG | | | X7R | | | Y5V | | |
| 工作电压 | 16V | 25V | 50V | 16V | 25V | 50V | 16V | 25V | 50V |
| 电容量 | | | | | | | | | |
| 0.5PF | Yellow | Green | Yellow | | | | | | |
| 5 PF | Yellow | Green | Yellow | | | | | | |
| 10 PF | Yellow | Green | Yellow | | | | | | |
| 15 PF | Yellow | Green | Yellow | | | | | | |
| 20 PF | Yellow | Green | Yellow | | | | | | |
| 22 PF | Yellow | Green | Yellow | | | | | | |
| 33 PF | Yellow | Green | Yellow | | | | | | |
| 47 PF | Yellow | Green | Yellow | | | | | | |
| 100 PF | Yellow | Green | Yellow | Green | Yellow | Green | | | |
| 150 PF | Yellow | Green | Yellow | Green | Yellow | Green | | | |
| 220 PF | Yellow | Green | Yellow | Green | Yellow | Green | | | |
| 330 PF | | | | Green | Yellow | Green | | | |
| 470 PF | | | | Green | Yellow | Green | | | |
| 1000 PF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 2.2nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 3.3nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 4.7nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 6.8nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 10 nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 22 nF | | | | Green | Yellow | Green | Yellow | Green | Yellow |
| 33 nF | | | | | | | Yellow | Green | Yellow |
| 47 nF | | | | | | | Yellow | Green | Yellow |
| 68 nF | | | | | | | | | |
| 100 nF | | | | | | | | | |
| 220nF | | | | | | | | | |



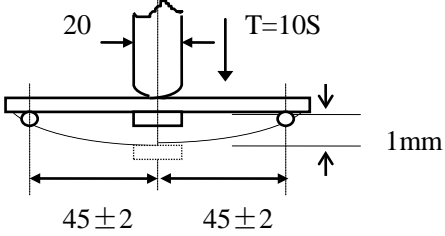
六、可靠性测试 Reliability Test

| 项目 Item | 技术规格 Technical Specification | | 测试方法 Test Method and Remarks | | |
|---|---------------------------------|---|--|-----------------------------|---------------------------|
| 容量 Capacitance | I类 Class I | 应符合指定的误差级别 Should be within the specified tolerance. | 标称容量 Capacitance | 测试频率 Measuring Frequency | 测试电压 Measuring Voltage |
| | | | $\leq 1000\text{pF}$ | $1\text{MHz} \pm 10\%$ | $1.0 \pm 0.2\text{Vrms}$ |
| | | | $> 1000\text{pF}$ | $1\text{KHz} \pm 10\%$ | |
| | II类 Class II | 应符合指定的误差级别 Should be within the specified tolerance. | 测试温度: $25^\circ\text{C} \pm 3^\circ\text{C}$ Test Temperature: $25^\circ\text{C} \pm 3^\circ\text{C}$ $C \leq 10\mu\text{F}$: 测试频率: $1\text{KHz} \pm 10\%$ 测试电压: $1.0 \pm 0.2\text{Vrms}$ Test Frequency: $1\text{KHz} \pm 10\%$ Test Voltage: $1.0 \pm 0.2\text{Vrms}$ $C > 10\mu\text{F}$ X7R、Y5V 测试频率: $120 \pm 24\text{Hz}$ 测试电压: $0.5 \pm 0.1\text{Vrms}$ Test Frequency: $120 \pm 24\text{Hz}$ Test Voltage: $0.5 \pm 0.1\text{Vrms}$ | | |
| 损耗角正切 (DF, $\tan \delta$) Dissipation Factor | I类 Class I | DF | 标称容量 Capacitance | 测试频率 Measuring Frequency | 测试电压 Measuring Voltage |
| | | $\leq 0.56\%$ | $C_r < 5\text{pF}$ | $1\text{MHz} \pm 10\%$ | $1.0 \pm 0.2\text{Vrms}$ |
| | | $1.5[(150/C_r)+7] \times 10^{-4}$ | $5\text{pF} \leq C_r < 50\text{pF}$ | $1\text{MHz} \pm 10\%$ | |
| | | $\leq 0.15\%$ | $50\text{pF} \leq C_r \leq 1000\text{pF}$ | $1\text{MHz} \pm 10\%$ | |
| | | $\leq 0.15\%$ | $> 1000\text{pF}$ | $1\text{KHz} \pm 10\%$ | |



| 项目 Item | 技术规格 Technical Specification | | | | 测试方法 Test Method and Remarks | | | | |
|--|--|---|---|--|---|--|---|---|--|
| 损耗角正切 (DF, tan δ) Dissipation Factor | II类 Class II | X7R | ≥50V | 25V | 16V | 10V | 6.3V | C ≤ 10μF 测试频率: 1KHz ± 10% 测试电压: 1.0 ± 0.2Vrms Test Frequency: 1KHz ± 10% Test Voltage: 1.0 ± 0.2Vrms C > 10μF X7R、Y5V 测试频率: 120 ± 24 Hz 测试电压: 0.5 ± 0.1Vrms Test Frequency: 120 ± 24Hz Test Voltage: 0.5 ± 0.1Vrms | |
| | | | ≤2.5% | ≤3.5% | ≤5.0% | ≤5.0% | ≤7.5% (C < 3.3μF) ≤10.0% (C ≥ 3.3μF) | | |
| | Y5V | ≥25V | | 16V | 10V | 6.3V | | | |
| | | ≤7.0% (C < 1.0μF) ≤9.0% (C ≥ 1.0μF) | ≤15% | ≤15% | ≤15% | | | | |
| 绝缘电阻 (IR) Insulation Resistance | I类 Class I | C ≤ 10 nF, Ri ≥ 50000M Ω C > 10 nF, Ri • CR ≥ 500S | | | | 测试电压: 额定电压 测试时间: 60 ± 5 秒 测试湿度: ≤75% | | | |
| | II类 Class II | X7R | C ≤ 25 nF, Ri ≥ 10000M Ω C > 25 nF, Ri • CR > 100S | | | | 测试温度: 25°C ± 3°C 测试充放电电流: ≤50mA Measuring Voltage: Rated Voltage Duration: 60 ± 5s | | |
| | | | Y5V | C ≤ 25 nF, Ri ≥ 4000M Ω C > 25 nF, Ri • CR > 100S | | | | Test Humidity: ≤75% Test Temperature: 25°C ± 3°C Test Current: ≤50mA | |
| 介质耐电强度(DWV) Dielectric Withstanding Voltage | 不应有介质被击穿或损伤 No breakdown or damage. | | | | 测量电压: I类: 300% 额定电压 II类: 250% 额定电压 时间: 1~5 秒 充/放电电流: 不应超过 50mA (这部分说明不包括中高压 MLCC) Measuring Voltage: Class I : 300% Rated voltage Class II : 250% Rated voltage Duration: 1~5s Charge/ Discharge Current: 50mA max. (This method excludes high-voltage MLCC) | | | | |



| 项目 Item | 技术规格 Technical Specification | | | 测试方法 Test Method and Remarks | |
|--|---|---------------------------------|---|---|--|
| 可焊性 Solderability | 上锡率应大于 95% 外观: 无可见损伤。 At least 95% of the terminal electrode is covered by new solder. Visual Appearance: No visible damage. | | | 将电容在 80~120°C 的温度下预热 10~30 秒。 Preheating conditions: 80 to 120°C; 10~30s. | |
| | 有铅焊料: (SnPb: 63/37) 浸锡温度: 235 ± 5°C 浸锡时间: 2 ± 0.5s Solder Temperature: 235 ± 5°C Duration: 2 ± 0.5s | | 无铅焊料: 浸锡温度: 245 ± 5°C 浸锡时间: 2 ± 0.5s Solder Temperature: 245 ± 5°C Duration: 2 ± 0.5s | | |
| 耐焊接热 Resistance to Soldering Heat | 项目 Item | NPO 至 SL NPO to SL | X7R | Y5V | 将电容在 100~200°C 的温度下预热 10 ± 2 分钟。 浸锡温度: 265 ± 5°C 浸锡时间: 10 ± 1s 然后取出溶剂清洗干净, 在 10 倍以上的显微镜底下观察。 放置时间: 24 ± 2 小时 放置条件: 室温 Preheating conditions: 100 to 200°C; 10 ± 2min. Solder Temperature: 265 ± 5°C Duration: 10 ± 1s Clean the capacitor with solvent and examine it with a 10X(min.) microscope. Recovery Time: 24 ± 2h Recovery condition: Room temperature |
| | ΔCC | ≤ ± 0.5% | -5~+10% | -10~+20% | |
| | DF | 同初始标准 Same to initial value. | | | |
| | IR | 同初始标准 Same to initial value. | | | |
| | 外观: 无可见损伤 上锡率: ≥95% Appearance: No visible damage. At least 95% of the terminal electrode is covered by new solder. | | | | |
| 抗弯曲强度 Resistance to Flexure of Substrate (Bending Strength) | 外观: 无可见损伤。 Appearance: No visible damage. | | | 试验基板: Al ₂ O ₃ 或 PCB 弯曲深度: 1mm 施压速度: 1mm/sec. 单位: mm 应在弯曲状态下进行测量。 | |
| | ΔC/C | ≤ ± 10% | | |  <p>Test Board: Al₂O₃ or PCB Warp: 1mm Speed: 1mm/sec. Unit: mm The measurement should be made with the board in the bending position.</p> |
| 端头结合强度 Termination Adhesion | 外观无可见损伤 No visible damage. | | | 施加的力: 5N 时间: 10 ± 1S Applied Force: 5N Duration: 10 ± 1S | |



| 项目 Item | 技术规格 Technical Specification | | 测试方法 Test Method and Remarks | | | | | | | | | | | | | | | | |
|---|--|--|---|---|------|------------------|------------|-----|--|----|-----|--------------------|-----|-----|--|----|-----|--------------------|-----|
| 温度循环 Temperature Cycle | $\Delta C/C$: I类: $\leq \pm 1\%$ 或 $\pm 1pF$, 取两者中最大者 II类: B: $\leq \pm 10\%$ F: $\leq \pm 20\%$ Class I: $\leq \pm 1\%$ or $\pm 1pF$, whichever is larger. Class II: B: $\leq \pm 10\%$ F: $\leq \pm 20\%$ | | 预处理* (2类): 上限类别温度, 1小时 恢复: $24 \pm 1h$ 初始测量 循环次数: 5次, 一个循环分以下4步: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>阶段</th> <th>温度 (°C)</th> <th>时间 (分钟)</th> </tr> </thead> <tbody> <tr> <td>第1步</td> <td>下限温度 (NPO/X7R/X5R: -55 Y5V:-25 Z5U:+10)</td> <td>30</td> </tr> <tr> <td>第2步</td> <td>常温 (+20)</td> <td>2~3</td> </tr> <tr> <td>第3步</td> <td>上限温度 (NPO/X7R/X5R:+125 Y5V/Z5U: +85)</td> <td>30</td> </tr> <tr> <td>第4步</td> <td>常温 (+20)</td> <td>2~3</td> </tr> </tbody> </table> | | 阶段 | 温度 (°C) | 时间 (分钟) | 第1步 | 下限温度 (NPO/X7R/X5R: -55 Y5V:-25 Z5U:+10) | 30 | 第2步 | 常温 (+20) | 2~3 | 第3步 | 上限温度 (NPO/X7R/X5R:+125 Y5V/Z5U: +85) | 30 | 第4步 | 常温 (+20) | 2~3 |
| | 阶段 | 温度 (°C) | 时间 (分钟) | | | | | | | | | | | | | | | | |
| 第1步 | 下限温度 (NPO/X7R/X5R: -55 Y5V:-25 Z5U:+10) | 30 | | | | | | | | | | | | | | | | | |
| 第2步 | 常温 (+20) | 2~3 | | | | | | | | | | | | | | | | | |
| 第3步 | 上限温度 (NPO/X7R/X5R:+125 Y5V/Z5U: +85) | 30 | | | | | | | | | | | | | | | | | |
| 第4步 | 常温 (+20) | 2~3 | | | | | | | | | | | | | | | | | |
| | | | 试验后放置 (恢复) 时间: $24 \pm 2h$ Preheating conditions: up-category temperature, 1h Recovery time: $24 \pm 1h$ Initial Measurement Cycling Times: 5 times, 1 cycle, 4 steps: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time(min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Low- category temp. (NPO/X7R/X5R: -55 Y5V:-25 Z5U:+10)</td> <td>30</td> </tr> <tr> <td>2</td> <td>Normal temp. (+20)</td> <td>2~3</td> </tr> <tr> <td>3</td> <td>Up- category temp. (NPO/X7R/X5R:+125 Y5V/Z5U: +85)</td> <td>30</td> </tr> <tr> <td>4</td> <td>Normal temp. (+20)</td> <td>2~3</td> </tr> </tbody> </table> Recovery time after test: $24 \pm 2h$ | | Step | Temperature (°C) | Time(min.) | 1 | Low- category temp. (NPO/X7R/X5R: -55 Y5V:-25 Z5U:+10) | 30 | 2 | Normal temp. (+20) | 2~3 | 3 | Up- category temp. (NPO/X7R/X5R:+125 Y5V/Z5U: +85) | 30 | 4 | Normal temp. (+20) | 2~3 |
| Step | Temperature (°C) | Time(min.) | | | | | | | | | | | | | | | | | |
| 1 | Low- category temp. (NPO/X7R/X5R: -55 Y5V:-25 Z5U:+10) | 30 | | | | | | | | | | | | | | | | | |
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| 4 | Normal temp. (+20) | 2~3 | | | | | | | | | | | | | | | | | |
| *耐湿负荷 Humidity load | $\Delta C/C$ | I类: $\pm 7.5\%$ 或 $\pm 0.75pF$,取两者之中较大者 II类: B: $\leq \pm 12.5\%$ F: $\leq \pm 30\%$ Class I: $\pm 7.5\%$ or $\pm 0.75pF$, whichever is larger. Class II: B: $\leq \pm 12.5\%$ F: $\leq \pm 30\%$ | 温度: $40 \pm 2^\circ C$ 湿度: 90~95%RH 电压: 额定电压 | | | | | | | | | | | | | | | | |
| | DF | ≤ 2 倍初始标准 Not more than twice of initial value. | 时间: 500 小时 放置条件: 室温 | | | | | | | | | | | | | | | | |
| | IR | Class I | $R_i \geq 5000M\Omega$ 或 $R_i \cdot C_R \geq 50S$ 取两者之中较小者; $R_i \geq 5000M\Omega$ 或 $R_i \cdot C_R \geq 50S$ whichever is smaller. | 放置时间: 24 小时(I类); 48 小时 (II类) | | | | | | | | | | | | | | | |
| | | X7R | $R_i \geq 1000M\Omega$ 或 $R_i \cdot C_R \geq 10S$ 取两者之中较小者; $R_i \geq 1000M\Omega$ 或 $R_i \cdot C_R \geq 10S$ whichever is smaller. | Temperature: $40 \pm 2^\circ C$ Humidity: 90~95%RH Voltage: Rated Voltage | | | | | | | | | | | | | | | |
| | | Y5V | $R_i \geq 400M\Omega$ 或 $R_i \cdot C_R \geq 10S$ 取两者之中较小者; $R_i \geq 400M\Omega$ 或 $R_i \cdot C_R \geq 10S$ whichever is smaller. | Duration: 500h Recovery conditions: Room temperature | | | | | | | | | | | | | | | |
| 外观: 无损伤 Appearance: No visible damage. | | Recovery Time: 24h (Class1) or 48h (Class2) | | | | | | | | | | | | | | | | | |



| 项目 Item | 技术规格 Technical Specification | | 测试方法 Test Method and Remarks |
|--------------------|--|--|---|
| *寿命试验 Life Test | $\Delta C/C$ | I 类: $\leq \pm 2\%$ 或 $\pm 1\text{pF}$ 取两者之中较大者 II 类: B: $\leq \pm 20\%$ F: $\leq \pm 30\%$ Class I : $\leq \pm 2\%$ or $\pm 1\text{pF}$, whichever is larger. Class II : B: $\leq \pm 20\%$ F: $\leq \pm 30\%$ | 电压: 2 倍额定工作电压 时间: 1000 小时 温度: 125°C (NPO、X7R) 85°C (Y5V) 充电电流: 不应超过 50mA 放置条件: 室温 放置时间: 24 小时 (I 类), 或 48 小时 (II 类), Applied Voltage: $2 \times \text{Rated Voltage}$ Duration: 1000h Temperature: 125°C (NPO、X7R) 85°C (Y5V) Charge/ Discharge Current: 50mA max. Recovery Conditions: Room Temperature Recovery Time: 24h (Class 1), or 48h (Class2) |
| | DF | ≤ 2 倍初始标准 Not more than twice of initial value. | |
| | IR | I 类: $R_i \geq 4000\text{M}\Omega$ 或 $R_i \cdot C_R \geq 40\text{S}$ 取两者之中较小者. Class I : $R_i \geq 4000\text{M}\Omega$ 或 $R_i \cdot C_R \geq 40\text{S}$ whichever is smaller. II 类: $R_i \geq 2000\text{M}\Omega$ 或 $R_i \cdot C_R \geq 50\text{S}$ 取两者之中较小者. Class II : $R_i \geq 2000\text{M}\Omega$ 或 $R_i \cdot C_R \geq 50\text{S}$ whichever is smaller. | |
| | 外观: 无损伤 Visual Appearance: No visible damage. | | |

注解:

专门预处理* (仅对 2 类电容器):

将电容器放在上限类别温度或按详细规范中可能规定的更高温度下经 1h 后, 接着在试验的标准大气条件下恢复 $24 \pm 1\text{h}$ 。

Note: Pretreatment (only for class2 capacitor)

Pretreatment (only for class2 capacitor) is a method to treat the capacitor before measurement. First, place the capacitor in the up-category temperature or other specified higher temperature environment for 1hour. Then recovery the capacitor at standard pressure conditions for $24 \pm 1\text{hours}$ 。

※以最新版本的内容为准