



## 规格承认书

## SPECIFICATION FOR APPROVAL

|                           |                                            |
|---------------------------|--------------------------------------------|
| 客户名称:<br>Customer         | 深圳市立创电子商务有限公司                              |
| 客户料号:<br>CSR Mat. Code    | C46638946                                  |
| 产品名称:<br>Product Name     | 安规电容                                       |
| 型号规格:<br>Type & Spec.     | MKPX1Y-0.47 $\mu$ F+2 $\times$ 27nF-300VAC |
| 物料简码:<br>Mat. Simple Code | X1Y011A5                                   |
| 万盛料号:<br>Walson Mat. Code | X1Y474273Q1V9401A5                         |
| 文档编号:<br>Document No.     | SP25031701CE                               |
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版本更新记录

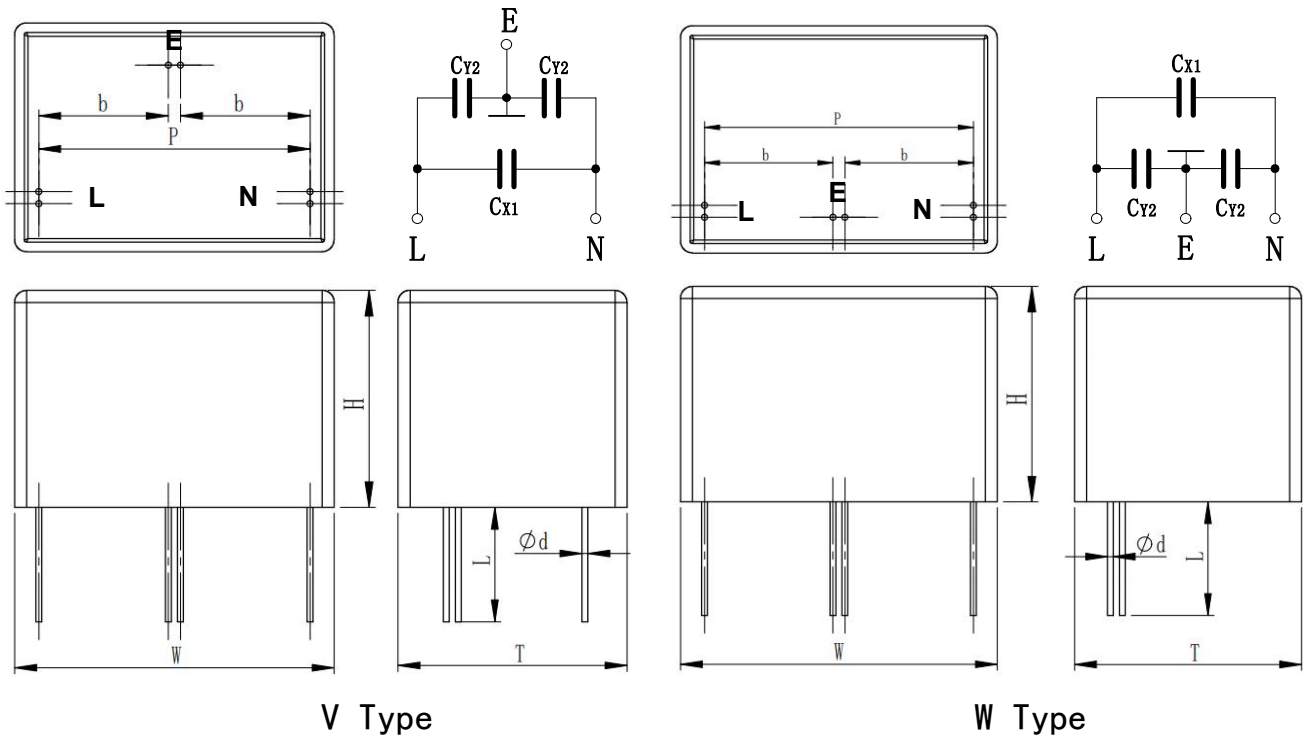
Version update records

| 版本号<br>Version | 日 期<br>Date | 更改说明<br>Change description | 编制人<br>Prepared by | 确认人<br>Approval by   |
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### ■ 特点和用途 Features and applications

- ❖ 金属化聚丙烯膜，无感结构，具有良好的电气性能。  
Metallized polypropylene film, non-inductive construction, with good electrical properties.
- ❖ X1 和 Y2 类抗干扰电容器三角形连接，一体结构三端引出。  
X1 and Y2 class suppress-interference capacitors have a triangular connection and integrated structure with three ends lead out.
- ❖ 阻燃塑料外壳和环氧树脂封装（UL94 V-0），镀锡铜包钢线引出端。  
Flame-resistant plastic case and epoxy resin sealing (UL94 V-0), tinned copper clad steel wires lead out at three ends.
- ❖ 用于线路旁路、天线耦合、跨线路和火花消除器电路，主要用于抑制应用中出现的噪音。  
Used in line bypass, antenna coupling, across-the-line and spark killer circuits, mainly for suppressing noise occurring in applications.
- ❖ 适用于 EMI 滤波器、开关电源、家用电器，如混频器、风扇，咖啡研磨机、音响和电视机等。  
Available for EMI filter, SMPS, Household appliances, such as mixers, fans, coffee grinders, audio and TV etc.
- ❖ 参考 GB/T 6346.14 (idt IEC 60384-14) 标准, 获得 ENEC 认证。  
Referring to the GB/T 6346.14 (idt IEC 60384-14) standard, obtained ENEC certification.

### ■ 外形尺寸 Outline dimensions



| U <sub>R</sub><br>Vac | C <sub>X1</sub><br>μF | C <sub>Y2</sub><br>nF | 外形尺寸 Dimensions (单位 Unit: mm) |     |     |      |     |        |                              | 引出形式<br>Lead type |
|-----------------------|-----------------------|-----------------------|-------------------------------|-----|-----|------|-----|--------|------------------------------|-------------------|
|                       |                       |                       | W±1                           | H±1 | T±1 | P±2  | b±2 | d±0.05 | L <sub>0</sub> <sup>+2</sup> |                   |
| 300                   | 0.47 ±10%             | 27 ±10%               | 26.5                          | 18  | 19  | 22.5 | 10  | 0.5    | 15                           | V Type            |

极间电容量 Capacitance between terminals: C<sub>L-N</sub>=0.483 μF±10 %, C<sub>L-E or N-E</sub>=52.53 nF±20 % (1 kHz) .

## ■ 技术要求 Technical Requirement

| 序<br>No. | 项<br>Items                                              | 要求<br>Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | 参考标准 Reference standards                                | IEC 60384-14:2013/AMD:2016、EN 60384-14:2013+A1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2        | 产品分类 Product subclass                                   | X1, Y2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3        | 额定电压 Rated voltage $U_R$                                | 300 Vac                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4        | 标称电容量范围<br>Normal capacitance range $C_R$               | $C_{X1}$ : 0.1~1.5 $\mu F$<br>$C_{Y2}$ : 1~27 nF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 5        | 电容量允许偏差 Permissible capacitance tolerance TOL           | $\pm 10\%$ (K) or $\pm 20\%$ (M)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 6        | 工作温度范围<br>Operating temperature range $T_C$             | -40~+110 $^{\circ}C$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7        | 气候类别 Climatic category                                  | 40/110/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 8        | 阻燃等级<br>Passive flammability category                   | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 9        | 极间耐电压<br>Voltage test between terminals $U_{T-T}$       | $C_{X1}$ (L-N): 2000 VDC, 5 s<br>$C_{Y2}$ (L-E or N-E): 1800 VAC/50 Hz or 2550 VDC, 5 s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 10       | 极壳耐电压 Voltage test between terminals and case $U_{T-C}$ | 2100 Vac, 60 s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 11       | 绝缘电阻<br>Insulation resistance I. R.                     | $C_{X1}$ (L-N): I. R. $\geq 6000 M\Omega$ (500 V, 1 min, 20 $^{\circ}C$ )<br>$C_{Y2}$ (L-E or N-E): I. R. $\geq 6000 M\Omega$ (500 V, 1 min, 20 $^{\circ}C$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 12       | 损耗角正切<br>Tangent of loss angle $\tan \delta$            | $\tan \delta_{L-N} \leq 0.0010$ (1 kHz, 20 $^{\circ}C$ )<br>$\tan \delta_{L-E \text{ or } N-E} \leq 0.0010$ (1 kHz, 20 $^{\circ}C$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 13       | 引出端强度试验<br>Robustness of terminations                   | 拉力: $U_{a1}$ , 5 N, 10 $\pm$ 1 s, 引线无断裂; 弯曲: $U_b$ , 2.5 N, 2 次, 引线无断裂, 电容或封装无损伤。Pull test: $U_{a1}$ , 5 N, 10 $\pm$ 1 s, not lead fracture or break. Bend test: $U_b$ , 2.5 N, 2 times, without breaking or damaging to the capacitor or seal.                                                                                                                                                                                                                                                                                                                                                              |
| 14       | 可焊性试验<br>Solderability Test                             | $T_a$ , 方法 1, 260 $\pm$ 5 $^{\circ}C$ , 2 $\pm$ 0.5 s, 引线浸入部分 95% 以上面积应被连续焊料包覆。 $T_a$ , method 1, 260 $\pm$ 5 $^{\circ}C$ , 2 $\pm$ 0.5 s, the immersed portion of lead wire shall be covered with at least 95% by a continuous fresh solder coating.                                                                                                                                                                                                                                                                                                                                                        |
| 15       | 耐焊接热试验<br>Soldering heat resistance Test                | $T_b$ , 260 $\pm$ 5 $^{\circ}C$ , 10 $\pm$ 1 s, 无可见损伤, 试验前后电容量变化 $\leq 5\%$ 。 $T_b$ , 260 $\pm$ 5 $^{\circ}C$ , 10 $\pm$ 1 s, no visible damage, and the capacitance difference shall not exceed 5%.                                                                                                                                                                                                                                                                                                                                                                                                         |
| 16       | 振动试验<br>Vibration test                                  | $F_c$ , 频率 10~55 Hz, 振幅 0.75 mm, 相互垂直的 3 个方向, 每个方向 2 h, 应无可见损伤。 $F_c$ , Frequency 10~55 Hz, amplitude 1.5 mm, 2 h per direction and for 3 directions, there shall be no visible damage.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 17       | 稳态湿热试验<br>Damp heat, steady state                       | 40 $\pm$ 2 $^{\circ}C$ , 93 $\pm$ 3 %RH, 21 天, 无可见损伤, 标志清晰, 试验前后容量变化 $\leq 5\%$ , 损耗角正切增量 $\leq 0.008$ ( $C_R \leq 1 \mu F$ ) 或 0.005 ( $C_R > 1 \mu F$ ), 耐电压试验无击穿或飞弧, 绝缘电阻大于初始极限值的 50%。<br>40 $\pm$ 2 $^{\circ}C$ , 93 $\pm$ 3 %RH, 21 d, no visible damage, the marking shall be legible, capacitance difference shall not exceed 5%, the increase of $\tan \delta$ not exceed 0.008 for $C_R \leq 1 \mu F$ or 0.005 for $C_R > 1 \mu F$ , voltage test good and the insulation resistance greater than 50% of original limits.                                                                           |
| 18       | 耐久性试验<br>Endurance                                      | 110 $\pm$ 3 $^{\circ}C$ , X1 电压 375 Vac, Y2 电压 510 Vac, 1000 h, 无可见损伤, 标志清晰, 试验前后容量变化 $\leq 10\%$ , 损耗角正切增量 $\leq 0.008$ ( $C_R \leq 1 \mu F$ , 10 kHz) 或 0.005 ( $C_R > 1 \mu F$ , 1 kHz), 耐电压试验无击穿或飞弧, 绝缘电阻大于初始极限值的 50%。<br>110 $\pm$ 3 $^{\circ}C$ , 375 Vac for X1 and 510 Vac for Y2, 1000 h, no visible damage, the marking shall be legible, capacitance difference shall not exceed 10%, the increase of $\tan \delta$ not exceed 0.008 for $C_R \leq 1 \mu F$ at 10 kHz or 0.005 for $C_R > 1 \mu F$ at 1 kHz, voltage test good and the insulation resistance greater than 50% of original limits. |

## ■ 出厂检验 OQC

| 分组<br>Group | 检验项目<br>Check Item                        | 检验方法和要求<br>Check Method and Requirement                                                                                                                                                                  | IL | AQL    |
|-------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------|
| A1 分组       | 外观检查<br>External inspection               | 目视检查, 要求外观整洁, 无可见损伤, 标志清晰。<br>Visual inspection, requires a neat appearance, no visible damage, and the markings are clear.                                                                              | II | 1. 5%  |
|             | 尺寸检测<br>Dimensions measurement            | 卡尺测量, 要求尺寸符合图纸要求。Measure with a caliper and ensure that the dimensions meet the drawing requirements.                                                                                                    |    |        |
| A2 分组       | 极间耐电压试验<br>Voltage test between terminals | 在端子间施加规定电压并保持规定时间, 要求无永久性击穿或飞弧。Apply the specified voltage between terminals and maintain it for the specified time, without permanent breakdown or flashover.                                           | II | 0. 25% |
|             | 绝缘电阻测试<br>Insulation resistance test      | 在规定条件下测量绝缘电阻, 要求绝缘电阻值不低于规定限值。Measure insulation resistance under specified conditions and ensure that the insulation resistance value is not lower than the specified limit value.                       |    |        |
|             | 电容量测量<br>Capacitance measurement          | 在规定条件下测量电容量和损耗角正切, 要求符合规定的容量偏差和损耗角正切限值要求。Measure the capacitance and loss angle tangent under specified conditions, and meet the specified capacity deviation and loss angle tangent limit requirements. |    |        |
|             | 损耗角正切测量<br>tan δ measurement              |                                                                                                                                                                                                          |    |        |

注: 根据 GB/T 2828.1-2003 标准正常检验一次抽样方案。

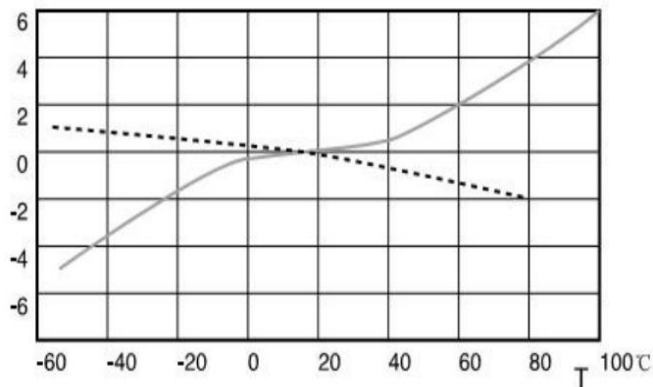
Note : According to the GB/T 2828.1-2003 standard, a sampling plan for normal inspection is required.

## ■ 物料编码 Material code

| 位序<br>No.     | 第 1~3 位<br>1st~3rd           | 第 4~6 位<br>4th~6th                                                                                                                                                          | 第 7~9 位<br>7th~9th                                                                                                                                                            | 第 10~11 位<br>10th~11th     | 第 12 位<br>12th                        | 第 13~14 位<br>13th~14th                         | 第 15~16 位<br>15th~16th         | 第 17~18 位<br>17th~18th                                                                                            |
|---------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 代码<br>Code    | X1Y                          | 474                                                                                                                                                                         | 273                                                                                                                                                                           | Q1                         | V                                     | 94                                             | 01                             | A5                                                                                                                |
| 内容<br>Content | 型号<br>Type                   | $C_{X1}$ 标称容量<br>$C_R (X1)$                                                                                                                                                 | $C_{Y2}$ 标称容量<br>$C_R (Y2)$                                                                                                                                                   | 额定电压<br>$U_R$              | 引出形式<br>Lead type                     | 引线间距 P/b<br>Lead space P/b                     | 内部代码<br>Internal code          | 引线长度<br>Lead length L                                                                                             |
| 说明<br>Explain | X2Y: MKP X2Y<br>X1Y: MKP X1Y | 三位数法, 即:<br>3 digits method<br>i. e. :<br>$ab \times 10^c$ pF<br>例如: e. g. :<br>$105 = 10 \times 10^2$ pF<br>$= 0.001 \mu F$<br>$474 = 47 \times 10^4$ pF<br>$= 0.47 \mu F$ | 三位数法, 即:<br>3 digits method<br>ii. e. :<br>$ab \times 10^c$ pF<br>例如: e. g. :<br>$273 = 27 \times 10^3$ pF<br>$= 0.027 \mu F$<br>$102 = 10 \times 10^2$ pF<br>$= 0.001 \mu F$ | P2: 275 Vac<br>Q1: 300 Vac | 见产品外形图<br>See Product outline drawing | 63: 15.0/7.5<br>94: 22.5/10.0<br>B5: 27.5/12.5 | 内部设计代码<br>Internal design code | 数字或数字和字母组合, 如:<br>Number or combination of number and letter<br>e. g. :<br>55=5.5<br>A5=15<br>2A=12.5<br>00=15min |

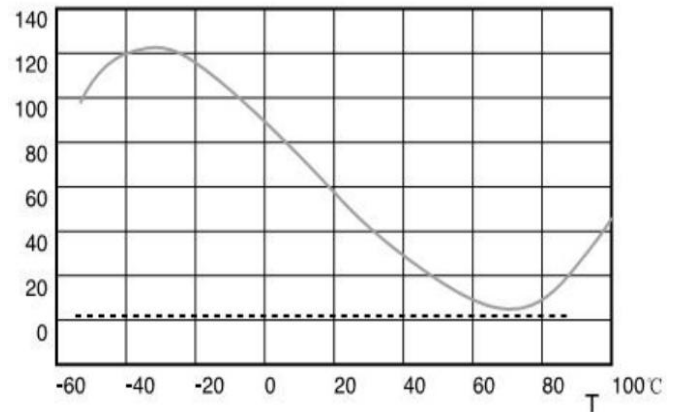
■ 特性曲线 Characteristic curve

$\Delta C/C$  (%)



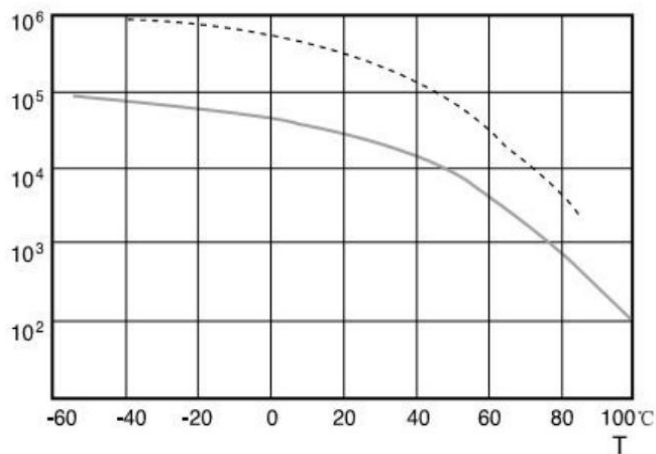
Capacitance vs. temperature at 1kHz

$\tan (\times 10^{-4})$



Dissipation factor vs. temperature at 1kHz

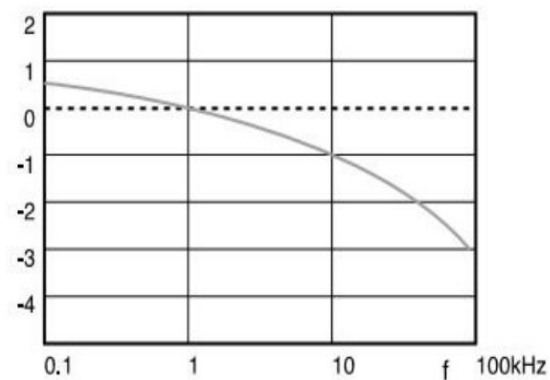
I.R. ( $M\Omega$ )



I.R. vs. temperature

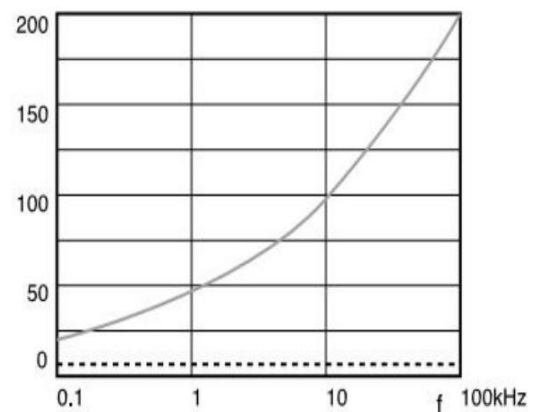
----- PP film  
————— PET film

$\Delta C/C$  (%)



Capacitance vs. frequency (Room temperature)

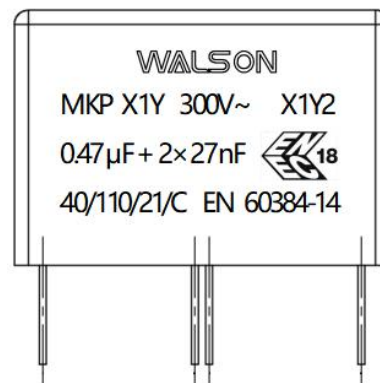
$\tan (\times 10^{-4})$



Dissipation factor vs. frequency (Room temperature)

## ■ 产品标志 Mark

| 标志内容 Mark                                                                         | 说明 description                            |
|-----------------------------------------------------------------------------------|-------------------------------------------|
| WALSON                                                                            | 万盛商标 Product logo                         |
| MKP X1Y                                                                           | 产品型号 Product type                         |
| 300V~                                                                             | 额定电压 Rated voltage                        |
| X1Y2                                                                              | 产品分类 Product subclass                     |
| 0.47 $\mu$ F + 2 $\times$ 27 nF                                                   | 标称电容量 Normal capacitance                  |
| 40/110/21/C                                                                       | 气候/阻燃类别 Climate and flammability category |
|  | 认证标志 Certification mark                   |
| EN 60384-14                                                                       | 参考标准 Reference standard                   |

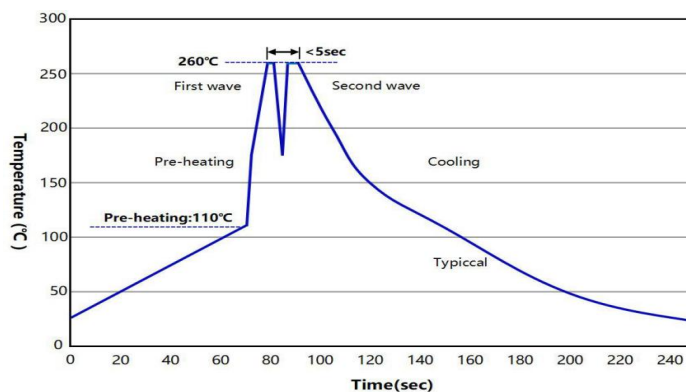


## ■ 贮存和运输 Storage and transportation

1. 电容器应保存在环境温度-10℃~40℃、相对湿度 $\leq 75\%$ 、气压：40~106 kPa 的室内，避免阳光直射、温度剧烈变化、凝露和有腐蚀性气体等。Capacitors shall be stored indoors with ambient temperature -10℃ to 40℃, relative humidity  $\leq 75\%$ , air pressure: 40~106 kPa, avoid direct sunlight, sharp temperature changes, condensation and corrosive gases.
2. 包装好的电容器允许以任何方式运输，但应避免雨雪淋袭、腐蚀、挤压跌落损伤等。Packaged capacitors are allowed to be transported in any way, but shall be protected from rain and snow, corrosion, crushing and falling damage, etc.
3. 存贮时间超过一年的电容器，应检查确认常规电气性能和可焊性合格后方可投入使用。Capacitors that have been stored for more than one year shall be checked and confirmed to be qualified in conventional electrical performance and solderability before being put into use.

## ■ 安装和使用 Installation and Use

1. 拿取和安装过程中，应做好防护，避免引线扎伤；另应避免多次挤压、弯曲电容器引线。In the process of taking and installing, protection shall be provided to prevent the lead from being punctured; In addition, avoid repeatedly squeezing and bending capacitor leads.
2. 焊接电容器引线时，应避免长时间过热以免影响到电容器性能（波峰焊时温度和时间要求见下图）；禁止与 SMD 产品一起做回流焊接；电烙铁焊接时烙铁尖端温度应不超过 360℃，焊接时间 3 s 以内。When welding capacitor leads, avoid overheating for a long time to avoid affecting capacitor performance (the temperature and time requirements for wave soldering are shown in the following figure). Reflow welding with SMD products is prohibited. The tip temperature of electric soldering iron shall not exceed 360℃, and the welding time shall be within 3 s.



3. 该款电容器不得用于其他不适宜的应用场合，如谐振、吸收等；设计电路时，电容器勿贴近其他发热源（如功率管、变压器等），以免引起电容器温度过高。

This capacitor shall not be used in other unsuitable applications, such as resonance, absorption, etc.; When designing the circuit, the capacitor shall not be close to other heat sources (such as power tube, transformer, etc.), so as not to cause excessive temperature of the capacitor.

4. 电容器不得过载使用，如超过规定值的电压、电流、温度等。

Capacitors shall not be used with overload, such as voltage, current, temperature, etc. exceeding the specified value.

----- END -----