

# 规格承认书

Specification for Approval

|                        |                                                                                     |
|------------------------|-------------------------------------------------------------------------------------|
| 产品名称<br>Product Name   | 塑料外壳双面金属化聚丙烯膜电容器<br>Double sided metallized polypropylene film capacitor (Box-type) |
| 型号规格<br>Type & Spec.   | MMKP82-630V-153-P10                                                                 |
| 万盛料号<br>Walson's P/N   | C822J153A5P40001                                                                    |
| 文件编号<br>Document No.   | WSCRS-2026020665                                                                    |
| 客 户<br>Customer        | 立创                                                                                  |
| 客户料号<br>Customer's P/N | C53670942                                                                           |

| 供方确认 Supplier confirmation                                                          | 客户承认 Customer Approval |
|-------------------------------------------------------------------------------------|------------------------|
|  |                        |

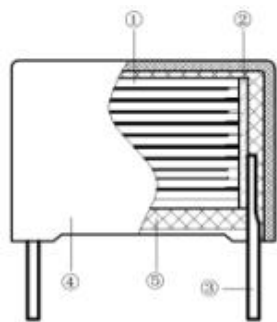
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Please sign for approval and reply



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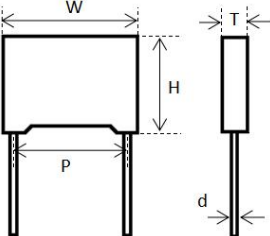
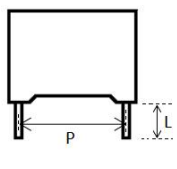
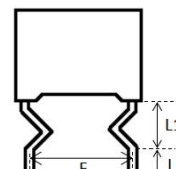
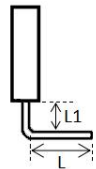
1. 结构 Construction



本产品由金属化高温聚丙烯膜卷绕而成，端面喷涂无铅金属并焊接引线，外部用阻燃塑壳和阻燃环氧树脂封装。  
This product is winding by metallized high-temperature polypropylene film. Both end faces of the core sprayed with lead-free metal and welded with leads. The exterior is packaged with flame-retardant plastic shell and flame-retardant epoxy resin.

- ① 芯子 Core
- ② 喷金层 Spray Metal Layer
- ③ 引出线 Lead Wire
- ④ 阻燃塑壳 Flame-retardant Plastic Case
- ⑤ 环氧树脂 Epoxy Resin

2. 外形尺寸 Dimensions

|  | 引线成型图示 Forming Lead Shapes                                                         |                                                                                     |                                                                                      |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                                                                    |  |  |  |
|                                                                                    | Fig. 1                                                                             | Fig. 2                                                                              | Fig. 3                                                                               |

| 客户料号<br>Customer's P/N | 规格型号 & 料号<br>Spec. & Walson's P/N       | 容量偏差<br>Tol.±% | 外形尺寸 Outline Dimensions (mm) |         |         |           |           |           |          | 图示<br>Fig. | 备注<br>Note |
|------------------------|-----------------------------------------|----------------|------------------------------|---------|---------|-----------|-----------|-----------|----------|------------|------------|
|                        |                                         |                | W<br>±1                      | H<br>±1 | T<br>±1 | P<br>±0.5 | F<br>±0.5 | d<br>±0.1 | L<br>Min |            |            |
| C53670942              | MMKP82-630V-153-P10<br>C822J153A5P40001 | 5              | 13                           | 12      | 6       | 10        | -         | 0.6       | 15       | 1          | 黄壳         |

### 3. 特点及主要用途 Application and Feature

#### ☆ 主要用途

- 广泛应用于高压高频脉冲电路中
- 吸收和 SCR 整流电路

#### ☆ Application

- Widely used in high voltage, high frequency and pulse circuit
- SNUBBER and SCR rectifier circuit

#### ☆ 特点

- 双面金属化聚丙烯膜
- 损耗小，内部温升小
- 负电容量温度系数
- 优异的阻燃性能

#### ☆ Characteristics

- Double sided metallized polypropylene film
- Low loss and small inherent temperature rise
- Negative temperature coefficient of capacitance
- Excellent active and passive flame resistant abilities

#### ☆ 技术要求 Specifications

|                                       |                                                                                |                       |
|---------------------------------------|--------------------------------------------------------------------------------|-----------------------|
| 引用标准<br>Reference Standard            | GB/T 10190-2012 (IEC 60384-16)                                                 |                       |
| 工作温度范围<br>Operating Temperature Range | -40 °C ~ +105 °C                                                               |                       |
| 额定温度<br>Rated Temperature             | 85 °C<br>(+85 °C to +105 °C decreasing factor 1.25 % per °C for $U_R$ )        |                       |
| 额定电压<br>Rated Voltage                 | 250/400/450V/630/1000/1600 /2000 VDC                                           |                       |
| 电容量范围<br>Capacitance Range            | 0.001 $\mu$ F ~ 3.3 $\mu$ F                                                    |                       |
| 电容量偏差<br>Capacitance Tolerance        | $\pm 5\%$ (J)、 $\pm 10\%$ (K)                                                  | (20 °C, 1 kHz, 1 V)   |
| 耐电压<br>Voltage Proof                  | 1.6 $U_R$                                                                      | (20 °C, 5 s)          |
| 损耗角正切值<br>Dissipation Factor          | $\leq 0.0010$ $C_R < 1.0 \mu$ F<br>$\leq 0.0020$ $C_R \geq 1.0 \mu$ F          | (20°C, 1 kHz, 1 V)    |
| 绝缘电阻<br>Insulation Resistance         | $\geq 25000 M\Omega$ $C_R \leq 0.33 \mu$ F<br>$\geq 7500 s$ $C_R > 0.33 \mu$ F | (20 °C, 100 V, 1 min) |

## 4. 可靠性测试 Reliability Test

| 序号<br>No. | 测试项目<br>Test Item                 | 测试方法<br>Test method                                                                                                                                                                                                                                                                                   | 要求<br>Requirement                                                                                                                                                                  |
|-----------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | 外部检查<br>Outline check             | 目视检查, 卡尺测量<br>Visual inspection and caliper measurement                                                                                                                                                                                                                                               | 外形规整, 无可见损伤; 标志端正、清晰、无误<br>The appearance is regular without visible damage; The mark is regular, clear and correct.                                                               |
|           | 初始测量<br>Initial measurement       | 电容量 C: 20 °C, 1 kHz, 1 V<br>损耗角正切 Tan δ: 20 °C, 1 kHz, 1 V                                                                                                                                                                                                                                            |                                                                                                                                                                                    |
|           | 引出端强度<br>Terminal Strength        | 拉力: 5 N<br>方向: 180 °<br>时间: 10±1 s<br>Pull: 5 N<br>Direction: 180 °<br>Time: 10±1 s                                                                                                                                                                                                                   | 无可见损伤<br>No visible damage                                                                                                                                                         |
|           |                                   | 弯曲<br>The pull of bend<br>拉力: 2.5 N<br>方向: 90 °<br>次数: 2 次<br>The pull of bend: 2.5 N<br>Direction: 90 °<br>Times: 2                                                                                                                                                                                  | 无可见损伤<br>No visible damage                                                                                                                                                         |
|           | 耐焊接热<br>Soldering Heat Resistance | 焊槽温度: +260 °C±5 °C<br>浸入时间: 10 s±1 s<br>浸入深度离安装面 2+0/-0.5 mm, 采用厚度为 1.5 mm±0.5 mm 的绝热屏蔽板<br>Solder temperature: 260 °C±5 °C<br>Immersion time: 10 s±1 s<br>Immersion depth is 2+0/-0.5mm away from the installation surface, and insulation shielding plate with a thickness of 1.5mm ± 0.5mm is used | 无可见损伤<br>No visible damage                                                                                                                                                         |
|           | 最后测量<br>Final measurement         |                                                                                                                                                                                                                                                                                                       | 无可见损伤<br>容量变化: $ \Delta C/C  \leq 3\%$<br>损耗变化: $\Delta \tan \delta \leq 0.004$ (1 kHz)<br>No visible damage<br>$ \Delta C/C  \leq 3\%$<br>$\Delta \tan \delta \leq 0.004$ (1 kHz) |
| 2         | 初始测量<br>Initial measurement       | 电容量 C: 20 °C, 1 kHz, 1V<br>损耗角正切 Tan δ: 20 °C, 1 kHz, 1 V                                                                                                                                                                                                                                             |                                                                                                                                                                                    |
|           | 可焊性<br>Solderability              | 焊槽温度: 235 °C±5°C<br>浸入时间: 2.0 s±0.5 s<br>Solder temperature: 235 °C ±5 °C<br>Immersion time: 2.0 s±0.5 s                                                                                                                                                                                              | 引线表面浸锡良好, 焊层面积达 95 % 以上<br>The surface of the lead wire is well tinned, and the welding layer area reaches over 95 %                                                               |

| 序号<br>No. | 测试项目<br>Test Item                     |                              | 测试方法<br>Test method                                                                                                                                                                                                                                                   | 要求<br>Requirement                                                                                                                                                                                                                                                                                                                           |
|-----------|---------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2         | 温度快速变化<br>Rapid Change of Temperature |                              | $\theta A = -40\text{ }^{\circ}\text{C}$<br>$\theta B = +105\text{ }^{\circ}\text{C}$<br>循环次数: 5 次,<br>持续时间 $t=30\text{ min}$<br><br>$\theta A = -40\text{ }^{\circ}\text{C}$<br>$\theta B = +105\text{ }^{\circ}\text{C}$<br>5 cycles<br>Duration: $t=30\text{ min}$ | 无可见损伤<br><br>No visible damage                                                                                                                                                                                                                                                                                                              |
|           | 振动<br>Vibration                       |                              | 频率范围: 10--500 Hz<br>振幅 : 0.75 mm<br>试验安装方向: X, Y, Z.<br>试验每个方向持续时间 : 2 h<br><br>Frequency range: 10 Hz to 500 Hz<br>Amplitude: 0.75 mm<br>Test installation direction: X,Y,Z,<br>Test duration in each direction: 2 h                                                 | 无可见损伤<br><br>No visible damage                                                                                                                                                                                                                                                                                                              |
|           | 碰撞<br>Bump                            |                              | 碰撞次数: 4000 次<br>加速度: 390 m/S <sup>2</sup><br>脉冲持续时间: 6 ms<br><br>Times of collisions: 4000 times<br>Acceleration: 390 m/s <sup>2</sup><br>Pulse duration: 6 ms                                                                                                        | 无可见损伤<br><br>No visible damage                                                                                                                                                                                                                                                                                                              |
|           | 最后测量<br>Final measurement             |                              |                                                                                                                                                                                                                                                                       | 无可见损伤<br>容量变化: $ \Delta C/C  \leq 3\%$<br>损耗变化: $\Delta \tan \delta \leq 0.004$ (1 kHz)<br>绝缘电阻: $\geq$ 初始测量值的 50 %<br><br>No visible damage<br>$ \Delta C/C  \leq 3\%$<br>$\Delta \tan \delta \leq 0.004$ (1 kHz)<br>I.R. $\geq 50\%$ of the rated value                                                                                   |
| 3         | 气候顺序<br>Climate Sequence              | 干热<br>Dry Heat               | +105 $^{\circ}\text{C}$ , 16 h                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                             |
|           |                                       | 循环湿热<br>Damp Heat<br>Cyclic  | 湿热试验 Db, 严酷度 b 第一次循环<br><br>Test Db, Severity: b, the first cycle                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                             |
|           |                                       | 寒冷<br>Cold                   | -40 $^{\circ}\text{C}$ , 2 h                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                             |
|           |                                       | 循环湿热<br>Damp Heat<br>Cyclic  | 试验 Db, 严酷度 b 其余循环<br><br>Test Db, Severity b, the other cycles,                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                             |
|           |                                       | 最后测量<br>Final<br>Measurement |                                                                                                                                                                                                                                                                       | 外观无可见损伤, 标志清晰<br>电容量变化: $ \Delta C/C  \leq 5\%$ ,<br>损耗角正切的增加: $\Delta \tan \delta \leq 0.005$ (1 kHz)<br>绝缘电阻: $\geq$ 额定值的 50 %<br><br>There shall be no evidence of deterioration and the marking shall be legible.<br>$ \Delta C/C  \leq \pm 5\%$<br>Increase of $\tan \delta \leq 0.005$ (1 kHz)<br>I.R. $\geq 50\%$ of the rated value |

| 序号<br>No. | 测试项目<br>Test Item                      | 测试方法<br>Test method                                                                                                                                                     | 要求<br>Requirement                                                                                                                                                                                                                                                                                                |
|-----------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4         | 初始测量<br>Initial measurement            | 电容量 C: 20 °C, 1 kHz, 1V<br>损耗角正切 Tan δ: 20 °C, 1 kHz, 1V                                                                                                                |                                                                                                                                                                                                                                                                                                                  |
|           | 稳态湿热<br>Damp Heat Steady State         | 温度: +40 °C±2 °C<br>相对湿度: 93 %±2 %RH<br>试验周期: 21 天<br><br>Temperature: +40 °C±2 °C<br>Humidity: 93 %±2 %RH<br>Duration: 21 Days                                          | 无可见损伤<br><br>No visible damage                                                                                                                                                                                                                                                                                   |
|           | 最后测量<br>Final measurement              |                                                                                                                                                                         | 容量变化   $\Delta C/C$   ≤ 5 %<br>损耗变化 $\Delta \tan \delta \leq 0.002$ (1 kHz)<br>绝缘电阻 I.R. ≥ 初始测量值的 50 %<br><br>  $\Delta C/C$   ≤ 5 %<br>$\Delta \tan \delta \leq 0.002$ (1 kHz)<br>I.R. ≥ 50 % of the rated value                                                                                                |
| 5         | 初始测量<br>Initial measurement            | 电容量 C: 20 °C, 1 kHz, 1V<br>损耗角正切 Tan δ: 20 °C, 1 kHz, 1V                                                                                                                |                                                                                                                                                                                                                                                                                                                  |
|           | 耐久性<br>Endurance                       | 温度: +85 °C±2 °C<br>试验周期: 1000 小时<br>施加电压: 1.25 U <sub>R</sub><br><br>Temperature: +85 °C±2 °C<br>Duration: 1000 (h)<br>Test voltage: 1.25 U <sub>R</sub>                | 无可见损伤, 标志清晰<br><br>No visible damage                                                                                                                                                                                                                                                                             |
|           | 最后测量<br>Final measurement              |                                                                                                                                                                         | 容量变化:   $\Delta C/C$   ≤ 5 %<br>损耗变化: $\Delta \tan \delta \leq 0.004$ (1 kHz)<br>绝缘电阻: ≥ 初始测量值的 50 %<br><br>  $\Delta C/C$   ≤ 5 %<br>$\Delta \tan \delta \leq 0.004$ (1 kHz)<br>I.R. ≥ 50 % of the rated value                                                                                                  |
| 6         | 随温度而定的特性<br>Temperature Characteristic | 静态法, 电容器依次保持在下述每个温度:<br>Static method, the capacitor is maintained at each of the following temperatures in sequence:<br><br>b: (20±2) °C, d: (-40±2) °C, f: (105±2) °C | 在 b,d,f 点上电容量测量<br>在下限类别温度(-40 °C)时的特性:<br>Measure capacitance at points b, d, and f, Characteristics at lower limit temperature (-40 °C):<br>$0 \leq \Delta C/C \leq +3.0 \%$<br><br>在上限类别温度(105 °C)时的特性:<br>Characteristics at upper limit category temperature (105 °C):<br>$-4.25 \% \leq \Delta C/C \leq 0$ |

| 序号<br>No. | 测试项目<br>Test Item                 | 测试方法<br>Test method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 要求<br>Requirement                                                                                                                                                                                                           |
|-----------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7         | 初始测量<br>Initial measurement       | 电容量 C: 20 °C, 1 kHz, 1V<br>损耗角正切 Tan $\delta$ : 20 °C, 1 kHz, 1V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                             |
|           | 充电和放电<br>Charging and Discharging | 充电次数: 10000 次<br>充电电压: 1.0 U <sub>R</sub><br>充电时间: 0.5 s<br>放电时间: 0.5 s<br>充电电阻: 220/C <sub>R</sub> $\Omega$<br>放电电阻: R=10/C <sub>R</sub> 或 20 $\Omega$ 取较大者<br>(C <sub>R</sub> 额定电容量, 单位 $\mu$ F)<br><br>Times: 10000<br>Charging voltage: 1.0 U <sub>R</sub><br>Duration of charging: 0.5 s<br>Duration of discharging: 0.5 s<br>Charging resistance: 220/C <sub>R</sub> ( $\Omega$ ) or<br>current intensity $\leq 1$ A (whichever is the<br>less current intensity)<br>Discharging resistance: R=U <sub>R</sub> /(C <sub>R</sub> $\times$ dv/dt)<br>C <sub>R</sub> : rated capacitance ( $\mu$ F) |                                                                                                                                                                                                                             |
|           | 最后测量<br>Final measurement         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 容量变化: $ \Delta C/C  \leq 5\%$<br>损耗变化: $\Delta \tan \delta \leq 0.005$ (1 kHz)<br>绝缘电阻: $\geq$ 初始测量值的 50 %<br><br>$ \Delta C/C  \leq 5\%$<br>$\Delta \tan \delta \leq 0.005$ (1 kHz)<br>I.R. $\geq 50\%$ of the rated value |

## 5. 产品特性曲线图 Graphs of Product Characteristics

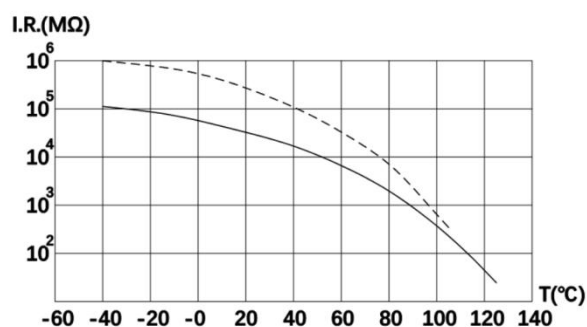
## ☆ 温度特性曲线 Temperature Characteristic Curve



Capacitance vs. Temperature at 1kHz



Dissipation Factor vs. Temperature at 1kHz



I.R. vs. Temperature

----- 聚丙烯薄膜 Polypropylene Film  
 ————— 聚酯薄膜 Polyester Film

## ☆ 频率特性曲线 Frequency Characteristic Curve



Capacitance vs. Frequency (Room Temperature)



Dissipation Factor vs. Frequency (Room Temperature)

----- 聚丙烯薄膜 Polypropylene Film  
 ————— 聚酯薄膜 Polyester Film

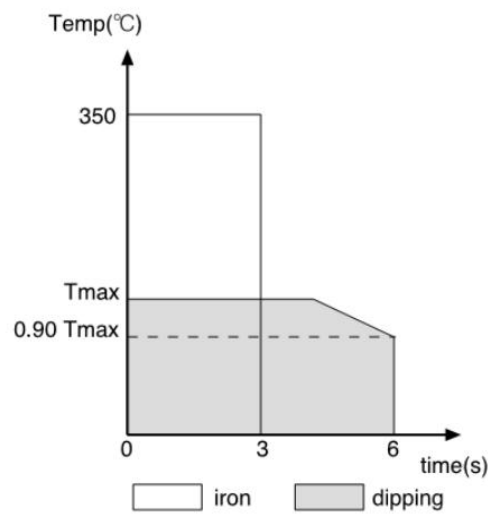
6. 焊接 Weld

焊接电容器时，热量会对电容器的引线和包封层产生影响，并且高温，以及长时间焊接都会对电容器的性能造成影响，甚至导致失效。

When welding, heat can have an impact on the leads and packaging layer of the capacitor, and high temperature and prolonged welding can affect the performance of the capacitor, even leading to failure.

焊接条件按下面的焊接图表：

The welding conditions are shown in the following welding chart



|             | Tmax | Time | Note      |
|-------------|------|------|-----------|
| Pre-heating | 110℃ | 1min |           |
|             | 100℃ | 1min | OPP ≤ 7.5 |
| Soldering   | 270℃ | 4s   |           |
|             | 260℃ | 4s   | OPP ≤ 7.5 |