



产品规格承认书

Product Specification for Approval

客户名: 立创商城
Customer: _____

产品品名: X2型金属化聚丙烯膜抑制电源电磁干扰电容器 (X2)
Description: X2 Series Metallized polypropylene film interference suppression capacitor

规格型号: MPX/MKP-X2系列
Specifications: _____

圣融达料号: 详见《产品尺寸及性能参数-圣融达料号》
Sincerity P/N: _____

客户料号: 详见《产品尺寸及性能参数-客户料号》
Customer P/N: _____

产品品牌: 圣融达 (SRD)
Product Brands: _____

制作日期: 2022-11-21
Production Date: _____

| 客户承认 Customer's Approval | | | 圣融达承认 Sincerity Approval | | |
|-----------------------------|---------------|----------------|-----------------------------|---------------|---|
| 接收 Receive | 审核 Checked | 批准 Approved | 制作 Producer | 审核 Checked | 批准 Approved |
| | | | 石海珍 | 谢宇 |  * 2022/11/21 |

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MPX/MKP-X2型金属化聚丙烯膜抑制电源电磁干扰电容器 (X2)

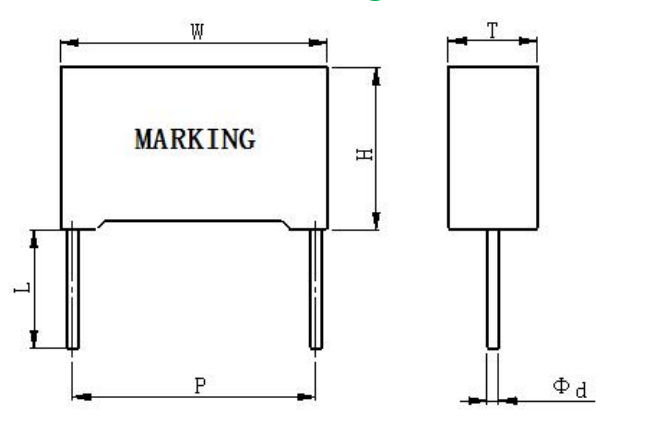
MPX/MKP-X2 Series Metallized polypropylene film interference suppression capacitor (Class X2)

1、产品特点及主要用途 Product characteristics and application

阻燃塑胶外壳封装，优异的阻燃性能，广泛用于电源跨线路等抗干扰场合产品损耗小，适用于电源抗干扰电路

Excellent flame retardant performance, Widely applied as across line Interference Suppression field, suitable for power supply anti-interference circuit with rated voltage not more than 320VAC and frequency of 50-100 Hz

2、外形图 Outline Drawing



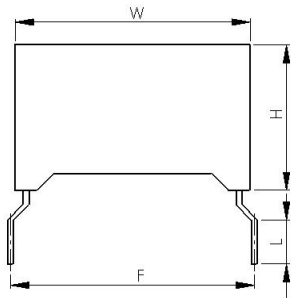
标志示例 Marking Example

275Vac样式

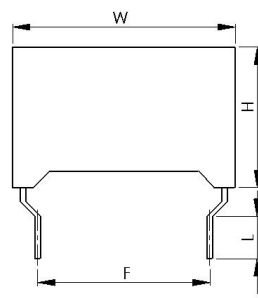
320Vac样式



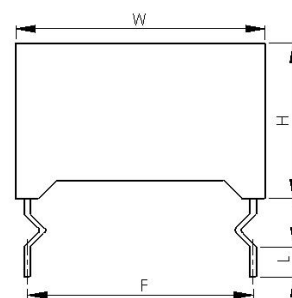
3、引线加工图形 Lead forming shape (mm)



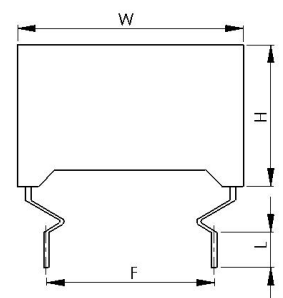
图号 Drawing No.1



图号 Drawing No.2



图号 Drawing No.3



图号 Drawing No.4

4、技术参数 Specification

| | | | |
|---|---|------------------------------|---------------------|
| 参照标准 Reference Standard | GB/T 6346.14-2015、IEC 60384-14 | | |
| 产品类别 Product category | X2 | | |
| 气候类别/阻燃等级 Climatic category/Passive Flammability Class | 40/110/56/B | | |
| 工作温度范围 Operation Temperature Range | -40°C~110°C | | |
| 额定电压 Rated Voltage | 275Vac/320Vac | | |
| 电容量范围 Capacitance Range | 0.001μF~10.0μF | | |
| 电容量偏差 Capacitance Tolerance | ±5%(J)、±10%(K)、±20%(M)(20°C, 1kHz) | | |
| 耐电压 Voltage Proof | 引线之间 Between Terminals | 4.3U _R (VDC), 60s | |
| | 极壳之间 Between Terminals to case | 2140Vac, 60s | |
| 绝缘电阻 Insulation Resistance | C _R ≤ 0.33μF, R ≥ 15000 MΩ C _R > 0.33μF, R _C ≥ 5000S (20°C, 100V, 1min) | | |
| 损耗角正切 Dissipation Factor | C < 0.47μF | tgδ ≤ 0.0010(1kHz) | tgδ ≤ 0.0020(10kHz) |
| | 0.47μF ≤ C ≤ 1.0μF | tgδ ≤ 0.0020(1kHz) | tgδ ≤ 0.0040(10kHz) |
| | 1.0μF < C ≤ 10.0μF | tgδ ≤ 0.0030(1kHz) | / |

5、产品安全认证Safety Approval

| 认证标志Certification Logo | 认证证书号Certification No. | 认证国家Certification Country |
|---|--|---------------------------|
|  | CQC22001351109 | 中国China |
|  | E528513 | 美国USA/加拿大Canada |
|  | 40028812 | 德国Germany (欧盟) Europe |
|  | SU03083 - 16001A~16005A SU03083 - 22001 | 韩国Korea |

6、产品代码及编写说明: Part number code rules

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| M | P | 2 | 1 | 0 | 4 | K | 3 | 2 | D | 2 | R | 8 | 0 | 0 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

| 第1~3位Digit 1 to 3 | 电容器型号代码Series code | 第4~6位Digit 4 to 6 | 标称电容量代码 Rated capacitance code |
|-----------------------|---------------------------------------|--|-----------------------------------|
| MP2=MPX/MKP-X2 | | ABC=AB×10 ^C pF Example104=10×10 ⁴ pF=0.1μF | |
| 第7位Digit 7 | 电容量偏差代码 Capacitance tolerance code | 第8~9位Digit 4 to 9 | 额定电压代码 Rated voltage code |
| J=±5%, K=±10%, M=±20% | | 32=320Vac, 27=275Vac, | |
| 第10~11位Digit 10 to 11 | 外形尺寸代码Dimension code | 第12位Digit 12 | 商标颜色Trademark color |
| 第13位Digit 13 | 线径代码 Line diameter code | 第14~15位Digit 14 to 15 | 特殊码Special code |

7、产品尺寸及性能参数: Product Dimension and Characteristic Data

| 圣融达料号 SRD P/N | 客户料号 Customer P/N | 额定电压 Rated Voltage | 标称容量 Cap | 容量偏差 Tolerance | 外形尺寸(mm) Dimension(mm) | | | | | |
|------------------|----------------------|-----------------------|-------------|-------------------|---------------------------|-----------|-----------|-----------|------------|--------|
| | | | | | W ±0.5 | T ±0.5 | H ±0.5 | P ±0.5 | d ±0.05 | L ≥ |
| MP2104K27D1J6YT | MP2104K27D1J6LC | 275vac | 0.1μF | K(±10%) | 18 | 5 | 11 | 15 | 0.6 | 13 |
| MP2104K32C2X600 | MP2104K32C2X6LC | 320vac | 0.1μF | K(±10%) | 13 | 5 | 11 | 10 | 0.6 | 13 |
| MP2104K32C3J600 | MP2104K32C3J6LC | 320vac | 0.1μF | K(±10%) | 13 | 6 | 12 | 10 | 0.6 | 13 |
| MP2154K32D2R800 | MP2154K32D2R8LC | 320vac | 0.15μF | K(±10%) | 18 | 6 | 12 | 15 | 0.8 | 13 |
| MP2224K32C3J690 | MP2224K32C3J6LC | 320vac | 0.22μF | K(±10%) | 13 | 6 | 12 | 10 | 0.6 | 13 |
| MP2224K32C5J600 | MP2224K32C5J6LC | 320vac | 0.22μF | K(±10%) | 13 | 7.8 | 13.8 | 10 | 0.6 | 13 |
| MP2224K32D4J800 | MP2224K32D4J8LC | 320vac | 0.22μF | K(±10%) | 18 | 8.4 | 14.5 | 15 | 0.8 | 13 |
| MP2474K32D4J800 | MP2474K32D4J8LC | 320vac | 0.47μF | K(±10%) | 18 | 8.4 | 14.5 | 15 | 0.8 | 13 |
| MP2474K32D4X890 | MP2474K32D4X8LC | 320vac | 0.47μF | K(±10%) | 18 | 8.4 | 14.5 | 15 | 0.8 | 13 |
| MP2474K32D6R8Q0 | MP2474K32D6R8LC | 320vac | 0.47μF | K(±10%) | 18 | 10 | 15.8 | 15 | 0.8 | 13 |
| MP2684K32D6T890 | MP2684K32D6T8LC | 320vac | 0.68μF | K(±10%) | 18 | 10 | 15.8 | 15 | 0.8 | 13 |
| 备注: | SRD | | | | | | | | | |

8、品质保证（产品出厂检查）试验： Quality ensuring test (before shipment):

| 检查项目（每批） Inspection item (each batch) | 技术要求 | 检查水平IL | 接收质量限AQL |
|--|--|-----------------|----------|
| | | GB 2828一次正常抽样方案 | |
| 外观检查 Appearance inspection | 标志正确，清晰可读，无明显损伤，针孔气泡，引出线无严重损伤。Marking is correct, clearly readable, No obvious damage, pinhole bubbles, There was no serious damage to the lead. | II | 1.0 |
| 外形尺寸 Dimensions | 按本文件第7条Refer to item 7 | | |
| 电容量 Capacitance | 按本文件第4条Refer to item 4 | II | 0.25* |
| 损耗角正切 Dissipation Factor | | | |
| 耐电压 Dielectric strength | | | |
| 绝缘电阻 Insulation resistance | | | |
| 可焊性 Solder ability | 按本文件第9.1条Refer to item 9.1 | S-3 | 1.0 |

*: 耐电压不允许失效 Voltage proof failure is not allowed

9、试验方法及性能试验 Test Method And Performance

| No. | 项目 project | 性能要求 Performance requirements | 试验方法（GB/T6346.14-2015） experiment method |
|-----|-----------------------------------|--|---|
| 9.1 | 可焊性 Solder ability | 上锡面积90%以上 More than 90% of the tin area | 方法1 method 1 焊料温度 Solder temperature: 235±5°C 浸渍时间 Immersion time: 5.0±0.5s |
| 9.2 | 初始测量 Initial measurement | 电容量 capacitance 损耗角正切 DF: $C_R \leq 1\mu F$, Test frequency: 10kHz $C_R > 1\mu F$, Test frequency: 1kHz | |
| | 引出端强度 Terminal strength | 外观无可见损伤 There shall be no visible damage | 拉力试验 Ual: 拉力: 0.5< ϕ d≤0.8mm: 10N, d>0.8mm: 20N 弯曲试验 Ub: 每个方向上进行二次弯曲 Tensile test Ual: Tension: 0.5< ϕ d≤0.8mm; 10N, d>0.8mm: 20N Bend: test Ub: secondary bending in each direction |
| | 耐焊接热 Resistance to solder heat | | 方法1A: 260±5°C, 5s method 1A 260±5°C, 5s |
| | 最后测量 Final measurement | 外观无可见损伤 There shall be no visible damage 电容量变化: $\Delta C/C \leq \pm 5\%$ Capacitance: $\Delta C/C \leq \pm 5\%$ (relative to the initial value) | |

| | | | |
|-----|------------------------------------|--|---|
| 9.3 | 初始测量 Initial measurement | 电容量capacitance 损耗角正切DF: $C_R \leq 1\mu F$, Test frequency: 10kHz $C_R > 1\mu F$, Test frequency: 1kHz | |
| | 温度快速变化 Rapid temperature change | 外观无可见损伤 There shall be no visible damage | $T_A = -40^\circ C$, $T_B = +110^\circ C$ 5次循环, 持续时间: $t = 30\text{min}$ 5 cycles, duration: $t = 30\text{min}$ |
| | 振动vibration | 外观无可见损伤 There shall be no visible damage | 振幅0.75mm或加速度 98m/s^2 (取严酷度较小者), 频率10~500Hz三个方向, 每个方向2h, 共6h Amplitude 0.75mm or acceleration 98m/s^2 (slightly less severe), frequency 10~500Hz three sides Direction, 2h in each direction, total 6h |
| | 碰撞 Bump | | 4000次, 加速度 400m/s^2 , 脉冲持续时间: 6ms 4000 times, acceleration 400m/s^2 , Pulse duration: 6ms |
| | 最后测量 Final measurement | 外观无可见损伤 There shall be no visible damage 电容量: $\Delta C / C \leq \pm 5\%$ Capacitance: $\Delta C / C \leq \pm 5\%$ (relative to the initial value) 损耗角正切: 符合本文件第4条要求DF: Comply the Item 4 | |
| 9.4 | 气候顺序 climate seunce | 初始测量 Initial measurement | 按9.2或9.3的最终测量 Refer to item 10.2 and 10.3 final measurement |
| | | 干热Dry heat | +110°C, 16h |
| | | 循环湿热 Damp heat, Cyclic | 试验Db, 严酷度b, 第一次循环 Test Db, severity b, First cycle |
| | | 寒冷cold | -40°C, 2h |
| | | 循环湿热 Damp heat, Cyclic | 试验Db, 严酷度b, 剩余循环 Test Db, severity b, the other cycles, |
| | | 外观无可见损伤, 标志清晰, 电容量变化: $\Delta C / C \leq 5\%$, 损耗角正切增加: $C_R \leq 1\mu F \leq 0.008$ (10kHz) $C_R > 1\mu F \leq 0.005$ (1kHz) 耐电压: $4.3U_R$, 60s无击穿或飞弧 绝缘电阻 IR: \geq 额定值的50% There shall be no visible damage, legible marking $\Delta C / C \leq 5\%$ (relative to the initial value) Increase of $\text{tg}\delta$: $C_R \leq 1\mu F \Delta \text{tg}\delta \leq 0.008$ (10kHz) $C_R > 1\mu F \Delta \text{tg}\delta \leq 0.005$ (1kHz) Voltage proof: Applying $4.3U_R$, 60s no breakdown and flashover I.R.: $\geq 50\%$ of the rated value | |

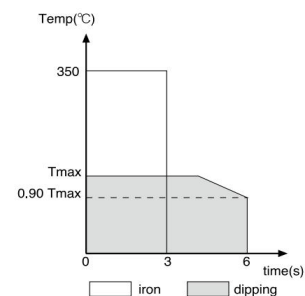
| NO. | 项目 project | 性能要求 Performance requirements | 试验方法 (GB/T6346.14-2015) Test method |
|-----|--------------------------------|---|--|
| 9.5 | 稳态湿热 Damp heat steady state | 外观无可见损伤, 标志清晰, 电容量变化: $\Delta C/C \leq 5\%$, 损耗角正切增加: $C_R \leq 1\mu F \leq 0.008$ (10kHz) $C_R > 1\mu F \leq 0.005$ (1kHz) 耐电压: $4.3U_R$, 60s无击穿或飞弧 绝缘电阻 IR: \geq 额定值的50% There shall be no visible damage, legible marking $\Delta C/C \leq 5\%$ (relative to the initial value) Increase of $\text{tg}\delta$: $C_R \leq 1\mu F \Delta \text{tg}\delta \leq 0.008$ (10kHz) $C_R > 1\mu F \Delta \text{tg}\delta \leq 0.005$ (1kHz) Voltage proof: Applying $4.3U_R$, 60s no breakdown and flashover IR: $\geq 50\%$ of the rated value | 温度: $40 \pm 2^\circ\text{C}$ 湿度: $93 (+2/-3) \%RH$ 持续时间: 56天 Temperature: $40 \pm 2^\circ\text{C}$ Humidity: $93 (+2/-3) \% rh$ Duration: 56 days |
| 9.6 | 脉冲电压 Pulse Voltage | 用监视器监视, 有三次或更多次 脉冲波形表示电容器未发生自愈性击穿 3 times or more pluse waves indicate that the capacitor's self-healing breakdown doesn't occur | 每个电容器施加24次相同极性的 脉冲, 脉冲间隔时间不少于10S, 脉冲电压峰值 $C_R \leq 1\mu F$, 2.5kV, $C_R > 1\mu F$, $2.5/\sqrt{C_R}$ KV Ech capacitor is applied with same polarity pulse for 24 times. the interval between successive discharges shall be more than 10sec. Peak value of pulse voltage is $C_R \leq 1\mu F$, 2.5kV, $C_R > 1\mu F$, $2.5/\sqrt{C_R}$ KV |
| 9.7 | 耐久性 Endurance | 外观无可见损伤, 标志清晰, 电容量变化: $\Delta C/C \leq 10\%$, 损耗角正切增加: $C_R \leq 1\mu F \leq 0.008$ (10kHz) $C_R > 1\mu F \leq 0.005$ (1kHz) 耐电压: $4.3U_R$, 60s无击穿或飞弧 绝缘电阻 IR: \geq 额定值的50% There shall be no visible damage, legible marking $\Delta C/C \leq 10\%$ (relative to the initial value) Increase of $\text{tg}\delta$: $C_R \leq 1\mu F \Delta \text{tg}\delta \leq 0.008$ (10kHz) $C_R > 1\mu F \Delta \text{tg}\delta \leq 0.005$ (1kHz) Voltage proof: Applying $4.3U_R$, 60s no breakdown and flashover IR.: $\geq 50\%$ of the rated value | $+110^\circ\text{C}$, 1000h 施加电压: 1.25倍额定电压 (50Hz), 每隔1h将电压升到 1000VAC, 持续时间0.1S $+110^\circ\text{C}$, 1000h Applied voltage: 1.25times rated voltage(50Hz), 1h intervals zhe voltage to rise to 1000VAC ,duration 0.1S |

| NO. | 项目 project | 性能要求 Performance requirements | 试验方法 (GB/T6346.14-2015) Test method | | | | | | | | | | | | |
|--|-----------------------------------|--|---|--|--|--|--|------------|--------------------|---------------------|----------|----|----|----|----|
| 9.8 | 充电和放电 Charging and discharging | 电容量变化: $\Delta C/C \leq 10\%$, 损耗角正切增加: $C_R \leq 1\mu F \leq 0.008$ (10kHz) $C_R > 1\mu F \leq 0.005$ (1kHz) 绝缘电阻 IR: \geq 额定值的50% $\Delta C/C \leq 10\%$ (relative to the initial value) Increase of $\text{tg}\delta$: $CR \leq 1\mu F \Delta \text{tg}\delta \leq 0.008$ (10kHz) $CR > 1\mu F \Delta \text{tg}\delta \leq 0.005$ (1kHz) IR.: $\geq 50\%$ of the rated value | 次数: 10000次 充电持续时间: 0.5S, 放电持续时间: 0.5S 充电电压为 $\sqrt{2} U_R$ (dc) 充电电阻: $220/C_R$ (Ω) 或 20Ω (取较大者) C_R 为标称电容量 (μF) Number of times: 10,000 times Charging duration: 0.5s, discharge duration: 0.5s Charging voltage is rated voltage Charging resistance: $220/C_R(\Omega)$ or 20Ω (whichever is greater) C_R is the rated capacitance (μF) | | | | | | | | | | | | |
| 9.9 | 阻燃性试验 Passive flammability | 离开火焰后, 最大燃烧时间不超过10s, 电容器燃烧的滴落物不应引燃在其下铺设的棉纸 The flaming time of each capacitor shall not go beyond 10s after it is taken apart from the flame. The drop objects of the capacitor shall not burn cotton paper after leaving flame | 针焰试验, 阻燃等级B, 在火焰上暴露一次 Needle flam test: burning resisting type B, exposed one time on flame <table border="1" style="margin-left: 20px;"> <tr> <th colspan="4">针对电容器体积V (mm³) 施加火焰时间 (s)</th> </tr> <tr> <td>≤ 250</td> <td>$250 < V \leq 500$</td> <td>$500 < V \leq 1750$</td> <td>> 1750</td> </tr> <tr> <td>10</td> <td>20</td> <td>30</td> <td>60</td> </tr> </table> | 针对电容器体积V (mm ³) 施加火焰时间 (s) | | | | ≤ 250 | $250 < V \leq 500$ | $500 < V \leq 1750$ | > 1750 | 10 | 20 | 30 | 60 |
| 针对电容器体积V (mm ³) 施加火焰时间 (s) | | | | | | | | | | | | | | | |
| ≤ 250 | $250 < V \leq 500$ | $500 < V \leq 1750$ | > 1750 | | | | | | | | | | | | |
| 10 | 20 | 30 | 60 | | | | | | | | | | | | |
| 9.10 | 自燃性试验 Active flammability | 纱布不燃烧 The gauze shall not burn | 样品用未处理过的纯棉布缠绕至少一层, 但不能多于两层, 每一样品应能承受贮能电容器放电20次; 每两次放电之间的间隔应为5s。 $U_i = 2.5kV \quad U \sim = U_R$ The specimens shall be individually wrapped in at least 1, but not more than 2, complete layers of cheesecloth, the cheesecloth shall be untreated pure cotton. Each sample shall be subjected to 20 discharged, the interval between successive discharges shall be 5s. $U \sim = U_R \quad U_i = 2.5kV$ | | | | | | | | | | | | |

10、波峰焊接 (最大焊接温度) Peak Welding (Maximum Welding Temperature)

10.1 焊接条件请按照右侧的焊接图表: Welding conditions should follow the welding chart on the right side:

| | 最高温度 Tmax | 时间 Time |
|--------|-------------------------|--------------|
| 预热 | 最高温度 $\leq 130^\circ C$ | ≤ 1 min |
| 焊接锡炉温度 | $260 \pm 5^\circ C$ | 5 ± 1 s |



10.2 如需焊接两次, 第二次焊接必须等到电容器恢复到常温。

If twice welding is required, the second welding must wait until the capacitor is restored to normal temperature.

10.3 插件产品仅适合使用波峰焊接 Plug-in products are only suitable for wave soldering

11、包装及运输要求 Packaging and transportation requirements

电容器以纸箱包装, 应避免雨雪的直接淋浇和机械损伤, 并保存在 $-10^\circ C \sim +40^\circ C$ 温度下, 相对湿度75%以下, 应避免温度剧烈变化, 阳光直射和腐蚀性气体, 存放期不超出12个月。 Capacitors are packaged in Corrugated box, should be stored at temperatures ranging from -10 to $+40$ C, with relative humidity below 75%, drastic temperature changes, direct sunlight and corrosive gases should be avoided. Storage period should not exceed 12 months

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