

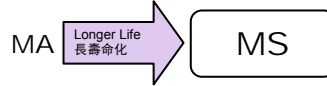
MS Series

CHIP TYPE, LONG LIFE

貼片式，長壽命品



- Operating with wide temperature range -55~+105°C
適用於 -55~+105°C 的寬溫範圍
- Long life assurance
長壽命
- Load life of 5000 hours
負荷壽命 5000 小時
- RoHS & REACH compliant, Halogen-free
符合 RoHS 與 REACH，無鹵

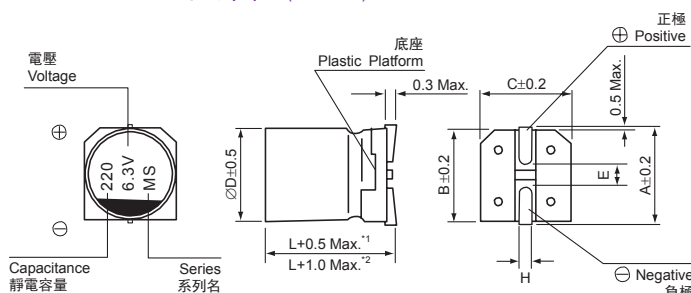


□ SPECIFICATIONS 特性表

| Items 項目 | Characteristics 主要特性 | | | | | |
|--|--|--|-------------------|-------|--|------------------|
| Operation Temperature Range 使用溫度範圍 | -55 ~ +105°C | | | | | |
| Voltage Range 額定工作電壓範圍 | 4 ~ 50V | | | | | |
| Capacitance Range 靜電容量範圍 | 22 ~ 560µF | | | | | |
| Capacitance Tolerance 靜電容量允許偏差 | ±20% at 120Hz, 20°C | | | | | |
| Leakage Current 漏電流 (*1) | ≤Specified value (after 2 minutes application of rated voltage at 20°C). ≤規範值(在 20°C 環境中施加額定工作電壓 2 分鐘後)。 | | | | | |
| Dissipation Factor (tan δ) 損耗角正切 | ≤Specified value at 120Hz, 20°C. ≤規範值(在 20°C 120Hz 環境下)。 | | | | | |
| ESR 阻抗值 (*2) | ≤Specified value at 100KHz, 20°C. ≤規範值(在 20°C 100KHz 環境下)。 | | | | | |
| Stability at Low Temperature 低溫特性 | Measurement frequency 測試頻率: 100KHz | | | | | |
| | <table border="1"> <tr> <td>Impedance Ratio 阻抗比 ZT/Z20 (max.)</td> <td>Z(+105°C)/Z(20°C)</td> <td>≤1.25</td> </tr> <tr> <td></td> <td>Z(-55°C)/Z(20°C)</td> <td>≤1.25</td> </tr> </table> | Impedance Ratio 阻抗比 ZT/Z20 (max.) | Z(+105°C)/Z(20°C) | ≤1.25 | | Z(-55°C)/Z(20°C) |
| Impedance Ratio 阻抗比 ZT/Z20 (max.) | Z(+105°C)/Z(20°C) | ≤1.25 | | | | |
| | Z(-55°C)/Z(20°C) | ≤1.25 | | | | |
| Damp Heat (Steady State) 穩態濕熱 | When the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH, they meet the characteristics listed below. 在 60°C 和相對濕度 90%環境下施加額定工作電壓 1000 小時並冷卻至 20°C 後，電容器的特性符合下表的要求。 | | | | | |
| | Capacitance Change 靜電容量變化率 | Within ±20% of initial value 為初始值的±20%以內 (*3) | | | | |
| | Dissipation Factor 損耗角正切 | 150% or less of initial specified value 不大於規範值的 150% | | | | |
| | ESR 阻抗值 (*2) | 150% or less of initial specified value 不大於規範值的 150% | | | | |
| | Leakage Current 漏電流 | Initial specified value or less 不大於規範值 | | | | |
| Endurance 耐久性 | After 5000 hours application of the rated voltage at 105°C, they meet the characteristics listed below. 在 105°C 環境中施加額定工作電壓 5000 小時後，電容器的特性符合下表的要求。 | | | | | |
| | Capacitance Change 靜電容量變化率 | Within ±20% of initial value 為初始值的±20%以內 (*3) | | | | |
| | Dissipation Factor 損耗角正切 | 150% or less of initial specified value 不大於規範值的 150% | | | | |
| | ESR 阻抗值 (*2) | 150% or less of initial specified value 不大於規範值的 150% | | | | |
| | Leakage Current 漏電流 | Initial specified value or less 不大於規範值 | | | | |
| Resistance to Soldering Heat 耐焊接熱特性 <small>(Please refer page 22 for soldering conditions) (焊接條件請查閱第 22 頁)</small> | After reflow soldering and restored at room temperature, they meet the characteristics listed below. 經過回流焊並冷卻至室溫後，電容器的特性符合下表的要求。 | | | | | |
| | Capacitance Change 靜電容量變化率 | Within ±10% of initial value 初始值的±10%以內 (*3) | | | | |
| | Dissipation Factor 損耗角正切 | 130% or less of initial specified value 不大於規範值的 130% | | | | |
| | ESR 阻抗值 (*2) | 130% or less of initial specified value 不大於規範值的 130% | | | | |
| | Leakage Current 漏電流 | Initial specified value or less 不大於規範值 | | | | |
| Marking 標識 | Red print on the case top. 鋁殼頂部紅色字體印刷。 | | | | | |

- (*1) If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
如未能確定，在 105°C 環境下連續施加額定工作電壓 120 分鐘後測量漏電流。
- (*2) Should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
測試應為靠近突出底座兩個端子的末端。
- (*3) The value before test of examination of resistance to soldering.
焊接測試前的值。

□ DRAWING 外形圖 (Unit: mm)



- *1. Applicable to Ø5~Ø8 適用於Ø5~Ø8
*2. Applicable to Ø10 and above 適用於Ø10和Ø10以上

Dimension table in next page.
尺寸表見下一頁。

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□ DIMENSIONS 尺寸表 (Unit: mm)

| ∅D × L | 5 × 6 | 6.3 × 6 | 8 × 7 | 6.3 × 7 | 6.3 × 9.5 | 8 × 12 | 10 × 12 |
|--------|---------|---------|---------|---------|-----------|---------|---------|
| A | 6.0 | 7.3 | 9.0 | 7.3 | 7.3 | 8.0 | 10.0 |
| B | 5.3 | 6.6 | 8.3 | 6.6 | 6.6 | 8.3 | 10.3 |
| C | 5.3 | 6.6 | 8.3 | 6.6 | 6.6 | 8.3 | 10.3 |
| E | 1.6 | 2.1 | 3.2 | 2.1 | 2.1 | 3.2 | 4.6 |
| L | 6.0 | 6.0 | 7.0 | 7.0 | 9.5 | 12.0 | 12.0 |
| H | 0.5~0.8 | 0.5~0.8 | 0.8~1.1 | 0.5~0.8 | 0.5~0.8 | 0.8~1.1 | 0.8~1.1 |

□ DIMENSIONS & STANDARD RATINGS 規格尺寸及標準參數

| WV (V) | | 4 (0G) | | | | | 6.3 (0J) | | | | |
|--------------|--------------|------------------------|----------------------------------|--------------------------|--------------------------------|--|------------------------|----------------------------------|--------------------------|--------------------------------|--|
| Cap. 容量 (μF) | Parameter 參數 | Case size ∅D×L (mm) 尺寸 | Dissipation factor (tan δ) 損耗角正切 | Leakage current (μA) 漏電流 | ESR (mΩ) max. 20°C, 100KHz 阻抗值 | Ripple current (mA rms) 105°C, 100KHz 紋波電流 | Case size ∅D×L (mm) 尺寸 | Dissipation factor (tan δ) 損耗角正切 | Leakage current (μA) 漏電流 | ESR (mΩ) max. 20°C, 100KHz 阻抗值 | Ripple current (mA rms) 105°C, 100KHz 紋波電流 |
| | | | | | | | | | | | |
| 100 | 101 | | | | | | 5 × 6 (6.3 × 6) | 0.12 (0.12) | 126 (126) | 25 (22) | 2400 (2800) |
| 120 | 121 | | | | | | 6.3 × 6 | 0.12 | 151 | 22 | 2800 |
| 150 | 151 | 5 × 6 | 0.12 | 120 | 25 | 2200 | | | | | |
| 220 | 221 | | | | | | 6.3 × 6 (8 × 7) | 0.12 (0.12) | 277 (277) | 20 (22) | 2800 (3200) |
| 330 | 331 | 6.3 × 6 (8 × 7) | 0.12 (0.12) | 264 (264) | 20 (22) | 2800 (3200) | | | | | |
| 390 | 391 | | | | | | 8 × 7 | 0.12 | 491 | 22 | 3200 |
| 470 | 471 | | | | | | 6.3 × 9.5 | 0.12 | 592 | 18 | 3200 |
| 560 | 561 | 8 × 7 | 0.12 | 448 | 18 | 3600 | | | | | |

| WV (V) | | 10 (1A) | | | | | 16 (1C) | | | | |
|--------------|--------------|------------------------|----------------------------------|--------------------------|--------------------------------|--|------------------------|----------------------------------|--------------------------|--------------------------------|--|
| Cap. 容量 (μF) | Parameter 參數 | Case size ∅D×L (mm) 尺寸 | Dissipation factor (tan δ) 損耗角正切 | Leakage current (μA) 漏電流 | ESR (mΩ) max. 20°C, 100KHz 阻抗值 | Ripple current (mA rms) 105°C, 100KHz 紋波電流 | Case size ∅D×L (mm) 尺寸 | Dissipation factor (tan δ) 損耗角正切 | Leakage current (μA) 漏電流 | ESR (mΩ) max. 20°C, 100KHz 阻抗值 | Ripple current (mA rms) 105°C, 100KHz 紋波電流 |
| | | | | | | | | | | | |
| 33 | 330 | 5 × 6 | 0.12 | 66 | 40 | 1300 | | | | | |
| 39 | 390 | | | | | | 5 × 6 (6.3 × 6) | 0.12 (0.12) | 125 (125) | 35 (30) | 2000 (2200) |
| 56 | 560 | 6.3 × 6 | 0.12 | 112 | 27 | 2300 | | | | | |
| 68 | 680 | 5 × 6 | 0.12 | 136 | 30 | 2100 | 6.3 × 6 | 0.12 | 218 | 30 | 2200 |
| 82 | 820 | | | | | | 8 × 7 | 0.12 | 262 | 28 | 2800 |
| 120 | 121 | 6.3 × 6 | 0.12 | 240 | 27 | 2300 | 8 × 7 | 0.12 | 384 | 28 | 2800 |
| 150 | 151 | 8 × 7 | 0.12 | 300 | 30 | 2600 | | | | | |
| 220 | 221 | 6.3 × 7 | 0.12 | 440 | 22 | 2800 | | | | | |
| 270 | 271 | 8 × 7 | 0.12 | 540 | 22 | 3200 | | | | | |

| WV (V) | | 25 (1E) | | | | | 35 (1V) | | | | |
|--------------|--------------|------------------------|----------------------------------|--------------------------|--------------------------------|--|------------------------|----------------------------------|--------------------------|--------------------------------|--|
| Cap. 容量 (μF) | Parameter 參數 | Case size ∅D×L (mm) 尺寸 | Dissipation factor (tan δ) 損耗角正切 | Leakage current (μA) 漏電流 | ESR (mΩ) max. 20°C, 100KHz 阻抗值 | Ripple current (mA rms) 105°C, 100KHz 紋波電流 | Case size ∅D×L (mm) 尺寸 | Dissipation factor (tan δ) 損耗角正切 | Leakage current (μA) 漏電流 | ESR (mΩ) max. 20°C, 100KHz 阻抗值 | Ripple current (mA rms) 105°C, 100KHz 紋波電流 |
| | | | | | | | | | | | |
| 100 | 101 | 6.3 × 9.5 | 0.12 | 500 | 32 | 2900 | | | | | |
| 150 | 151 | | | | | | 10 × 12 | 0.12 | 1050 | 28 | 2600 |
| 180 | 181 | 8 × 12 | 0.12 | 900 | 16 | 4650 | | | | | |

| WV (V) | | 50 (1H) | | | | |
|--------------|--------------|------------------------|----------------------------------|--------------------------|--------------------------------|--|
| Cap. 容量 (μF) | Parameter 參數 | Case size ∅D×L (mm) 尺寸 | Dissipation factor (tan δ) 損耗角正切 | Leakage current (μA) 漏電流 | ESR (mΩ) max. 20°C, 100KHz 阻抗值 | Ripple current (mA rms) 105°C, 100KHz 紋波電流 |
| | | | | | | |
| 68 | 680 | 10 × 12 | 0.12 | 680 | 20 | 4300 |

- Taping specifications are given in page 17. 編帶標準請查閱第 17 頁。
- Soldering conditions and recommended land size are given in page 22. 焊接條件及推薦安裝尺寸請查閱第 22 頁。
- Please refer to page 18 for the minimum package quantity. 最小包裝數量請查閱第 18 頁。
- Please refer to page 14 for the Part Number System. 產品編碼規則請查閱第 14 頁。

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