# KP Series

## CHIP TYPE, NON-POLARIZED, WIDE TEMPERATURE
## 貼片式，無極性寬溫品



- Non-polarized with wide temperature range -55°C~+105°C
  無極性和適用於-55°C~+105°C 的寬溫範圍
- Endurance 1000 hours
  耐久性 1000 小時
- RoHS & REACH compliant, Halogen-free
  符合 RoHS 與 REACH，無鹵

NP
Non-polarized

CN → Higher Temperature 寬溫化 → KP

## ☐ SPECIFICATIONS 特性表

| Items 項目 | Characteristics 主要特性 |
|---|---|
| **Category Temperature Range** 工作溫度範圍 | -55 ~ +105°C |
| **Voltage Range** 額定工作電壓範圍 | 6.3 ~ 50V |
| **Capacitance Range** 靜電容量範圍 | 0.1 ~ 47μF |
| **Capacitance Tolerance** 靜電容量允許偏差 | ±20% at 120Hz, 20°C |
| **Leakage Current**<br>漏電流 | Leakage current ≤0.05CV or 10μA, whichever is greater (after 2 minutes application of rated voltage at 20°C)<br>漏電流 ≤0.05CV 或 10μA，取較大值（在 20°C 環境中施加額定工作電壓 2 分鐘後）<br>C: Nominal capacitance (μF) 標稱靜電容量, V: Rated voltage (V) 額定電壓 |
| **Dissipation Factor (tan δ)**<br>損耗角正切 | Measurement frequency 測試頻率: 120Hz, Temperature 温度: 20°C |

| Rated Voltage (V) 額定工作電壓 | | 6.3 | 10 | 16 | 25 | 35 | 50 |
|---|---|---|---|---|---|---|---|
| tan δ (max.)<br>最大損耗角正切 | ∅4 | 0.35 | 0.30 | 0.25 | 0.25 | 0.25 | 0.25 |
| | ∅5~∅6.3 | 0.30 | 0.25 | 0.20 | 0.15 | 0.15 | 0.15 |

| **Stability at Low Temperature**<br>低溫特性 | Measurement frequency 測試頻率: 120Hz | | | | | |
|---|---|---|---|---|---|---|
| Rated Voltage (V) 額定工作電壓 | | 6.3 | 10 | 16 | 25 | 35, 50 |
| Impedance Ratio 阻抗比<br>ZT/Z20 (max.) | Z(-25°C) / Z(+20°C) | 3 | 3 | 2 | 2 | 2 |
| | Z(-55°C) / Z(+20°C) | 8 | 5 | 4 | 3 | 3 |

**Endurance**
耐久性

When the capacitors are restored to 20°C after 1000 hours application of the rated voltage at 105°C (the polarity needs to exchange every 250 hours), they meet the characteristics listed below.
在 105°C 環境中施加額定工作電壓 1000 小時（每 250 小時必須轉換一次極性）後，待電容器恢復至 20°C 時進行測量，電容器的特性符合下表要求。

| | |
|---|---|
| Capacitance Change 靜電容量變化率 | Within ±20% of initial value 初始值的±20%以內 |
| Dissipation Factor 損耗角正切 | 200% or less of initial specified value 不大於規範值的 200% |
| Leakage Current 漏電流 | initial specified value or less 不大於規範值 |

**Shelf Life**
高溫貯存特性

When the capacitors are restored to 20°C after leaving under no load at 105°C for 1000 hours, they meet the specified value for endurance characteristics listed above.
在 105°C 環境中無負荷放置 1000 小時後，待電容器恢復至 20°C 時進行測量，電容器的特性符合耐久性特性中所列的規定值。

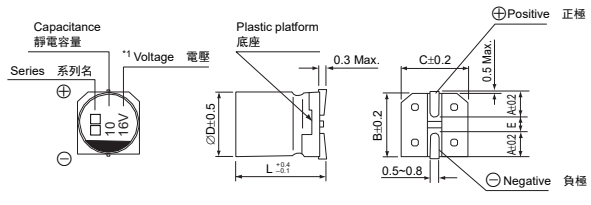
**Resistance to Soldering Heat**
耐焊接熱特性
(Please refer page 25 for soldering conditions)
(焊接條件請查閱第 25 頁)

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要求。

| | |
|---|---|
| Capacitance Change 靜電容量變化率 | Within ±10% of initial value 初始值的±10%以內 |
| Dissipation Factor 損耗角正切 | initial specified value or less 不大於規範值 |
| Leakage Current 漏電流 | initial specified value or less 不大於規範值 |

**Marking** 標識: Black print on the case top. 鋁殼頂部黑字印刷。

## ☐ DRAWING 外形圖 (Unit: mm)




*1. Voltage mark for 6.3V is [6V] 6.3V 的產品標識為 [6V]

## ☐ DIMENSIONS (Unit: mm) 尺寸表

| ØD x L | 4 x 5.4 | 5 x 5.4 | 6.3 x 5.4 |
|---|---|---|---|
| A | 2.0 | 2.2 | 2.6 |
| B | 4.3 | 5.3 | 6.6 |
| C | 4.3 | 5.3 | 6.6 |
| E ± 0.2 | 1.0 | 1.4 | 1.9 |
| L | 5.4 | 5.4 | 5.4 |

**Note:** All design and specifications are for reference only and is subject to change without prior notice. If any doubt about safety for your application, please contact us immediately for technical assistance before purchase.
**注：**以上所提供的設計及特性參數僅供參考，任何修改不作預先通知。如果在使用上有疑問，請在採購前與我們聯繫，以便提供技術上的協助。

# KP Series

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

| WV / Code 代碼 / μF | | 6.3 | | 10 | | 16 | | 25 | | 35 | | 50 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0J | | 1A | | 1C | | 1E | | 1V | | 1H | |
| 0.1 | 0R1 | | | | | | | | | | | 4 × 5.4 | 1.0 |
| 0.22 | R22 | | | | | | | | | | | 4 × 5.4 | 2.0 |
| 0.33 | R33 | | | | | | | | | | | 4 × 5.4 | 2.8 |
| 0.47 | R47 | | | | | | | | | | | 4 × 5.4 | 4.0 |
| 1 | 010 | | | | | | | | | | | 4 × 5.4 | 8.4 |
| 2.2 | 2R2 | | | | | | | | | 4 × 5.4 | 8.4 | 5 × 5.4 | 13 |
| 3.3 | 3R3 | | | | | | | 5 × 5.4 | 12 | 5 × 5.4 | 16 | 5 × 5.4 | 17 |
| 4.7 | 4R7 | | | | | 4 × 5.4 | 12 | 5 × 5.4 | 16 | 5 × 5.4 | 18 | 6.3 × 5.4 | 20 |
| 10 | 100 | | | 4 × 5.4 | 17 | 5 × 5.4 | 23 | 6.3 × 5.4 | 27 | 6.3 × 5.4 | 29 | | |
| 22 | 220 | 5 × 5.4 | 28 | 6.3 × 5.4 | 33 | 6.3 × 5.4 | 37 | | | | | | |
| 33 | 330 | 6.3 × 5.4 | 37 | 6.3 × 5.4 | 41 | 6.3 × 5.4 | 49 | | | | | Case size 尺寸 | Ripple current 紋波電流 |
| 47 | 470 | 6.3 × 5.4 | 45 | | | | | | | | | | |

•Case size ∅D×L(mm), ripple current (mA rms) at 105°C, 120Hz •尺寸∅D×L(mm)，紋波電流(mA rms)於 105°C, 120Hz

## ☐ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 紋波電流頻率補償系數

| Frequency 頻率 | 50Hz | 120Hz | 300Hz | 1KHz | 10KHz~ |
|---|---|---|---|---|---|
| Coefficient 系數 | 0.70 | 1.00 | 1.17 | 1.36 | 1.50 |

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5~10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced. 鋁電解電容器在疊加紋波電流後會引起發熱，溫度每上升 5~10°C 壽命會減半。若要保持長壽命性能，請在使用過程中適當降低紋波電流。


- Taping specifications are given in page 19. 編帶標準請查閱第 19 頁。
- Soldering conditions and recommended land size are given in page 25. 焊接條件及推薦安裝尺寸請查閱第 25 頁。
- Please refer to page 20 for the minimum package quantity. 最小包裝數量請查閱第 20 頁。
- Please refer to page 18 for the Part Number System. 產品編碼規則請查閱第 18 頁。


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