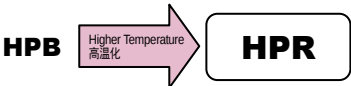


HPR Series

RADIAL LEAD TYPE, HIGH RELIABILITY  
插件式，高可靠品

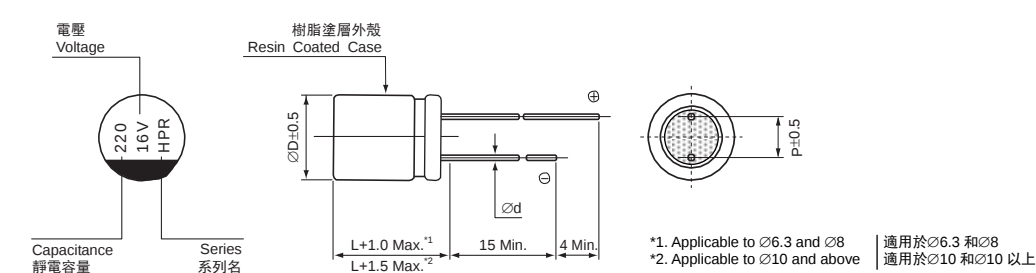
- Operating with wide temperature range -55~+125°C  
適用於 -55~+125°C 的寬溫範圍
- High reliability & high voltage are realized by hybrid electrolyte  
通過混合型電解質，提升高可靠性和高電壓化
- Load life of 4000 hours  
負荷壽命 4000 小時
- RoHS & REACH compliant, Halogen-free  
符合 RoHS 與 REACH，無鹵



SPECIFICATIONS 特性表

| Items 項目                                                                                                 | Characteristics 主要特性                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation Temperature Range 使用溫度範圍                                                                       | -55 ~ +125°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Voltage Range 額定工作電壓範圍                                                                                   | 16 ~ 100V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Capacitance Range 靜電容量範圍                                                                                 | 22 ~ 1500μF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Capacitance Tolerance 靜電容量允許偏差                                                                           | ±20% at 120Hz, 20°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Leakage Current 漏電流                                                                                      | Leakage current ≤0.01CV (after 2 minutes application of rated voltage at 20°C)<br>漏電流 ≤0.01CV (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) 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                                                                                                  | ≤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<br>Impedance Ratio 阻抗比<br>Z(-25°C)/Z(20°C) ≤1.5<br>Z(-55°C)/Z(20°C) ≤2.0                                                                                                                                                                                                                                                                                                                                                                                                    |
| Damp Heat (Steady State) 穩態濕熱                                                                            | When the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C, 85% RH, they meet the characteristics listed below.<br>在 85°C 和相對濕度 85%環境下施加額定工作電壓 2000 小時並冷卻至 20°C 後，電容器的特性符合下表的要求。<br>Capacitance Change 靜電容量變化率 Within ±30% of initial value 為初始值的±30%以內<br>Dissipation Factor 損耗角正切 200% or less of initial specified value 不大於規範值的 200%<br>ESR 阻抗值 200% or less of initial specified value 不大於規範值的 200%<br>Leakage Current 漏電流 Initial specified value or less 不大於規範值 |
| Endurance 耐久性                                                                                            | After 4000 hours application of the rated voltage at 125°C, they meet the characteristics listed below.<br>在 125°C 環境中施加額定工作電壓 4000 小時後，電容器的特性符合下表的要求。<br>Capacitance Change 靜電容量變化率 Within ±30% of initial value 為初始值的±30%以內<br>Dissipation Factor 損耗角正切 200% or less of initial specified value 不大於規範值的 200%<br>ESR 阻抗值 200% or less of initial specified value 不大於規範值的 200%<br>Leakage Current 漏電流 Initial specified value or less 不大於規範值                                                                   |
| Shelf Life 高溫貯存特性                                                                                        | After leaving capacitors under no load at 125°C for 1000 hours, they meet the specified value for Endurance characteristics listed above.<br>在 125°C 環境中無負荷放置 1000 小時後，電容器的特性符合耐久性和所列的規定值。                                                                                                                                                                                                                                                                                                                     |
| Resistance to Soldering Heat 耐焊接熱特性<br>(Please refer page 9 for soldering conditions)<br>(焊接條件請查閱第 12 頁) | After reflow soldering and restored at room temperature, they meet the characteristics listed below.<br>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。<br>Capacitance Change 靜電容量變化率 Within ±10% of initial value 初始值的±10%以內<br>Dissipation Factor 損耗角正切 130% or less of initial specified value 不大於規範值的 130%<br>ESR 阻抗值 130% or less of initial specified value 不大於規範值的 130%<br>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。                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

DRAWING 外形圖 (Unit: mm)



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

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## HPR Series

New  
新品

## □ DIMENSIONS 尺寸表 (Unit: mm)

| ØD × L | 6.3 × 7 | 6.3 × 11.5 | 8 × 12 | 10 × 12 |
|--------|---------|------------|--------|---------|
| P      | 2.5     | 2.5        | 3.5    | 5.0     |
| Ød     | 0.5     | 0.6        | 0.6    | 0.6     |
| L      | 7.0     | 11.5       | 12.0   | 12.0    |

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

| WV (V)             |                 | 16 (1C)                      |                                           |                                   |                                         |                                                        | 25 (1E)                      |                                           |                                   |                                         |                                                        |
|--------------------|-----------------|------------------------------|-------------------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------------|------------------------------|-------------------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------------|
| Cap.<br>容量<br>(µF) | Parameter<br>參數 | Case size<br>ØD×L (mm)<br>尺寸 | Dissipation<br>factor<br>(tan δ)<br>損耗角正切 | Leakage<br>current<br>(µA)<br>漏電流 | ESR (mΩ)<br>max. 20°C,<br>100KHz<br>阻抗值 | Ripple current<br>(mA rms)<br>125°C,<br>100KHz<br>紋波電流 | Case size<br>ØD×L (mm)<br>尺寸 | Dissipation<br>factor<br>(tan δ)<br>損耗角正切 | Leakage<br>current<br>(µA)<br>漏電流 | ESR (mΩ)<br>max. 20°C,<br>100KHz<br>阻抗值 | Ripple current<br>(mA rms)<br>125°C,<br>100KHz<br>紋波電流 |
| 100                | 101             |                              |                                           |                                   |                                         |                                                        | 6.3 × 7                      | 0.14                                      | 25                                | 30                                      | 1400                                                   |
| 150                | 151             |                              |                                           |                                   |                                         |                                                        | 6.3 × 7                      | 0.14                                      | 37.5                              | 30                                      | 1400                                                   |
| 220                | 221             | 6.3 × 7                      | 0.16                                      | 35.2                              | 27                                      | 1450                                                   | 6.3 × 11.5                   | 0.14                                      | 55                                | 27                                      | 1650                                                   |
| 330                | 331             | 6.3 × 11.5                   | 0.16                                      | 52.8                              | 25                                      | 1600                                                   |                              |                                           |                                   |                                         |                                                        |
| 470                | 471             |                              |                                           |                                   |                                         |                                                        | 8 × 12                       | 0.14                                      | 117.5                             | 23                                      | 1900                                                   |
| 680                | 681             |                              |                                           |                                   |                                         |                                                        | 10 × 12                      | 0.14                                      | 170                               | 15                                      | 2700                                                   |
| 820                | 821             | 8 × 12                       | 0.16                                      | 131.2                             | 20                                      | 1850                                                   |                              |                                           |                                   |                                         |                                                        |
| 1500               | 152             | 10 × 12                      | 0.16                                      | 240                               | 14                                      | 3000                                                   |                              |                                           |                                   |                                         |                                                        |

| WV (V)             |                 | 35 (1V)                      |                                           |                                   |                                         |                                                        | 50 (1H)                      |                                           |                                   |                                         |                                                        |
|--------------------|-----------------|------------------------------|-------------------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------------|------------------------------|-------------------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------------|
| Cap.<br>容量<br>(µF) | Parameter<br>參數 | Case size<br>ØD×L (mm)<br>尺寸 | Dissipation<br>factor<br>(tan δ)<br>損耗角正切 | Leakage<br>current<br>(µA)<br>漏電流 | ESR (mΩ)<br>max. 20°C,<br>100KHz<br>阻抗值 | Ripple current<br>(mA rms)<br>125°C,<br>100KHz<br>紋波電流 | Case size<br>ØD×L (mm)<br>尺寸 | Dissipation<br>factor<br>(tan δ)<br>損耗角正切 | Leakage<br>current<br>(µA)<br>漏電流 | ESR (mΩ)<br>max. 20°C,<br>100KHz<br>阻抗值 | Ripple current<br>(mA rms)<br>125°C,<br>100KHz<br>紋波電流 |
| 33                 | 330             |                              |                                           |                                   |                                         |                                                        | 6.3 × 7                      | 0.10                                      | 16.5                              | 40                                      | 1100                                                   |
| 47                 | 470             |                              |                                           |                                   |                                         |                                                        | 6.3 × 11.5                   | 0.10                                      | 23.5                              | 36                                      | 1250                                                   |
| 100                | 101             | 6.3 × 7                      | 0.12                                      | 35                                | 35                                      | 1400                                                   |                              |                                           |                                   |                                         |                                                        |
| 120                | 121             |                              |                                           |                                   |                                         |                                                        | 8 × 12                       | 0.10                                      | 60                                | 28                                      | 1400                                                   |
| 150                | 151             | 6.3 × 11.5                   | 0.12                                      | 52.5                              | 32                                      | 1650                                                   |                              |                                           |                                   |                                         |                                                        |
| 220                | 221             | 8 × 12                       | 0.12                                      | 77                                | 24                                      | 1800                                                   | 10 × 12                      | 0.10                                      | 110                               | 23                                      | 1800                                                   |
| 470                | 471             | 10 × 12                      | 0.12                                      | 164.5                             | 16                                      | 2600                                                   |                              |                                           |                                   |                                         |                                                        |

| WV (V)             |                 | 63 (1J)                      |                                           |                                   |                                         |                                                        | 80 (1K)                      |                                           |                                   |                                         |                                                        |
|--------------------|-----------------|------------------------------|-------------------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------------|------------------------------|-------------------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------------|
| Cap.<br>容量<br>(µF) | Parameter<br>參數 | Case size<br>ØD×L (mm)<br>尺寸 | Dissipation<br>factor<br>(tan δ)<br>損耗角正切 | Leakage<br>current<br>(µA)<br>漏電流 | ESR (mΩ)<br>max. 20°C,<br>100KHz<br>阻抗值 | Ripple current<br>(mA rms)<br>125°C,<br>100KHz<br>紋波電流 | Case size<br>ØD×L (mm)<br>尺寸 | Dissipation<br>factor<br>(tan δ)<br>損耗角正切 | Leakage<br>current<br>(µA)<br>漏電流 | ESR (mΩ)<br>max. 20°C,<br>100KHz<br>阻抗值 | Ripple current<br>(mA rms)<br>125°C,<br>100KHz<br>紋波電流 |
| 22                 | 220             | 6.3 × 7                      | 0.08                                      | 13.9                              | 80                                      | 900                                                    |                              |                                           |                                   |                                         |                                                        |
| 33                 | 330             | 6.3 × 11.5                   | 0.08                                      | 20.8                              | 70                                      | 1000                                                   |                              |                                           |                                   |                                         |                                                        |
| 47                 | 470             |                              |                                           |                                   |                                         |                                                        | 8 × 12                       | 0.08                                      | 37.6                              | 42                                      | 1200                                                   |
| 82                 | 820             |                              |                                           |                                   |                                         |                                                        | 10 × 12                      | 0.08                                      | 65.6                              | 33                                      | 1350                                                   |
| 100                | 101             | 8 × 12                       | 0.08                                      | 63                                | 36                                      | 1300                                                   |                              |                                           |                                   |                                         |                                                        |
| 150                | 151             | 10 × 12                      | 0.08                                      | 94.5                              | 26                                      | 1600                                                   |                              |                                           |                                   |                                         |                                                        |

| WV (V)             |                 | 100 (2A)                     |                                           |                                   |                                         |                                                        |
|--------------------|-----------------|------------------------------|-------------------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------------|
| Cap.<br>容量<br>(µF) | Parameter<br>參數 | Case size<br>ØD×L (mm)<br>尺寸 | Dissipation<br>factor<br>(tan δ)<br>損耗角正切 | Leakage<br>current<br>(µA)<br>漏電流 | ESR (mΩ)<br>max. 20°C,<br>100KHz<br>阻抗值 | Ripple current<br>(mA rms)<br>125°C,<br>100KHz<br>紋波電流 |
| 47                 | 470             | 10 × 12                      | 0.08                                      | 47                                | 60                                      | 1050                                                   |

## □ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 紋波電流頻率補償係數

| Frequency 頻率   | 120Hz ≤ f ≤ 1KHz | 1KHz ≤ f ≤ 10KHz | 10KHz ≤ f ≤ 100KHz | 100KHz ≤ f ≤ 300KHz |
|----------------|------------------|------------------|--------------------|---------------------|
| Coefficient 係數 | 0.10             | 0.40             | 0.70               | 1.00                |

- Please refer to page 14 about the taped or cutting product spec. 編帶與剪腳標準請查閱第 14 頁。
- Please refer to page 13 for the minimum package quantity. 最小包裝數量請查閱第 13 頁。
- Please refer to page 11 for the Part Number System. 產品編碼規則請查閱第 11 頁。

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