

## NPH series Non-Polarized+105°C wide temperature range standard 無極性+105°C 寬溫度品

- 適用於極性反轉回路，例如：信號交連或 HI-FI 高級音響設備如喇叭等。  
NP series capacitors are suitable for crossover network for HI-FI equipment's and speakers, etc.
- 具有容量誤差小，頻率回應高之特質。  
Have excellent frequency characteristic and small deviation of Capacitance.

### Specifications

| No                        | Item                                                                                 | Performance                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
|---------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------|--------------------|---------------------------------|---------------------------|----------------------------------|----|----|-----|--------------|------|------|------|------|------|------|------|------|--------------|---|---|---|---|---|---|---|---|
| 1                         | 使用溫度範圍<br>Operating Temperature Range                                                | -40 to +105°C                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| 2                         | 定格電壓範圍<br>Rated Working Voltage Range                                                | 6.3-100V.DC                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| 3                         | 靜電容量範圍<br>Capacitance Tolerance                                                      | 0.1-1000μF                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| 4                         | 靜電容量容許差<br>Capacitance Tolerance                                                     | ±20%(at+20 °C,120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                            |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| 5                         | 洩漏電流<br>Leakage Current                                                              | After 5minutes application of rated voltage<br>I≤0.03CV or 10μA minimum at 20°C                                                                                                                                                                                                                                                                                                                                                                 |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| 6                         | 損失角<br>Dissipation Factor(tan δ)<br>(120Hz/+20°C)                                    | <table border="1"> <tr> <th>Working Voltage (V)</th><th>6.3</th><th>10</th><th>16</th><th>25</th><th>35</th><th>50</th><th>63</th><th>100</th></tr> <tr> <td>tan δ max.</td><td>0.25</td><td>0.25</td><td>0.20</td><td>0.20</td><td>0.15</td><td>0.15</td><td>0.12</td><td>0.10</td></tr> </table>                                                                                                                                              | Working Voltage (V) | 6.3                              | 10                 | 16                              | 25                        | 35                               | 50 | 63 | 100 | tan δ max.   | 0.25 | 0.25 | 0.20 | 0.20 | 0.15 | 0.15 | 0.12 | 0.10 |              |   |   |   |   |   |   |   |   |
| Working Voltage (V)       | 6.3                                                                                  | 10                                                                                                                                                                                                                                                                                                                                                                                                                                              | 16                  | 25                               | 35                 | 50                              | 63                        | 100                              |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| tan δ max.                | 0.25                                                                                 | 0.25                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.20                | 0.20                             | 0.15               | 0.15                            | 0.12                      | 0.10                             |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| 7                         | 溫度特性 (at 120 Hz)<br>Characteristics at low temperature<br>(Impedance ratio at 120Hz) | <table border="1"> <tr> <th>Working Voltage (V)</th><th>6.3</th><th>10</th><th>16</th><th>25</th><th>35</th><th>50</th><th>63</th><th>100</th></tr> <tr> <td>Z-25°C/+20°C</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td></tr> <tr> <td>Z-40°C/+20°C</td><td>8</td><td>6</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>3</td></tr> </table>                                                    | Working Voltage (V) | 6.3                              | 10                 | 16                              | 25                        | 35                               | 50 | 63 | 100 | Z-25°C/+20°C | 4    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | Z-40°C/+20°C | 8 | 6 | 4 | 4 | 4 | 4 | 4 | 3 |
| Working Voltage (V)       | 6.3                                                                                  | 10                                                                                                                                                                                                                                                                                                                                                                                                                                              | 16                  | 25                               | 35                 | 50                              | 63                        | 100                              |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| Z-25°C/+20°C              | 4                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2                   | 2                                | 2                  | 2                               | 2                         | 2                                |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| Z-40°C/+20°C              | 8                                                                                    | 6                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4                   | 4                                | 4                  | 4                               | 4                         | 3                                |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| 8                         | 高溫負荷特性<br>High Temperature Loading                                                   | After 2000hrs. application of DC rated working voltage at +105°C,with the polarity inverted every 250hrs,capacitors meet the characteristic of following requirements. <table border="1"> <tr> <td>Leakage current</td><td>≤ the Initial specified value</td></tr> <tr> <td>Capacitance change</td><td>≤±25% of initial measured value</td></tr> <tr> <td>Dissipation Factor(tan δ)</td><td>≤200% of initial specified value</td></tr> </table> | Leakage current     | ≤ the Initial specified value    | Capacitance change | ≤±25% of initial measured value | Dissipation Factor(tan δ) | ≤200% of initial specified value |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| Leakage current           | ≤ the Initial specified value                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| Capacitance change        | ≤±25% of initial measured value                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| Dissipation Factor(tan δ) | ≤200% of initial specified value                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| 9                         | 高溫無負荷特性<br>Shelf Life                                                                | After 1000hrs. Application of DC no rated working voltage at +105°C,The capacitor shall meet the following limits: Post test requirements at + 20°C <table border="1"> <tr> <td>Leakage current</td><td>≤200% of initial specified value</td></tr> <tr> <td>Capacitance change</td><td>≤±20% of initial measured value</td></tr> <tr> <td>Dissipation Factor(tanδ)</td><td>≤200% of initial specified value</td></tr> </table>                  | Leakage current     | ≤200% of initial specified value | Capacitance change | ≤±20% of initial measured value | Dissipation Factor(tanδ)  | ≤200% of initial specified value |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| Leakage current           | ≤200% of initial specified value                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| Capacitance change        | ≤±20% of initial measured value                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |
| Dissipation Factor(tanδ)  | ≤200% of initial specified value                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                  |                    |                                 |                           |                                  |    |    |     |              |      |      |      |      |      |      |      |      |              |   |   |   |   |   |   |   |   |

Multiplier for ripple current 紋波電流補正係數

Frequency Coefficient 周波數係數

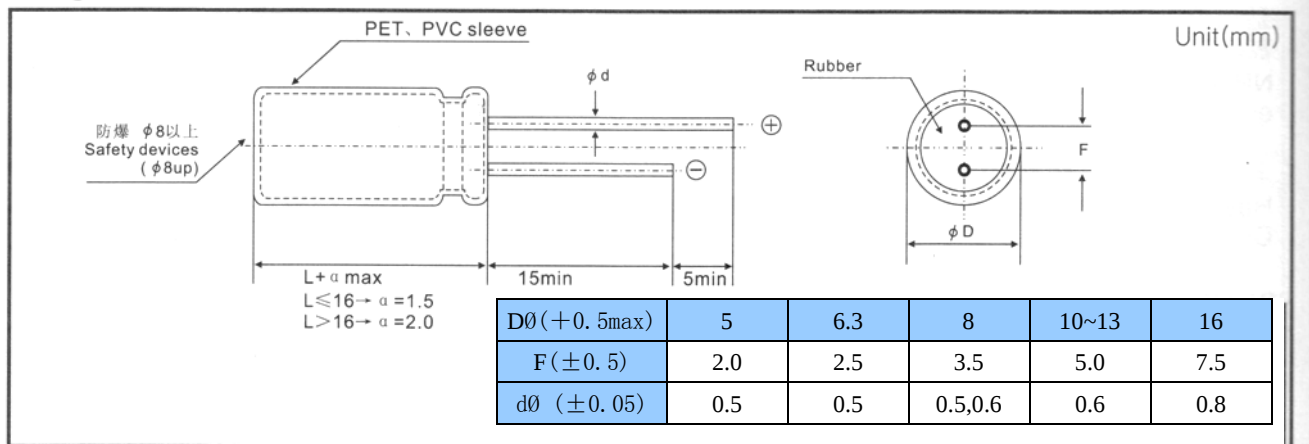
| μF \ Frequency | 60 (50) Hz | 120 H z | 400 H z | 1K H z | ≥10K H z |
|----------------|------------|---------|---------|--------|----------|
| 0.1~47         | 0.75       | 1.00    | 1.30    | 1.55   | 2.00     |
| 100~470        | 0.80       | 1.00    | 1.20    | 1.30   | 1.50     |
| 1000           | 0.85       | 1.00    | 1.10    | 1.10   | 1.15     |

Temperature Coefficient 周圍溫度係數

| Coefficient \ temperature (°C) | 105 | 85  | ≤65 |
|--------------------------------|-----|-----|-----|
| coefficient                    | 1.0 | 1.6 | 2.0 |

## NPH Series

## Diagram of Dimensions



## DIMENSIONS &amp; MAXIMUM PERMISSIBLE RIPPLE CURRENT 規格尺寸及最大允許紋波電流

| WV (SV)<br>uF | 6.3 (8) |     | 10 (13) |     | 16 (20) |     | 25 (32) |     | 35 (44) |     | 50 (63) |     | 63 (79) |     | 100 (125) |     |
|---------------|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|-----------|-----|
|               | SIZE    | RC  | SIZE    | RC  | SIZE    | RC  | SIZE    | RC  | SIZE    | RC  | SIZE    | RC  | SIZE    | RC  | SIZE      | RC  |
| 0.1           |         |     |         |     |         |     |         |     |         |     |         |     |         |     | 5×11      | 1   |
| 0.22          |         |     |         |     |         |     |         |     |         |     |         |     |         |     | 5×11      | 2   |
| 0.33          |         |     |         |     |         |     |         |     |         |     |         |     |         |     | 5×11      | 4   |
| 0.47          |         |     |         |     |         |     |         |     |         |     | 5×11    | 8   |         |     | 5×11      | 10  |
| 1             |         |     |         |     |         |     |         |     |         |     | 5×11    | 10  |         |     | 5×11      | 15  |
| 2.2           |         |     |         |     |         |     |         |     |         |     | 5×11    | 18  | 6.3×11  | 25  | 6.3×11    | 20  |
| 3.3           |         |     |         |     |         |     |         |     |         |     | 5×11    | 20  | 6.3×11  | 30  | 8×12      | 30  |
| 4.7           |         |     |         |     |         |     | 5×11    | 20  | 5×11    | 25  | 6.3×11  | 28  | 8×12    | 52  | 8×12      | 35  |
| 10            |         |     |         |     | 5×11    | 30  | 5×11    | 34  | 6.3×11  | 40  | 8×12    | 50  | 10×16   | 90  | 10×13     | 60  |
| 22            |         |     | 5×11    | 40  | 6.3×11  | 50  | 6.3×11  | 55  | 8×12    | 65  | 10×13   | 80  | 10×20   | 120 | 10×20     | 110 |
| 33            | 5×11    | 45  | 6.3×11  | 55  | 6.3×11  | 60  | 8×12    | 75  | 10×13   | 85  | 10×16   | 100 | 10×20   | 150 | 13×20     | 160 |
| 47            | 6.3×11  | 60  | 6.3×11  | 65  | 8×12    | 85  | 10×13   | 90  | 10×16   | 100 | 10×20   | 140 | 13×25   | 270 | 13×25     | 200 |
| 100           | 8×12    | 100 | 10×13   | 120 | 10×13   | 130 | 10×16   | 150 | 10×20   | 190 | 13×25   | 260 | 16×32   | 480 |           |     |
| 220           | 10×13   | 160 | 10×16   | 200 | 10×20   | 270 | 13×20   | 300 | 13×25   | 350 | 16×25   | 440 |         |     |           |     |
| 330           | 10×16   | 220 | 10×20   | 270 | 13×20   | 340 | 13×25   | 400 | 16×25   | 480 |         |     |         |     |           |     |
| 470           | 10×20   | 300 | 13×20   | 360 | 13×25   | 450 | 16×25   | 520 |         |     |         |     |         |     |           |     |
| 1000          | 13×25   | 540 | 16×25   | 650 | 16×25   | 730 |         |     |         |     |         |     |         |     |           |     |

Case size ØD×L (mm); Ripple current (mA rms) at 105°C, 120Hz