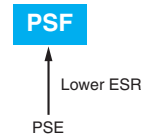


NPCAP™-PSF Series

- Super low ESR, high ripple current capability
- ESR 5mΩ max. (2 to 4V<sub>dc</sub>)
- Longer life (20,000 hours at 105°C)
- Rated voltage range : 2 to 16V<sub>dc</sub>
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free



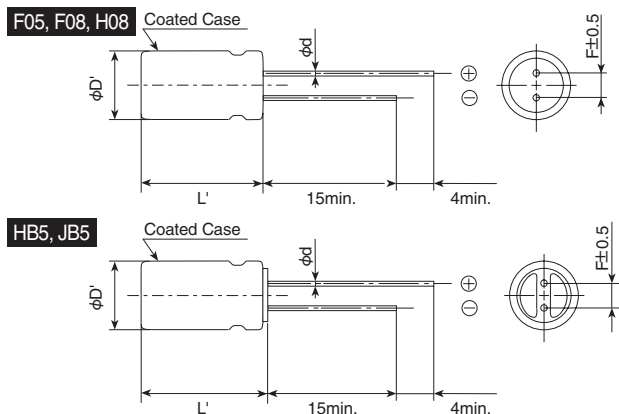
◆ SPECIFICATIONS

| Items   | Characteristics  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
|---|--|----------------------------------|-----------------------|--------------------|-----------------------------|--------------|---------------------------------------|----------------------------------|--|-----------------|-------------------------------|-----|----|------------|-----------------------|--------------------|-----------------------------|--------------|-------------------------------|-----|--|-----------------|-------------------------------|
| Category  |  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Temperature Range                                     | -55 to +105°C  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Rated Voltage Range                                   | 2 to 16V <sub>dc</sub>   |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Capacitance Tolerance                                 | ±20%(M) (at 20°C, 120Hz)   |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Leakage Current<br>*Note                              | Shall not exceed values shown in STANDARD RATINGS. (at 20°C after 2 minutes)   |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Dissipation Factor (tan δ)                            | 0.10 max. (at 20°C, 120Hz)   |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Low Temperature Characteristics (Max.Impedance Ratio) | Z(-25°C)/Z(+20°C) ≤ 1.15<br>Z(-55°C)/Z(+20°C) ≤ 1.25 (at 100kHz)   |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Endurance   | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 20,000 hours at 105°C.<br><table border="1"> <tr><td>Appearance</td><td>No significant damage</td></tr> <tr><td>Capacitance change</td><td>≤ ±20% of the initial value</td></tr> <tr><td>D.F. (tan δ)</td><td>≤ 150% of the initial specified value</td></tr> <tr><td>ESR</td><td>≤ 150% of the initial specified value</td></tr> <tr><td>Leakage current</td><td>≤ The initial specified value</td></tr> </table>   | Appearance                       | No significant damage | Capacitance change | ≤ ±20% of the initial value | D.F. (tan δ) | ≤ 150% of the initial specified value | ESR                              | ≤ 150% of the initial specified value  | Leakage current | ≤ The initial specified value |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Appearance  | No significant damage  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Capacitance change                                    | ≤ ±20% of the initial value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| D.F. (tan δ)  | ≤ 150% of the initial specified value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| ESR   | ≤ 150% of the initial specified value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Leakage current                                       | ≤ The initial specified value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Bias Humidity Test                                    | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to DC voltage at 60°C, 90 to 95% RH for 1,000 hours.<br><table border="1"> <tr><td>Appearance</td><td>No significant damage</td></tr> <tr><td>Capacitance change</td><td>≤ ±20% of the initial value</td></tr> <tr><td>D.F. (tan δ)</td><td>≤ The initial specified value</td></tr> <tr><td>ESR</td><td>2 to 6.3V<sub>dc</sub> : ≤ The initial specified value<br/>16V<sub>dc</sub> : ≤ 150% of the initial specified value</td></tr> <tr><td>Leakage current</td><td>≤ The initial specified value</td></tr> </table>  | Appearance                       | No significant damage | Capacitance change | ≤ ±20% of the initial value | D.F. (tan δ) | ≤ The initial specified value         | ESR                              | 2 to 6.3V <sub>dc</sub> : ≤ The initial specified value<br>16V <sub>dc</sub> : ≤ 150% of the initial specified value | Leakage current | ≤ The initial specified value |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Appearance  | No significant damage  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Capacitance change                                    | ≤ ±20% of the initial value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| D.F. (tan δ)  | ≤ The initial specified value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| ESR   | 2 to 6.3V <sub>dc</sub> : ≤ The initial specified value<br>16V <sub>dc</sub> : ≤ 150% of the initial specified value   |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Leakage current                                       | ≤ The initial specified value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Surge Voltage Test                                    | The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105°C for 30 seconds through a protective resistor(R=1kΩ) and discharge for 5 minutes 30 seconds.<br><table border="1"> <tr><td>Rated voltage (V<sub>dc</sub>)</td><td>2.0</td><td>2.5</td><td>4.0</td><td>6.3</td><td>16</td></tr> <tr><td>Surge voltage (V<sub>dc</sub>)</td><td>2.3</td><td>2.9</td><td>4.6</td><td>7.2</td><td>18</td></tr> </table><br><table border="1"> <tr><td>Appearance</td><td>No significant damage</td></tr> <tr><td>Capacitance change</td><td>≤ ±20% of the initial value</td></tr> <tr><td>D.F. (tan δ)</td><td>≤ The initial specified value</td></tr> <tr><td>ESR</td><td>2 to 6.3V<sub>dc</sub> : ≤ The initial specified value<br/>16V<sub>dc</sub> : ≤ 150% of the initial specified value</td></tr> <tr><td>Leakage current</td><td>≤ The initial specified value</td></tr> </table> | Rated voltage (V <sub>dc</sub> ) | 2.0                   | 2.5                | 4.0                         | 6.3          | 16                                    | Surge voltage (V <sub>dc</sub> ) | 2.3  | 2.9             | 4.6                           | 7.2 | 18 | Appearance | No significant damage | Capacitance change | ≤ ±20% of the initial value | D.F. (tan δ) | ≤ The initial specified value | ESR | 2 to 6.3V <sub>dc</sub> : ≤ The initial specified value<br>16V <sub>dc</sub> : ≤ 150% of the initial specified value | Leakage current | ≤ The initial specified value |
| Rated voltage (V <sub>dc</sub> )                      | 2.0  | 2.5                              | 4.0                   | 6.3                | 16                          |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Surge voltage (V <sub>dc</sub> )                      | 2.3  | 2.9                              | 4.6                   | 7.2                | 18                          |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Appearance  | No significant damage  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Capacitance change                                    | ≤ ±20% of the initial value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| D.F. (tan δ)  | ≤ The initial specified value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| ESR   | 2 to 6.3V <sub>dc</sub> : ≤ The initial specified value<br>16V <sub>dc</sub> : ≤ 150% of the initial specified value   |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |
| Leakage current                                       | ≤ The initial specified value  |                                  |                       |                    |                             |              |                                       |                                  |  |                 |                               |     |    |            |                       |                    |                             |              |                               |     |  |                 |                               |

\*Note : If any doubt arises, measure the leakage current after the following voltage treatment.  
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105°C.

◆ DIMENSIONS [mm]

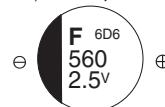
● Terminal Code : E



| Size code | F05   | F08 | H08 | HB5 | JB5  |
|-----------|---|-----|-----|-----|------|
| φD        | 6.3   |     | 8.0 |     | 10.0 |
| φd        | 0.45  |     | 0.6 |     |      |
| F         | 2.5   |     | 3.5 |     | 5.0  |
| φD'       | φD+0.5max.  |     |     |     |      |
| Note 1    | L + 1.2max. for 6.3V, 8.0V, 10V, 16V, 18V. F1.5max. |     |     |     |      |

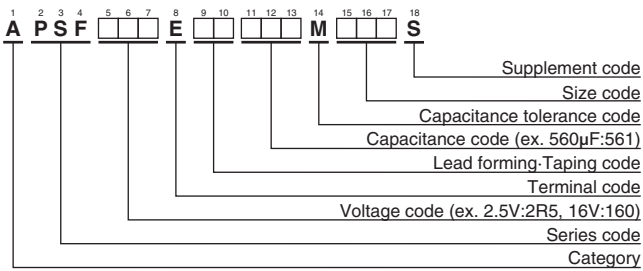
◆ MARKING

EX) 2.5V560μF



## NPCAP™-PSF Series

### ◆PART NUMBERING SYSTEM



Please refer to "Product code guide (conductive polymer type)"

### ◆STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (µF) | Case size φD×L(mm) | Leakage current (µA max./after 2min.) | ESR (mΩ max./20°C, 100k to 300kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part No.           |
|-----------------------|----------|--------------------|---------------------------------------|------------------------------------|--|--------------------|
| 2                     | 1,000    | 6.3×8              | 500                                   | 5                                  | 5,900                                      | APSF2R0E□□102MF08S |
|                       | 330      | 6.3×8              | 500                                   | 5                                  | 5,900                                      | APSF2R5E□□331MF08S |
| 2.5                   | 470      | 6.3×8              | 500                                   | 5                                  | 5,900                                      | APSF2R5E□□471MF08S |
|                       | 560      | 6.3×8              | 500                                   | 5                                  | 5,900                                      | APSF2R5E□□561MF08S |
|                       | 820      | 6.3×8              | 500                                   | 5                                  | 5,900                                      | APSF2R5E□□821MF08S |
|                       | 1,200    | 6.3×8              | 1,200                                 | 5                                  | 5,900                                      | APSF2R5E□□122MF08S |
|                       | 1,600    | 8×8                | 800                                   | 5                                  | 6,100                                      | APSF2R5E□□162MH08S |
|                       | 470      | 6.3×8              | 500                                   | 5                                  | 5,900                                      | APSF4R0E□□471MF08S |
| 4                     | 560      | 6.3×8              | 500                                   | 5                                  | 5,900                                      | APSF4R0E□□561MF08S |
|                       | 820      | 6.3×8              | 1,030                                 | 8                                  | 4,700                                      | APSF6R3E□□821MF08S |
| 16                    | 100      | 6.3×5              | 500                                   | 24                                 | 2,490                                      | APSF160E□□101MF05S |
|                       | 270      | 8×8                | 864                                   | 10                                 | 5,000                                      | APSF160E□□271MH08S |
|                       | 270      | 8×11.5             | 864                                   | 11                                 | 5,080                                      | APSF160E□□271MHB5S |
|                       | 330      | 8×8                | 1,050                                 | 13                                 | 4,700                                      | APSF160E□□331MH08S |
|                       | 470      | 8×11.5             | 1,500                                 | 11                                 | 5,400                                      | APSF160E□□471MHB5S |
|                       | 470      | 10×11.5            | 1,500                                 | 10                                 | 6,100                                      | APSF160E□□471MJB5S |

□□ : Enter the appropriate lead forming or taping code.

### ◆RATED RIPPLE CURRENT MULTIPLIERS

#### ● Frequency Multipliers

| Frequency(Hz)    | 120  | 1k   | 10k  | 50k  | 100k to 500k |
|------------------|------|------|------|------|--------------|
| Radial lead type | 0.10 | 0.35 | 0.60 | 0.80 | 1.00         |



- Always read "Notes on Use" before using the product in order to enable you to use the product correctly and prevent any faults and accidents from occurring.
- Request the Product Specification on the product of NIPPON CHEMI-CON CORPORATION to refer to it as well as this brochure prior to the order of the products. Some specific notes on use of the ordered product may be described in the specifications.
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[Part Numbering System](#)

[Part Numbering System \(Appendix\)](#)

[Standardization](#)

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[Environmental Measures](#)

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[Precautions and Guidelines](#)

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- ✓ Shortage Management
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