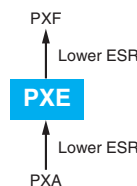


# NPCAP™-PXE Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.  
(ESR and rated ripple current values are improved from PXA series.)
- Rated voltage range : 2.5 to 16V<sub>dc</sub>, Capacitance range : 33 to 2,700μF
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- RoHS Compliant
- Halogen Free



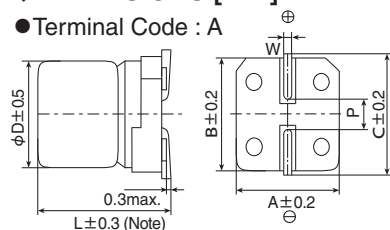
## SPECIFICATIONS

| Items                                                  | Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------|--------------------|-----------------------------|-----------|---------------------------------------|-----|---------------------------------------|-----------------|-------------------------------|
| Category                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Temperature Range                                      | -55 to +105°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Rated Voltage Range                                    | 2.5 to 16V <sub>dc</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Capacitance Tolerance                                  | ±20% (M) (at 20°C, 120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Surge Voltage                                          | Rated voltage × 1.15 (at 105°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Leakage Current                                        | Shall not exceed values shown in STANDARD RATINGS. (at 20°C after 2 minutes)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Dissipation Factor (tanδ)                              | 0.12 max. (at 20°C, 120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Low Temperature Characteristics (Max. Impedance Ratio) | $Z(-25^{\circ}\text{C})/Z(+20^{\circ}\text{C}) \leq 1.15$<br>$Z(-55^{\circ}\text{C})/Z(+20^{\circ}\text{C}) \leq 1.25$ (at 100kHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Endurance                                              | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 105°C. <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>DF (tanδ)</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 | DF (tanδ) | ≤ 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| DF (tanδ)                                              | ≤ 150% of the initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| ESR                                                    | ≤ 150% of the initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Leakage current                                        | ≤ The initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Bias Humidity                                          | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to the DC rated voltage at 60°C, 90 to 95% RH for 1,000 hours. <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>DF (tanδ)</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 | DF (tanδ) | ≤ 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| DF (tanδ)                                              | ≤ 150% of the initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| ESR                                                    | ≤ 150% of the initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Leakage current                                        | ≤ The initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Surge Voltage                                          | 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. <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>DF (tanδ)</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 | DF (tanδ) | ≤ 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| DF (tanδ)                                              | ≤ 150% of the initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| ESR                                                    | ≤ 150% of the initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Leakage current                                        | ≤ The initial specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |
| Failure Rate                                           | 0.5% per 1,000 hours maximum (Confidence level 60% at 105°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                       |                    |                             |           |                                       |     |                                       |                 |                               |

\*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 : A



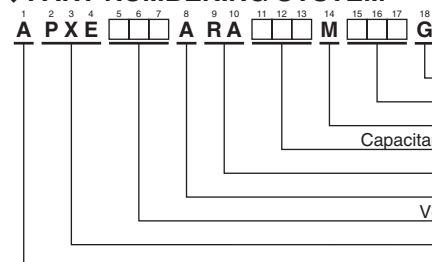
| Size Code | φD  | L    | A    | B    | C    | W          | P   |
|-----------|-----|------|------|------|------|------------|-----|
| E61       | 5   | 5.8  | 5.3  | 5.3  | 5.9  | 0.5 to 0.8 | 1.4 |
| F61       | 6.3 | 5.8  | 6.6  | 6.6  | 7.2  | 0.5 to 0.8 | 1.9 |
| F80       | 6.3 | 7.7  | 6.6  | 6.6  | 7.2  | 0.5 to 0.8 | 1.9 |
| H70       | 8   | 6.7  | 8.3  | 8.3  | 9.0  | 0.7 to 1.1 | 3.1 |
| H80       | 8   | 7.7  | 8.3  | 8.3  | 9.0  | 0.7 to 1.1 | 3.1 |
| HA0       | 8   | 10.0 | 8.3  | 8.3  | 9.0  | 0.7 to 1.1 | 3.1 |
| HC0       | 8   | 12.0 | 8.3  | 8.3  | 9.0  | 0.7 to 1.1 | 3.1 |
| J80       | 10  | 7.7  | 10.3 | 10.3 | 11.0 | 0.7 to 1.1 | 4.5 |
| JA0       | 10  | 10.0 | 10.3 | 10.3 | 11.0 | 0.7 to 1.1 | 4.5 |
| JC0       | 10  | 12.2 | 10.3 | 10.3 | 11.0 | 0.7 to 1.1 | 4.5 |

## MARKING

EX) 2.5V390μF



## PART NUMBERING SYSTEM



Supplement code

Size code

Capacitance tolerance code

Capacitance code (ex. 47μF:470,100μF:101)

Taping code

Terminal code

Voltage code (ex. 6.3V:6R3,10V:100)

Series code

Category

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

## ◆STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size code | Leakage current (μAmax/after 2min.) | ESR (mΩmax/20°C, 100k to 300kHz) | Rated ripple current (mA <sub>rms</sub> /105°C, 100kHz) | Part No.           |
|----------|----------|-----------|-------------------------------------|----------------------------------|---------------------------------------------------------|--------------------|
| 2.5      | 180      | E61       | 90.0                                | 21                               | 2,670                                                   | APXE2R5ARA181ME61G |
|          | 390      | F61       | 195                                 | 15                               | 3,160                                                   | APXE2R5ARA391MF61G |
|          | 470      | F80       | 235                                 | 13                               | 3,600                                                   | APXE2R5ARA471MF80G |
|          | 560      | F80       | 280                                 | 13                               | 3,600                                                   | APXE2R5ARA561MF80G |
|          | 560      | H70       | 280                                 | 13                               | 4,100                                                   | APXE2R5ARA561MH70G |
|          | 680      | H70       | 340                                 | 13                               | 4,100                                                   | APXE2R5ARA681MH70G |
|          | 820      | H80       | 410                                 | 12                               | 4,260                                                   | APXE2R5ARA821MH80G |
|          | 820      | HC0       | 410                                 | 9                                | 5,400                                                   | APXE2R5ARA821MHC0G |
|          | 1,000    | H80       | 500                                 | 12                               | 4,260                                                   | APXE2R5ARA102MH80G |
|          | 1,200    | J80       | 600                                 | 13                               | 4,450                                                   | APXE2R5ARA122MJ80G |
|          | 1,500    | HA0       | 750                                 | 10                               | 5,220                                                   | APXE2R5ARA152MHA0G |
|          | 1,500    | HC0       | 750                                 | 9                                | 5,400                                                   | APXE2R5ARA152MHC0G |
| 4        | 2,200    | JA0       | 1,100                               | 10                               | 5,500                                                   | APXE2R5ARA222MJA0G |
|          | 2,700    | JC0       | 1,350                               | 9                                | 5,600                                                   | APXE2R5ARA272MJC0G |
|          | 100      | E61       | 80.0                                | 22                               | 2,610                                                   | APXE4R0ARA101ME61G |
|          | 150      | E61       | 120                                 | 22                               | 2,610                                                   | APXE4R0ARA151ME61G |
|          | 270      | F61       | 216                                 | 15                               | 3,160                                                   | APXE4R0ARA271MF61G |
|          | 330      | F61       | 264                                 | 15                               | 3,160                                                   | APXE4R0ARA331MF61G |
|          | 390      | F80       | 312                                 | 14                               | 3,470                                                   | APXE4R0ARA391MF80G |
|          | 470      | H70       | 376                                 | 14                               | 3,950                                                   | APXE4R0ARA471MH70G |
|          | 560      | H70       | 448                                 | 14                               | 3,950                                                   | APXE4R0ARA561MH70G |
|          | 680      | H80       | 544                                 | 13                               | 3,950                                                   | APXE4R0ARA681MH80G |
|          | 1,000    | HA0       | 800                                 | 10                               | 5,220                                                   | APXE4R0ARA102MHA0G |
|          | 1,000    | J80       | 800                                 | 14                               | 4,300                                                   | APXE4R0ARA102MJ80G |
| 6.3      | 1,200    | HC0       | 960                                 | 9                                | 5,400                                                   | APXE4R0ARA122MHC0G |
|          | 1,200    | JA0       | 960                                 | 10                               | 5,500                                                   | APXE4R0ARA122MJA0G |
|          | 1,500    | JA0       | 1,200                               | 10                               | 5,500                                                   | APXE4R0ARA152MJA0G |
|          | 1,800    | JA0       | 1,440                               | 10                               | 5,500                                                   | APXE4R0ARA182MJA0G |
|          | 1,800    | JC0       | 1,440                               | 9                                | 5,600                                                   | APXE4R0ARA182MJC0G |
|          | 100      | E61       | 126                                 | 24                               | 2,500                                                   | APXE6R3ARA101ME61G |
|          | 120      | E61       | 151                                 | 24                               | 2,500                                                   | APXE6R3ARA121ME61G |
|          | 220      | F61       | 277                                 | 15                               | 3,160                                                   | APXE6R3ARA221MF61G |
|          | 270      | F80       | 340                                 | 14                               | 3,470                                                   | APXE6R3ARA271MF80G |
|          | 330      | F80       | 415                                 | 14                               | 3,470                                                   | APXE6R3ARA331MF80G |
|          | 330      | H70       | 415                                 | 14                               | 3,950                                                   | APXE6R3ARA331MH70G |
|          | 390      | H70       | 491                                 | 14                               | 3,950                                                   | APXE6R3ARA391MH70G |
| 10       | 470      | H80       | 592                                 | 13                               | 3,950                                                   | APXE6R3ARA471MH80G |
|          | 820      | HA0       | 1,030                               | 12                               | 4,770                                                   | APXE6R3ARA821MHA0G |
|          | 820      | HC0       | 1,030                               | 10                               | 5,150                                                   | APXE6R3ARA821MHC0G |
|          | 820      | J80       | 1,030                               | 14                               | 4,300                                                   | APXE6R3ARA821MJ80G |
|          | 1,200    | JA0       | 1,510                               | 12                               | 5,025                                                   | APXE6R3ARA122MJA0G |
|          | 1,500    | JA0       | 1,890                               | 12                               | 5,025                                                   | APXE6R3ARA152MJA0G |
|          | 1,500    | JC0       | 1,890                               | 10                               | 5,500                                                   | APXE6R3ARA152MJC0G |
|          | 47       | E61       | 94.0                                | 28                               | 2,310                                                   | APXE100ARA470ME61G |
|          | 56       | E61       | 112                                 | 28                               | 2,310                                                   | APXE100ARA560ME61G |
|          | 68       | E61       | 136                                 | 28                               | 2,310                                                   | APXE100ARA680ME61G |
|          | 120      | F61       | 240                                 | 25                               | 2,530                                                   | APXE100ARA121MF61G |
|          | 150      | F80       | 300                                 | 21                               | 2,880                                                   | APXE100ARA151MF80G |
| 16       | 220      | H70       | 440                                 | 21                               | 3,220                                                   | APXE100ARA221MH70G |
|          | 270      | H70       | 540                                 | 21                               | 3,220                                                   | APXE100ARA271MH70G |
|          | 330      | H80       | 660                                 | 19                               | 3,390                                                   | APXE100ARA331MH80G |
|          | 390      | HA0       | 780                                 | 17                               | 4,000                                                   | APXE100ARA391MHA0G |
|          | 470      | J80       | 940                                 | 19                               | 3,800                                                   | APXE100ARA471MJ80G |
|          | 680      | JA0       | 1,360                               | 13                               | 4,820                                                   | APXE100ARA681MJA0G |
|          | 33       | E61       | 105                                 | 35                               | 2,070                                                   | APXE160ARA330ME61G |
|          | 39       | E61       | 124                                 | 35                               | 2,070                                                   | APXE160ARA390ME61G |
|          | 68       | F61       | 217                                 | 28                               | 2,390                                                   | APXE160ARA680MF61G |
|          | 82       | F80       | 262                                 | 24                               | 2,700                                                   | APXE160ARA820MF80G |
|          | 100      | F80       | 320                                 | 24                               | 2,700                                                   | APXE160ARA101MF80G |
|          | 100      | H70       | 320                                 | 24                               | 3,010                                                   | APXE160ARA101MH70G |
|          | 120      | H70       | 384                                 | 24                               | 3,010                                                   | APXE160ARA121MH70G |
|          | 150      | H80       | 480                                 | 22                               | 3,150                                                   | APXE160ARA151MH80G |
|          | 180      | HA0       | 576                                 | 18                               | 3,890                                                   | APXE160ARA181MHA0G |
|          | 220      | HA0       | 704                                 | 18                               | 3,890                                                   | APXE160ARA221MHA0G |
|          | 220      | J80       | 704                                 | 22                               | 3,450                                                   | APXE160ARA221MJ80G |
|          | 330      | JA0       | 1,050                               | 16                               | 4,350                                                   | APXE160ARA331MJA0G |