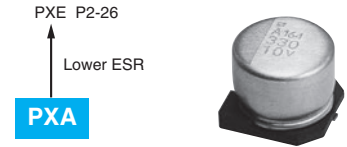


# NPCAP™-PXA Series

- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte
- Rated voltage range : 2.5 to 25V<sub>dc</sub>, case size range : φ5×5.7L to φ10×12.2L
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- Halogen Free



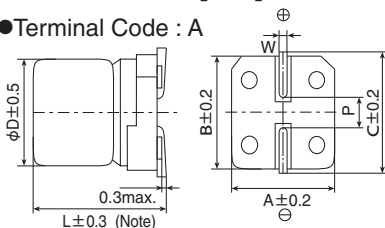
## ◆ SPECIFICATIONS

| Items  | Characteristics  |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
|--|--|------------|-----------------------|--------------------|-----------------------------|--------------|---------------------------------------|-----|---------------------------------------|-----------------|-------------------------------|
| Category   | -55 to +105°C  |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
| Temperature Range                                      |  |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
| Rated Voltage Range                                    | 2.5 to 25V <sub>dc</sub>   |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
| Capacitance Tolerance                                  | ±20% (M) (at 20°C, 120Hz)  |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
| Surge Voltage  | Rated voltage × 1.15 (Rated voltage 2.5 to 20V <sub>dc</sub> , 25V <sub>dc</sub> ) / Rated voltage × 1.00 (Rated voltage 23V <sub>dc</sub> ) (at 105°C)  |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
| Leakage Current  | Shall not exceed values shown in STANDARD RATINGS. (at 20°C after 2 minutes)   |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
| Dissipation Factor (tan δ)                             | 0.12 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 15,000 hours (F45 : 3,000 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>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  | 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 (F45 : 500 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>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  |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
| 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>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  |            |                       |                    |                             |              |                                       |     |                                       |                 |                               |
| 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



Note : L+0.1/-0.2 for F45  
L±0.5 for HC0 and JC0

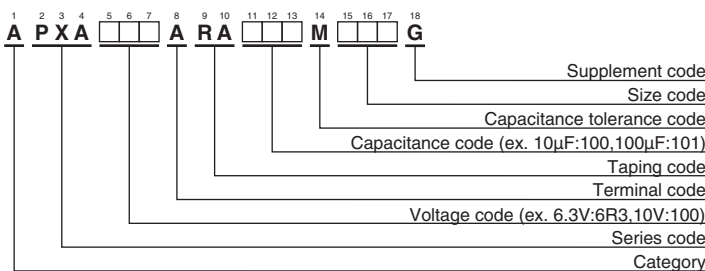
| Size code | φD  | L    | A    | B    | C    | W          | P   |
|-----------|-----|------|------|------|------|------------|-----|
| E60       | 5   | 5.7  | 5.3  | 5.3  | 5.9  | 0.5 to 0.8 | 1.4 |
| F45       | 6.3 | 4.4  | 6.6  | 6.6  | 7.2  | 0.5 to 0.8 | 1.9 |
| F60       | 6.3 | 5.7  | 6.6  | 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 |
| 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 |
| JC0       | 10  | 12.2 | 10.3 | 10.3 | 11.0 | 0.7 to 1.1 | 4.5 |

## ◆ MARKING

EX) 16V39μF



## ◆ PART NUMBERING SYSTEM



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

NPCAP™-PXA Series

◆STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF) | Size code | Leakage current (μA max./ after 2 min.) | ESR (mΩ max./ 20°C, 100k to 300kHz) | Rated ripple current (mA rms/105°C, 100kHz) | Part No.           | WV (V <sub>dc</sub> ) | Cap (μF) | Size code | Leakage current (μA max./ after 2 min.) | ESR (mΩ max./ 20°C, 100k to 300kHz) | Rated ripple current (mA rms/105°C, 100kHz) | Part No.           |                    |
|-----------------------|----------|-----------|---|-------------------------------------|---|--------------------|-----------------------|----------|-----------|---|-------------------------------------|---|--------------------|--------------------|
| 2.5                   | 220      | F60       | 110                                     | 25                                  | 2,500                                       | APXA2R5ARA221MF60G | 10                    | 33       | E60       | 66.0                                    | 40                                  | 1,270                                       | APXA100ARA330ME60G |                    |
|                       | 560      | H70       | 280                                     | 23                                  | 3,100                                       | APXA2R5ARA561MH70G |                       | 47       | E60       | 94.0                                    | 40                                  | 1,270                                       | APXA100ARA470ME60G |                    |
|                       | 680      | HCO       | 340                                     | 12                                  | 4,770                                       | APXA2R5ARA681MHC0G |                       | 47       | F45       | 235                                     | 41                                  | 1,560                                       | APXA100ARA470MF45G |                    |
|                       | 1,000    | J80       | 500                                     | 19                                  | 4,240                                       | APXA2R5ARA102MJ80G |                       | 47       | F60       | 94.0                                    | 31                                  | 2,250                                       | APXA100ARA470MF60G |                    |
|                       | 1,500    | JCO       | 750                                     | 10                                  | 5,500                                       | APXA2R5ARA152MJC0G |                       | 56       | F60       | 112                                     | 31                                  | 2,250                                       | APXA100ARA560MF60G |                    |
| 4                     | 100      | F60       | 80.0                                    | 26                                  | 2,450                                       | APXA4R0ARA101MF60G |                       | 120      | H70       | 240                                     | 27                                  | 2,800                                       | APXA100ARA121MH70G |                    |
|                       | 120      | F45       | 240                                     | 38                                  | 1,710                                       | APXA4R0ARA121MF45G |                       | 150      | H70       | 300                                     | 27                                  | 2,800                                       | APXA100ARA151MH70G |                    |
|                       | 150      | E60       | 120                                     | 30                                  | 1,490                                       | APXA4R0ARA151ME60G |                       | 270      | HCO       | 540                                     | 14                                  | 4,420                                       | APXA100ARA271MHC0G |                    |
|                       | 150      | F60       | 120                                     | 26                                  | 2,450                                       | APXA4R0ARA151MF60G |                       | 270      | J80       | 540                                     | 24                                  | 3,770                                       | APXA100ARA271MJ80G |                    |
|                       | 220      | H70       | 176                                     | 25                                  | 3,020                                       | APXA4R0ARA221MH70G |                       | 330      | HCO       | 660                                     | 14                                  | 4,420                                       | APXA100ARA331MHC0G |                    |
|                       | 330      | H70       | 264                                     | 25                                  | 3,020                                       | APXA4R0ARA331MH70G |                       | 330      | J80       | 660                                     | 24                                  | 3,770                                       | APXA100ARA331MJ80G |                    |
|                       | 470      | J80       | 376                                     | 20                                  | 4,130                                       | APXA4R0ARA471MJ80G |                       | 470      | JCO       | 940                                     | 12                                  | 5,300                                       | APXA100ARA471MJC0G |                    |
|                       | 560      | HCO       | 448                                     | 12                                  | 4,770                                       | APXA4R0ARA561MHC0G |                       | 560      | JCO       | 1,120                                   | 12                                  | 5,300                                       | APXA100ARA561MJC0G |                    |
|                       | 680      | J80       | 544                                     | 20                                  | 4,130                                       | APXA4R0ARA681MJ80G |                       | 16       | 22        | E60                                     | 70.4                                | 45  | 1,210              | APXA160ARA220ME60G |
|                       | 820      | JCO       | 656                                     | 10                                  | 5,500                                       | APXA4R0ARA821MJC0G |                       |          | 22        | F45                                     | 176                                 | 45  | 1,490              | APXA160ARA220MF45G |
| 1,200                 | JCO      | 960       | 10                                      | 5,500                               | APXA4R0ARA122MJC0G                          | 33                 | F60                   |          | 105       | 37                                      | 2,050                               | APXA160ARA330MF60G                          |                    |                    |
| 6.3                   | 47       | E60       | 59.2                                    | 35                                  | 1,380                                       | APXA6R3ARA470ME60G | 39                    |          | F60       | 124                                     | 37                                  | 2,050                                       | APXA160ARA390MF60G |                    |
|                       | 68       | F60       | 85.6                                    | 27                                  | 2,400                                       | APXA6R3ARA680MF60G | 82                    |          | H70       | 262                                     | 30                                  | 2,700                                       | APXA160ARA820MH70G |                    |
|                       | 82       | F45       | 258                                     | 40                                  | 1,670                                       | APXA6R3ARA820MF45G | 150                   |          | J80       | 480                                     | 26                                  | 3,430                                       | APXA160ARA151MJ80G |                    |
|                       | 82       | F60       | 103                                     | 27                                  | 2,400                                       | APXA6R3ARA820MF60G | 180                   |          | HCO       | 576                                     | 16                                  | 4,360                                       | APXA160ARA181MHC0G |                    |
|                       | 100      | E60       | 126                                     | 35                                  | 1,380                                       | APXA6R3ARA101ME60G | 180                   |          | J80       | 576                                     | 26                                  | 3,430                                       | APXA160ARA181MJ80G |                    |
|                       | 100      | F45       | 315                                     | 40                                  | 1,670                                       | APXA6R3ARA101MF45G | 220                   |          | JCO       | 704                                     | 14                                  | 5,050                                       | APXA160ARA221MJC0G |                    |
|                       | 100      | F60       | 126                                     | 27                                  | 2,400                                       | APXA6R3ARA101MF60G | 330                   |          | JCO       | 1,050                                   | 14                                  | 5,050                                       | APXA160ARA331MJC0G |                    |
|                       | 120      | F60       | 151                                     | 27                                  | 2,400                                       | APXA6R3ARA121MF60G | 20                    | 15       | F45       | 150                                     | 57                                  | 1,300                                       | APXA200ARA150MF45G |                    |
|                       | 150      | H70       | 189                                     | 25                                  | 3,020                                       | APXA6R3ARA151MH70G |                       | 22       | F60       | 88.0                                    | 50                                  | 1,650                                       | APXA200ARA220MF60G |                    |
|                       | 220      | H70       | 277                                     | 25                                  | 3,020                                       | APXA6R3ARA221MH70G |                       | 39       | H70       | 156                                     | 45                                  | 2,000                                       | APXA200ARA390MH70G |                    |
|                       | 330      | J80       | 415                                     | 20                                  | 4,130                                       | APXA6R3ARA331MJ80G |                       | 47       | H70       | 188                                     | 45                                  | 2,000                                       | APXA200ARA470MH70G |                    |
|                       | 390      | HCO       | 491                                     | 12                                  | 4,770                                       | APXA6R3ARA391MHC0G |                       | 82       | J80       | 328                                     | 40                                  | 2,500                                       | APXA200ARA820MJ80G |                    |
|                       | 470      | HCO       | 592                                     | 12                                  | 4,770                                       | APXA6R3ARA471MHC0G |                       | 150      | JCO       | 600                                     | 20                                  | 4,320                                       | APXA200ARA151MJC0G |                    |
|                       | 470      | J80       | 592                                     | 20                                  | 4,130                                       | APXA6R3ARA471MJ80G |                       | 23       | 15        | F45                                     | 172                                 | 57  | 1,300              | APXA230ARA150MF45G |
|                       | 680      | JCO       | 856                                     | 10                                  | 5,500                                       | APXA6R3ARA681MJC0G |                       |          | 10        | F60                                     | 125                                 | 65  | 1,500              | APXA250ARA100MF60G |
| 820                   | JCO      | 1,030     | 10                                      | 5,500                               | APXA6R3ARA821MJC0G                          | 22                 |                       |          | H70       | 275                                     | 50                                  | 1,800                                       | APXA250ARA220MH70G |                    |
| 25                    |          |           |   |                                     |   |                    |                       |          | 39        | J80                                     | 487                                 | 45  | 2,100              | APXA250ARA390MJ80G |

◆RATED RIPPLE CURRENT MULTIPLIERS

● Frequency Multipliers

| Frequency (Hz) | 120  | 1k   | 10k  | 50k  | 100k to 500k |
|----------------|------|------|------|------|--------------|
| SMD type       | 0.05 | 0.30 | 0.55 | 0.70 | 1.00         |