

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_{dc}, 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



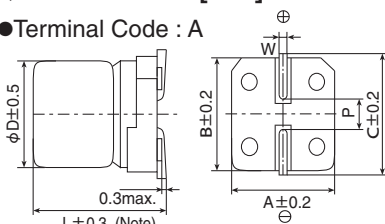
◆ SPECIFICATIONS

| Items | Characteristics | | | | | | | | | | | | | | | | | | |
|---|--|----------------------------------|-----------------------|--------------------|--------------------------------------|--------------|---------------------------------------|-----|---------------------------------------|-----------------|---|-----|-----|-----|----|----|----|----|----|
| Category | | | | | | | | | | | | | | | | | | | |
| Temperature Range | -55 to +105°C | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 2.5 to 25V _{dc} | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) | | | | | | | | | | | | | | | | | | |
| 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 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). | | | | | | | | | | | | | | | | | | |
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| Appearance | No significant damage | | | | | | | | | | | | | | | | | | |
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| 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>Rated voltage (V_{dc})</td> <td>2.5</td> <td>4.0</td> <td>6.3</td> <td>10</td> <td>16</td> <td>20</td> <td>23</td> <td>25</td> </tr> <tr> <td>Surge voltage (V_{dc})</td> <td>2.9</td> <td>4.6</td> <td>7.2</td> <td>12</td> <td>18</td> <td>23</td> <td>23</td> <td>29</td> </tr> </table> | Rated voltage (V _{dc}) | 2.5 | 4.0 | 6.3 | 10 | 16 | 20 | 23 | 25 | Surge voltage (V _{dc}) | 2.9 | 4.6 | 7.2 | 12 | 18 | 23 | 23 | 29 |
| Rated voltage (V _{dc}) | 2.5 | 4.0 | 6.3 | 10 | 16 | 20 | 23 | 25 | | | | | | | | | | | |
| Surge voltage (V _{dc}) | 2.9 | 4.6 | 7.2 | 12 | 18 | 23 | 23 | 29 | | | | | | | | | | | |
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| 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 | | | | | | | | | | | | | | | | | | |
| Soldering Heat | The following specifications shall be satisfied when the solder temperature is reduced back to 20°C to measure dip resistance after soldering has been performed under the recommended soldering conditions. | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr><td>Appearance</td><td>No significant damage</td></tr> <tr><td>Capacitance value</td><td>Within the specified tolerance range</td></tr> <tr><td>D.F. (tan δ)</td><td>≤ The initial specified value</td></tr> <tr><td>ESR</td><td>≤ The initial specified value</td></tr> <tr><td>Leakage current</td><td>≤ The initial specified value (Voltage treatment)</td></tr> </table> | Appearance | No significant damage | Capacitance value | Within the specified tolerance range | D.F. (tan δ) | ≤ The initial specified value | ESR | ≤ The initial specified value | Leakage current | ≤ The initial specified value (Voltage treatment) | | | | | | | | |
| Appearance | No significant damage | | | | | | | | | | | | | | | | | | |
| Capacitance value | Within the specified tolerance range | | | | | | | | | | | | | | | | | | |
| D.F. (tan δ) | ≤ The initial specified value | | | | | | | | | | | | | | | | | | |
| ESR | ≤ The initial specified value | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ The initial specified value (Voltage treatment) | | | | | | | | | | | | | | | | | | |
| 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 HCO and JCO

| 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 |
| HCO | 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 |
| JCO | 10 | 12.2 | 10.3 | 10.3 | 11.0 | 0.7 to 1.1 | 4.5 |

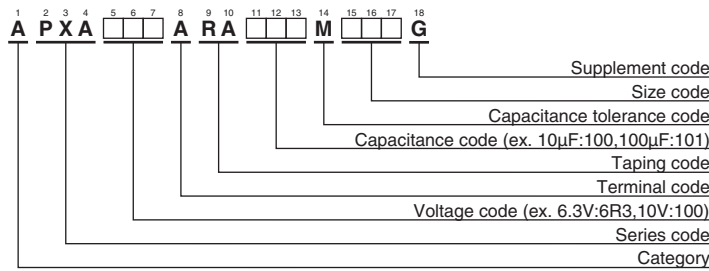
◆ MARKING

EX) 16V39μF



NPCAP™-**PXA**Series

◆PART NUMBERING SYSTEM



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

◆STANDARD RATINGS

| WV (V _{dc}) | 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 _{dc}) | 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 | APXA2R5ARA152MJCOG | | 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 | APXA100ARA471MJCOG | |
| | 560 | HCO | 448 | 12 | 4,770 | APXA4R0ARA561MHC0G | 560 | JCO | 1,120 | 12 | 5,300 | APXA100ARA561MJCOG | |
| | 680 | J80 | 544 | 20 | 4,130 | APXA4R0ARA681MJ80G | 16 | 22 | E60 | 70.4 | 45 | 1,210 | APXA160ARA220ME60G |
| | 820 | JCO | 656 | 10 | 5,500 | APXA4R0ARA821MJCOG | | 22 | F45 | 176 | 45 | 1,490 | APXA160ARA220MF45G |
| 1,200 | JCO | 960 | 10 | 5,500 | APXA4R0ARA122MJCOG | 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 | APXA160ARA221MJCOG |
| | 100 | F60 | 126 | 27 | 2,400 | APXA6R3ARA101MF60G | | 330 | JCO | 1,050 | 14 | 5,050 | APXA160ARA331MJCOG |
| | 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 | APXA200ARA151MJCOG | |
| 470 | J80 | 592 | 20 | 4,130 | APXA6R3ARA471MJ80G | 23 | | 15 | F45 | 172 | 57 | 1,300 | APXA230ARA150MF45G |
| 680 | JCO | 856 | 10 | 5,500 | APXA6R3ARA681MJCOG | | | 10 | F60 | 125 | 65 | 1,500 | APXA250ARA100MF60G |
| 820 | JCO | 1,030 | 10 | 5,500 | APXA6R3ARA821MJCOG | | | 25 | 22 | H70 | 275 | 50 | 1,800 |
| | | | | | | 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 |