

### RXC Series

#### Features

- 105°C, 2,000 ~ 3,000 hours assured
- Low ESR, suitable for switching power supplies, UPS
- Smaller size with large permissible ripple current
- RoHS Compliance



Sleeve & Marking Color: Brown & White

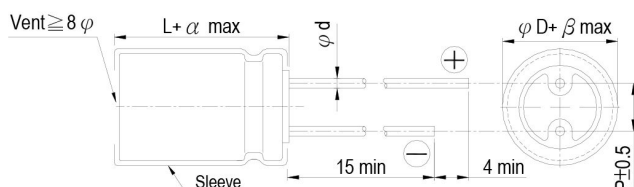
#### Specifications

| Items                                      | Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------|----------------|------|------|-----------------------|-----------------------------------------------------------|--------------------|------------------------------|------|-----------------------------------|-----------------|-----------------------------------|-----------------|------------------------------|--------|------|------|------|------|---|-------------------|---|---|---|---|---|---|
| Category Temperature Range                 | 160 ~ 400V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                              | 450V           |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
|                                            | -40°C ~ +105°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |                              | -25°C ~ +105°C |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Capacitance Tolerance                      | ±20% (at 120Hz, 20°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Leakage Current (at 20°C)                  | <table><tr><td>Time</td><td colspan="5">After 5 minutes</td></tr><tr><td>Leakage Current</td><td colspan="2">CV ≤ 1,000<br/>I = 0.03CV(μA)</td><td colspan="3">CV &gt; 1,000<br/>I = 0.02CV(μA)</td></tr></table>                                                                                                                                                                                                                                                                                                                                              |      |                              |                |      |      | Time                  | After 5 minutes                                           |                    |                              |      |                                   | Leakage Current | CV ≤ 1,000<br>I = 0.03CV(μA)      |                 | CV > 1,000<br>I = 0.02CV(μA) |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Time                                       | After 5 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Leakage Current                            | CV ≤ 1,000<br>I = 0.03CV(μA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      | CV > 1,000<br>I = 0.02CV(μA) |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Tanδ (at 120Hz, 20°C)                      | <table><tr><td>Rated Voltage</td><td>160</td><td>200</td><td>250</td><td>350</td><td>400</td><td>450</td></tr><tr><td>Tanδ (max)</td><td>0.20</td><td>0.20</td><td>0.20</td><td>0.24</td><td>0.24</td><td>0.24</td></tr></table>                                                                                                                                                                                                                                                                                                                               |      |                              |                |      |      | Rated Voltage         | 160                                                       | 200                | 250                          | 350  | 400                               | 450             | Tanδ (max)                        | 0.20            | 0.20                         | 0.20   | 0.24 | 0.24 | 0.24 |      |   |                   |   |   |   |   |   |   |
| Rated Voltage                              | 160                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 200  | 250                          | 350            | 400  | 450  |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Tanδ (max)                                 | 0.20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.20 | 0.20                         | 0.24           | 0.24 | 0.24 |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Low Temperature Characteristics (at 120Hz) | <p>Impedance ratio shall not exceed the values given in the table below.</p> <table><tr><td colspan="2">Rated Voltage</td><td>160</td><td>200</td><td>250</td><td>350</td><td>400</td><td>450</td></tr><tr><td rowspan="2">Impedance Ratio</td><td>Z(-25°C)/Z(+20°C)</td><td>3</td><td>3</td><td>3</td><td>3</td><td>5</td><td>6</td></tr><tr><td>Z(-40°C)/Z(+20°C)</td><td>4</td><td>4</td><td>4</td><td>4</td><td>6</td><td>-</td></tr></table>                                                                                                              |      |                              |                |      |      | Rated Voltage         |                                                           | 160                | 200                          | 250  | 350                               | 400             | 450                               | Impedance Ratio | Z(-25°C)/Z(+20°C)            | 3      | 3    | 3    | 3    | 5    | 6 | Z(-40°C)/Z(+20°C) | 4 | 4 | 4 | 4 | 6 | - |
| Rated Voltage                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 160  | 200                          | 250            | 350  | 400  | 450                   |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Impedance Ratio                            | Z(-25°C)/Z(+20°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3    | 3                            | 3              | 3    | 5    | 6                     |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
|                                            | Z(-40°C)/Z(+20°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4    | 4                            | 4              | 4    | 6    | -                     |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Endurance                                  | <table><tr><td>Test Time</td><td>2,000 Hrs for ϕ D ≤ 10 mm;<br/>3,000 Hrs for ϕ D ≥ 12.5 mm</td></tr><tr><td>Capacitance Change</td><td>Within ±20% of initial value</td></tr><tr><td>Tanδ</td><td>Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> <p>* The above Specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2,000 ~ 3,000 hours at 105°C.</p>                                               |      |                              |                |      |      | Test Time             | 2,000 Hrs for ϕ D ≤ 10 mm;<br>3,000 Hrs for ϕ D ≥ 12.5 mm | Capacitance Change | Within ±20% of initial value | Tanδ | Less than 200% of specified value | Leakage Current | Within specified value            |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Test Time                                  | 2,000 Hrs for ϕ D ≤ 10 mm;<br>3,000 Hrs for ϕ D ≥ 12.5 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Capacitance Change                         | Within ±20% of initial value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Tanδ                                       | Less than 200% of specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Leakage Current                            | Within specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Shelf Life Test                            | <table><tr><td>Test Time</td><td>1,000 Hrs</td></tr><tr><td>Capacitance Change</td><td>Within ±20% of initial value</td></tr><tr><td>Tanδ</td><td>Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Less than 500% of specified value</td></tr></table> <p>* The above Specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5101-4 4.1).</p> |      |                              |                |      |      | Test Time             | 1,000 Hrs                                                 | Capacitance Change | Within ±20% of initial value | Tanδ | Less than 200% of specified value | Leakage Current | Less than 500% of specified value |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Test Time                                  | 1,000 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Capacitance Change                         | Within ±20% of initial value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Tanδ                                       | Less than 200% of specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Leakage Current                            | Less than 500% of specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |                              |                |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| Ripple Current & Frequency Multipliers     | <table><tr><th>Cap. (μF) \ Freq.(Hz)</th><th>120</th><th>1k</th><th>10k</th><th>100k</th></tr><tr><td>1 to 82</td><td>1.00</td><td>1.20</td><td>1.40</td><td>1.50</td></tr><tr><td>100 up</td><td>1.00</td><td>1.18</td><td>1.35</td><td>1.45</td></tr></table>                                                                                                                                                                                                                                                                                                |      |                              |                |      |      | Cap. (μF) \ Freq.(Hz) | 120                                                       | 1k                 | 10k                          | 100k | 1 to 82                           | 1.00            | 1.20                              | 1.40            | 1.50                         | 100 up | 1.00 | 1.18 | 1.35 | 1.45 |   |                   |   |   |   |   |   |   |
| Cap. (μF) \ Freq.(Hz)                      | 120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1k   | 10k                          | 100k           |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| 1 to 82                                    | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.20 | 1.40                         | 1.50           |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |
| 100 up                                     | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.18 | 1.35                         | 1.45           |      |      |                       |                                                           |                    |                              |      |                                   |                 |                                   |                 |                              |        |      |      |      |      |   |                   |   |   |   |   |   |   |

\* The above Specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2,000 ~ 3,000 hours at 105°C.

\* The above Specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5101-4 4.1).

#### Diagram of Dimensions



#### Lead Spacing and Diameter

Unit: mm

|          |                             |     |      |     |     |
|----------|-----------------------------|-----|------|-----|-----|
| $\phi D$ | 8                           | 10  | 12.5 | 16  | 18  |
| P        | 3.5                         | 5.0 | 5.0  | 7.5 | 7.5 |
| $\phi d$ | 0.6                         |     |      | 0.8 |     |
| $\alpha$ | L<20: 1.5, L $\geq$ 20: 2.0 |     |      |     |     |
| $\beta$  | 0.5                         |     |      |     |     |

Dimension:  $\phi D \times L(\text{mm})$   
 Dimension & Permissible Ripple Current  
 Ripple Current: mA/rms, 105°C

| V.DC<br>Contents<br>$\mu\text{F}$ | 160V (2C)         |  |                |         | 200V (2D)         |  |                |         | 250V (2E)         |  |                |         | 350V (2V)         |     |                |         | 400V (2G)         |     |                |         |
|-----------------------------------|-------------------|--|----------------|---------|-------------------|--|----------------|---------|-------------------|--|----------------|---------|-------------------|-----|----------------|---------|-------------------|-----|----------------|---------|
|                                   | $\phi D \times L$ |  | Ripple Current |         | $\phi D \times L$ |  | Ripple Current |         | $\phi D \times L$ |  | Ripple Current |         | $\phi D \times L$ |     | Ripple Current |         | $\phi D \times L$ |     | Ripple Current |         |
|                                   |                   |  | 120 Hz         | 100k Hz |                   |  | 120 Hz         | 100k Hz |                   |  | 120 Hz         | 100k Hz |                   |     | 120 Hz         | 100k Hz |                   |     | 120 Hz         | 100k Hz |
| 2.2                               |                   |  |                |         |                   |  |                |         |                   |  |                |         | 10×12.5           | 55  | 83             |         | 10×16             | 66  | 99             |         |
| 3.3                               | 8×11.5            |  | 48             | 72      | 8×11.5            |  | 52             | 78      | 10×12.5           |  | 80             | 120     | 10×16             | 75  | 113            |         | 10×20             | 85  | 128            |         |
| 4.7                               | 8×11.5            |  | 58             | 87      | 10×12.5           |  | 88             | 132     | 10×16             |  | 105            | 158     | 10×20             | 120 | 180            |         | 10×20             | 100 | 150            |         |
| 10                                | 10×16             |  | 100            | 150     | 10×16             |  | 125            | 188     | 10×20             |  | 165            | 248     | 10×20             | 150 | 225            |         | 10×20             | 145 | 218            |         |
| 22                                | 10×16             |  | 155            | 233     | 10×20             |  | 170            | 255     | 12.5×20           |  | 240            | 360     | 12.5×20           | 240 | 360            |         | 12.5×25           | 260 | 390            |         |
| 33                                | 10×20             |  | 220            | 330     | 12.5×20           |  | 275            | 415     | 12.5×25           |  | 365            | 550     | 12.5×25           | 300 | 450            |         | 12.5×25           | 285 | 430            |         |
| 47                                | 12.5×25           |  | 340            | 510     | 12.5×20           |  | 295            | 445     | 12.5×25           |  | 390            | 585     | 16×25             | 410 | 615            |         | 16×31.5           | 445 | 665            |         |
| 68                                | 12.5×25           |  | 385            | 580     | 12.5×25           |  | 395            | 595     | 16×25             |  | 485            | 730     | 16×31.5           | 485 | 730            |         | 16×31.5           | 490 | 735            |         |
| 100                               | 12.5×25           |  | 450            | 655     | 16×25             |  | 550            | 800     | 16×31.5           |  | 630            | 915     | 16×31.5           | 520 | 755            |         | 18×31.5           | 610 | 885            |         |
| 150                               | 16×25             |  | 610            | 885     | 16×31.5           |  | 720            | 1,045   | 18×31.5           |  | 780            | 1,130   |                   |     |                |         |                   |     |                |         |
| 220                               | 16×31.5           |  | 755            | 1,095   | 18×35.5           |  | 900            | 1,305   | 18×40             |  | 970            | 1,405   |                   |     |                |         |                   |     |                |         |
| 330                               | 18×35.5           |  | 940            | 1,360   |                   |  |                |         |                   |  |                |         |                   |     |                |         |                   |     |                |         |

| V. DC<br>Contents<br>$\mu\text{F}$ | 450V (2W)         |  |                |         |
|------------------------------------|-------------------|--|----------------|---------|
|                                    | $\phi D \times L$ |  | Ripple Current |         |
|                                    |                   |  | 120 Hz         | 100k Hz |
| 1.5                                | 10×12.5           |  | 50             | 75      |
| 2.2                                | 10×16             |  | 68             | 102     |
| 3.3                                | 10×20             |  | 88             | 132     |
| 4.7                                | 12.5×20           |  | 140            | 210     |
| 10                                 | 12.5×25           |  | 200            | 300     |
| 22                                 | 16×25             |  | 305            | 460     |
| 33                                 | 16×31.5           |  | 410            | 615     |
| 47                                 | 18×31.5           |  | 495            | 745     |
| 68                                 | 18×35.5           |  | 540            | 810     |

## Part Numbering System

|            |                  |                       |               |                              |             |                             |                              |
|------------|------------------|-----------------------|---------------|------------------------------|-------------|-----------------------------|------------------------------|
| RXC series | 22 $\mu\text{F}$ | ±20%                  | 450V          | Bulk Package                 | Gas Type    | 16 $\phi \times 25\text{L}$ | Pb-free and PET coating case |
| <b>RXC</b> | <b>220</b>       | <b>M</b>              | <b>2W</b>     | <b>BK</b>                    | -           | <b>1625</b>                 |                              |
| Series     | Capacitance      | Capacitance Tolerance | Rated Voltage | Lead Configuration & Package | Rubber Type | Case Size                   | Lead Wire and Coating Type   |

Note: For more details, please refer to "Part Numbering System (Radial Type)" on page 10.