



# Aluminum Electrolytic Capacitors

SA

## Features

- 105°C, 1,000 hours assured, 7mm height with low leakage current
- Use in very compact high temperature industrial equipment
- RoHS Compliance

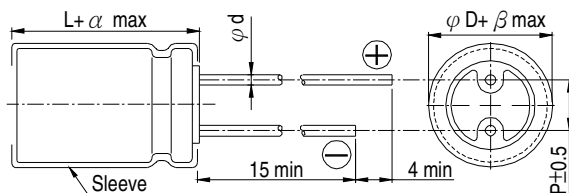


Sleeve & Marking Color: Purple & Black

## SPECIFICATIONS

| Items                                          | Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|--------|------|------|------|----|--|-----------------------|-----------|--------------------|------------------------------|--------------------|-----------------------------------|-----------------|------------------------|------|-------------|-----------|-----------------|------|------|------|------|------|------|---|---|-------|-----------------|----|----|---|---|---|---|---|---|
| Category Temperature Range                     | -40℃ ~ +105℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Capacitance Tolerance                          | ±20% (at 120Hz, 20℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Leakage Current (at 20℃)                       | I = 0.002CV or 0.4 (μA) whichever is greater (after 2 minutes)<br>Where, C = rated capacitance in μF    V = rated DC working voltage in V                                                                                                                                                                                                                                                                                                                                                           |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Dissipation Factor<br>(Tan δ at 120Hz, 20℃)    | <table><tr><td>Rated Voltage</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td></tr><tr><td>Tan δ (max)</td><td>0.35</td><td>0.24</td><td>0.21</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.10</td></tr></table>                                                                                                                                                                                                                         |      |      |      |        |      |      |      |    |  | Rated Voltage         | 4         | 6.3                | 10                           | 16                 | 25                                | 35              | 50                     | 63   | Tan δ (max) | 0.35      | 0.24            | 0.21 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 |   |   |       |                 |    |    |   |   |   |   |   |   |
| Rated Voltage                                  | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.3  | 10   | 16   | 25     | 35   | 50   | 63   |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Tan δ (max)                                    | 0.35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.24 | 0.21 | 0.16 | 0.14   | 0.12 | 0.10 | 0.10 |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Low Temperature<br>Characteristics (at 120 Hz) | <p>Impedance ratio shall not exceed the values given in the table below.</p> <table><tr><td colspan="2">Rated Voltage</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td></tr><tr><td>Impedance</td><td>Z(-25℃)/Z(+20℃)</td><td>6</td><td>4</td><td>3</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Ratio</td><td>Z(-40℃)/Z(+20℃)</td><td>12</td><td>10</td><td>8</td><td>6</td><td>5</td><td>4</td><td>4</td><td>3</td></tr></table> |      |      |      |        |      |      |      |    |  | Rated Voltage         |           | 4                  | 6.3                          | 10                 | 16                                | 25              | 35                     | 50   | 63          | Impedance | Z(-25℃)/Z(+20℃) | 6    | 4    | 3    | 3    | 2    | 2    | 2 | 2 | Ratio | Z(-40℃)/Z(+20℃) | 12 | 10 | 8 | 6 | 5 | 4 | 4 | 3 |
| Rated Voltage                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4    | 6.3  | 10   | 16     | 25   | 35   | 50   | 63 |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Impedance                                      | Z(-25℃)/Z(+20℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6    | 4    | 3    | 3      | 2    | 2    | 2    | 2  |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Ratio                                          | Z(-40℃)/Z(+20℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 12   | 10   | 8    | 6      | 5    | 4    | 4    | 3  |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Endurance                                      | <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>Dissipation Factor</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℃ after the rated voltage applied with rated ripple current for 1,000 hours at 105℃.</p>                                 |      |      |      |        |      |      |      |    |  | Test Time             | 1,000 Hrs | Capacitance Change | Within ±20% of initial value | Dissipation Factor | Less than 200% of specified value | Leakage Current | Within specified value |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Test Time                                      | 1,000 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Capacitance Change                             | Within ±20% of initial value                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Dissipation Factor                             | Less than 200% of specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Leakage Current                                | Within specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Shelf Life Test                                | Test time: 500 hours; other items are the same as those for the Endurance.                                                                                                                                                                                                                                                                                                                                                                                                                          |      |      |      |        |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Ripple Current &<br>Frequency Multipliers      | <table><tr><td>Freq.(Hz)<br/>Cap.(μF)</td><td>60 (50)</td><td>120</td><td>500</td><td>1k</td><td>10k up</td></tr><tr><td>Under 47</td><td>0.70</td><td>1.00</td><td>1.20</td><td>1.30</td><td>1.45</td></tr><tr><td>100</td><td>0.80</td><td>1.00</td><td>1.10</td><td>1.15</td><td>1.20</td></tr></table>                                                                                                                                                                                          |      |      |      |        |      |      |      |    |  | Freq.(Hz)<br>Cap.(μF) | 60 (50)   | 120                | 500                          | 1k                 | 10k up                            | Under 47        | 0.70                   | 1.00 | 1.20        | 1.30      | 1.45            | 100  | 0.80 | 1.00 | 1.10 | 1.15 | 1.20 |   |   |       |                 |    |    |   |   |   |   |   |   |
| Freq.(Hz)<br>Cap.(μF)                          | 60 (50)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 120  | 500  | 1k   | 10k up |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| Under 47                                       | 0.70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1.00 | 1.20 | 1.30 | 1.45   |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |
| 100                                            | 0.80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1.00 | 1.10 | 1.15 | 1.20   |      |      |      |    |  |                       |           |                    |                              |                    |                                   |                 |                        |      |             |           |                 |      |      |      |      |      |      |   |   |       |                 |    |    |   |   |   |   |   |   |

## DIAGRAM OF DIMENSIONS



## LEAD SPACING AND DIAMETER Unit: mm

|          |      |     |     |     |
|----------|------|-----|-----|-----|
| $\phi D$ | 4    | 5   | 6.3 | 8   |
| P        | 1.5  | 2.0 | 2.5 | 3.5 |
| $\phi d$ | 0.45 | 0.5 |     |     |
| $\alpha$ | 1.0  |     |     |     |
| $\beta$  | 0.5  |     |     |     |

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φ D × L(mm)

Ripple Current: mA/rms at 120 Hz, 105°C

| μF   | V. DC Contents | 4V (0G) |    | 6.3V (0J) |    | 10V (1A) |    | 16V (1C) |    | 25V (1E) |    | 35V (1V) |    | 50V (1H) |    | 63V (1J) |    |
|------|----------------|---------|----|-----------|----|----------|----|----------|----|----------|----|----------|----|----------|----|----------|----|
|      |                | φ D×L   | mA | φ D×L     | mA | φ D×L    | mA | φ D×L    | mA | φ D×L    | mA | φ D×L    | mA | φ D×L    | mA | φ D×L    | mA |
| 0.1  | 0R1            |         |    |           |    |          |    |          |    |          |    |          |    | 4×7      | 3  | 4×7      | 3  |
| 0.22 | R22            |         |    |           |    |          |    |          |    |          |    |          |    | 4×7      | 5  | 4×7      | 5  |
| 0.33 | R33            |         |    |           |    |          |    |          |    |          |    |          |    | 4×7      | 6  | 4×7      | 6  |
| 0.47 | R47            |         |    |           |    |          |    |          |    |          |    |          |    | 4×7      | 7  | 4×7      | 7  |
| 1    | 010            |         |    |           |    |          |    |          |    |          |    |          |    | 4×7      | 10 | 4×7      | 10 |
| 2.2  | 2R2            |         |    |           |    |          |    |          |    |          |    |          |    | 4×7      | 16 | 5×7      | 19 |
| 3.3  | 3R3            |         |    |           |    |          |    |          |    |          |    | 4×7      | 18 | 4×7      | 20 | 6.3×7    | 29 |
| 4.7  | 4R7            |         |    |           |    |          |    |          |    | 4×7      | 19 | 5×7      | 21 | 6.3×7    | 24 | 6.3×7    | 36 |
| 10   | 100            |         |    |           |    |          |    | 4×7      | 27 | 5×7      | 29 | 6.3×7    | 32 | 8×7      | 40 |          |    |
| 22   | 220            |         |    |           |    | 4×7      | 36 | 4×7      | 40 | 6.3×7    | 44 | 6.3×7    | 49 |          |    |          |    |
| 33   | 330            | 4×7     | 33 | 4×7       | 41 | 5×7      | 44 | 5×7      | 50 | 6.3×7    | 55 | 8×7      | 67 |          |    |          |    |
| 47   | 470            | 4×7     | 39 | 5×7       | 49 | 6.3×7    | 54 | 6.3×7    | 62 | 8×7      | 74 |          |    |          |    |          |    |
| 100  | 101            | 6.3×7   | 59 | 6.3×7     | 75 | 8×7      | 90 |          |    |          |    |          |    |          |    |          |    |