



## REA Series

### Features

- 85°C, 2,000 ~ 3,000 hours assured
- Standard series for general purposes
- RoHS Compliance

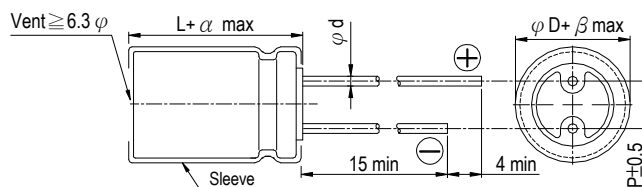


Sleeve & Marking Color: Blue & Black

### Specifications

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|------|--------|------|------|-----------------------------------|------|------|------|------|------|------|-----------------------------------|---------------------------------------------------|--------------------|-------------------------------|------|-----------------------------------|-----------------|------------------------|--------|------|------|------|-----------------|------|------|------------|-----------------|----------|----------------|------|------|------|------|-----------------|------|------|------|------|------|------|-----------------|----------------------------------------------|-----------|----------|---|---|---|---|-----------------------------------|---|---|----------|----------|----|---|-----------------------------------|---|---|---|---|---|---|---|----|----|----|----|-----------|----------|----|----|----|----|---|---|---|---|
| Items                                      | Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Category Temperature Range                 | -40°C ~ +85°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Capacitance Tolerance                      | ±20% (at 120Hz, 20°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Leakage Current (at 20°C)                  | <table><tr><td>Rated voltage</td><td colspan="7">≤ 100V</td><td colspan="7">&gt; 100V</td></tr><tr><td>Time</td><td colspan="7">after 2 minutes</td><td colspan="7">after 5 minutes</td></tr><tr><td>Leakage Current</td><td colspan="7">I = 0.01CV or 3 (μA)<br/>whichever is greater</td><td colspan="7">CV ≤ 1,000<br/>I = 0.03CV + 15(μA)</td><td colspan="2">CV &gt; 1,000<br/>I = 0.02CV + 25(μA)</td></tr></table> <p>Where, C = rated capacitance in μF V = rated DC working voltage in V</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |      |      |        |      |      |                                   |      |      |      |      |      |      | Rated voltage                     | ≤ 100V                                            |                    |                               |      |                                   |                 |                        | > 100V |      |      |      |                 |      |      | Time       | after 2 minutes |          |                |      |      |      |      | after 5 minutes |      |      |      |      |      |      | Leakage Current | I = 0.01CV or 3 (μA)<br>whichever is greater |           |          |   |   |   |   | CV ≤ 1,000<br>I = 0.03CV + 15(μA) |   |   |          |          |    |   | CV > 1,000<br>I = 0.02CV + 25(μA) |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Rated voltage                              | ≤ 100V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |        |      |      | > 100V                            |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Time                                       | after 2 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |      |      |        |      |      | after 5 minutes                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Leakage Current                            | I = 0.01CV or 3 (μA)<br>whichever is greater                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |      |      |        |      |      | CV ≤ 1,000<br>I = 0.03CV + 15(μA) |      |      |      |      |      |      | CV > 1,000<br>I = 0.02CV + 25(μA) |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Tanδ (at 120 Hz, 20°C)                     | <table><tr><td>Rated Voltage</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</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>0.23</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.08</td><td>0.12</td><td>0.14</td><td>0.17</td><td>0.20</td><td>0.25</td><td>0.25</td></tr></table> <p>When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |      |      |        |      |      |                                   |      |      |      |      |      |      | Rated Voltage                     | 6.3                                               | 10                 | 16                            | 25   | 35                                | 50              | 63                     | 100    | 160  | 200  | 250  | 350             | 400  | 450  | Tanδ (max) | 0.23            | 0.20     | 0.16           | 0.14 | 0.12 | 0.10 | 0.09 | 0.08            | 0.12 | 0.14 | 0.17 | 0.20 | 0.25 | 0.25 |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Rated Voltage                              | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10       | 16   | 25   | 35     | 50   | 63   | 100                               | 160  | 200  | 250  | 350  | 400  | 450  |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Tanδ (max)                                 | 0.23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.20     | 0.16 | 0.14 | 0.12   | 0.10 | 0.09 | 0.08                              | 0.12 | 0.14 | 0.17 | 0.20 | 0.25 | 0.25 |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| 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>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160</td><td>200</td><td>250</td><td>350</td><td>400</td><td>450</td></tr><tr><td rowspan="4">Impedance Ratio</td><td>Z(-25°C)</td><td>φ D &lt; 16</td><td>6</td><td>4</td><td>3</td><td>3</td><td>2</td><td>2</td><td>2</td><td rowspan="2">3</td><td rowspan="2">6</td><td rowspan="2">8</td><td rowspan="2">12</td><td rowspan="2">14</td><td rowspan="2">16</td></tr><tr><td>/Z(+20°C)</td><td>φ D ≥ 16</td><td>8</td><td>6</td><td>4</td><td>4</td><td>3</td><td>3</td><td>3</td></tr><tr><td>Z(-40°C)</td><td>φ D &lt; 16</td><td>10</td><td>8</td><td>6</td><td>6</td><td>4</td><td>3</td><td>3</td><td>3</td><td rowspan="2">4</td><td rowspan="2">8</td><td rowspan="2">10</td><td rowspan="2">16</td><td rowspan="2">18</td><td rowspan="2">20</td></tr><tr><td>/Z(+20°C)</td><td>φ D ≥ 16</td><td>18</td><td>16</td><td>12</td><td>10</td><td>8</td><td>8</td><td>6</td><td>6</td></tr></table> |          |      |      |        |      |      |                                   |      |      |      |      |      |      | Rated Voltage                     |                                                   | 6.3                | 10                            | 16   | 25                                | 35              | 50                     | 63     | 100  | 160  | 200  | 250             | 350  | 400  | 450        | Impedance Ratio | Z(-25°C) | φ D < 16       | 6    | 4    | 3    | 3    | 2               | 2    | 2    | 3    | 6    | 8    | 12   | 14              | 16                                           | /Z(+20°C) | φ D ≥ 16 | 8 | 6 | 4 | 4 | 3                                 | 3 | 3 | Z(-40°C) | φ D < 16 | 10 | 8 | 6                                 | 6 | 4 | 3 | 3 | 3 | 4 | 8 | 10 | 16 | 18 | 20 | /Z(+20°C) | φ D ≥ 16 | 18 | 16 | 12 | 10 | 8 | 8 | 6 | 6 |
| Rated Voltage                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.3      | 10   | 16   | 25     | 35   | 50   | 63                                | 100  | 160  | 200  | 250  | 350  | 400  | 450                               |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Impedance Ratio                            | Z(-25°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | φ D < 16 | 6    | 4    | 3      | 3    | 2    | 2                                 | 2    | 3    | 6    | 8    | 12   | 14   | 16                                |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
|                                            | /Z(+20°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | φ D ≥ 16 | 8    | 6    | 4      | 4    | 3    | 3                                 | 3    |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
|                                            | Z(-40°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | φ D < 16 | 10   | 8    | 6      | 6    | 4    | 3                                 | 3    | 3    | 4    | 8    | 10   | 16   | 18                                | 20                                                |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
|                                            | /Z(+20°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | φ D ≥ 16 | 18   | 16   | 12     | 10   | 8    | 8                                 | 6    | 6    |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Endurance                                  | <table><tr><td>Test Time</td><td>2,000 Hrs for φD ≤ 8mm<br/>3,000 Hrs for φD ≥ 10mm</td></tr><tr><td>Capacitance Change</td><td>With in ±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 85°C.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |      |      |        |      |      |                                   |      |      |      |      |      |      | Test Time                         | 2,000 Hrs for φD ≤ 8mm<br>3,000 Hrs for φD ≥ 10mm | Capacitance Change | With in ±20% of initial value | Tanδ | Less than 200% of specified value | Leakage Current | Within specified value |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Test Time                                  | 2,000 Hrs for φD ≤ 8mm<br>3,000 Hrs for φD ≥ 10mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Capacitance Change                         | With in ±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>With in ±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 exposing them for 1,000 hours at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |      |      |        |      |      |                                   |      |      |      |      |      |      | Test Time                         | 1,000 Hrs                                         | Capacitance Change | With in ±20% of initial value | Tanδ | Less than 200% of specified value | Leakage Current | Within specified value |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Test Time                                  | 1,000 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Capacitance Change                         | With in ±20% of initial value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Tanδ                                       | Less than 200% of specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Leakage Current                            | Within specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |        |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Ripple Current & 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 100</td><td>0.70</td><td>1.00</td><td>1.30</td><td>1.40</td><td>1.50</td></tr><tr><td>100 &lt; C ≤ 1,000</td><td>0.75</td><td>1.00</td><td>1.20</td><td>1.30</td><td>1.35</td></tr><tr><td>1,000 up above</td><td>0.80</td><td>1.00</td><td>1.10</td><td>1.12</td><td>1.15</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |      |      |        |      |      |                                   |      |      |      |      |      |      | Freq. (Hz)<br>Cap. (μF)           | 60 (50)                                           | 120                | 500                           | 1k   | 10k up                            | Under 100       | 0.70                   | 1.00   | 1.30 | 1.40 | 1.50 | 100 < C ≤ 1,000 | 0.75 | 1.00 | 1.20       | 1.30            | 1.35     | 1,000 up above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15            |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Freq. (Hz)<br>Cap. (μF)                    | 60 (50)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 120      | 500  | 1k   | 10k up |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| Under 100                                  | 0.70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.00     | 1.30 | 1.40 | 1.50   |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| 100 < C ≤ 1,000                            | 0.75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.00     | 1.20 | 1.30 | 1.35   |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |
| 1,000 up above                             | 0.80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.00     | 1.10 | 1.12 | 1.15   |      |      |                                   |      |      |      |      |      |      |                                   |                                                   |                    |                               |      |                                   |                 |                        |        |      |      |      |                 |      |      |            |                 |          |                |      |      |      |      |                 |      |      |      |      |      |      |                 |                                              |           |          |   |   |   |   |                                   |   |   |          |          |    |   |                                   |   |   |   |   |   |   |   |    |    |    |    |           |          |    |    |    |    |   |   |   |   |

### Diagram of Dimensions

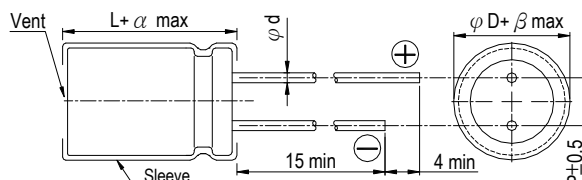


#### Lead Spacing and Diameter

Unit: mm

| φD | 5                        | 6.3 | 8   | 10  | 12.5 | 16  | 18  | 22  | 25   |
|----|--------------------------|-----|-----|-----|------|-----|-----|-----|------|
| P  | 2.0                      | 2.5 | 3.5 | 5.0 | 5.0  | 7.5 | 7.5 | 10  | 12.5 |
| φd | 0.5                      |     | 0.6 |     |      | 0.8 |     | 1.0 |      |
| α  | L < 20: 1.5, L ≥ 20: 2.0 |     |     |     |      |     |     | 2.0 |      |
| β  | 0.5                      |     |     |     |      |     |     |     |      |

The case size of 12.5×16, 16×16, 16×20, 18×16, 18×20 and 18×25 are suitable for below diagram:





Dimension:  $\phi D \times L(\text{mm})$

Ripple Current: mA/rms at 120 Hz, 85°C

## Dimension & Permissible Ripple Current

| $\mu\text{F}$ | Contents | V. DC             |                | 6.3V (0J)         |                | 10V (1A)           |                | 16V (1C)           |                | 25V (1E)          |                | 35V (1V)          |                | 50V (1H)          |            | 63V (1J)          |            | 100V (2A)         |            |
|---------------|----------|-------------------|----------------|-------------------|----------------|--------------------|----------------|--------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|------------|-------------------|------------|-------------------|------------|
|               |          | $\phi D \times L$ | mA             | $\phi D \times L$ | mA             | $\phi D \times L$  | mA             | $\phi D \times L$  | mA             | $\phi D \times L$ | mA             | $\phi D \times L$ | mA             | $\phi D \times L$ | mA         | $\phi D \times L$ | mA         | $\phi D \times L$ | mA         |
| 2.2           | 2R2      |                   |                |                   |                |                    |                |                    |                |                   |                |                   |                | 5×11              | 29         |                   |            | 5×11              | 33         |
| 3.3           | 3R3      |                   |                |                   |                |                    |                |                    |                |                   |                |                   |                | 5×11              | 35         |                   |            | 5×11              | 40         |
| 4.7           | 4R7      |                   |                |                   |                |                    |                |                    |                |                   |                |                   |                | 5×11              | 42         |                   |            | 5×11              | 48         |
| 10            | 100      |                   |                |                   |                |                    |                |                    |                |                   |                |                   |                | 5×11              | 65         | 5×11              | 70         | 5×11              | 59         |
| 22            | 220      |                   |                |                   |                |                    |                |                    |                |                   |                |                   |                | 5×11              | 95         | 6.3×11            | 115        | 6.3×11<br>8×11.5  | 115<br>135 |
| 33            | 330      |                   |                |                   |                |                    |                |                    |                |                   |                | 5×11              | 108            | 6.3×11<br>5×11    | 136<br>125 | 6.3×11            | 140        | 8×11.5            | 145        |
| 47            | 470      |                   |                |                   |                |                    |                |                    |                | 5×11              | 115            | 5×11              | 130            | 6.3×11            | 165        | 6.3×11            | 170        | 10×12.5           | 235        |
| 100           | 101      |                   |                |                   |                |                    |                | 5×11               | 160            | 6.3×11            | 190            | 6.3×11            | 210            | 8×11.5            | 260        | 8×11.5<br>10×12.5 | 245<br>320 | 10×16             | 325        |
| 220           | 221      |                   |                |                   |                | 5×11               | 220            | 6.3×11             | 260            | 8×11.5            | 320            | 8×11.5            | 385            | 10×12.5           | 455        | 10×16             | 490        | 12.5×20<br>16×16  | 640<br>625 |
| 330           | 331      |                   |                |                   |                | 6.3×11             | 290            | 6.3×11             | 290            | 8×11.5            | 440            | 10×12.5           | 490            | 10×16             | 585        | 10×20<br>12.5×16  | 710<br>675 | 16×20<br>18×16    | 695<br>685 |
| 470           | 471      |                   |                |                   |                | 6.3×11             | 350            | 8×11.5             | 440            | 10×12.5           | 545            | 10×16             | 740            | 10×20<br>12.5×16  | 755<br>610 | 16×16<br>12.5×20  | 910<br>900 | 16×25             | 910        |
| 1,000         | 102      | 8×11.5            | 540            | 10×12.5<br>8×11.5 | 650<br>550     | 10×12.5            | 635            | 10×20<br>12.5×16   | 955<br>830     | 12.5×20<br>16×16  | 1,145<br>1,010 | 12.5×25<br>16×20  | 1,340<br>1,160 | 16×20             | 1,260      | 18×40             | 1,820      |                   |            |
| 2,200         | 222      | 10×16             | 845            | 10×20<br>12.5×16  | 1,070<br>970   | 12.5×16<br>16×16   | 930<br>1,160   | 12.5×25<br>16×16   | 1,540<br>1,150 | 16×20             | 1,390          | 16×35.5           | 1,960          | 18×31.5           | 2,040      |                   |            |                   |            |
| 3,300         | 332      | 10×20<br>12.5×16  | 1,185<br>960   | 12.5×20           | 1,420          | 12.5×20<br>16×16   | 1,450<br>1,240 | 16×20              | 1,490          | 16×31.5<br>18×25  | 2,070<br>1,970 | 18×35.5           | 2,500          | 18×40             | 2,575      |                   |            |                   |            |
| 4,700         | 472      | 12.5×20           | 1,545          | 12.5×25<br>16×16  | 1,780<br>1,420 | 16×20<br>18×16     | 1,600<br>1,820 | 16×25<br>18×25     | 2,100<br>2,170 | 18×35.5           | 2,700          | 22×40             | 3,040          |                   |            |                   |            |                   |            |
| 6,800         | 682      | 12.5×25           | 1,880          | 16×20<br>18×20    | 1,700<br>1,870 | 16×25<br>18×20     | 2,280<br>1,890 | 16×35.5<br>18×31.5 | 2,475<br>2,550 | 22×40             | 2,900          | 22×45             | 3,185          |                   |            |                   |            |                   |            |
| 10,000        | 103      | 16×20<br>18×20    | 2,000<br>2,020 | 16×25<br>18×25    | 2,150<br>2,370 | 18×31.5<br>16×35.5 | 2,590<br>2,450 | 18×40              | 3,080          | 22×45             | 3,400          |                   |                |                   |            |                   |            |                   |            |
| 15,000        | 153      | 16×31.5<br>18×25  | 2,460<br>2,375 | 16×40<br>18×31.5  | 2,730<br>2,620 | 18×40              | 3,100          | 22×45<br>25×40     | 3,780<br>3,850 |                   |                |                   |                |                   |            |                   |            |                   |            |
| 22,000        | 223      | 18×31.5           | 2,780          | 18×40             | 3,370          | 22×40              | 3,900          | 25×45              | 4,290          |                   |                |                   |                |                   |            |                   |            |                   |            |
| 33,000        | 333      | 22×40             | 3,700          |                   |                |                    |                |                    |                |                   |                |                   |                |                   |            |                   |            |                   |            |

| $\mu\text{F}$ | Contents | V. DC             |            | 160V (2C)         |            | 200V (2D)         |            | 250V (2E)         |            | 350V (2V)         |            | 400V (2G)         |          | 450V (2W)         |          |
|---------------|----------|-------------------|------------|-------------------|------------|-------------------|------------|-------------------|------------|-------------------|------------|-------------------|----------|-------------------|----------|
|               |          | $\phi D \times L$ | mA         | $\phi D \times L$ | mA         | $\phi D \times L$ | mA         | $\phi D \times L$ | mA         | $\phi D \times L$ | mA         | $\phi D \times L$ | mA       | $\phi D \times L$ | mA       |
| 1             | 010      |                   |            |                   |            |                   |            | 5×11              | 18         | 5×11              | 18         | 5×11              | 22       | 6.3×11            | 25       |
| 2.2           | 2R2      |                   |            |                   |            | 5×11              | 29         | 6.3×11            | 33         | 6.3×11            | 33         | 6.3×11            | 33       | 8×11.5            | 45       |
| 3.3           | 3R3      |                   |            |                   |            | 6.3×11            | 46         | 6.3×11            | 46         | 8×11.5            | 50         | 8×11.5            | 50       | 10×12.5           | 65       |
| 4.7           | 4R7      |                   |            |                   |            | 6.3×11            | 50         | 8×11.5            | 55         | 8×11.5            | 60         | 8×11.5<br>10×12.5 | 55<br>80 | 8×11.5<br>10×12.5 | 55<br>80 |
| 10            | 100      | 8×11.5            | 75         | 8×11.5            | 81         | 10×12.5           | 100        | 10×16             | 110        | 10×16             | 110        | 10×16             | 110      | 10×20             | 140      |
| 22            | 220      | 10×12.5           | 130        | 10×12.5           | 135        | 10×16             | 150        | 12.5×16           | 185        | 12.5×20           | 200        | 12.5×25           | 300      |                   |          |
| 33            | 330      | 10×16             | 175        | 10×16             | 180        | 10×20<br>12.5×16  | 215<br>220 | 12.5×20<br>16×16  | 245<br>260 | 16×16             | 260        | 16×20             | 270      |                   |          |
| 47            | 470      | 10×20<br>12.5×16  | 230<br>250 | 10×20<br>12.5×16  | 240<br>250 | 12.5×20           | 290        | 16×20<br>18×16    | 340<br>310 | 16×20             | 340        | 16×31.5           | 390      |                   |          |
| 68            | 680      | 12.5×20           | 330        | 12.5×20<br>16×16  | 330<br>370 | 12.5×25           | 370        | 16×25<br>18×20    | 420<br>410 | 16×31.5           | 435        | 16×35.5           | 460      |                   |          |
| 100           | 101      | 12.5×25           | 440        | 16×20<br>18×16    | 460<br>450 | 16×25             | 510        | 16×31.5<br>18×25  | 540<br>520 | 16×40<br>18×35.5  | 560<br>570 | 18×35.5           | 570      |                   |          |
| 150           | 151      | 16×25             | 620        | 16×25<br>18×20    | 620<br>605 | 16×31.5<br>18×25  | 625<br>630 | 18×35.5           | 640        | 18×40             | 670        | 22×45             | 800      |                   |          |
| 220           | 221      | 16×31.5<br>18×25  | 790<br>760 | 16×35.5           | 830        | 16×40<br>18×35.5  | 840<br>890 | 22×40             | 920        | 22×45<br>25×40    | 960<br>980 | 25×45             | 1,030    |                   |          |
| 330           | 331      | 18×35.5           | 985        | 18×40             | 1,150      | 22×40             | 1,200      | 25×45             | 1,270      |                   |            |                   |          |                   |          |
| 470           | 471      | 18×40             | 1,150      | 22×40             | 1,400      | 22×45             | 1,470      |                   |            |                   |            |                   |          |                   |          |

## Part Numbering System

REA series    470 $\mu\text{F}$      $\pm 20\%$     16V    Bulk Package    Gas Type    8  $\phi \times 11.5\text{L}$     Pb-free and PET sleeve

**REA**    **471**    **M**    **1C**    **BK**    -    **0811**

Series    Capacitance    Capacitance Tolerance    Rated Voltage    Lead Configuration & Package    Rubber Type    Case Size    Lead Wire and Sleeve Type

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