

## Features

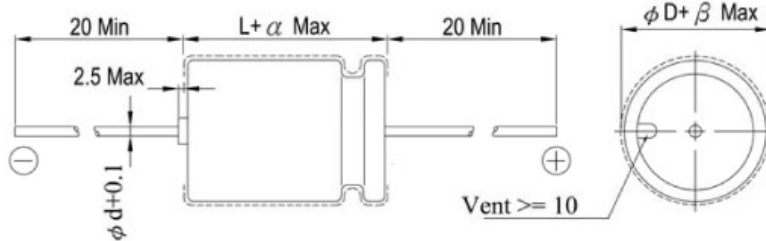
- 85°C, 2,000 hours assured
- For general purpose application
- RoHS Compliance



## SPECIFICATIONS

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|------|------|---------------------------------|------|------|------|------|---------------------------------|------|------|------|-----|---------------|-----------|---------|-----|-----|----|--------|-----------|-----------|------|------|------|-----------------|------|-----------------|-------------|--------------------|------------------------------|----------|------|----------------|------|-----------------|--------------------------------------------|------|------|------|------|---------------------------------|------|----|----|--------------------|-----------------------------------|----------|---|---|---|---|---|---|---|---|--|--|--|--|--|-----------------|------------------------|----------|----|---|---|---|---|---|---|---|---|---|----|---|---|---|--|----------|----|----|----|----|---|---|---|---|--|--|--|--|--|--|
| Items                                      | Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Operating Temperature Range                | -40℃ ~ +85℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Capacitance Tolerance                      | ±20% (at 120Hz, 20℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Leakage Current (at 20℃)                   | <table><tr><td>Rated voltage</td><td colspan="5">≤ 100V</td><td colspan="5">&gt; 100V</td></tr><tr><td>Time</td><td colspan="5">after 2 minutes</td><td colspan="5">after 5 minutes</td></tr><tr><td>Leakage Current</td><td colspan="5">I = 0.02CV or 3 (μ A) whichever is greater</td><td colspan="5">CV ≤ 1000<br/>I = 0.03CV+15(μ A)</td><td colspan="5">CV &gt; 1000<br/>I = 0.02CV+25(μ A)</td></tr></table> <p>Where, C= rated capacitance in μ F. V = rated DC working voltage in V.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     | Rated voltage | ≤ 100V    |         |     |     |    | > 100V |           |           |      |      | Time | after 2 minutes |      |                 |             |                    | after 5 minutes              |          |      |                |      | Leakage Current | I = 0.02CV or 3 (μ A) whichever is greater |      |      |      |      | CV ≤ 1000<br>I = 0.03CV+15(μ A) |      |    |    |                    | CV > 1000<br>I = 0.02CV+25(μ A)   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Rated voltage                              | ≤ 100V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |      |      |      | > 100V                          |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Time                                       | after 2 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          |      |      |      | after 5 minutes                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Leakage Current                            | I = 0.02CV or 3 (μ A) whichever is greater                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |      |      |      | CV ≤ 1000<br>I = 0.03CV+15(μ A) |      |      |      |      | CV > 1000<br>I = 0.02CV+25(μ A) |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Dissipation Factor (Tan δ at 120 Hz, 20℃)  | <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>Tan δ (max)</td><td>0.23</td><td>0.20</td><td>0.17</td><td>0.15</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>0.24</td><td>0.24</td></tr></table> <p>When the capacitance exceeds 1,000 μ F, 0.02 shall be added every 1,000 μ F increase.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     | Rated Voltage | 6.3       | 10      | 16  | 25  | 35 | 50     | 63        | 100       | 160  | 200  | 250  | 350             | 400  | 450             | Tan δ (max) | 0.23               | 0.20                         | 0.17     | 0.15 | 0.12           | 0.10 | 0.09            | 0.08                                       | 0.12 | 0.14 | 0.17 | 0.20 | 0.24                            | 0.24 |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Rated Voltage                              | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10       | 16   | 25   | 35   | 50                              | 63   | 100  | 160  | 200  | 250                             | 350  | 400  | 450  |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Tan δ (max)                                | 0.23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.20     | 0.17 | 0.15 | 0.12 | 0.10                            | 0.09 | 0.08 | 0.12 | 0.14 | 0.17                            | 0.20 | 0.24 | 0.24 |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Low Temperature Characteristics (at 120Hz) | <p>Impedance ratio shall not exceed the values given in the table below.</p> <table><tr><td colspan="2">Rated Voltage</td><td>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℃) /Z(+20℃)</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>2</td><td>3</td><td>6</td><td>8</td><td>12</td><td>14</td><td>16</td></tr><tr><td></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><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Z(-40℃) /Z(+20℃)</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>4</td><td>8</td><td>10</td><td>-</td><td>-</td><td>-</td></tr><tr><td></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><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     | Rated Voltage |           | 6.3     | 10  | 16  | 25 | 35     | 50        | 63        | 100  | 160  | 200  | 250             | 350  | 400             | 450         | Impedance Ratio    | Z(-25℃) /Z(+20℃)             | φ D < 16 | 6    | 4              | 3    | 3               | 2                                          | 2    | 2    | 2    | 3    | 6                               | 8    | 12 | 14 | 16                 |                                   | φ D ≥ 16 | 8 | 6 | 4 | 4 | 3 | 3 | 3 | 3 |  |  |  |  |  |                 | Z(-40℃) /Z(+20℃)       | φ D < 16 | 10 | 8 | 6 | 6 | 4 | 3 | 3 | 3 | 4 | 8 | 10 | - | - | - |  | 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℃) /Z(+20℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | φ D < 16 | 6    | 4    | 3    | 3                               | 2    | 2    | 2    | 2    | 3                               | 6    | 8    | 12   | 14  | 16            |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | φ D ≥ 16 | 8    | 6    | 4    | 4                               | 3    | 3    | 3    | 3    |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
|                                            | Z(-40℃) /Z(+20℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | φ D < 16 | 10   | 8    | 6    | 6                               | 4    | 3    | 3    | 3    | 4                               | 8    | 10   | -    | -   | -             |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | φ D ≥ 16 | 18   | 16   | 12   | 10                              | 8    | 8    | 6    | 6    |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Load Life Test                             | <table><tr><td>Test Time</td><td colspan="15">2,000 hrs</td></tr><tr><td>Capacitance Change</td><td colspan="15">Within ±20% of initial value</td></tr><tr><td>Dissipation Factor</td><td colspan="15">Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td colspan="15">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 for 2,000 hrs at 85℃</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     | Test Time     | 2,000 hrs |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             | Capacitance Change | Within ±20% of initial value |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    | Dissipation Factor | Less than 200% of specified value |          |   |   |   |   |   |   |   |   |  |  |  |  |  | Leakage Current | Within specified value |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Test Time                                  | 2,000 hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Capacitance Change                         | Within ±20% of initial value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Dissipation Factor                         | Less than 200% of specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Leakage Current                            | Within specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Shelf Life Test                            | <table><tr><td>Test Time</td><td colspan="15">1,000 hrs</td></tr><tr><td>Capacitance Change</td><td colspan="15">Within ±20% of initial value</td></tr><tr><td>Dissipation Factor</td><td colspan="15">Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td colspan="15">Within specified value</td></tr></table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hrs at 85℃ 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 | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |      |      |      |                                 |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Ripple Current & Frequency Multipliers     | <table><tr><td colspan="2">Freq.(Hz)</td><td>60 (50)</td><td>120</td><td>500</td><td>1K</td><td>10K up</td></tr><tr><td rowspan="4">Cap.(μ F)</td><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)     |           | 60 (50) | 120 | 500 | 1K | 10K up | Cap.(μ F) | 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)                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 60 (50)  | 120  | 500  | 1K   | 10K up                          |      |      |      |      |                                 |      |      |      |     |               |           |         |     |     |    |        |           |           |      |      |      |                 |      |                 |             |                    |                              |          |      |                |      |                 |                                            |      |      |      |      |                                 |      |    |    |                    |                                   |          |   |   |   |   |   |   |   |   |  |  |  |  |  |                 |                        |          |    |   |   |   |   |   |   |   |   |   |    |   |   |   |  |          |    |    |    |    |   |   |   |   |  |  |  |  |  |  |
| Cap.(μ F)                                  | 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

|          |     |     |   |     |      |     |    |    |    |
|----------|-----|-----|---|-----|------|-----|----|----|----|
| $\phi D$ | 5   | 6.3 | 8 | 10  | 12.5 | 16  | 18 | 22 | 25 |
| $\phi d$ | 0.6 |     |   |     |      | 0.8 |    |    |    |
| $\alpha$ | 1.5 |     |   | 2.0 |      |     |    |    |    |
| $\beta$  | 0.5 |     |   |     |      |     |    |    |    |

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φ D × L(mm)

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

| V. DC  |          | 6.3V (0J) |       | 10V (1A) |       | 16V (1C) |       | 25V (1E) |       | 35V (1V) |       | 50V (1H) |       | 63V (1J) |       | 100V (2A) |       |
|--------|----------|-----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|-----------|-------|
| μF     | Contents | 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    |
| 0.10   | 0R1      |           |       |          |       |          |       |          |       |          |       | 5×12     | 1.5   | 5×12     | 3     | 5×12      | 3     |
| 0.22   | R22      |           |       |          |       |          |       |          |       |          |       | 5×12     | 3.5   | 5×12     | 4.5   | 5×12      | 5     |
| 0.33   | R33      |           |       |          |       |          |       |          |       |          |       | 5×12     | 5     | 5×12     | 7.5   | 5×12      | 8     |
| 0.47   | R47      |           |       |          |       |          |       |          |       |          |       | 5×12     | 6     | 5×12     | 9     | 5×12      | 9     |
| 1.0    | 010      |           |       |          |       |          |       |          |       |          |       | 5×12     | 10    | 5×12     | 15    | 5×12      | 15    |
| 2.2    | 2R2      |           |       |          |       |          |       |          |       |          |       | 5×12     | 20    | 5×12     | 30    | 5×12      | 30    |
| 3.3    | 3R3      |           |       |          |       |          |       |          |       |          |       | 5×12     | 30    | 5×12     | 36    | 5×12      | 40    |
| 4.7    | 4R7      |           |       |          |       |          |       |          |       |          |       | 5×12     | 42    | 5×12     | 44    | 6.3×13    | 41    |
| 10     | 100      |           |       |          |       |          |       | 5×12     | 40    | 5×12     | 55    | 5×12     | 50    | 6.3×13   | 55    | 6.3×13    | 72    |
| 22     | 220      |           |       |          |       | 5×12     | 71    | 5×12     | 76    | 6.3×13   | 70    | 6.3×13   | 85    | 6.3×13   | 109   | 8×16      | 133   |
| 33     | 330      |           |       |          |       | 5×12     | 85    | 5×12     | 80    | 6.3×13   | 115   | 6.3×13   | 126   | 8×13     | 154   | 10×17     | 190   |
| 47     | 470      | 5×12      | 87    | 5×12     | 94    | 6.3×13   | 88    | 6.3×13   | 100   | 6.3×13   | 138   | 8×13     | 174   | 8×16     | 214   | 10×21     | 237   |
| 100    | 101      | 6.3×13    | 121   | 6.3×13   | 145   | 6.3×13   | 160   | 8×13     | 215   | 8×16     | 232   | 10×17    | 296   | 10×17    | 326   | 13×22     | 377   |
| 220    | 221      | 6.3×13    | 215   | 8×13     | 231   | 8×13     | 298   | 8×16     | 319   | 10×17    | 401   | 10×21    | 459   | 13×22    | 527   | 16×28     | 625   |
| 330    | 331      | 8×16      | 305   | 8×16     | 327   | 8×16     | 365   | 10×17    | 454   | 10×21    | 514   | 13×22    | 613   | 13×22    | 675   | 16×33     | 793   |
| 470    | 471      | 8×16      | 364   | 8×16     | 390   | 8×16     | 460   | 10×21    | 524   | 13×22    | 613   | 13×22    | 731   | 13×27    | 780   | 16×36     | 942   |
| 1,000  | 102      | 10×17     | 662   | 10×17    | 671   | 10×21    | 775   | 13×22    | 873   | 13×27    | 955   | 16×33    | 1,111 | 16×36    | 1,249 | 18×42     | 1,359 |
| 2,200  | 222      | 13×22     | 929   | 13×22    | 1,051 | 13×24    | 1,125 | 16×28    | 1,344 | 16×33    | 1,421 | 18×36    | 1,699 | 22×43    | 1,744 | 25×52     | 2,430 |
| 3,300  | 332      | 13×27     | 1,150 | 13×27    | 1,288 | 16×28    | 1,454 | 16×33    | 1,611 | 18×36    | 1,640 | 22×43    | 2,027 | 25×52    | 2,309 |           |       |
| 4,700  | 472      | 13×27     | 1,354 | 16×28    | 1,552 | 16×33    | 1,650 | 18×36    | 1,881 | 22×43    | 2,280 | 25×43    | 2,347 | 25×52    | 2,710 |           |       |
| 6,800  | 682      | 16×28     | 1,762 | 16×33    | 1,930 | 18×36    | 2,040 | 18×42    | 2,170 | 22×43    | 2,470 | 25×52    | 2,650 |          |       |           |       |
| 10,000 | 103      | 16×36     | 2,062 | 18×36    | 2,122 | 18×42    | 2,503 | 22×43    | 2,893 | 25×52    | 3,180 |          |       |          |       |           |       |

| V. DC |          | 160V (2C) |     | 200V (2D) |     | 250V (2E) |     | 350V (2V) |     | 400V (2G) |     | 450V (2W) |     |
|-------|----------|-----------|-----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|
| μF    | Contents | φ D×L     | mA  | φ D×L     | mA  | φ D×L     | mA  | φ D×L     | mA  | φ D×L     | mA  | φ D×L     | mA  |
| 1.0   | 010      | 6.3 × 13  | 7   | 6.3 × 13  | 9   | 6.3 × 13  | 12  | 8 × 16    | 13  | 8 × 16    | 14  | 8 × 16    | 15  |
| 2.2   | 2R2      | 6.3 × 13  | 15  | 8 × 13    | 16  | 8 × 16    | 17  | 8 × 20    | 19  | 10 × 17   | 21  | 10 × 21   | 23  |
| 3.3   | 3R3      | 8 × 13    | 21  | 8 × 16    | 26  | 8 × 21    | 31  | 8 × 21    | 33  | 10 × 17   | 34  | 10 × 21   | 36  |
| 4.7   | 4R7      | 8 × 16    | 31  | 10 × 17   | 33  | 10 × 17   | 38  | 10 × 21   | 44  | 10 × 26   | 45  | 10 × 26   | 46  |
| 10    | 100      | 10 × 17   | 60  | 10 × 21   | 66  | 10 × 21   | 72  | 13 × 22   | 72  | 13 × 22   | 80  | 13 × 27   | 82  |
| 22    | 220      | 10 × 21   | 121 | 13 × 22   | 121 | 13 × 27   | 126 | 13 × 27   | 132 | 16 × 33   | 137 | 16 × 36   | 143 |
| 33    | 330      | 13 × 22   | 154 | 13 × 27   | 167 | 16 × 28   | 178 | 16 × 33   | 186 | 16 × 36   | 192 | 16 × 42   | 201 |
| 47    | 470      | 13 × 27   | 198 | 16 × 33   | 214 | 16 × 33   | 241 | 16 × 42   | 253 | 18 × 42   | 339 | 18 × 42   | 339 |
| 100   | 101      | 16 × 33   | 345 | 16 × 36   | 368 | 16 × 42   | 391 | 22 × 43   | 402 | 25 × 43   | 424 | 25 × 52   | 448 |
| 220   | 221      | 18 × 42   | 586 | 22 × 43   | 609 | 22 × 43   | 632 |           |     |           |     |           |     |
| 330   | 331      | 22 × 43   | 632 |           |     |           |     |           |     |           |     |           |     |