



SMD Aluminum Electrolytic Capacitors

VES

Features

- 4 ~ 6.3 ϕ , 105°C, 1,000 hours assured
- Vertical chip type miniaturized for 5.5mm high capacitor
- Designed for surface mounting on high density PC board
- RoHS Compliance

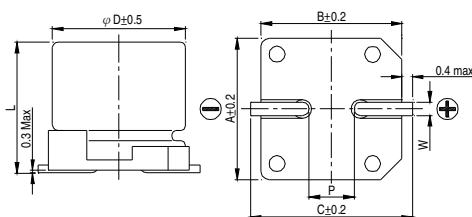


Marking color: Black

SPECIFICATIONS

| Items | Performance | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|----------------|-----------|--------------------|------------------------------|--------------------|-----------------------------------|-----------------|------------------------|-----------------|-------------------|------|------|------|------|---|---|-------------------|---|---|---|---|---|---|
| Category Temperature Range | -55°C ~ +105°C | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 120Hz, 20°C) | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where, C = rated capacitance in μF V = rated DC working voltage in V | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (Tan δ at 120Hz, 20°C) | <table border="1"> <thead> <tr> <th>Rated Voltage</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>Tan δ (max)</td> <td>0.30</td> <td>0.26</td> <td>0.22</td> <td>0.16</td> <td>0.13</td> <td>0.12</td> </tr> </tbody> </table> | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | Tan δ (max) | 0.30 | 0.26 | 0.22 | 0.16 | 0.13 | 0.12 | | | | | | | | | |
| Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | |
| Tan δ (max) | 0.30 | 0.26 | 0.22 | 0.16 | 0.13 | 0.12 | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | <p>Impedance ratio shall not exceed the values given in the table below.</p> <table border="1"> <thead> <tr> <th colspan="2">Rated Voltage</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance Ratio</td> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | Impedance Ratio | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 8 | 5 | 4 | 3 | 3 | 3 |
| Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | |
| Impedance Ratio | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 8 | 5 | 4 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | |
| Endurance | <table border="1"> <thead> <tr> <th>Test Time</th> <th>1,000 Hrs</th> </tr> </thead> <tbody> <tr> <td>Capacitance Change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 1,000 hours at 105°C.</p> | Test Time | 1,000 Hrs | Capacitance Change | Within ±20% of initial value | Dissipation Factor | Less than 200% of specified value | Leakage Current | Within specified value | | | | | | | | | | | | | | | |
| Test Time | 1,000 Hrs | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Change | Within ±20% of initial value | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | Within specified value | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life Test | <table border="1"> <thead> <tr> <th>Test Time</th> <th>1,000 Hrs</th> </tr> </thead> <tbody> <tr> <td>Capacitance Change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied.</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 border="1"> <thead> <tr> <th>Frequency (Hz)</th> <th>50</th> <th>120</th> <th>1k</th> <th>10k up</th> </tr> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.7</td> <td>1.0</td> <td>1.3</td> <td>1.4</td> </tr> </tbody> </table> | Frequency (Hz) | 50 | 120 | 1k | 10k up | Multiplier | 0.7 | 1.0 | 1.3 | 1.4 | | | | | | | | | | | | | |
| Frequency (Hz) | 50 | 120 | 1k | 10k up | | | | | | | | | | | | | | | | | | | | |
| Multiplier | 0.7 | 1.0 | 1.3 | 1.4 | | | | | | | | | | | | | | | | | | | | |

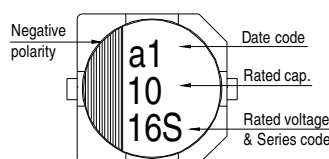
DIAGRAM OF DIMENSIONS



LEAD SPACING AND DIAMETER Unit: mm

| φD | L | A | B | C | W | P ± 0.2 |
|-----|-----------|-----|-----|-----|-----------|---------|
| 4 | 5.3 ± 0.2 | 4.3 | 4.3 | 5.1 | 0.5 ~ 0.8 | 1.0 |
| 5 | 5.3 ± 0.2 | 5.3 | 5.3 | 6.1 | 0.5 ~ 0.8 | 1.5 |
| 6.3 | 5.3 ± 0.2 | 6.6 | 6.6 | 7.4 | 0.5 ~ 0.8 | 2.0 |

MARKING





SMD Aluminum Electrolytic Capacitors

VES

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: $\phi D \times L$ (mm)
Ripple Current: mA/rms at 120 Hz, 105°C

| μF | V. DC Contents | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---------|-------------------|-------------------|----|-------------------|----|-------------------|----|-------------------|----|-------------------|----|-------------------|----|
| | | $\phi D \times L$ | 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 |
| 0.1 | 0R1 | | | | | | | | | | | 4x5.3 | 2 |
| 0.22 | R22 | | | | | | | | | | | 4x5.3 | 3 |
| 0.33 | R33 | | | | | | | | | | | 4x5.3 | 4 |
| 0.47 | R47 | | | | | | | | | | | 4x5.3 | 5 |
| 1 | 010 | | | | | | | | | | | 4x5.3 | 7 |
| 2.2 | 2R2 | | | | | | | | | | | 4x5.3 | 10 |
| 3.3 | 3R3 | | | | | | | | | | | 4x5.3 | 12 |
| 4.7 | 4R7 | | | | | | | 4x5.3 | 12 | 4x5.3 | 14 | 5x5.3 | 17 |
| 10 | 100 | | | 4x5.3 | 15 | 4x5.3 | 16 | 5x5.3 | 21 | 5x5.3 | 23 | 6.3x5.3 | 26 |
| 22 | 220 | 4x5.3 | 21 | 5x5.3 | 25 | 5x5.3 | 28 | 6.3x5.3 | 36 | 6.3x5.3 | 50 | 6.3x5.3 | 51 |
| 33 | 330 | 5x5.3 | 30 | 5x5.3 | 31 | 6.3x5.3 | 40 | 6.3x5.3 | 44 | | | | |
| 47 | 470 | 5x5.3 | 36 | 6.3x5.3 | 43 | 6.3x5.3 | 47 | 6.3x5.3 | 60 | | | | |
| 100 | 101 | 6.3x5.3 | 61 | 6.3x5.3 | 65 | 6.3x5.3 | 70 | | | | | | |