



VLV Series

Features

- 12.5 φ ~ 16 φ, 105°C, 5,000 hours assured
- Suitable for automotive application
- Peak acceleration: 50G / 30G
- RoHS Compliance

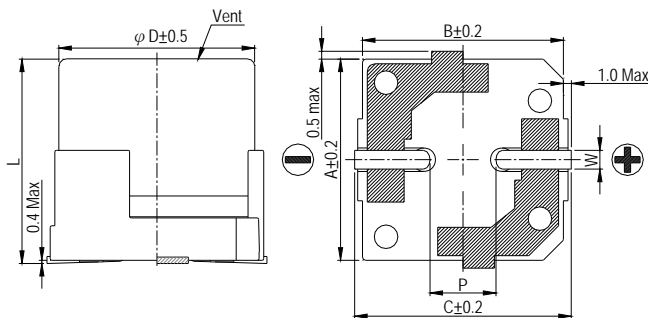


Marking color: Black

Specifications

| Items                                      | Performance   |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
|--|---|---------------|-----------|--------------------|------------------------------|--------------------|-----------------------------------|-----------------|------------------------|------|-----|-----------------|-------------------|------|------|------|------|------|------|------|------|--|-------------------|---|---|---|---|---|---|---|---|
| Category Temperature Range                 | -55 ~ +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)<br>Where, C = rated capacitance in μF V = rated DC working voltage in V   |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Dissipation Factor (Tanδ 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> <th>63</th> <th>80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Tanδ (max)</td> <td>0.30</td> <td>0.26</td> <td>0.22</td> <td>0.16</td> <td>0.13</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> <td>0.07</td> </tr> </tbody> </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                     | 80   | 100 | Tanδ (max)      | 0.30              | 0.26 | 0.22 | 0.16 | 0.13 | 0.10 | 0.08 | 0.08 | 0.07 |  |                   |   |   |   |   |   |   |   |   |
| Rated Voltage                              | 6.3   | 10            | 16        | 25                 | 35                           | 50                 | 63                                | 80              | 100                    |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Tanδ (max)                                 | 0.30  | 0.26          | 0.22      | 0.16               | 0.13                         | 0.10               | 0.08                              | 0.08            | 0.07                   |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| 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>Rated Voltage</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>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> <td>2</td> <td>2</td> </tr> <tr> <td></td> <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> <td>3</td> <td>3</td> </tr> </tbody> </table> | Rated Voltage | 6.3       | 10                 | 16                           | 25                 | 35                                | 50              | 63                     | 80   | 100 | Impedance Ratio | Z(-25°C)/Z(+20°C) | 4    | 3    | 2    | 2    | 2    | 2    | 2    | 2    |  | Z(-55°C)/Z(+20°C) | 8 | 5 | 4 | 3 | 3 | 3 | 3 | 3 |
| Rated Voltage                              | 6.3   | 10            | 16        | 25                 | 35                           | 50                 | 63                                | 80              | 100                    |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Impedance Ratio                            | Z(-25°C)/Z(+20°C)   | 4             | 3         | 2                  | 2                            | 2                  | 2                                 | 2               | 2                      |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
|  | Z(-55°C)/Z(+20°C)   | 8             | 5         | 4                  | 3                            | 3                  | 3                                 | 3               | 3                      |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Endurance                                  | <table border="1"> <thead> <tr> <th>Test Time</th> <th>5,000 Hrs</th> </tr> </thead> <tbody> <tr> <td>Capacitance Change</td> <td>Within ±30% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>Less than 300% 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 5,000 hours at 105°C.</p>   | Test Time     | 5,000 Hrs | Capacitance Change | Within ±30% of initial value | Dissipation Factor | Less than 300% of specified value | Leakage Current | Within specified value |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Test Time                                  | 5,000 Hrs   |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Capacitance Change                         | Within ±30% of initial value  |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Dissipation Factor                         | Less than 300% 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 ±30% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>Less than 300% 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 ±30% of initial value | Dissipation Factor | Less than 300% of specified value | Leakage Current | Within specified value |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Test Time                                  | 1,000 Hrs   |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Capacitance Change                         | Within ±30% of initial value  |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Dissipation Factor                         | Less than 300% of specified value   |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Leakage Current                            | Within specified value  |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Ripple Current & Frequency Multipliers     | <table border="1"> <thead> <tr> <th>Frequency(Hz)</th> <th>50, 60</th> <th>120</th> <th>1k</th> <th>10k up</th> </tr> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.60</td> <td>0.70</td> <td>0.85</td> <td>1.0</td> </tr> </tbody> </table>  | Frequency(Hz) | 50, 60    | 120                | 1k                           | 10k up             | Multiplier                        | 0.60            | 0.70                   | 0.85 | 1.0 |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Frequency(Hz)                              | 50, 60  | 120           | 1k        | 10k up             |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Multiplier                                 | 0.60  | 0.70          | 0.85      | 1.0                |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |
| Vibration                                  | <p>Peak acceleration: 50G<br/>Peak to peak amplitude: 1.5mm<br/>Frequency: 5 to 2,000 Hz reciprocation for 20 min.<br/>Direction and duration of vibration: 3 orthogonal directions mutually each for 4 Hrs.</p>  |               |           |                    |                              |                    |                                   |                 |                        |      |     |                 |                   |      |      |      |      |      |      |      |      |  |                   |   |   |   |   |   |   |   |   |

Diagram of Dimensions



| Lead Spacing and Diameter |            |      |      |      |           |         | Unit: mm |
|---------------------------|------------|------|------|------|-----------|---------|----------|
| φ D                       | L          | A    | B    | C    | W         | P ± 0.2 |          |
| 12.5                      | 13.5 ± 0.5 | 13.0 | 13.5 | 14.5 | 1.1 ~ 1.4 | 4.4     |          |
| 12.5                      | 16 ± 0.5   | 13.0 | 13.5 | 14.5 | 1.1 ~ 1.4 | 4.4     |          |
| 16                        | 16.5 ± 0.5 | 16.5 | 17.0 | 18.2 | 1.1 ~ 1.4 | 6.4     |          |

## Marking

$\phi D \geq 12.5\text{mm}$



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

Ripple Current: mA/rms at 100k Hz, 105°C

Impedance:  $\Omega$  at 100k Hz, 20°C

## Dimension & Permissible Ripple Current

| $\mu\text{F}$ | V. DC<br>Contents | 6.3V (0J)         |       |       | 10V (1A)          |       |       | 16V (1C)          |       |       | 25V (1E)          |       |       | 35V (1V)          |       |           | 50V (1H)          |      |           |       |       |
|---------------|-------------------|-------------------|-------|-------|-------------------|-------|-------|-------------------|-------|-------|-------------------|-------|-------|-------------------|-------|-----------|-------------------|------|-----------|-------|-------|
|               |                   | $\phi D \times L$ | Imp.  | mA    | $\phi D \times L$ | Imp.  | mA    | $\phi D \times L$ | Imp.  | mA    | $\phi D \times L$ | Imp.  | mA    | $\phi D \times L$ | Imp.  | mA        | $\phi D \times L$ | Imp. | mA        |       |       |
| 330           | 331               |                   |       |       |                   |       |       |                   |       |       |                   |       |       |                   |       | 12.5×13.5 | 0.066             | 850  | 12.5×13.5 | 0.11  | 700   |
| 470           | 471               |                   |       |       |                   |       |       |                   |       |       |                   |       |       |                   |       | 12.5×16   | 0.058             | 950  | 16×16.5   | 0.070 | 1,100 |
| 680           | 681               |                   |       |       |                   |       |       |                   |       |       |                   |       |       |                   |       | 12.5×16   | 0.058             | 950  | 16×16.5   | 0.070 | 1,100 |
| 1,000         | 102               |                   |       |       |                   |       |       | 12.5×13.5         | 0.066 | 850   | 12.5×16           | 0.058 | 950   | 16×16.5           | 0.052 | 1,300     |                   |      |           |       |       |
| 1,500         | 152               |                   |       |       | 12.5×13.5         | 0.066 | 850   | 12.5×16           | 0.058 | 950   | 16×16.5           | 0.052 | 1,300 |                   |       |           |                   |      |           |       |       |
| 2,200         | 222               | 12.5×13.5         | 0.066 | 850   | 12.5×16           | 0.058 | 950   | 16×16.5           | 0.052 | 1,300 | 16×16.5           | 0.052 | 1,300 |                   |       |           |                   |      |           |       |       |
| 3,300         | 332               | 12.5×16           | 0.058 | 950   | 16×16.5           | 0.052 | 1,300 | 16×16.5           | 0.052 | 1,300 |                   |       |       |                   |       |           |                   |      |           |       |       |
| 4,700         | 472               | 16×16.5           | 0.052 | 1,300 | 16×16.5           | 0.052 | 1,300 |                   |       |       |                   |       |       |                   |       |           |                   |      |           |       |       |

| $\mu\text{F}$ | V. DC<br>Contents | 63V (1J)          |       |     | 80V (1K)          |      |     | 100V (2A)         |      |     |
|---------------|-------------------|-------------------|-------|-----|-------------------|------|-----|-------------------|------|-----|
|               |                   | $\phi D \times L$ | Imp.  | mA  | $\phi D \times L$ | Imp. | mA  | $\phi D \times L$ | Imp. | mA  |
| 100           | 101               |                   |       |     |                   |      |     | 12.5×13.5         | 0.32 | 450 |
| 150           | 151               | 12.5×13.5         | 0.140 | 700 | 12.5×13.5         | 0.32 | 450 | 12.5×16           | 0.26 | 550 |
| 220           | 221               | 12.5×13.5         | 0.140 | 700 | 12.5×16           | 0.26 | 550 | 16×16.5           | 0.17 | 650 |
| 330           | 331               | 16×16.5           | 0.080 | 900 | 16×16.5           | 0.17 | 650 |                   |      |     |
| 470           | 471               | 16×16.5           | 0.080 | 900 |                   |      |     |                   |      |     |

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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