

## VEU Series

### Features

- 4 φ ~ 18 φ, 105°C, 3,000 ~ 5,000 hours assured
- Long life assured
- 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)<br>Where, C = rated capacitance in μF V = rated DC working voltage in V   |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| 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>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.13</td> <td>0.12</td> <td>0.09</td> <td>0.08</td> <td>0.07</td> </tr> </tbody> </table>  | Rated Voltage | 6.3   | 10                 | 16                           | 25   | 35                                | 50              | 63                     | 80     | 100         | Tanδ (max) | 0.30      | 0.24              | 0.20 | 0.16              | 0.13 | 0.12 | 0.09 | 0.08 | 0.07 |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Rated Voltage                              | 6.3   | 10            | 16  | 25                 | 35                           | 50   | 63                                | 80              | 100                    |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Tanδ (max)                                 | 0.30  | 0.24          | 0.20  | 0.16               | 0.13                         | 0.12 | 0.09                              | 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 colspan="2">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</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> <td>2</td> </tr> <tr> <td>Ratio</td> <td>Z(-55°C)/Z(+20°C)</td> <td>10</td> <td>7</td> <td>5</td> <td>3</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 | Z(-25°C)/Z(+20°C) | 4    | 3                 | 2    | 2    | 2    | 2    | 2    | 2 | 2 | Ratio | Z(-55°C)/Z(+20°C) | 10 | 7 | 5 | 3 | 3 | 3 | 3 | 3 | 3 |
| Rated Voltage                              |   | 6.3           | 10  | 16                 | 25                           | 35   | 50                                | 63              | 80                     | 100    |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Impedance                                  | Z(-25°C)/Z(+20°C)   | 4             | 3   | 2                  | 2                            | 2    | 2                                 | 2               | 2                      | 2      |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Ratio                                      | Z(-55°C)/Z(+20°C)   | 10            | 7   | 5                  | 3                            | 3    | 3                                 | 3               | 3                      | 3      |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Endurance                                  | <table border="1"> <thead> <tr> <th>Test Time</th> <td>3,000 Hrs for φ D ≤ 10 mm;<br/>5,000 Hrs for φ D ≥ 12.5 mm</td> </tr> <tr> <th>Capacitance Change</th> <td>Within ±30% of initial value</td> </tr> <tr> <th>Tanδ</th> <td>Less than 300% of specified value</td> </tr> <tr> <th>Leakage Current</th> <td>Within specified value</td> </tr> </thead> </table> <p>* The above Specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 3,000 ~ 5,000 hours at 105°C.</p>   | Test Time     | 3,000 Hrs for φ D ≤ 10 mm;<br>5,000 Hrs for φ D ≥ 12.5 mm | Capacitance Change | Within ±30% of initial value | Tanδ | Less than 300% of specified value | Leakage Current | Within specified value |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Test Time                                  | 3,000 Hrs for φ D ≤ 10 mm;<br>5,000 Hrs for φ D ≥ 12.5 mm   |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Capacitance Change                         | Within ±30% of initial value  |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Tanδ                                       | Less than 300% of specified value   |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Leakage Current                            | Within specified value  |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Shelf Life Test                            | <table border="1"> <thead> <tr> <th>Test Time</th> <td>1,000 Hrs</td> </tr> <tr> <th>Capacitance Change</th> <td>Within ±30% of initial value</td> </tr> <tr> <th>Tanδ</th> <td>Less than 300% of specified value</td> </tr> <tr> <th>Leakage Current</th> <td>Within specified value</td> </tr> </thead> </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 | Tanδ | Less than 300% of specified value | Leakage Current | Within specified value |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Test Time                                  | 1,000 Hrs   |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Capacitance Change                         | Within ±30% of initial value  |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Tanδ                                       | Less than 300% of specified value   |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Leakage Current                            | Within specified value  |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Ripple Current & Frequency Multipliers     | <table border="1"> <thead> <tr> <th rowspan="2">Cap.(μF)</th> <th colspan="4">Frequency (Hz)</th> </tr> <tr> <th>50</th> <th>120</th> <th>1k</th> <th>10k up</th> </tr> </thead> <tbody> <tr> <td>Under 1,000</td> <td>0.70</td> <td>1.00</td> <td>1.30</td> <td>1.40</td> </tr> <tr> <td>1,000 &lt; C ≤ 1,500</td> <td>0.85</td> <td>1.00</td> <td>1.13</td> <td>1.15</td> </tr> </tbody> </table>   | Cap.(μF)      | Frequency (Hz)  |                    |                              |      | 50                                | 120             | 1k                     | 10k up | Under 1,000 | 0.70       | 1.00      | 1.30              | 1.40 | 1,000 < C ≤ 1,500 | 0.85 | 1.00 | 1.13 | 1.15 |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Cap.(μF)                                   | Frequency (Hz)  |               |   |                    |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
|  | 50  | 120           | 1k  | 10k up             |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| Under 1,000                                | 0.70  | 1.00          | 1.30  | 1.40               |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |
| 1,000 < C ≤ 1,500                          | 0.85  | 1.00          | 1.13  | 1.15               |                              |      |                                   |                 |                        |        |             |            |           |                   |      |                   |      |      |      |      |      |   |   |       |                   |    |   |   |   |   |   |   |   |   |

### Diagram of Dimensions

Fig. 1

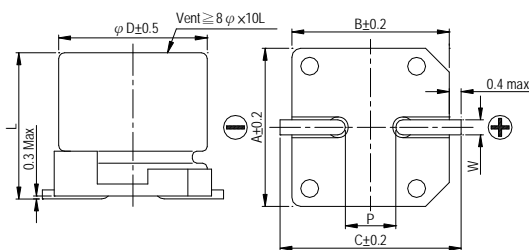
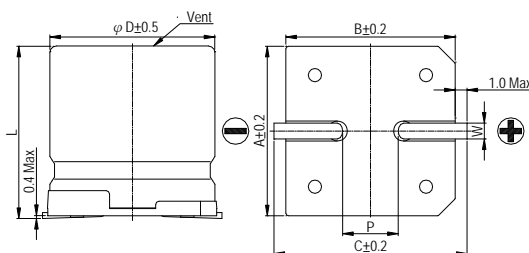


Fig. 2



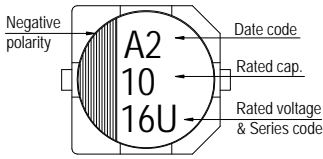
Lead Spacing and Diameter

Unit: mm

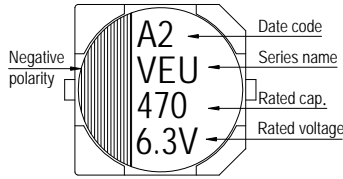
| φ D  | L          | A    | B    | C    | W         | P ± 0.2 | Fig. No. |
|------|------------|------|------|------|-----------|---------|----------|
| 4    | 5.7 ± 0.3  | 4.3  | 4.3  | 5.1  | 0.5 ~ 0.8 | 1.0     | 1        |
| 5    | 5.7 ± 0.3  | 5.3  | 5.3  | 5.9  | 0.5 ~ 0.8 | 1.5     | 1        |
| 6.3  | 5.7 ± 0.3  | 6.6  | 6.6  | 7.2  | 0.5 ~ 0.8 | 2.0     | 1        |
| 6.3  | 7.7 ± 0.3  | 6.6  | 6.6  | 7.2  | 0.5 ~ 0.8 | 2.0     | 1        |
| 8    | 10 ± 0.5   | 8.4  | 8.4  | 9.0  | 0.7 ~ 1.1 | 3.1     | 1        |
| 10   | 10 ± 0.5   | 10.4 | 10.4 | 11.0 | 0.7 ~ 1.3 | 4.7     | 1        |
| 12.5 | 13.5 ± 0.5 | 13.0 | 13.0 | 13.7 | 1.1 ~ 1.4 | 4.4     | 2        |
| 12.5 | 16 ± 0.5   | 13.0 | 13.0 | 13.7 | 1.1 ~ 1.4 | 4.4     | 2        |
| 16   | 16.5 ± 0.5 | 17.0 | 17.0 | 18.0 | 1.1 ~ 1.4 | 6.4     | 2        |
| 18   | 16.5 ± 0.5 | 19.0 | 19.0 | 20.0 | 1.1 ~ 1.4 | 6.4     | 2        |

## Marking

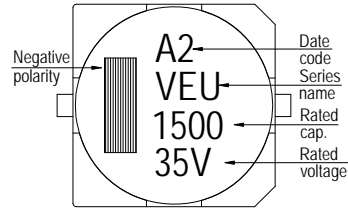
$\phi D \leq 6.3\text{mm}$



$\phi D = 8 \sim 10\text{ mm}$



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



## Dimension & Permissible Ripple Current

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

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

| $\mu\text{F}$ | V <sub>DC</sub><br>Contents | 6.3V (0J)         |     | 10V (1A)          |     | 16V (1C)          |     | 25V (1E)          |     | 35V (1V)          |     | 50V (1H)          |     | 63V (1J)          |     | 80V (1K)          |     |
|---------------|-----------------------------|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|
|               |                             | $\phi D \times L$ | mA  | $\phi D \times L$ | mA  | $\phi D \times L$ | mA  | $\phi D \times L$ | mA  | $\phi D \times L$ | mA  | $\phi D \times L$ | mA  | $\phi D \times L$ | mA  | $\phi D \times L$ | mA  |
| 1             | 010                         |                   |     |                   |     |                   |     |                   |     |                   |     | 4×5.7             | 8   |                   |     |                   |     |
| 2.2           | 2R2                         |                   |     |                   |     |                   |     |                   |     |                   |     | 4×5.7             | 12  |                   |     |                   |     |
| 3.3           | 3R3                         |                   |     |                   |     |                   |     |                   |     |                   |     | 4×5.7             | 17  |                   |     |                   |     |
| 4.7           | 4R7                         |                   |     |                   |     |                   |     |                   |     | 4×5.7             | 16  | 5×5.7             | 22  |                   |     |                   |     |
| 10            | 100                         |                   |     |                   |     | 4×5.7             | 18  | 5×5.7             | 27  | 5×5.7             | 27  | 6.3×5.7           | 32  |                   |     |                   |     |
| 22            | 220                         | 4×5.7             | 22  | 4×5.7             | 30  | 5×5.7             | 30  | 6.3×5.7           | 44  | 6.3×5.7           | 44  | 6.3×7.7           | 58  |                   |     |                   |     |
| 33            | 330                         | 5×5.7             | 35  | 5×5.7             | 35  | 6.3×5.7           | 48  | 6.3×5.7           | 50  | 6.3×7.7           | 57  | 8×10              | 130 |                   |     |                   |     |
| 47            | 470                         | 5×5.7             | 38  | 6.3×5.7           | 50  | 6.3×5.7           | 50  | 6.3×7.7           | 63  | 8×10              | 92  | 8×10              | 141 |                   |     |                   |     |
| 100           | 101                         | 6.3×5.7           | 69  | 6.3×7.7           | 81  | 6.3×7.7           | 81  | 8×10              | 116 | 10×10             | 151 | 10×10             | 310 |                   |     | 12.5×13.5         | 220 |
| 150           | 151                         |                   |     |                   |     |                   |     |                   |     |                   |     |                   |     | 12.5×13.5         | 240 | 12.5×16           | 290 |
| 220           | 221                         | 6.3×7.7           | 120 | 8×10              | 141 | 8×10              | 141 | 10×10             | 290 | 10×10             | 320 | 12.5×13.5         | 280 | 12.5×16           | 320 | 16×16.5           | 410 |
| 330           | 331                         | 8×10              | 290 | 10×10             | 290 | 10×10             | 290 | 10×10             | 320 | 12.5×13.5         | 320 | 12.5×16           | 360 | 16×16.5           | 450 | 16×16.5           | 510 |
| 470           | 471                         | 10×10             | 320 | 10×10             | 320 | 10×10             | 320 |                   |     | 12.5×16           | 410 | 16×16.5           | 510 | 16×16.5           | 540 | 18×16.5           | 650 |
| 1,000         | 102                         | 10×10             | 410 |                   |     |                   |     |                   |     | 16×16.5           | 690 | 18×16.5           | 780 |                   |     |                   |     |
| 1,500         | 152                         |                   |     |                   |     |                   |     |                   |     | 18×16.5           | 900 |                   |     |                   |     |                   |     |

| $\mu\text{F}$ | V <sub>DC</sub><br>Contents | 100V (2A)         |     |
|---------------|-----------------------------|-------------------|-----|
|               |                             | $\phi D \times L$ | mA  |
| 68            | 680                         | 12.5×13.5         | 180 |
| 100           | 101                         | 12.5×16           | 240 |
| 150           | 151                         | 16×16.5           | 340 |
| 220           | 221                         | 16×16.5           | 410 |
| 330           | 331                         | 18×16.5           | 540 |

## Part Numbering System

VEU series    470 $\mu\text{F}$      $\pm 20\%$     6.3V    Carrier Tape    10  $\phi \times 10\text{L}$     Pb-free and PET coating case

**VEU**    **471**    **M**    **0J**    **TR**    -    **1010**

Series name    Capacitance    Capacitance Tolerance    Rated Voltage    Package Type    Terminal Type    Case size    Lead Wire and Coating Type

Note: For more details, please refer to "Part Numbering System (SMD Type)" on page 12.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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