

## VUP Series

### Features

- 6.3  $\phi$  ~ 10  $\phi$ , 125°C, 2,000 ~ 3,000 hours assured
- Low impedance capacitors
- Chip type high temperature range, for +125°C use
- For automobile modules and other high temperature applications
- RoHS compliance

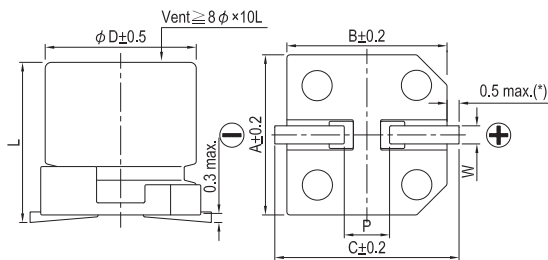


Marking color: Black

### Specifications

Items	Performance												
Category Temperature Range	-40°C ~ +125°C												
Capacitance Tolerance	±20% (at 120 Hz, 20°C)												
Leakage Current (at 20°C)	$I = 0.01CV$ or $3(\mu A)$ whichever is greater (after 2 minutes) Where, C = rated capacitance in $\mu F$ , V = rated DC working voltage in V												
Tan $\delta$ (at 120 Hz, 20°C)	<table border="1"> <tr> <th>Rated Voltage</th> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <th>Tan<math>\delta</math> (max)</th> <td>0.30</td> <td>0.23</td> <td>0.18</td> <td>0.16</td> </tr> </table>	Rated Voltage	10	16	25	35	Tan $\delta$ (max)	0.30	0.23	0.18	0.16		
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Low Temperature Characteristics (at 120 Hz)	<p>Impedance ratio shall not exceed the values given in the table below.</p> <table border="1"> <tr> <th colspan="2">Rated Voltage</th> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <th rowspan="2">Impedance Ratio</th> <th>Z(-40°C)/Z(+20°C)</th> <td>12</td> <td>8</td> <td>6</td> <td>4</td> </tr> </table>	Rated Voltage		10	16	25	35	Impedance Ratio	Z(-40°C)/Z(+20°C)	12	8	6	4
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	Endurance	<table border="1"> <tr> <th>Test Time</th> <td>2,000 Hrs for <math>\phi D = 6.3</math> mm 3,000 Hrs for <math>\phi D \geq 8</math> mm</td> </tr> <tr> <th>Capacitance Change</th> <td>Within ±30% of initial value</td> </tr> <tr> <th>Tan<math>\delta</math></th> <td>Less than 300% of specified value</td> </tr> <tr> <th>Leakage Current</th> <td>Within specified value</td> </tr> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 ~ 3,000 hours at 125°C.</p>	Test Time	2,000 Hrs for $\phi D = 6.3$ mm 3,000 Hrs for $\phi D \geq 8$ mm	Capacitance Change	Within ±30% of initial value	Tan $\delta$	Less than 300% of specified value	Leakage Current	Within specified value			
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Shelf Life Test	<table border="1"> <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>Tan<math>\delta</math></th> <td>Less than 300% of specified value</td> </tr> <tr> <th>Leakage Current</th> <td>Within specified value</td> </tr> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 125°C without voltage applied.</p>	Test Time	1,000 Hrs	Capacitance Change	Within ±30% of initial value	Tan $\delta$	Less than 300% of specified value	Leakage Current	Within specified value				
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Ripple Current and Frequency Multipliers	<table border="1"> <tr> <th>Frequency (Hz)</th> <td>50</td> <td>120</td> <td>300</td> <td>1k</td> <td>10k up</td> </tr> <tr> <th>Multiplier</th> <td>0.35</td> <td>0.50</td> <td>0.64</td> <td>0.83</td> <td>1.0</td> </tr> </table>	Frequency (Hz)	50	120	300	1k	10k up	Multiplier	0.35	0.50	0.64	0.83	1.0
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### Diagram of Dimensions



### Lead Spacing and Diameter

Unit: mm

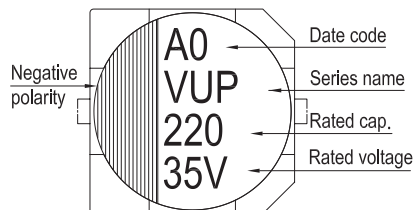
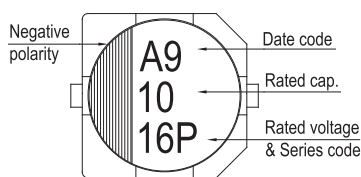
$\phi D$	L	A	B	C	W	P ± 0.2
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1
10	10 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7

(\*): For 6.3  $\phi$  is 0.4 max.

### Marking

$\phi D = 6.3$  mm

$\phi D = 8 \sim 10$  mm



Dimension:  $\phi D \times L$ (mm)

Ripple Current: mA/rms at 100k Hz, 125°C

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

### Dimension and Permissible Ripple Current

Rated Volt. (V <sub>DC</sub> )		10V (1A)			16V (1C)			25V (1E)			35V (1V)		
Cap. ( $\mu$ F)	Contents	$\phi D \times L$	Imp.	mA	$\phi D \times L$	Imp.	mA	$\phi D \times L$	Imp.	mA	$\phi D \times L$	Imp.	mA
33	330										6.3×7.7	0.5	197
47	470										6.3×7.7 8×10	0.5 0.2	197 270
100	101				6.3×7.7 8×10	0.5 0.2	197 270	6.3×7.7 8×10	0.5 0.2	197 270	8×10	0.2	270
220	221	8×10	0.2	270	8×10	0.2	270	8×10 10×10	0.2 0.15	270 500	10×10	0.15	500
330	331	8×10 10×10	0.2 0.15	270 500	10×10	0.15	500	10×10	0.15	500			
470	471	10×10	0.15	500	10×10	0.15	500						

### Part Numbering System

VUP series	100 $\mu$ F	$\pm$ 20%	16V	Carrier Tape	6.3 $\phi$ × 7.7L	Pb-free and PET coating case
<b>VUP</b>	<b>101</b>	<b>M</b>	<b>1C</b>	<b>TR</b>	<b>-</b>	<b>0607</b>
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 15.