

## VUA Series

### Features

- 6.3  $\phi$  ~ 18  $\phi$ , 125°C, 1,000 ~ 2,000 hours assured
- 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 120Hz, 20°C)																				
Leakage Current (at 20°C)	$I = 0.03CV$ or 4 ( $\mu A$ ) whichever is greater (after 1 minutes) Where, C = rated capacitance in $\mu F$ , V = rated DC working voltage in V																				
Tan $\delta$ (at 120Hz, 20°C)	<table border="1"> <tr> <td>Rated Voltage</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Tan<math>\delta</math> (max)</td> <td>0.32</td> <td>0.24</td> <td>0.21</td> <td>0.18</td> <td>0.15</td> </tr> </table> <p>When the capacitance exceeds 1,000<math>\mu F</math>, 0.02 shall be added every 1,000<math>\mu F</math> increase.</p>	Rated Voltage	10	16	25	35	50	Tan $\delta$ (max)	0.32	0.24	0.21	0.18	0.15								
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Low Temperature Characteristics (at 120Hz)	<p>Impedance ratio shall not exceed the values given in the table below.</p> <table border="1"> <tr> <td colspan="2">Rated Voltage</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td rowspan="2">Impedance Ratio</td> <td>Z(-25°C)/Z(+20°C)</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>12</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> </tr> </table>	Rated Voltage		10	16	25	35	50	Impedance Ratio	Z(-25°C)/Z(+20°C)	6	5	4	3	3	Z(-40°C)/Z(+20°C)	12	8	6	4	4
Rated Voltage		10	16	25	35	50															
Impedance Ratio	Z(-25°C)/Z(+20°C)	6	5	4	3	3															
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Endurance	<table border="1"> <tr> <td>Test Time</td> <td>1,000 Hrs for <math>\phi D \leq 8 \times 6.5mm</math> 2,000 Hrs for <math>\phi D \geq 8 \times 10mm</math></td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±30% of initial value</td> </tr> <tr> <td>Tan<math>\delta</math></td> <td>Less than 300% of specified value</td> </tr> <tr> <td>Leakage Current</td> <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 1,000 / 2,000 hours at 125°C.</p>	Test Time	1,000 Hrs for $\phi D \leq 8 \times 6.5mm$ 2,000 Hrs for $\phi D \geq 8 \times 10mm$	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> <td>Test Time</td> <td>1,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±30% of initial value</td> </tr> <tr> <td>Tan<math>\delta</math></td> <td>Less than 300% of specified value</td> </tr> <tr> <td>Leakage Current</td> <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> <td rowspan="2">Cap. (<math>\mu F</math>)</td> <td>Freq. (Hz)</td> <td>50</td> <td>120</td> <td>1k</td> <td>10k up</td> </tr> <tr> <td>Under 330</td> <td>0.80</td> <td>1.0</td> <td>1.25</td> <td>1.40</td> </tr> <tr> <td>330 &lt; C ≤ 4,700</td> <td></td> <td>0.85</td> <td>1.0</td> <td>1.20</td> <td>1.30</td> </tr> </table>	Cap. ( $\mu F$ )	Freq. (Hz)	50	120	1k	10k up	Under 330	0.80	1.0	1.25	1.40	330 < C ≤ 4,700		0.85	1.0	1.20	1.30			
Cap. ( $\mu F$ )	Freq. (Hz)		50	120	1k	10k up															
	Under 330	0.80	1.0	1.25	1.40																
330 < C ≤ 4,700		0.85	1.0	1.20	1.30																

### Diagram of Dimensions

Fig. 1

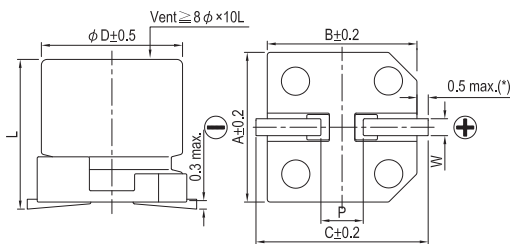
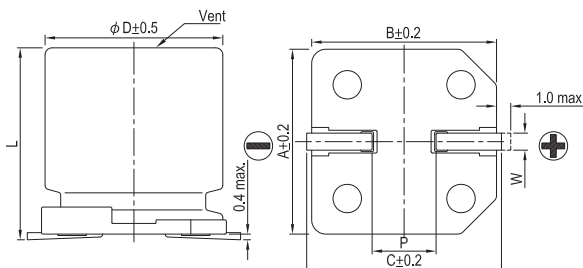


Fig. 2



### Lead Spacing and Diameter

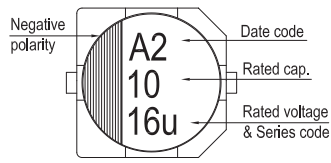
Unit: mm

$\phi D$	L	A	B	C	W	P ± 0.2	Fig. No.
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	6.5 ± 0.3	8.3	8.3	9.0	0.5 ~ 0.8	2.3	1
8	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1	1
10	10 ± 0.5	10.3	10.3	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

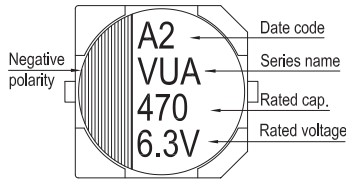
(\*): For 6.3  $\phi$  is 0.4 max.

## Marking

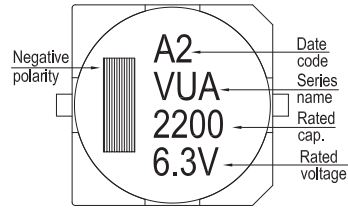
$\phi D = 6.3 \text{ mm}$



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



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



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

Ripple Current: mA/rms at 120 Hz, 125°C

## Dimension and Permissible Ripple Current

$\mu\text{F}$	V. DC Contents	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
22	220							6.3×5.7	50	8×6.5	75
33	330			6.3×5.7	50	6.3×5.7	50	6.3×7.7	70	8×10	130
47	470			6.3×7.7	70	6.3×7.7	70	8×6.5	75	8×10	130
68	680	6.3×5.7	50	8×6.5	75	8×6.5	75	8×10	130	10×10	180
100	101	8×6.5	75	8×6.5	75	8×10	130	10×10	180	12.5×13.5	357
220	221	8×10	130	10×10	180	10×10	180	12.5×13.5	357	12.5×16	400
330	331	8×10	130	12.5×13.5	480	12.5×13.5	480	16×16.5	650	16×16.5	650
470	471	12.5×13.5	480	12.5×13.5	480	12.5×13.5	480	16×16.5	650	16×16.5	650
680	681	12.5×13.5	480	12.5×13.5	480	12.5×16	585	16×16.5	650	18×16.5	855
1,000	102	12.5×16	585	12.5×16	585	16×16.5	650	18×16.5	855		
1,500	152	12.5×16	585	16×16.5	650	18×16.5	855				
2,200	222	16×16.5	650	18×16.5	855						
3,300	332	18×16.5	855								
4,700	472	18×16.5	855								

## Part Numbering System

VUA Series	33 $\mu\text{F}$	$\pm 20\%$	16V	Carrier Tape	6.3 $\phi$ × 5.7L	Pb-free and PET coating case
<b>VUA</b>	<b>330</b>	<b>M</b>	<b>1C</b>	<b>TR</b>	<b>-</b>	<b>0606</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.

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[XT100UF35V90RV0065](#) [FZ100UF35V90RV0064](#) [XT100UF25V90RV0062](#) [XT220UF10V90RV0073](#) [XT220UF35V90RV0076](#)  
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