

VUX Series

Features

- 8φ ~ 18φ, 135°C, 2,000 hours assured
- Chip type, high temperature range, for +135°C use
- For automobile modules and high temperature applications
- RoHS compliant
- AEC-Q200 compliant



Marking color: Black

Specifications

Items	Performance													
Category Temperature Range	-40°C ~ +135°C													
Capacitance Tolerance	± 20% (at 120 Hz, 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													
Tanδ (at 120 Hz, 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>Tanδ (max.)</td> <td>0.30</td> <td>0.23</td> <td>0.18</td> <td>0.16</td> <td>0.16</td> </tr> </table> <p>When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.</p>	Rated Voltage	10	16	25	35	50	Tanδ (max.)	0.30	0.23	0.18	0.16	0.16	
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Tanδ (max.)	0.30	0.23	0.18	0.16	0.16									
Low Temperature Characteristics (at 120 Hz)	<p>Impedance ratio shall not exceed the values given in the table below.</p> <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>Impedance Ratio</td> <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(-40°C) / Z(+20°C)	12	8	6	4	4
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Endurance	<table border="1"> <tr> <td>Test Time</td> <td>2,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ± 30% of initial value</td> </tr> <tr> <td>Tanδ</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 2,000 hours at 135°C.</p>	Test Time	2,000 Hrs	Capacitance Change	Within ± 30% of initial value	Tanδ	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>Tanδ</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 135°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					
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Ripple Current and Frequency Multipliers	<table border="1"> <tr> <td>Frequency(Hz)</td> <td>50</td> <td>120</td> <td>1k</td> <td>10k up</td> </tr> <tr> <td>Multiplier</td> <td>0.35</td> <td>0.50</td> <td>0.83</td> <td>1.0</td> </tr> </table>	Frequency(Hz)	50	120	1k	10k up	Multiplier	0.35	0.50	0.83	1.0			
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Diagram of Dimensions

Fig. 1

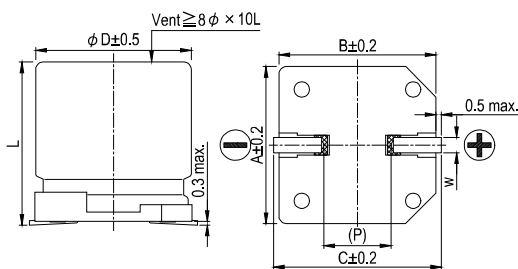
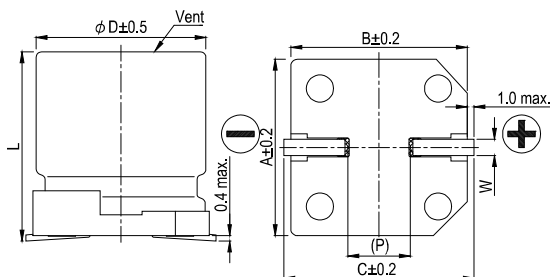


Fig. 2



Lead Spacing and Diameter

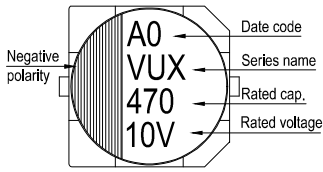
Unit: mm

φ D	L	A	B	C	W	P	Fig. No.
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 ~ 1.1	4.7	1
12.5	13.5 ± 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
16	21.5 ± 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
18	21.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2

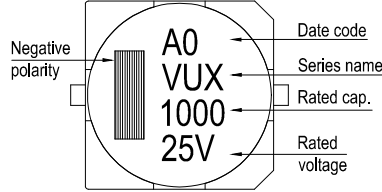
The diagram is marking " () " for reference dimension.

Marking

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



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



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

Ripple Current: mA/rms at 100k Hz, 135°C

Impedance: $\Omega/$ at 100k Hz, 20°C

Dimension and Permissible Ripple Current

Rated Volt. (Vdc)	Cap. (μF)	Contents	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
47	470											8×10	0.20	270	8×10	0.30	270
68	680											8×10	0.20	270			
100	101				8×10	0.20	270	8×10	0.20	270	8×10	0.20	270	10×10	0.25	500	
220	221	8×10	0.20	270	8×10	0.20	270	10×10	0.15	500	10×10	0.15	500				
330	331	8×10 10×10	0.20 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				12.5×13.5	0.08	750	16×16.5	0.075	1,000	
560	561										12.5×13.5	0.08	750	16×16.5	0.075	1,000	
680	681										16×16.5	0.06	1,200	18×16.5	0.075	1,200	
820	821							12.5×13.5	0.08	750	16×16.5	0.06	1,200	18×16.5	0.075	1,200	
1,000	102							12.5×13.5	0.08	750	16×16.5	0.06	1,200	16×21.5	0.06	1,600	
1,200	122							16×16.5	0.06	1,200	18×16.5	0.05	1,400	18×21.5	0.04	1,900	
1,500	152							16×16.5	0.06	1,200	16×21.5 18×16.5	0.04 0.05	1,900 1,400				
1,800	182							16×16.5	0.06	1,200	18×21.5	0.035	2,200				
2,200	222							18×16.5	0.05	1,400	18×21.5	0.035	2,200				
2,700	272							16×21.5	0.04	1,900							
3,300	332							18×21.5	0.035	2,200							

Part Numbering System

VUX Series	470 μF	$\pm 20\%$	10V	Carrier Tape	10 $\phi \times 10\text{L}$	General Purpose
VUX	471	M	1A	TR	-	1010
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case Size
						Application

Note: For more details, please refer to "Part Numbering System - SMD Type" on page 106.