

VUX Series

Features

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

AEC-Q200 Qualified Parts Available: Use "LS" or "KS" Suffix



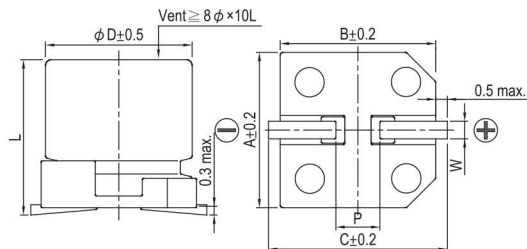
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Specifications

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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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

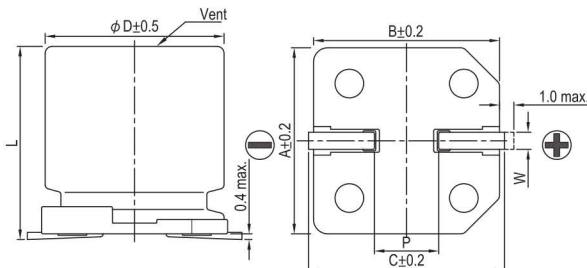


Lead Spacing and Diameter

Unit: mm

φD	L	A	B	C	W	P ± 0.2	Fig. No.
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
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

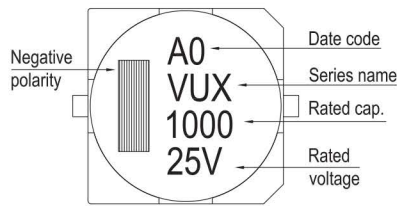
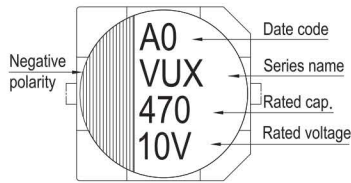
Fig. 2



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: Ω / at 100k Hz, 20°C

Dimension and Permissible Ripple Current

Rated Volt. (V _{oc})		10V (1A)			16V (1C)			25V (1E)			35V (1V)			50V (1H)		
Cap. (μF)	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	$\phi D \times L$	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	0.05	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						

SMD

Part Numbering System

VUX Series	470μF	±20%	10V	Carrier Tape	10 ϕ × 10L	Pb-free and PET coating case
VUX	471	M	1A	TR	-	S
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case size
						Lead Wire and Coating Type

For automotive application, please replace "S" suffix with an "LS" or "KS" suffix, for non-safety critical and safety critical applications respectively

Note: For more details, please refer to "Part Numbering System (SMD Type)" on page 15.