

VUJ Series

Features

- 8φ ~ 18φ, 150°C, 1,000 hours assured
- Chip type high temperature range, for +150°C use
- For automobile modules and other high temperature applications
- RoHS compliance
- AEC-Q200 Parts Available: Replace “S” Suffix with “KS” or “LS” Suffix



Marking color: Black

Specifications

Items	Performance																											
Category Temperature Range	-55°C ~ +150°C																											
Capacitance Tolerance	±20% (at 120 Hz, 20°C)																											
Leakage Current (at 20°C)	I = 0.03CV or 4 (μ A) whichever is greater (after 1 minutes) Where, C = rated capacitance in μF, V = rated DC working voltage in V																											
Tanδ (at 120 Hz, 20°C)	<table border="1"> <thead> <tr> <th colspan="2">Rated Voltage</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Tanδ (max)</td> <td>Dφ ≤ 10</td> <td>0.26</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.14</td> </tr> <tr> <td>Dφ ≥ 12.5</td> <td>0.22</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> </tbody> </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)	Dφ ≤ 10	0.26	0.20	0.16	0.14	0.14	Dφ ≥ 12.5	0.22	0.18	0.16	0.14	0.12							
Rated Voltage		10	16	25	35	50																						
Tanδ (max)	Dφ ≤ 10	0.26	0.20	0.16	0.14	0.14																						
	Dφ ≥ 12.5	0.22	0.18	0.16	0.14	0.12																						
Low Temperature Characteristics (at 120 Hz)	<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>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance Ratio</td> <td>Z(-40°C)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Dφ ≤ 10</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> </tr> <tr> <td></td> <td>Dφ ≥ 12.5</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>4</td> </tr> </tbody> </table>	Rated Voltage		10	16	25	35	50	Impedance Ratio	Z(-40°C)						Dφ ≤ 10	10	8	6	4	4		Dφ ≥ 12.5	8	6	4	4	4
Rated Voltage		10	16	25	35	50																						
Impedance Ratio	Z(-40°C)																											
	Dφ ≤ 10	10	8	6	4	4																						
	Dφ ≥ 12.5	8	6	4	4	4																						
Endurance	<table border="1"> <tbody> <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> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 1,000 hours at 150°C.</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																											
Shelf Life Test	<table border="1"> <tbody> <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> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 150°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 and Frequency Multipliers	<table border="1"> <thead> <tr> <th>Frequency (Hz)</th> <th>120</th> <th>300</th> <th>1k</th> <th>10k up</th> </tr> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.67</td> <td>0.79</td> <td>0.91</td> <td>1.00</td> </tr> </tbody> </table>	Frequency (Hz)	120	300	1k	10k up	Multiplier	0.67	0.79	0.91	1.00																	
Frequency (Hz)	120	300	1k	10k up																								
Multiplier	0.67	0.79	0.91	1.00																								

Diagram of Dimensions

Fig. 1

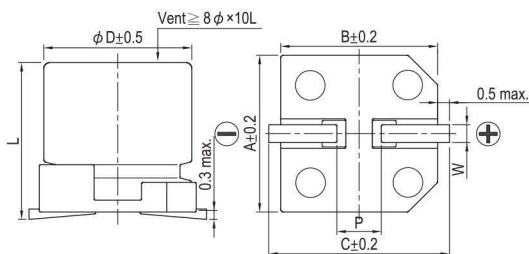
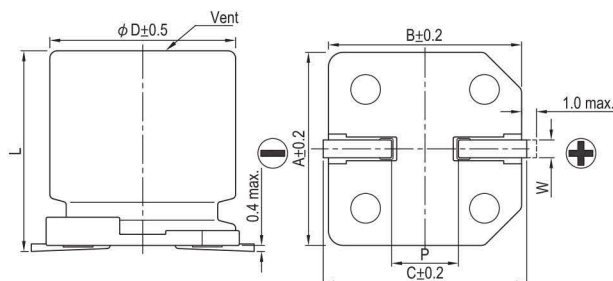


Fig. 2



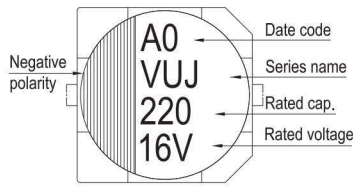
Lead Spacing and Diameter

Unit: mm

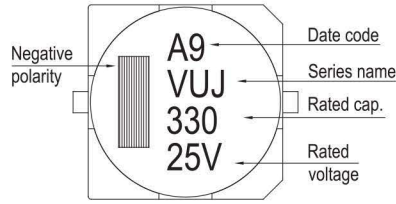
φD	L	A	B	C	W	P ± 0.2	Fig. No.
8	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1	1
10	10 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7	1
12.5	13.5 ± 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
16	16.5 ± 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
18	16.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2
18	21.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2

Marking

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



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



Dimension and Permissible Ripple Current

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

Ripple Current: mA/rms at 100k Hz, 150°C

Rated Volt. (V _{DC})	Cap. (μF)	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
33	330										8×10	70
47	470								8×10	80	10×10	100
100	101			8×10	110	8×10	110	10×10	120	12.5×13.5	420	
220	221	8×10	110	10×10	150	10×10	150	12.5×13.5	550	16×16.5	550	
330	331	10×10	150			12.5×13.5	650	12.5×13.5	650	16×21.5	650	
470	471			12.5×13.5	750	12.5×13.5	700	16×16.5	750	16×21.5	850	
680	681	12.5×13.5	800	12.5×13.5	800	16×16.5	800	16×21.5	950	18×21.5	1,100	
1,000	102	12.5×13.5	900	16×16.5	850	16×21.5	1,000	18×21.5	1,150			
2,200	222	18×21.5	1,350	18×21.5	1,350							
3,300	332	18×21.5	1,400									

Part Numbering System

VUJ series	220μF	±20%	10V	Carrier Tape	8φ × 10L	
VUJ	221	M	1A	TR	-	0810
Series name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case size
						Regional Code

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