

VLV Series

Features

- 12.5 ϕ ~ 16 ϕ , 105°C, 5,000 hours assured
- Suitable for automotive application
- Peak acceleration: 50G / 30G
- RoHS Compliance

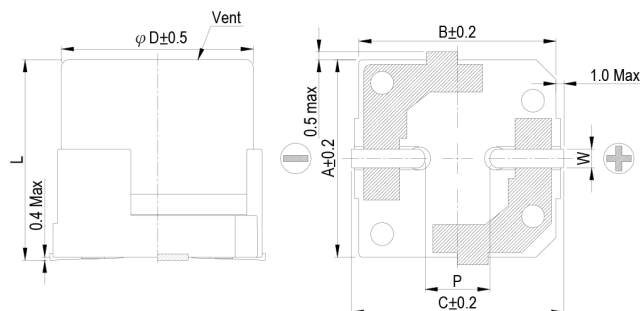


Marking color: Black

Specifications

Items	Performance																																	
Category Temperature Range	-55 ~ +105°C																																	
Capacitance Tolerance	±20% (at 120Hz, 20°C)																																	
Leakage Current (at 20°C)	$I = 0.01CV$ or 3 (μ A) whichever is greater (after 2 minutes) Where, C = rated capacitance in μ F V = rated DC working voltage in V																																	
Tan δ (at 120Hz, 20°C)	<table border="1"> <tr> <td>Rated Voltage</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>Tanδ (max)</td> <td>0.30</td> <td>0.26</td> <td>0.22</td> <td>0.16</td> <td>0.13</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> <td>0.07</td> </tr> </table> <p>When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.</p>	Rated Voltage	6.3	10	16	25	35	50	63	80	100	Tan δ (max)	0.30	0.26	0.22	0.16	0.13	0.10	0.08	0.08	0.07													
Rated Voltage	6.3	10	16	25	35	50	63	80	100																									
Tan δ (max)	0.30	0.26	0.22	0.16	0.13	0.10	0.08	0.08	0.07																									
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>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>Impedance</td> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Ratio</td> <td>Z(-55°C)/Z(+20°C)</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	Rated Voltage		6.3	10	16	25	35	50	63	80	100	Impedance	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2	2	Ratio	Z(-55°C)/Z(+20°C)	8	5	4	3	3	3	3	3	3
Rated Voltage		6.3	10	16	25	35	50	63	80	100																								
Impedance	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2	2																								
Ratio	Z(-55°C)/Z(+20°C)	8	5	4	3	3	3	3	3	3																								
Endurance	<table border="1"> <tr> <td>Test Time</td> <td>5,000 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 5,000 hours at 105°C.</p>	Test Time	5,000 Hrs	Capacitance Change	Within ±30% of initial value	Tan δ	Less than 300% of specified value	Leakage Current	Within specified value																									
Test Time	5,000 Hrs																																	
Capacitance Change	Within ±30% of initial value																																	
Tan δ	Less than 300% of specified value																																	
Leakage Current	Within specified value																																	
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 105°C without voltage applied.</p>	Test Time	1,000 Hrs	Capacitance Change	Within ±30% of initial value	Tan δ	Less than 300% of specified value	Leakage Current	Within specified value																									
Test Time	1,000 Hrs																																	
Capacitance Change	Within ±30% of initial value																																	
Tan δ	Less than 300% of specified value																																	
Leakage Current	Within specified value																																	
Ripple Current & Frequency Multipliers	<table border="1"> <tr> <td>Frequency(Hz)</td> <td>50, 60</td> <td>120</td> <td>1k</td> <td>10k up</td> </tr> <tr> <td>Multiplier</td> <td>0.60</td> <td>0.70</td> <td>0.85</td> <td>1.0</td> </tr> </table>	Frequency(Hz)	50, 60	120	1k	10k up	Multiplier	0.60	0.70	0.85	1.0																							
Frequency(Hz)	50, 60	120	1k	10k up																														
Multiplier	0.60	0.70	0.85	1.0																														
Vibration	<p>Peak acceleration: 50G Peak to peak amplitude: 1.5mm Frequency: 5 to 2,000 Hz reciprocation for 20 min. Direction and duration of vibration: 3 orthogonal directions mutually each for 4 Hrs.</p>																																	

Diagram of Dimensions



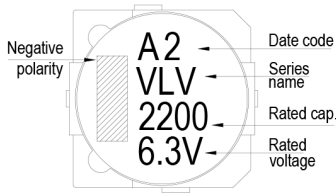
Lead Spacing and Diameter

Unit: mm

ϕ D	L	A	B	C	W	P ± 0.2
12.5	13.5 ± 0.5	13.0	13.5	14.5	1.1 ~ 1.4	4.4
12.5	16 ± 0.5	13.0	13.5	14.5	1.1 ~ 1.4	4.4
16	16.5 ± 0.5	16.5	17.0	18.2	1.1 ~ 1.4	6.4

Marking

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



Dimension: $\phi D \times L(\text{mm})$
 Ripple Current: mA/rms at 100k Hz, 105°C
 Impedance: Ω at 100k Hz, 20°C

Dimension & Permissible Ripple Current

V. DC		6.3V (0J)			10V (1A)			16V (1C)			25V (1E)			35V (1V)			50V (1H)		
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	$\phi D \times L$	Imp.	mA
330	331													12.5×13.5	0.066	850	12.5×13.5	0.11	700
470	471													12.5×16	0.058	950	16×16.5	0.070	1,100
680	681										12.5×13.5	0.066	850	12.5×16	0.058	950	16×16.5	0.070	1,100
1,000	102							12.5×13.5	0.066	850	12.5×16	0.058	950	16×16.5	0.052	1,300			
1,500	152				12.5×13.5	0.066	850	12.5×16	0.058	950	16×16.5	0.052	1,300						
2,200	222	12.5×13.5	0.066	850	12.5×16	0.058	950	16×16.5	0.052	1,300	16×16.5	0.052	1,300						
3,300	332	12.5×16	0.058	950	16×16.5	0.052	1,300	16×16.5	0.052	1,300									
4,700	472	16×16.5	0.052	1,300	16×16.5	0.052	1,300												

V. DC		63V (1J)			80V (1K)			100V (2A)		
μF	Contents	$\phi D \times L$	Imp.	mA	$\phi D \times L$	Imp.	mA	$\phi D \times L$	Imp.	mA
100	101							12.5×13.5	0.32	450
150	151	12.5×13.5	0.140	700	12.5×13.5	0.32	450	12.5×16	0.26	550
220	221	12.5×13.5	0.140	700	12.5×16	0.26	550	16×16.5	0.17	650
330	331	16×16.5	0.080	900	16×16.5	0.17	650			
470	471	16×16.5	0.080	900						

Part Numbering System

VLV series	2200 μF	$\pm 20\%$	6.3V	Carrier Tape	Anti-vibration structure (30G)	12.5 ϕ × 13.5L	Pb-free and PET coating case
VLV	222	M	0J	TR	K	1313	
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 12.