VLW Series



Marking color: Black

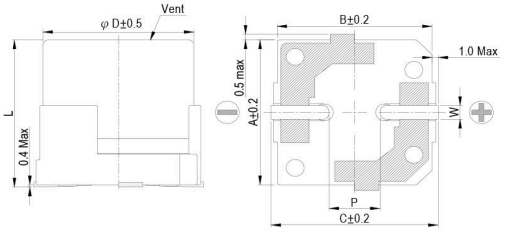
Features

- 12.5φ ~ 16φ, 125℃, 2,000 hours assured
- Suitable for automotive application
- Peak acceleration: 50G / 30G
- RoHS Compliance

Specifications

Items	Performance
Category Temperature Range	-40℃ ~ +125℃
Capacitance Tolerance	±20% (at 120Hz, 20℃)
Leakage Current (at 20℃)	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 120Hz, 20℃)	Rated Voltage: 10 / 16 / 25 / 35 / 50 Tanδ (max): 0.32 / 0.24 / 0.21 / 0.18 / 0.15 When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below. Rated Voltage: 10 / 16 / 25 / 35 / 50 Impedance Ratio Z(-25℃)/Z(+20℃): 3 / 2 / 2 / 2 / 2 Impedance Ratio Z(-40℃)/Z(+20℃): 5 / 4 / 3 / 3 / 3
Endurance	Test Time: 2,000 Hrs Capacitance Change: Within ±30% of initial value Tanδ: Less than 300% of specified value Leakage Current: Within specified value * The above Specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied for 2,000 hours at 125℃.
Shelf Life Test	Test Time: 1,000 Hrs Capacitance Change: Within ±30% of initial value Tanδ: Less than 300% of specified value Leakage Current: Within specified value * The above Specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 125℃ without voltage applied.
Ripple Current & Frequency Multipliers	Frequency(Hz) / Cap.(μF): 50, 60 / 120 / 1k / 10k up Under 330: 0.80 / 1.0 / 1.25 / 1.40 330 < C ≦ 2,200: 0.85 / 1.0 / 1.20 / 1.30
Vibration	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.

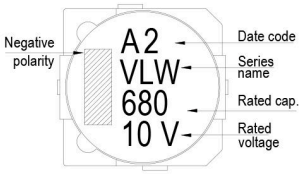
Diagram of Dimensions



Lead Spacing and Diameter Unit: mm

φD	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



Dimension & Permissible Ripple Current

Dimension: φD × L(mm)
Ripple Current: mA/rms at 120 Hz, 125℃

V. DC		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)	
μF	Contents	φD×L	mA	φD×L	mA	φD×L	mA	φD×L	mA	φD×L	mA
100	101									12.5×13.5	380
220	221							12.5×13.5	380	12.5×16	430
330	331			12.5×13.5	500	12.5×13.5	500	16×16.5	680	16×16.5	680
470	471	12.5×13.5	500	12.5×13.5	500	12.5×13.5	500	16×16.5	680	16×16.5	680
680	681	12.5×13.5	500	12.5×13.5	500	12.5×16	600	16×16.5	680		
1,000	102	12.5×16	600	12.5×16	600	16×16.5	680				
1,500	152	12.5×16	600	16×16.5	680						
2,200	222	16×16.5	680								

Part Numbering System

VLW series	470μF	±20%	16V	Carrier Tape	Anti-vibration structure (30G)	12.5φ×13.5L	Pb-free and PET coating case
VLW	**471**	**M**	**1C**	**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.