



VZL Series

Features

- $4\phi \sim 10\phi$, 105°C, 2,000 hours assured
- Large capacitance with ultra low impedance capacitors
- Designed for surface mounting on high density PC board
- RoHS compliant
- AEC-Q200 compliant

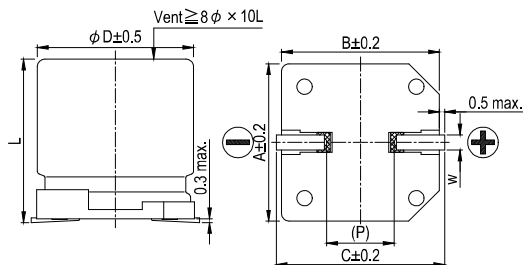


Marking color: Black

Specifications

Items	Performance																													
Category Temperature Range	-55℃ ~ +105℃																													
Capacitance Tolerance	± 20% (at 120 Hz, 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 120 Hz, 20℃)	<table><tr><td>Rated Voltage</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td>Tanδ (max.)</td><td>0.26</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td></tr></table>							Rated Voltage	6.3	10	16	25	35	50	Tanδ (max.)	0.26	0.19	0.16	0.14	0.12	0.10									
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Tanδ (max.)	0.26	0.19	0.16	0.14	0.12	0.10																								
Low Temperature Characteristics (at 120 Hz)	Impedance ratio shall not exceed the values given in the table below. <table><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></tr><tr><td rowspan="2">Impedance Ratio</td><td>Z(-25℃) / Z(+20℃)</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-55℃) / Z(+20℃)</td><td>8</td><td>5</td><td>4</td><td>3</td><td>3</td><td>3</td></tr></table>							Rated Voltage		6.3	10	16	25	35	50	Impedance Ratio	Z(-25℃) / Z(+20℃)	4	3	2	2	2	2	Z(-55℃) / Z(+20℃)	8	5	4	3	3	3
Rated Voltage		6.3	10	16	25	35	50																							
Impedance Ratio	Z(-25℃) / Z(+20℃)	4	3	2	2	2	2																							
	Z(-55℃) / Z(+20℃)	8	5	4	3	3	3																							
Endurance	<table><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> * The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied for 2,000 hours at 105℃.							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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Tanδ	Less than 300% of specified value																													
Leakage Current	Within specified value																													
Shelf Life Test	Test time: 1,000 hours; other items are the same as those for the Endurance.																													
Ripple Current and Frequency Multipliers	<table><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													
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Diagram of Dimensions



Lead Spacing and Diameter

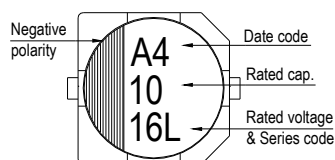
Unit: mm

φD	L	A	B	C	W	P
4	5.8 ± 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0
5	5.8 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5
6.3	5.8 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	6.5 ± 0.3	8.3	8.3	9.0	0.5 ~ 0.8	2.3
8	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1
10	10 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.1	4.7

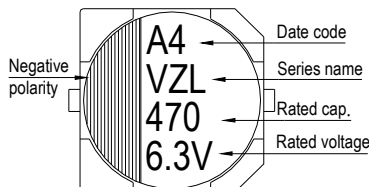
The diagram is marking " () " for reference dimension.

Marking

φD ≤ 6.3 mm



φD = 8 ~ 10 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 and Permissible Ripple Current

Cap. (μF)	Contents	6.3V (0J)			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	$\phi D \times L$	Imp.	mA
4.7	4R7													4×5.8	1.35	90			
10	100							4×5.8	1.35	90	4×5.8	1.35	90	5×5.8	0.70	160			
22	220	4×5.8	1.35	90	4×5.8	1.35	90	5×5.8	0.70	160	5×5.8	0.70	160	6.3×5.8	0.36	240			
33	330	4×5.8	1.35	90	5×5.8	0.70	160	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×5.8	0.36	240			
47	470	5×5.8	0.70	160	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×5.8	0.36	240			
68	680	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×7.7 8×6.5	0.32 0.26	290 300			
100	101	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×7.7 8×6.5	0.32 0.26	290 300	6.3×7.7 8×10	0.32 0.16	290 600	8×10	0.34	350
150	151	6.3×5.8	0.36	240	6.3×5.8	0.36	240	6.3×7.7	0.32	290	8×10	0.16	600	8×10	0.16	600			
220	221	6.3×5.8	0.36	240	6.3×7.7 8×6.5	0.32 0.26	290 300	6.3×7.7 8×6.5	0.32 0.26	290 300	8×10	0.16	600	10×10	0.08	850	10×10	0.18	670
330	331	6.3×7.7 8×6.5 8×10	0.32 0.26 0.16	290 300 600	8×10	0.16	600	8×10	0.16	600	8×10	0.16	600	10×10	0.08	850			
470	471	8×10	0.16	600	8×10	0.16	600	8×10 10×10	0.16 0.08	600 850	10×10	0.08	850						
680	681	8×10	0.16	600	10×10	0.08	850	10×10	0.08	850									
1,000	102	8×10	0.16	600	10×10	0.08	850												
1,500	152	10×10	0.08	850															

Part Numbering System

VZL Series	470μF	± 20%	6.3V	Carrier Tape		8 ϕ ×10L	General Purpose
<u>VZL</u>	<u>471</u>	<u>M</u>	<u>0J</u>	<u>TR</u>	<u>-</u>	<u>0810</u>	
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.