

VZR Series

Features

- 5 φ ~ 10 φ , 105°C, 7,000 hours assured
- Low Impedance temperature range up to +105°C
- For automobile modules and high temperature applications
- RoHS Compliance



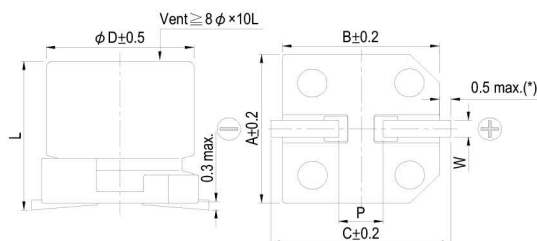
AEC-Q200 Qualified Parts Available: Use "LS" or "KS" Suffix

Marking color: Black

Specifications

Items	Performance																
Category Temperature Range	-25°C ~ +105°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>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>0.32</td> <td>0.28</td> <td>0.26</td> <td>0.16</td> <td>0.14</td> <td>0.14</td> </tr> </table>	Rated Voltage	6.3	10	16	25	35	50	Tanδ (max)	0.32	0.28	0.26	0.16	0.14	0.14		
Rated Voltage	6.3	10	16	25	35	50											
Tanδ (max)	0.32	0.28	0.26	0.16	0.14	0.14											
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 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>Impedance Ratio</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> </tr> </table>	Rated Voltage		6.3	10	16	25	35	50	Impedance Ratio	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2
Rated Voltage		6.3	10	16	25	35	50										
Impedance Ratio	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2										
Endurance	<table border="1"> <tr> <td>Test Time</td> <td>7,000 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 7,000 hours at 105°C.</p>	Test Time	7,000 Hrs	Capacitance Change	Within ±30% of initial value	Tanδ	Less than 300% of specified value	Leakage Current	Within specified value								
Test Time	7,000 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"> <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	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"> <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						
Frequency(Hz)	50	120	1k	10k up													
Multiplier	0.35	0.50	0.83	1.0													

Diagram of Dimensions



Lead Spacing and Diameter

Unit: mm

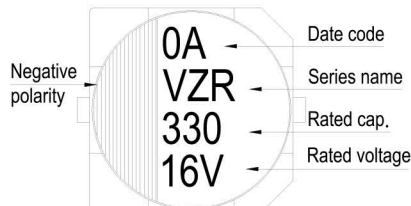
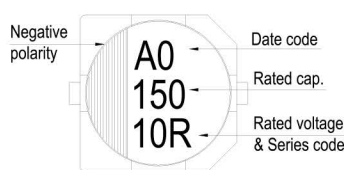
φD	L	A	B	C	W	P ± 0.2
5	7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5
6.3	7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
6.3	8.7 ± 0.5	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	10 ± 0.5	8.4	8.4	9.0	0.7 ~ 1.1	3.1
10	10 ± 0.5	10.4	10.4	11.0	0.7 ~ 1.3	4.7

(*): For 5 ~ 6.3 φ is 0.4 max.

Marking

φ D = 5 ~ 6.3 mm

φ D = 8 ~ 10 mm



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

Dimension and Permissible Ripple Current

Rated Volt. (Voc)		6.3V (0J)			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	$\phi D \times L$	Imp.	mA	
10	100																			
22	220							5×7	2.2	95	5×7	2.2	95	5×7	2.2	95				
33	330				5×7	2.2	95				6.3×7	1.1	140	6.3×8.7	1.0	230				
47	470	5×7	2.2	95				6.3×7	1.1	140	6.3×7	1.1	140	6.3×8.7	1.0	230	8×10	0.53	350	
100	101	6.3×7	1.1	140				6.3×7	1.1	140	6.3×8.7	1.0	230				8×10	0.53	350	
150	151				6.3×7	1.1	140	6.3×8.7	1.0	230										
220	221	6.3×8.7	1.0	230				6.3×8.7	1.0	230	8×10	0.22	600	8×10	0.22	600	10×10	0.35	670	
330	331	6.3×8.7	1.0	230				8×10	0.22	600	8×10	0.22	600	10×10	0.16	850				
470	471	8×10	0.22	600				8×10	0.22	600	10×10	0.16	850							

Part Numbering System

VZR Series	470μF	±20%	6.3V	Carrier Tape	8φ×10L	Pb-free and PET coating case
VZR	471	M	0J	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.

SMD