

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

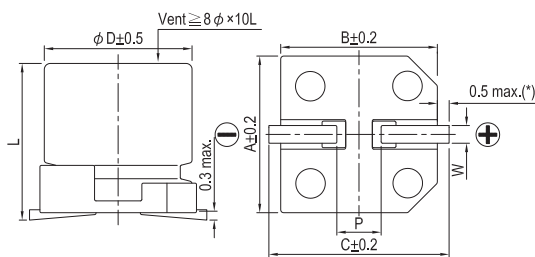


Marking color: Black

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"> <thead> <tr> <th>Rated Voltage</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <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> </tbody> </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"> <thead> <tr> <th>Rated Voltage</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <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> </tr> </tbody> </table>	Rated Voltage	6.3	10	16	25	35	50	Impedance Ratio	$Z(-25°C)/Z(+20°C)$	4	3	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									
Endurance	<table border="1"> <thead> <tr> <th>Test Time</th> <th>7,000 Hrs</th> </tr> </thead> <tbody> <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 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"> <thead> <tr> <th>Test Time</th> <th>1,000 Hrs</th> </tr> </thead> <tbody> <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 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"> <thead> <tr> <th>Frequency(Hz)</th> <th>50</th> <th>120</th> <th>1k</th> <th>10k up</th> </tr> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.35</td> <td>0.50</td> <td>0.83</td> <td>1.0</td> </tr> </tbody> </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

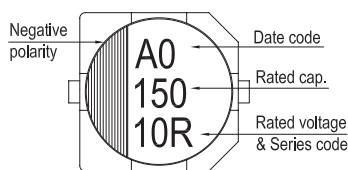
Unit: mm

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	8.3	8.3	9.0	0.7 ~ 1.1	3.1
10	10 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7

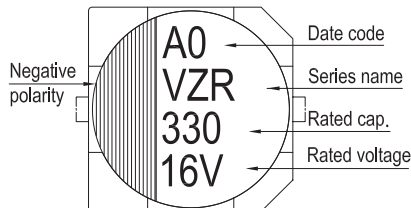
(*): For 5 ~ 6.3 φ is 0.4 max.

Marking

φD = 5 ~ 6.3 mm



φD = 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. (V _{DC})	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		
10	100																5×7	2.2	95			
22	220								5×7	2.2	95	5×7	2.2	95	5×7	2.2	95					
33	330											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	-	0810
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 15.