



## VEC Series

### Features

- 4  $\phi$  ~ 6.3  $\phi$ , 85°C, 2,000 hours assured
- Vertical chip type miniaturized for 5.5mm, high capacitors
- Low Leakage Current Lead free reflow soldering is available
- Designed for surface mounting on high density PC board
- RoHS Compliance

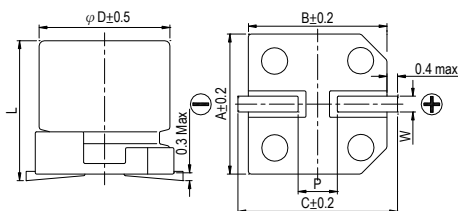


Marking color: Black

### Specifications

Items	Performance																							
Category Temperature Range	-40°C ~ +85°C																							
Capacitance Tolerance	±20% (at 120Hz, 20°C)																							
Leakage Current (at 20°C)	I = 0.002CV or 0.5 (μA) whichever is greater (after 2 minutes) Where, C = rated capacitance in μF V = rated DC working voltage in V																							
Tanδ (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> </tr> <tr> <td>Tanδ (max)</td> <td>0.28</td> <td>0.24</td> <td>0.20</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)	0.28	0.24	0.20	0.14	0.12	0.10									
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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> </tr> <tr> <td rowspan="2">Impedance Ratio</td> <td>Z(-25°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</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°C)/Z(+20°C)	3	3	2	2	2	2	Z(-40°C)/Z(+20°C)	8	5	4	3	3	3
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Shelf Life Test	<table border="1"> <tr> <td>Test Time</td> <td>1,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 200% 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 85°C without voltage applied.</p>	Test Time	1,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value															
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Ripple Current & 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>0.7</td> <td>1.0</td> <td>1.3</td> <td>1.4</td> </tr> </table>	Frequency (Hz)	50	120	1k	10k up	Multiplier	0.7	1.0	1.3	1.4													
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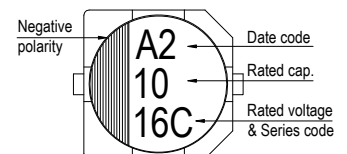
### Diagram of Dimensions



Lead Spacing and Diameter Unit: mm

$\phi$ D	L	A	B	C	W	P ± 0.2
4	5.3 ± 0.2	4.3	4.3	5.1	0.5 ~ 0.8	1.0
5	5.3 ± 0.2	5.3	5.3	5.9	0.5 ~ 0.8	1.5
6.3	5.3 ± 0.2	6.6	6.6	7.2	0.5 ~ 0.8	2.0

### Marking



### Dimension & Permissible Ripple Current

Dimension:  $\phi$  D × L(mm)

Ripple Current: mA/rms at 120 Hz, 85°C

V. DC	μF Contents	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)	
		$\phi$ D×L	mA	$\phi$ D×L	mA	$\phi$ D×L	mA	$\phi$ D×L	mA	$\phi$ D×L	mA	$\phi$ D×L	mA
1	010											4×5.3	10
2.2	2R2											4×5.3	15
3.3	3R3											4×5.3	19
4.7	4R7							4×5.3	19	4×5.3	20	5×5.3	26
10	100			4×5.3	23	4×5.3	26	5×5.3	32	5×5.3	34	6.3×5.3	44
22	220	4×5.3	31	5×5.3	39	5×5.3	44	6.3×5.3	55	6.3×5.3	59		
33	330	5×5.3	44	5×5.3	48	6.3×5.3	63	6.3×5.3	67				
47	470	5×5.3	52	6.3×5.3	67	6.3×5.3	75						
100	101	6.3×5.3	89	6.3×5.3	98								

### Part Numbering System

VEC series	10μF	±20%	16V	Carrier Tape	4 $\phi$ × 5.3L	Pb-free and PET coating case
<b>VEC</b>	<b>100</b>	<b>M</b>	<b>1C</b>	<b>TR</b>	<b>-</b>	<b>0405</b>
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.