

VGN Series

Features

- $8\phi \sim 18\phi$, 105°C, 2,000 hours assured
- Bi-polarized series for operations wide temperature range
- Designed for surface mounting on high density PC board
- RoHS Compliance
- AEC-Q200 qualified



Marking color: Black

Specifications

Items	Performance																													
Category Temperature Range	-55°C ~ +105°C																													
Capacitance Tolerance	±20% (at 120 Hz, 20°C)																													
Leakage Current (at 20°C)	I = 0.03CV or 4 (μA) whichever is greater (after 1 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> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Tanδ (max)</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> </tr> </tbody> </table> <p>When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.</p>	Rated Voltage	6.3	10	16	25	35	50	63	100	Tanδ (max)	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.09											
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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 colspan="2">Rated Voltage</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance Ratio</td> <td>Z(-25°C)/Z(+20°C)</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table>	Rated Voltage		6.3	10	16	25	35	50	63	100	Impedance Ratio	Z(-25°C)/Z(+20°C)	5	4	3	2	2	2	2	2	Z(-40°C)/Z(+20°C)	10	8	6	4	3	3	3	3
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Endurance (with the polarity inverted every 250 hours)	<table border="1"> <thead> <tr> <th>Test Time</th> <th>2,000 Hrs</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hours at 105°C.</p>	Test Time	2,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																					
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Diagram of Dimensions

Fig. 1

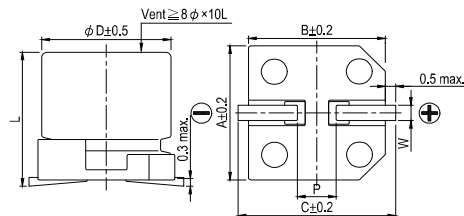
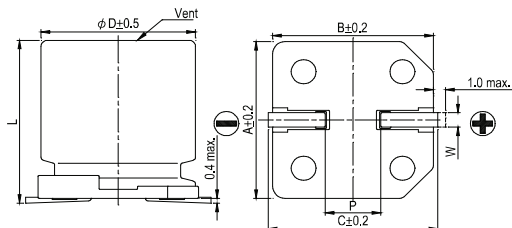


Fig. 2

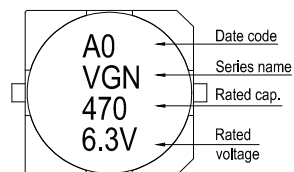


Lead Spacing and Diameter

Unit: mm

φD	L	A	B	C	W	P ± 0.2	Fig. No.
8	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1	1
10	10 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7	1
12.5	13.5 ± 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
12.5	16 ± 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
16	16.5 ± 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
16	21.5 ± 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
18	16.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2
18	21.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2

Marking



Dimension and Permissible Ripple Current

Dimension: $\phi D \times L$ (mm)

Ripple Current: mA/rms at 120 Hz, 105°C

Cap. (μ F)	Contents	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
22	220											8×10	40			12.5×13.5	100
33	330							8×10	50	8×10	50	10×10	60			12.5×16	150
47	470							8×10	60	10×10	70	12.5×13.5	130	12.5×13.5	140	16×16.5	180
100	101			8×10	100	8×10	100	10×10	110	12.5×13.5	180	12.5×16	230	16×16.5	270	18×21.5	310
220	221	8×10	120	10×10	150	10×10	150	12.5×13.5	270	16×16.5	330	18×16.5 16×21.5	400 400	18×21.5	440		
330	331	10×10	170	10×10	170	12.5×13.5	310	16×16.5	370	18×16.5 16×21.5	450 450	18×21.5	540	18×21.5	590		
470	471	12.5×13.5	270	12.5×13.5	340	16×16.5	420	16×16.5	490	18×21.5	590	18×21.5	640				
1,000	102	12.5×16	500	16×16.5	600	18×16.5 16×21.5	670 670	18×21.5	780								
2,200	222	18×16.5 16×21.5	740 740	18×21.5	830												
3,300	332	18×21.5	920														

Part Numbering System

VGN Series 470 μ F $\pm 20\%$ 6.3V Carrier Tape 12.5 ϕ × 13.5L

VGN **471** **M** **0J** **TR** - **1313**

Series Name Capacitance Capacitance Tolerance Rated Voltage Package Type Terminal Type Case Size

XX
S = Standard
KS = AEC-Q200 Qualified, Safety Critical Application
LS = AEC-Q200 Qualified, Non-Safety Critical Application