

VUK Series

Features

- $8\phi \sim 18\phi$, 125°C, 3,000 ~ 5,000 hours assured
- Chip type high temperature range, for +125°C use
- For automobile modules and other high temperature applications
- RoHS compliant
- AEC-Q200 compliant



Marking color: Black

Specifications

Items	Performance																																		
Category Temperature Range	-40°C ~ +125°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><tr><td>Rated Voltage</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td></tr><tr><td>Tanδ (max.)</td><td>0.22</td><td>0.18</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.12</td></tr></table> When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.							Rated Voltage	10	16	25	35	50	63	Tanδ (max.)	0.22	0.18	0.16	0.14	0.12	0.12														
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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>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td></tr><tr><td rowspan="2">Impedance Ratio</td><td>Z(-25°C) / Z(+20°C)</td><td>6</td><td>5</td><td>4</td><td>3</td><td>3</td><td>3</td></tr><tr><td>Z(-40°C) / Z(+20°C)</td><td>12</td><td>8</td><td>6</td><td>4</td><td>4</td><td>4</td></tr></table>							Rated Voltage		10	16	25	35	50	63	Impedance Ratio	Z(-25°C) / Z(+20°C)	6	5	4	3	3	3	Z(-40°C) / Z(+20°C)	12	8	6	4	4	4					
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Endurance	<table><tr><td>Test Time</td><td colspan="6">3,000 Hrs for ϕ D ≤ 10 mm; 5,000 Hrs for ϕ D ≥ 12.5 mm</td></tr><tr><td>Capacitance Change</td><td colspan="6">Within ± 30% of initial value</td></tr><tr><td>Tanδ</td><td colspan="6">Less than 300% of specified value</td></tr><tr><td>Leakage Current</td><td colspan="6">Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 3,000 / 5,000 hours at 125°C.							Test Time	3,000 Hrs for ϕ D ≤ 10 mm; 5,000 Hrs for ϕ D ≥ 12.5 mm						Capacitance Change	Within ± 30% of initial value						Tanδ	Less than 300% of specified value						Leakage Current	Within specified value					
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Shelf Life Test	<table><tr><td>Test Time</td><td colspan="6">1,000 Hrs</td></tr><tr><td>Capacitance Change</td><td colspan="6">Within ± 30% of initial value</td></tr><tr><td>Tanδ</td><td colspan="6">Less than 300% of specified value</td></tr><tr><td>Leakage Current</td><td colspan="6">Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 125°C without voltage applied.							Test Time	1,000 Hrs						Capacitance Change	Within ± 30% of initial value						Tanδ	Less than 300% of specified value						Leakage Current	Within specified value					
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Ripple Current and Frequency Multipliers	<table><tr><td> Freq.(Hz) Cap.(μF) </td><td>50</td><td>120</td><td>1k</td><td>10k up</td></tr><tr><td>≤ 330</td><td>0.80</td><td>1.0</td><td>1.25</td><td>1.40</td></tr><tr><td>330 < C ≤ 3,300</td><td>0.85</td><td>1.0</td><td>1.20</td><td>1.30</td></tr></table>							Freq.(Hz) Cap.(μF)	50	120	1k	10k up	≤ 330	0.80	1.0	1.25	1.40	330 < C ≤ 3,300	0.85	1.0	1.20	1.30													
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Diagram of Dimensions

Fig. 1

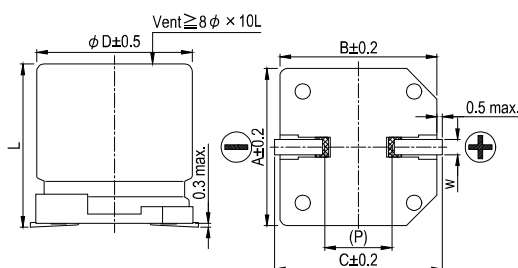
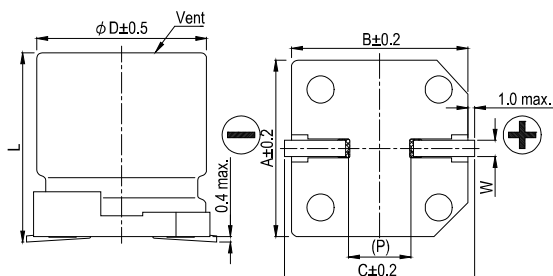


Fig. 2



Lead Spacing and Diameter

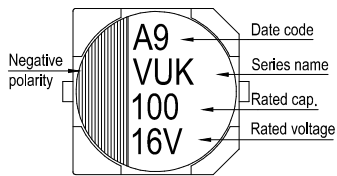
Unit: mm

φ D	L	A	B	C	W	P	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 ~ 1.1	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
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

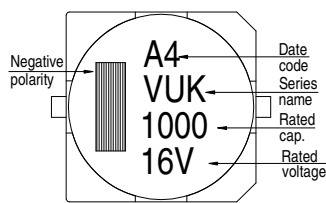
The diagram is marking " () " for reference dimension.

Marking

$\phi D = 8 \sim 10 \text{ mm}$



$\phi D \geq 12.5 \text{ mm}$



Dimension and Permissible Ripple Current

Dimension: $\phi D \times L(\text{mm})$

Ripple Current: mA/rms at 120 Hz, 125°C

Rated Volt. (V _{DC})		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)	
Cap. (μF)	Contents	$\phi D \times L$	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
100	101			8×10	85	8×10	85	10×10	110	12.5×13.5	170	12.5×13.5	150
220	221	8×10	85	10×10	150	10×10	150	12.5×13.5	200	16×16.5	250	16×16.5	230
330	331	10×10	150	12.5×13.5	230	12.5×13.5	230	16×16.5	280	18×16.5	340	18×16.5	320
470	471	12.5×13.5	230	12.5×13.5	250	16×16.5	310	18×16.5	380	18×21.5	430	18×21.5	410
680	681	12.5×13.5	250	12.5×13.5	280	16×16.5	350	18×16.5	450				
1,000	102	12.5×16	350	16×16.5	440	18×21.5	540						
1,500	152	12.5×16	350	16×16.5	460								
2,200	222	18×16.5	620	18×21.5	710								
3,300	332	18×21.5	770										

Part Numbering System

VUK Series	330μF	± 20%	16V	Carrier Tape	12.5 ϕ × 13.5L	General Purpose
VUK	331	M	1C	TR	-	1313
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.