

VZH Series

Features

- 4φ ~ 18φ, 105°C, 2,000 ~ 5,000 hours assured
- Large capacitance with ultra low impedance capacitors
- Designed for surface mounting on high density PC board
- RoHS compliant
- AEC-Q200 compliant parts available (replace "S" Suffix with "KS")



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 = 0.01CV 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><tr><td>Rated Voltage</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td></tr><tr><td>Tanδ (max.)</td><td>0.30</td><td>0.26</td><td>0.22</td><td>0.16</td><td>0.13</td><td>0.10</td><td>0.08</td><td>0.08</td><td>0.07</td></tr></table>										Rated Voltage	6.3	10	16	25	35	50	63	80	100	Tanδ (max.)	0.30	0.26	0.22	0.16	0.13	0.10	0.08	0.08	0.07
	Rated Voltage	6.3	10	16	25	35	50	63	80	100																				
	Tanδ (max.)	0.30	0.26	0.22	0.16	0.13	0.10	0.08	0.08	0.07																				
When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.																														
Low Temperature Characteristics (at 120 Hz)	Impedance ratio shall not exceed the values given in the table below.																													
	Rated Voltage			6.3	10	16	25	35	50	63	80	100																		
	Impedance Ratio	Z(-25°C) / Z(+20°C)	4	3	2	2	2	2	2	2	2	2																		
Z(-55°C) / Z(+20°C)		8	5	4	3	3	3	3	3	3	3																			
Endurance	Test Time		2,000 Hrs for ϕ D ≤ 6.3mm & 8×6.5L & 10 ϕ ×7.7L; 5,000 Hrs for ϕ D ≥ 8mm																											
	Capacitance Change		Within ± 30% of initial value																											
	Tanδ		Less than 300% of specified value																											
	Leakage Current		Within specified value																											
	* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 ~ 5,000 hours at 105°C.																													
Shelf Life Test	Test Time		1,000 Hrs																											
	Capacitance Change		Within ± 30% of initial value																											
	Tanδ		Less than 300% of specified value																											
	Leakage Current		Within specified value																											
	* 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.																													
Ripple Current and Frequency Multipliers	Frequency (Hz)		50, 60		120		1k		10k up																					
	Multiplier		0.60		0.70		0.85		1.0																					

Diagram of Dimensions

Fig. 1

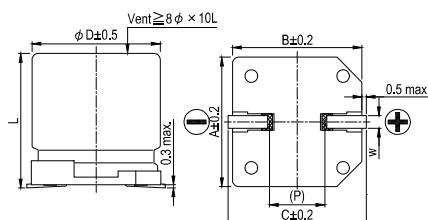
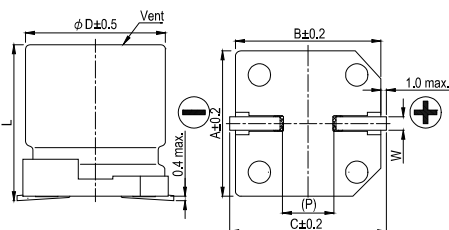


Fig. 2



Lead Spacing and Diameter

Unit: mm

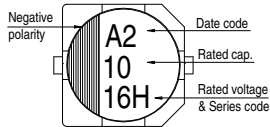
φ D	L	A	B	C	W	P	Fig. No.
4	5.7 ± 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5	1
6.3	5.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
8	6.5 ± 0.3	8.3	8.3	9.0	0.5 ~ 0.8	2.3	1
8	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1	1
10	7.7 ± 0.3	10.3	10.3	11.0	0.7 ~ 1.1	4.7	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
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

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

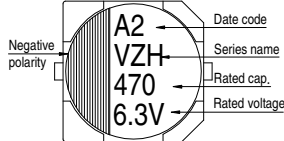
All product specifications in the catalog are subject to change without notice. (Cat. 2025E3)

Marking

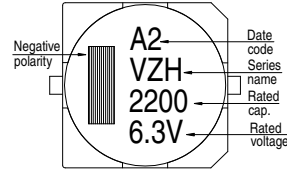
$\phi D \leq 6.3 \text{ mm}$



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



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



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

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
1 010						
2.2 2R2						4×5.7 2.9 60
3.3 3R3						4×5.7 2.9 60
4.7 4R7					4×5.7 1.35 80	5×5.7 1.52 85
10 100			4×5.7 1.35 80	4×5.7 1.35 80	5×5.7 0.80 150	6.3×5.7 0.88 165
22 220	4×5.7 1.35 80	4×5.7 1.35 80	5×5.7 0.80 150	5×5.7 0.80 150	6.3×5.7 0.44 230	6.3×5.7 0.88 165
33 330	4×5.7 1.35 80	5×5.7 0.80 150	6.3×5.7 0.44 230	6.3×5.7 0.44 230	6.3×5.7 0.44 230	6.3×7.7 0.68 185
47 470	5×5.7 0.80 150	6.3×5.7 0.44 230	6.3×5.7 0.44 230	6.3×5.7 0.44 230	6.3×5.7 0.44 230	6.3×7.7 0.68 185
68 680				6.3×5.7 0.44 230	8×6.5 0.36 280	8×10 0.34 369
100 101	6.3×5.7 0.44 230	6.3×5.7 0.44 230	6.3×5.7 0.44 230	6.3×7.7 0.36 280	8×6.5 0.36 280	8×10 0.34 369
150 151	6.3×5.7 0.44 230	6.3×5.7 0.44 230	6.3×7.7 0.36 280	8×6.5 0.36 280	8×10 0.17 450	8×10 0.17 450
220 221	6.3×5.7 0.44 230	6.3×7.7 0.36 280	6.3×7.7 0.36 280	8×10 0.17 450	8×10 0.17 450	10×10 0.18 553
330 331	8×6.5 0.36 280	8×10 0.17 450	8×10 0.17 450	8×10 0.17 450	10×10 0.090 670	12.5×13.5 0.12 650
470 471	8×10 0.17 450	8×10 0.17 450	8×10 0.17 450	10×10 0.09 670	12.5×13.5 0.070 820	12.5×13.5 0.12 650
680 681	8×10 0.17 450	10×10 0.09 670	10×10 0.09 670	12.5×13.5 0.070 820	12.5×16 0.060 950	16×16.5 0.073 1,000
1,000 102	8×10 0.17 450	10×10 0.09 670	12.5×13.5 0.070 820	12.5×16 0.060 950	16×16.5 0.054 1,260	16×16.5 0.073 1,000
1,500 152	10×10 0.09 670	12.5×13.5 0.070 820	12.5×16 0.060 950	16×16.5 0.054 1,260	18×16.5 0.048 1,500	18×16.5 0.066 1,500
2,200 222	12.5×13.5 0.070 820	12.5×16 0.060 950	16×16.5 0.054 1,260	16×16.5 0.054 1,260	18×21.5 0.038 1,630	18×21.5 0.05 1,620
3,300 332	12.5×16 0.060 950	16×16.5 0.054 1,260	16×16.5 0.054 1,260	18×16.5 0.048 1,500	18×21.5 0.038 1,630	
4,700 472	16×16.5 0.054 1,260	16×16.5 0.054 1,260	18×16.5 0.048 1,500	18×21.5 0.038 1,630		
6,800 682	18×16.5 0.048 1,500	18×16.5 0.048 1,500				
8,200 822	18×16.5 0.048 1,500	18×21.5 0.038 1,750				

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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})		63V (1J)			80V (1K)			100V (2A)		
Cap. (μF)	Contents	$\phi D \times L$	Imp.	mA	$\phi D \times L$	Imp.	mA	$\phi D \times L$	Imp.	mA
4.7	4R7	5×5.7	1.90	70						
10	100	6.3×5.7	1.20	130						
22	220	6.3×7.7	0.90	150	8×10	1.3	130	8×10	1.3	130
33	330	8×10	0.50	280	8×10	1.3	130	10×10	0.7	200
47	470	8×10	0.50	280	10×10	0.7	200	10×10	0.7	200
100	101	10×10	0.25	450	10×10	0.7	200	12.5×13.5	0.32	450
150	151	12.5×13.5	0.15	700	12.5×13.5	0.32	450	16×16.5	0.17	650
220	221	12.5×13.5	0.15	700	16×16.5	0.17	650	16×16.5 18×21.5	0.17 0.15	650 950
330	331	16×16.5	0.082	900	16×16.5	0.17	650	18×16.5 16×21.5	0.15 0.15	850 900
470	471	16×16.5	0.082	900	16×21.5	0.15	900	18×21.5	0.15	950
680	681	18×16.5 16×21.5	0.080 0.080	1,150 1,150	18×21.5	0.15	950			
1,000	102	18×21.5	0.06	1,250						

Part Numbering System

VZH Series	470μF	± 20%	6.3V	Carrier Tape	8 ϕ × 10L	Regional Tracking Purpose
VZH	471	M	0J	TR	-	0810
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case Size
						S

Note: For more details, please refer to "Part Numbering System - SMD Type" on page 106.