VZH Series

Features

- 4φ ~ 18φ, 105℃, 2,000 ~ 5,000 hours assured
- Large capacitance with ultra low impedance capacitors
- Designed for surface mounting on high density PC board
- RoHS compliance

Marking color: Black

Specifications

Items	Performance
Category Temperature Range	-55℃ ~ +105℃
Capacitance Tolerance	±20% (at 120 Hz, 20℃)
Leakage Current (at 20℃)	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℃)	See table below
Low Temperature Characteristics (at 120 Hz)	See table below
Endurance	See table below
Shelf Life Test	See table below
Ripple Current and Frequency Multipliers	See table below

Tanδ (at 120 Hz, 20℃)

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℃)/Z(+20℃)	4	3	2	2	2	2	2	2	2
	Z(-55℃)/Z(+20℃)	8	5	4	3	3	3	3	3	3

Endurance

Test Time	2,000 Hrs for φD ≦ 6.3mm & 8×6.5L & 10φ×7.7L; 5,000 Hrs for φD ≧ 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℃ after the rated voltage applied for 2,000 ~ 5,000 hours at 105℃.

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℃ after exposing them for 1,000 hours at 105℃ 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

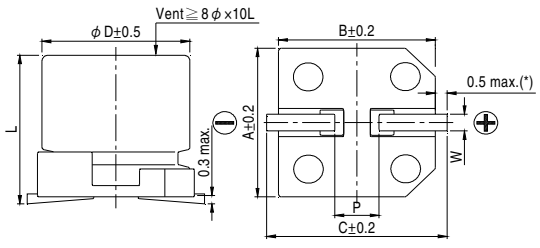
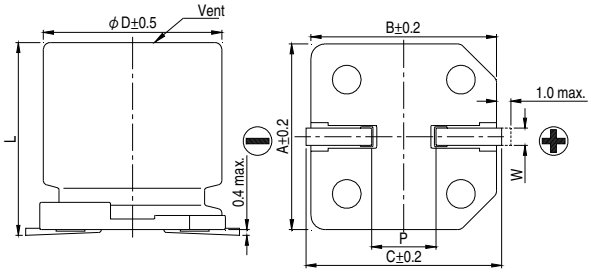


Fig. 2



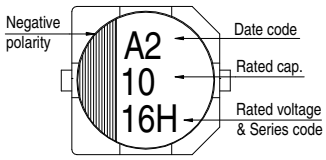
Lead Spacing and Diameter Unit: mm

φD	L	A	B	C	W	P ± 0.2	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 ~ 1.3	4.7	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

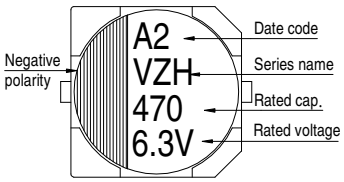
(*): For 4 ~ 6.3φ is 0.4 max.

Marking

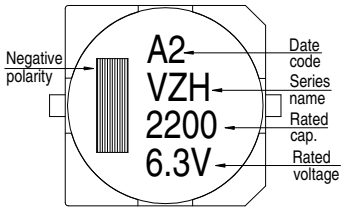
ϕD ≦ 6.3 mm



ϕD = 8 ~ 10 mm



ϕD ≧ 12.5 mm



Dimension: ϕD × L(mm)
Ripple Current: mA/rms at 100k Hz, 105℃
Impedance: Ω/ at 100k Hz, 20℃

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)		
		ϕD×L	Imp.	mA	ϕD×L	Imp.	mA	ϕD×L	Imp.	mA	ϕD×L	Imp.	mA	ϕD×L	Imp.	mA	ϕD×L	Imp.	mA
1	010																4×5.7	2.9	60
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 8×6.5	0.68 0.68	185 185
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 8×6.5	0.36 0.36	280 280	8×10	0.17	450	8×10 10×10	0.34 0.18	369 553
150	151	6.3×5.7	0.44	230	6.3×5.7	0.44	230	6.3×7.7 8×6.5	0.36 0.36	280 280	8×10	0.17	450	8×10 10×7.7	0.17 0.17	450 450	10×10	0.18	553
220	221	6.3×5.7 6.3×7.7	0.44 0.36	230 280	6.3×7.7 8×6.5	0.36 0.36	280 280	6.3×7.7	0.36	280	8×10 10×7.7	0.17 0.17	450 450	8×10 10×10	0.17 0.09	450 670	12.5×13.5	0.12	650
330	331	8×6.5 8×10	0.36 0.17	280 450	8×10 10×7.7	0.17 0.17	450 450	8×10 10×7.7	0.17 0.17	450 450	8×10	0.17	450	10×10 12.5×13.5	0.090 0.070	670 820	12.5×13.5	0.12	650
470	471	8×10 10×7.7	0.17 0.17	450 450	8×10 10×7.7	0.17 0.17	450 450	8×10 10×10	0.17 0.09	450 670	10×10	0.09	670	12.5×16	0.060	950	16×16.5	0.073	1,000
680	681	8×10 10×7.7	0.17 0.17	450 450	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 18×16.5	0.073 0.066	1,000 1,500
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 16×21.5	0.048 0.038	1,500 1,630	18×21.5	0.05	1,620
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	1,750			
3,300	332	12.5×16	0.060	950	16×16.5	0.054	1,260	16×16.5 16×21.5	0.054 0.038	1,260 1,630	18×16.5 16×21.5 18×21.5	0.048 0.038 0.038	1,500 1,630 1,750						
4,700	472	16×16.5	0.054	1,260	16×16.5	0.054	1,260	18×16.5 16×21.5	0.048 0.038	1,500 1,630									
6,800	682	18×16.5 16×21.5	0.048 0.038	1,500 1,630	18×16.5 16×21.5	0.048 0.038	1,500 1,630												
8,200	822	18×16.5 16×21.5	0.048 0.038	1,500 1,630	18×21.5	0.038	1,750												

Dimension: ϕD × L(mm)
Ripple Current: mA/rms at 100k Hz, 105℃
Impedance: Ω/ at 100k Hz, 20℃

Dimension and Permissible Ripple Current

Rated Volt. (V_{DC}) / Cap. (μF)	Contents	63V (1J)			80V (1K)			100V (2A)		
		ϕD×L	Imp.	mA	ϕD×L	Imp.	mA	ϕD×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		8ϕ×10L	Pb-free and PET coating case
VZH	**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.

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VZH-100M1CTR-0406 VZH-100M1ETR-0406 VZH-100M1JTR-0606 VZH-100M1VTR-0506 VZH-101M0JTR-0606 VZH-101M1ATR-0606 VZH-101M1CTR-0606 VZH-220M1ETR-0506 VZH-220M1HTR-0606 VZH-470M1ETR-0606 VZH-470M1HTR-0607 VZH-470M1JTR-0810 VZH-101M1ETR-0607 VZH-101M1VTR-0810 VZH-102M1ATR-1010 VZH-221M1ETR-0810 VZH-221M1HTR-1010 VZH-221M1JTR-1313 VZH-010M1HTR-0406 VZH-100M1HTR-0606 VZH-101M1HTR-1010 VZH-101M1KTR-1313 VZH-101M2ATR-1313 VZH-102M0JTR-0810 VZH-102M1CTR-1313 VZH-102M1ETR-1316 VZH-102M1VTR-1616 VZH-151M0JTR-0606 VZH-151M1ATR-0606 VZH-151M1CTR-0607 VZH-151M1ETR-0810 VZH-151M1HTR-1010 VZH-151M1JTR-1313 VZH-151M1KTR-1313 VZH-151M1VTR-0810 VZH-151M2ATR-1316 VZH-151M2ATR-1616 VZH-152M0JTR-1010 VZH-152M1ATR-1313 VZH-152M1CTR-1316 VZH-152M1ETR-1616 VZH-220M0JTR-0406 VZH-220M1ATR-0406 VZH-220M1CTR-0506 VZH-220M1JTR-0607 VZH-220M1VTR-0606 VZH-221M0JTR-0607 VZH-470M1CTR-0606 VZH-221M1ATR-0607 VZH-221M1KTR-1316 VZH-100M1ETR-0406-K VZH101M0JTR-0505K VZH220M1VTR-0606LEGT VZH-10V101MF60-RK VZH101M2ATR-1313 VZH100M1HTR-0606 VZH151M1HTR-1010 VZH102M1ETR-1316 VZH102M1VTR-1616 VZH101M1HTR-1010 VZH100M1VTR-0506 VZH151M1VTR-0810 VZH221M1HTR-1010 VZH221M1KTR-1316 VZH151M1ETR-0810 VZH102M0JTR-0810 VZH102M1ATR-1010 VZH100M1CTR-0406 VZH100M1JTR-0606 VZH101M0JTR-0606 VZH101M1ETR-0607 VZH101M1VTR-0810 VZH220M1ETR-0506 VZH220M1HTR-0606 VZH221M1ETR-0810 VZH221M1JTR-1313 VZH470M1ETR-0606 VZH470M1HTR-0607 VZH470M1JTR-0810 VZH152M0JTR-1010 VZH151M1KTR-1313 VZH101M1KTR-1313 VZH220M1ATR-0406 VZH010M1HTR-0406 VZH100M1ETR0406 VZH101M1ATR-0606 VZH102M1CTR-1313 VZH151M0JTR-0606 VZH151M1ATR-0606 VZH151M1CTR-0607 VZH151M1JTR-1313 VZH151M2ATR-1316 VZH151M2ATR-1616 VZH152M1CTR-1316 VZH152M1ETR-1616 VZH220M0JTR-0406 VZH220M1CTR-0506 VZH220M1JTR-0607 VZH220M1VTR-0606 VZH221M0JTR-0607