VEH Series

Marking color: Black

Features

- 4φ ~ 10φ, 105℃, 2,000 hours assured
- Vertical chip type miniaturized, Low impedance capacitors
- Designed for surface mounting on high density PC board
- RoHS compliant
- AEC-Q200 compliant parts available (replace "S" Suffix with "KS")

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℃)	
Low Temperature Characteristics (at 120 Hz)	Impedance ratio shall not exceed the values given in the table below.
Endurance	
Shelf Life Test	
Ripple Current and Frequency Multipliers	

Tanδ (at 120 Hz, 20℃)

Rated Voltage	6.3	10	16	25	35	50
Tanδ (max.)	0.30	0.26	0.22	0.16	0.13	0.13

Low Temperature Characteristics (at 120 Hz)

Rated Voltage		6.3	10	16	25	35	50
Impedance Ratio	Z(-25℃) / Z(+20℃)	4	3	2	2	2	2
	Z(-55℃) / Z(+20℃)	10	7	5	3	3	3

Endurance

Test Time	2,000 Hrs
Capacitance Change	Within ± 25% of initial value for φD ≦ 6.3 mm; Within ± 20% of initial value for φD ≧ 8 mm
Tanδ	Less than 200% 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 hours at 105℃.

Shelf Life Test

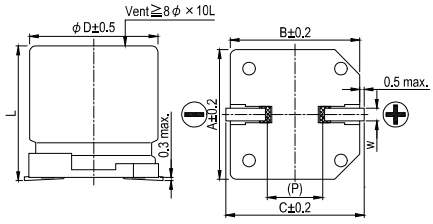
Test Time	1,000 Hrs
Capacitance Change	Within ± 25% of initial value for φD ≦ 6.3 mm; Within ± 20% of initial value for φD ≧ 8 mm
Tanδ	Less than 200% of specified value
Leakage Current	Within specified value

* 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	0.64	0.8	0.93	1.0

Diagram of Dimensions



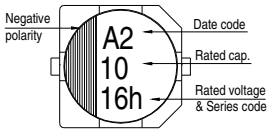
Lead Spacing and Diameter Unit: mm

φD	L	A	B	C	W	P
4	5.7 ± 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0
5	5.7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5
6.3	5.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1
10	10 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.1	4.7

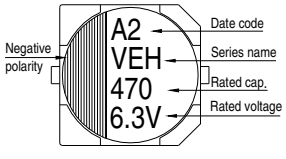
The diagram is marking " ( ) " for reference dimension.

Marking

φD ≦ 6.3 mm



φD = 8 ~ 10 mm



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SMD Aluminum Electrolytic Capacitors **VEH**

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. (Vdc) / 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
3.3	3R3																4×5.7	5.0	30
4.7	4R7										4×5.7	3.2	65	4×5.7	3.2	65	4×5.7	5.0	30
10	100							4×5.7	3.2	65	5×5.7	1.5	110	5×5.7	1.5	110	5×5.7	3.0	50
22	220				4×5.7	3.2	65	5×5.7	1.5	110	6.3×5.7	0.85	170	6.3×5.7	0.85	170	6.3×5.7	2.0	70
33	330	4×5.7	3.2	65	5×5.7	1.5	110	6.3×5.7	0.85	170	6.3×5.7	0.85	170	6.3×5.7	0.85	170	8×10	0.6	300
47	470	5×5.7	1.5	110	6.3×5.7	0.85	170	6.3×5.7	0.85	170	6.3×5.7	0.85	170	8×10	0.45	450	8×10	0.6	300
100	101	6.3×5.7	0.85	170	6.3×5.7	0.85	170	8×10	0.45	450	8×10	0.45	450	8×10	0.45	450	8×10	0.6	300
150	151	6.3×5.7	0.85	170	6.3×5.7	0.85	170	8×10	0.45	450	8×10	0.45	450	8×10	0.45	450	10×10	0.3	500
220	221	6.3×5.7	0.85	170	8×10	0.45	450	8×10	0.45	450	8×10 10×10	0.45 0.25	450 670	10×10	0.25	670			
330	331	8×10	0.45	450	8×10	0.45	450	8×10	0.45	450	10×10	0.25	670						
470	471	8×10	0.45	450	8×10	0.45	450	10×10	0.25	670									
820	821	10×10	0.25	670	10×10	0.25	670												
1,000	102	10×10	0.25	670															

Part Numbering System

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

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

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