

## VEJ Series

### Features

- 4  $\phi$  ~ 18  $\phi$ , 105°C, 2,000 hours assured
- Designed for surface mounting on high density PC board
- RoHS Compliance



Marking color: Black

### Specifications

Items	Performance																																																											
Category Temperature Range	6.3 ~ 100V	160 ~ 400V	450V																																																									
	-55°C ~ +105°C	-40°C ~ +105°C	-25°C ~ +105°C																																																									
Capacitance Tolerance	±20% (at 120Hz, 20°C)																																																											
Leakage Current (at 20°C)	<table border="1"> <tr> <td>Rated voltage</td> <td colspan="2">6.3 ~ 100V</td> <td>160 ~ 450V</td> </tr> <tr> <td>Time</td> <td colspan="2">after 2 minutes</td> <td>after 5 minutes</td> </tr> <tr> <td>Case size</td> <td>4 ~ 10 <math>\phi</math></td> <td>12.5 ~ 18 <math>\phi</math></td> <td>12.5 ~ 18 <math>\phi</math></td> </tr> <tr> <td>Leakage Current</td> <td>I = 0.01CV or 3<math>\mu</math>A, whichever is greater</td> <td>I = 0.03CV or 4<math>\mu</math>A, whichever is greater</td> <td>I = 0.04CV + 100<math>\mu</math>A</td> </tr> </table> <p>Where, C = rated capacitance in <math>\mu</math>F    V = rated DC working voltage in V</p>			Rated voltage	6.3 ~ 100V		160 ~ 450V	Time	after 2 minutes		after 5 minutes	Case size	4 ~ 10 $\phi$	12.5 ~ 18 $\phi$	12.5 ~ 18 $\phi$	Leakage Current	I = 0.01CV or 3 $\mu$ A, whichever is greater	I = 0.03CV or 4 $\mu$ A, whichever is greater	I = 0.04CV + 100 $\mu$ A																																									
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Tan $\delta$ (at 120Hz, 20°C)	<table border="1"> <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>100</td> <td>160 ~ 250</td> <td>400 ~ 450</td> </tr> <tr> <td>4 ~ 10 <math>\phi</math></td> <td>0.45</td> <td>0.35</td> <td>0.28</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> <td>-</td> <td>-</td> </tr> <tr> <td>12.5 ~ 18 <math>\phi</math></td> <td>0.40</td> <td>0.38</td> <td>0.34</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.14</td> <td>0.10</td> <td>0.20</td> <td>0.25</td> </tr> </table> <p>When the capacitance exceeds 1,000<math>\mu</math>F, 0.02 shall be added every 1,000<math>\mu</math>F increase.</p>			Rated Voltage	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450	4 ~ 10 $\phi$	0.45	0.35	0.28	0.18	0.16	0.14	0.12	0.12	-	-	12.5 ~ 18 $\phi$	0.40	0.38	0.34	0.26	0.22	0.18	0.14	0.10	0.20	0.25																								
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Low Temperature Characteristics (at 120Hz)	<p>Impedance ratio shall not exceed the values given in the table below.</p> <table border="1"> <tr> <td colspan="2">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>100</td> <td>160 ~ 250</td> <td>400 ~ 450</td> </tr> <tr> <td rowspan="4">Impedance Ratio</td> <td>Z(-25°C)</td> <td><math>\phi D &lt; 12.5</math></td> <td>4</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td>-</td> </tr> <tr> <td>/Z(+20°C)</td> <td><math>\phi D \geq 12.5</math></td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td>6</td> </tr> <tr> <td>Z(-55/-40°C)</td> <td><math>\phi D &lt; 12.5</math></td> <td>12</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>-</td> </tr> <tr> <td>/Z(+20°C)</td> <td><math>\phi D \geq 12.5</math></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> <td>10</td> </tr> </table>			Rated Voltage		6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450	Impedance Ratio	Z(-25°C)	$\phi D < 12.5$	4	4	3	2	2	2	2	3	-	/Z(+20°C)	$\phi D \geq 12.5$	5	4	3	2	2	2	2	3	6	Z(-55/-40°C)	$\phi D < 12.5$	12	8	6	4	3	3	3	4	-	/Z(+20°C)	$\phi D \geq 12.5$	10	8	6	4	3	3	3	3	10
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Endurance	<table border="1"> <tr> <td>Test Time</td> <td colspan="3">2,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td colspan="3">Within ±25% of initial value for <math>\phi D \leq 6.3</math>mm; Within ±20% of initial value for <math>\phi D \geq 8</math>mm</td> </tr> <tr> <td>Tan<math>\delta</math></td> <td colspan="3">Less than 300% of specified value for <math>\phi D \leq 6.3</math>mm; Less than 200% of specified value for <math>\phi D \geq 8</math>mm</td> </tr> <tr> <td>Leakage Current</td> <td colspan="3">Within specified value</td> </tr> </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 ±25% of initial value for $\phi D \leq 6.3$ mm; Within ±20% of initial value for $\phi D \geq 8$ mm			Tan $\delta$	Less than 300% of specified value for $\phi D \leq 6.3$ mm; Less than 200% of specified value for $\phi D \geq 8$ mm			Leakage Current	Within specified value																																											
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Shelf Life Test	Test time: 1,000 hours; other items are the same as those for the Endurance. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1).																																																											
Ripple Current & Frequency Multipliers	<table border="1"> <tr> <td rowspan="2">Cap. (<math>\mu</math>F)</td> <td colspan="4">Freq. (Hz)</td> </tr> <tr> <td>50</td> <td>120</td> <td>1k</td> <td>10k up</td> </tr> <tr> <td>Under 1,000</td> <td>0.80</td> <td>1.00</td> <td>1.25</td> <td>1.40</td> </tr> <tr> <td>1,000 &lt; C <math>\leq</math> 8,200</td> <td>0.85</td> <td>1.00</td> <td>1.15</td> <td>1.25</td> </tr> </table>			Cap. ( $\mu$ F)	Freq. (Hz)				50	120	1k	10k up	Under 1,000	0.80	1.00	1.25	1.40	1,000 < C $\leq$ 8,200	0.85	1.00	1.15	1.25																																						
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### Diagram of Dimensions

Fig. 1



Fig. 2



### Lead Spacing and Diameter

Unit: mm

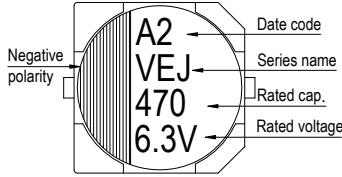
$\phi D$	L	A	B	C	W	P ± 0.2	Fig. No.
4	5.7 ± 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5	1
6.3	5.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
8	6.5 ± 0.3	8.4	8.4	9.0	0.5 ~ 0.8	2.3	1
8	10 ± 0.5	8.4	8.4	9.0	0.7 ~ 1.1	3.1	1
10	7.7 ± 0.3	10.4	10.4	11.0	0.7 ~ 1.3	4.7	1
10	10 ± 0.5	10.4	10.4	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

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



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



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



## Dimension & Permissible Ripple Current

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

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

V. DC $\mu\text{F}$	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
1	010											4×5.7	8	4×5.7	8		
2.2	2R2											4×5.7	12	4×5.7	12		
3.3	3R3											4×5.7	14	5×5.7	17		
4.7	4R7							4×5.7	17	4×5.7	17	5×5.7	20	6.3×5.7	22		
10	100					4×5.7	20	4×5.7	20	5×5.7	27	6.3×5.7	32	6.3×5.7 8×6.5	32 51		
22	220	4×5.7	22	4×5.7	22	5×5.7	30	5×5.7	30	6.3×5.7	44	6.3×5.7 8×6.5	38 67	6.3×7.7	58	8×10	100
33	330	5×5.7	34	5×5.7	34	5×5.7	34	6.3×5.7	46	6.3×5.7 8×6.5	46 76	6.3×7.7	65	8×10	140	10×10	150
47	470	5×5.7	38	5×5.7	38	6.3×5.7	48	6.3×5.7 8×6.5	48 79	6.3×7.7	80	6.3×7.7	70	8×10	170	12.5×13.5	250
100	101	6.3×5.7	69	6.3×5.7 8×6.5	69 90	6.3×5.7	69	6.3×7.7	100	8×10	240	8×10	210	10×10	310	12.5×13.5	380
220	221	6.3×7.7 8×6.5	120 120	6.3×7.7	120	6.3×7.7	120	8×10 10×7.7	270 270	8×10	270	10×10	330	12.5×13.5	470	16×16.5	450
330	331	8×10	290	8×10	290	8×10 10×7.7	290 290	8×10	290	10×10	370	12.5×13.5	490	16×16.5	650	18×16.5 16×21.5	590 750
470	471	8×10	320	8×10 10×7.7	320 320	10×10	380	10×10	380	12.5×13.5	520	12.5×16	550	16×16.5	700	18×21.5	980
1,000	102	10×10	410	10×10	410	12.5×13.5	550	12.5×16	550	16×16.5	800	18×16.5	990				
2,200	222	12.5×13.5	680	12.5×13.5	680	16×16.5	900	16×16.5	900	18×16.5	1,050						
3,300	332	12.5×16	850	16×16.5	950	16×16.5	950	18×16.5 16×21.5	1,150 1,200								
4,700	472	16×16.5	1,000	16×16.5	1,000	18×16.5 16×21.5	1,225 1,275	18×21.5	1,300								
6,800	682	18×16.5 16×21.5	1,290 1,350	18×16.5 16×21.5	1,290 1,350												
8,200	822	18×21.5	1,450	18×21.5	1,450												

V. DC $\mu\text{F}$	Contents	160V (2C)		200V (2D)		250V (2E)		400V (2G)		450V (2W)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
4.7	4R7					12.5×13.5	65	12.5×13.5	45	12.5×13.5	45
10	100			12.5×13.5	80	12.5×13.5	70	12.5×13.5	50	12.5×16	75
22	220			12.5×16	110	12.5×13.5	105	16×16.5	85	16×16.5	85
33	330	12.5×13.5	95	12.5×16	120	16×16.5	180	18×16.5	100	18×16.5	100
47	470	16×16.5	240	16×16.5	220	16×16.5	220	18×21.5	130		
100	101	16×16.5	250	18×16.5	280	18×16.5	260				

## Part Numbering System

VEJ series    470 $\mu\text{F}$      $\pm 20\%$     6.3V    Carrier Tape    8 $\phi \times 10\text{L}$     Pb-free and PET coating case

**VEJ**    **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 12.

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

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