

## OCV Series

### Features

- 105°C, 2,000 hours assured
- Ultra low ESR, solid capacitors of SMD type
- RoHS compliance
- AEC-Q200 Parts Available: Replace “S” Suffix with “KS” or “LS” Suffix



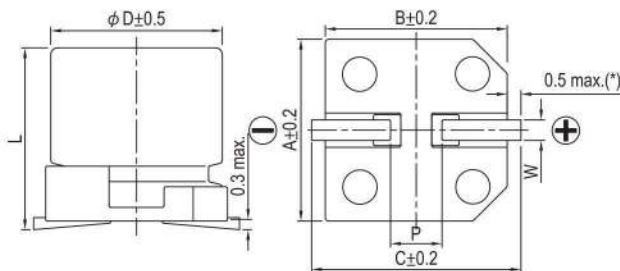
Marking color: Blue

### Specifications

Items	Performance										
Category Temperature Range	-55°C ~ +105°C										
Capacitance Tolerance	±20% (at 120 Hz, 20°C)										
Leakage Current (at 20°C)*	Rated voltage applied, after 2 minutes at 20°C. See Standard Ratings										
Tanδ (at 120 Hz, 20°C)	See Standard Ratings										
ESR (at 100k ~ 300k Hz, 20°C)	See Standard Ratings										
Endurance	<table border="1"> <tr> <td>Test Time</td> <td>2,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 150% of specified value</td> </tr> <tr> <td>ESR</td> <td>Less than 150% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table>	Test Time	2,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 150% of specified value	ESR	Less than 150% of specified value	Leakage Current	Within specified value
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	Capacitance Change	Within ±20% of initial value									
	Tanδ	Less than 150% of specified value									
	ESR	Less than 150% 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 hours at 105°C.											
Moisture Resistance	<table border="1"> <tr> <td>Test Time</td> <td>1,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 150% of specified value</td> </tr> <tr> <td>ESR</td> <td>Less than 150% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table>	Test Time	1,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 150% of specified value	ESR	Less than 150% of specified value	Leakage Current	Within specified value
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	Tanδ	Less than 150% of specified value									
	ESR	Less than 150% of specified value									
Leakage Current	Within specified value										
* The above specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them at 60°C, 90 ~ 95% RH for 1,000 hours. Leakage current should be tested after voltage treatment*.											
Resistance to Soldering Heat * (Please refer to page 26 for reflowsoldering conditions)	<table border="1"> <tr> <td>Capacitance Change</td> <td>Within ±10% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Within specified value</td> </tr> <tr> <td>ESR</td> <td>Within specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table>	Capacitance Change	Within ±10% of initial value	Tanδ	Within specified value	ESR	Within specified value	Leakage Current	Within specified value		
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	ESR	Within specified value									
Leakage Current	Within specified value										
Ripple Current and Frequency Multipliers	<table border="1"> <tr> <th>Frequency (Hz)</th> <th>120 ≤ f &lt; 1k</th> <th>1k ≤ f &lt; 10k</th> <th>10k ≤ f &lt; 100k</th> <th>100k ≤ f &lt; 500k</th> </tr> <tr> <td>Multiplier</td> <td>0.05</td> <td>0.3</td> <td>0.7</td> <td>1.0</td> </tr> </table>	Frequency (Hz)	120 ≤ f < 1k	1k ≤ f < 10k	10k ≤ f < 100k	100k ≤ f < 500k	Multiplier	0.05	0.3	0.7	1.0
	Frequency (Hz)	120 ≤ f < 1k	1k ≤ f < 10k	10k ≤ f < 100k	100k ≤ f < 500k						
Multiplier	0.05	0.3	0.7	1.0							

\* For any doubt about measured values, measure the leakage current again after the following voltage treatment.  
Voltage treatment: DC rated voltage is applied to the capacitors for 2 hours at 105 °C.

### Diagram of Dimensions



### Lead Spacing and Diameter

Unit: mm

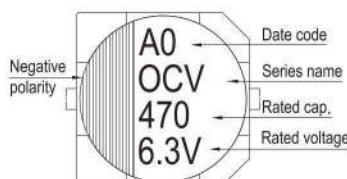
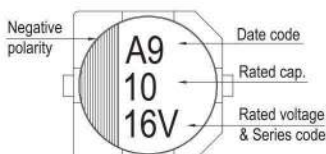
φ D	L	A	B	C	W	P ± 0.2
5	5.7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5
6.3	5.9 +0.1/-0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
6.3	7.0 ± 0.2	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	6.7 ± 0.3	8.3	8.3	9.0	0.7 ~ 1.1	3.1
8	12.0 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1
10	7.7 ± 0.3	10.3	10.3	11.0	0.7 ~ 1.3	4.7
10	9.9 +0.1/-0.3	10.3	10.3	11.0	0.7 ~ 1.3	4.7
10	12.6 +0.1/-0.4	10.3	10.3	11.0	0.7 ~ 1.3	4.7

(\*): For 5 ~ 6.3 φ is 0.4 max.

### Marking

φ D = 5 ~ 6.3

φ D = 8 ~ 10



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

Ripple Current: mA/rms at 100k Hz, 105°C

**Standard Ratings**

Rated Volt. (V)	Surge Voltage (V)	Capacitance ( $\mu$ F)	Size $\phi D \times L$ (mm)	Tan $\delta$ (120 Hz, 20°C)	L C ( $\mu$ A)	E S R (m $\Omega$ /at 100k ~ 300k Hz, 20°C max.)	Rated R. C. (mA/rms at 100k Hz, 105°C)	
2.5V (0E)	2.9	220	6.3 × 5.9	0.12	110	25	2,500	
		560	8 × 6.7		280	23	3,100	
		680	8 × 12		340	12	4,770	
		1,000	10 × 7.7		500	19	4,240	
		1,200	10 × 9.9		750	13	5,200	
		1,500	10 × 12.6		750	10	5,500	
4V (0G)	4.6	150	5 × 5.7	0.12	120	30	1,490	
			6.3 × 5.9		120	26	2,450	
			8 × 6.7		176	25	3,020	
			8 × 6.7		264	25	3,020	
		470	10 × 7.7	0.18	376	20	4,130	
		560	8 × 12		448	12	4,770	
		680	10 × 7.7		544	20	4,130	
		820	10 × 9.9		656	13	5,200	
		1,200	10 × 12.6		960	10	5,500	
6.3V (0J)	7.2	82	6.3 × 5.9	0.12	103	27	2,400	
			5 × 5.7		126	35	1,380	
		100	6.3 × 5.9		126	27	2,400	
			6.3 × 7		151	30	2,010	
		150	6.3 × 7		189	30	2,250	
			8 × 6.7		189	25	3,020	
		220	6.3 × 7		277	30	2,250	
			8 × 6.7		277	25	3,020	
		330	10 × 7.7		0.15	416	20	4,130
		470	8 × 12			592	12	4,770
		560	10 × 9.9			706	16	4,700
820	10 × 12.6	1,033	10	5,500				
10V (1A)	12.0	47	5 × 5.7	0.12		94	40	1,270
		56	6.3 × 5.9	0.10	112	31	2,250	
		150	8 × 6.7	0.10	300	27	2,800	
		330	8 × 12	0.15	660	14	4,420	
			10 × 7.7	0.10	660	24	3,770	
		470	10 × 9.9	0.15	940	18	4,400	
		560	10 × 12.6	0.15	1,120	12	5,300	
16V (1C)	18.0	22	5 × 5.7	0.12	70	45	1,210	
		47	6.3 × 5.9	0.10	150	50	1,650	
		82	8 × 6.7	0.10	262	30	2,700	
		180	8 × 12	0.15	576	16	4,360	
			10 × 7.7	0.10	576	26	3,430	
		220	10 × 9.9	0.15	704	20	4,200	
		330	10 × 12.6	0.15	792	14	5,050	
		820	10 × 12.6	0.12	2,624	18	4,200	

OP-CAP

Dimension:  $\phi D \times L$ (mm)  
 Ripple Current: mA/rms at 100k Hz, 105°C

**Standard Ratings**

Rated Volt. (V)	Surge Voltage (V)	Capacitance ( $\mu$ F)	Size $\phi D \times L$ (mm)	Tan $\delta$ (120 Hz, 20°C)	L C ( $\mu$ A)	E S R (m $\Omega$ /at 100k ~ 300k Hz, 20°C max.)	Rated R. C. (mA/rms at 100k Hz, 105°C)
20V (1D)	23.0	22	6.3 × 5.9	0.10	88	50	1,650
		47	8 × 6.7		188	45	2,000
		82	10 × 7.7		328	40	2,500
		100	8 × 12	0.15	400	24	3,320
			10 × 9.9		400	25	3,700
			10 × 12.6		600	20	4,320
		330	10 × 12.6	0.12	1,320	26	2,700
25V (1E)	29.0	6.8	6.3 × 5.9	0.10	170	80	1,200
		10	8 × 6.7		125	60	1,500
		22	10 × 7.7		275	50	2,000
		33	8 × 12	0.12	413	30	2,980
			10 × 12.6		700	28	3,800
			10 × 12.6		1,350	27	2,700
35V (1V)	40.0	39	8 × 12	0.12	273	31	2,100
		68	10 × 12.6	0.12	476	28	2,700

**Part Numbering System**

OCV Series	470 $\mu$ F	$\pm$ 20%	6.3V	Carrier Tape	8 $\phi$ × 12L
<b>OCV</b>	<b>471</b>	<b>M</b>	<b>0J</b>	<b>TR</b>	<b>-</b>
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type
					Case size
					Regional Code
					<b>0812</b>
					<b>S</b>

Note: For more details, please refer to "Part Numbering System (SMD Type)" on page 15.