

### Features

- 105°C, 2,000 hours assured
- Ultra low ESR, solid capacitors of SMD type
- RoHS compliance

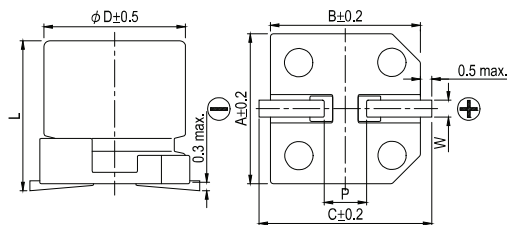


Marking color: Blue

### 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 15 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		
	Capacitance Change	Within ±10% of initial value									
	Tanδ	Within specified value									
	ESR	Within specified value									
Leakage Current	Within specified value										
* 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.											
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							

### Diagram of Dimensions



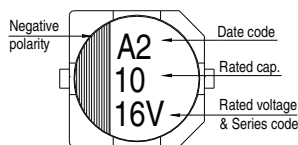
### Lead Spacing and Diameter

Unit: mm

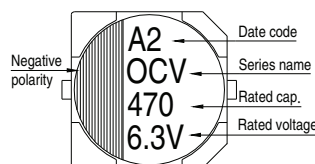
φD	L	A	B	C	W	P ± 0.2
5	5.7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5
6.3	5.9 +0.1/-0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
6.3	7.0 ± 0.2	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	6.7 ± 0.3	8.3	8.3	9.0	0.7 ~ 1.1	3.1
8	12.0 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1
10	7.7 ± 0.3	10.3	10.3	11.0	0.7 ~ 1.3	4.7
10	9.9 +0.1/-0.3	10.3	10.3	11.0	0.7 ~ 1.3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

### Marking

φD = 5 ~ 6.3



φD = 8 ~ 10



Standard Ratings

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

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

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 x 5.9	0.12	110	25	2,500
		560	8 x 6.7	0.12	280	23	3,100
		680	8 x 12	0.18	340	12	4,770
		1,000	10 x 7.7	0.12	500	19	4,240
		1,200	10 x 9.9	0.18	750	13	5,200
		1,500	10 x 12.6	0.18	750	10	5,500
4V (0G)	4.6	150	5 x 5.7	0.12	120	30	1,490
			6.3 x 5.9		120	26	2,450
		220	8 x 6.7		176	25	3,020
		330	8 x 6.7		264	25	3,020
		470	10 x 7.7	376	20	4,130	
		560	8 x 12	0.18	448	12	4,770
		680	10 x 7.7	0.12	544	20	4,130
		820	10 x 9.9	0.18	656	13	5,200
		1,200	10 x 12.6	0.18	960	10	5,500
		6.3V (0J)	7.2	82	6.3 x 5.9	0.12	103
5 x 5.7	126				35		1,380
100	6.3 x 5.9			126	27		2,400
	6.3 x 7			151	30		2,010
150	6.3 x 7			189	30		2,250
	8 x 6.7			189	25		3,020
220	6.3 x 7			277	30	2,250	
	8 x 6.7			277	25	3,020	
330	10 x 7.7			416	20	4,130	
470	8 x 12			592	12	4,770	
560	10 x 9.9			0.15	706	16	4,700
820	10 x 12.6			1,033	10	5,500	
10V (1A)	12.0	47	5 x 5.7	0.12	94	40	1,270
		56	6.3 x 5.9	0.10	112	31	2,250
		150	8 x 6.7	0.10	300	27	2,800
		330	8 x 12	0.15	660	14	4,420
			10 x 7.7	0.10	660	24	3,770
		470	10 x 9.9	0.15	940	18	4,400
		560	10 x 12.6	0.15	1,120	12	5,300
16V (1C)	18.0	22	5 x 5.7	0.12	70	45	1,210
		47	6.3 x 5.9	0.10	150	50	1,650
		82	8 x 6.7	0.10	262	30	2,700
		180	8 x 12	0.15	576	16	4,360
			10 x 7.7	0.10	576	26	3,430
		220	10 x 9.9	0.15	704	20	4,200
		330	10 x 12.6	0.15	792	14	5,050
		820	10 x 12.6	0.12	2,624	18	4,200

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 x 5.9	0.10	88	50	1,650
		47	8 x 6.7		188	45	2,000
		82	10 x 7.7		328	40	2,500
		100	8 x 12	0.15	400	24	3,320
			10 x 9.9		400	25	3,700
			150	10 x 12.6	600	20	4,320
		330	10 x 12.6	0.12	1,320	26	2,700
25V (1E)	29.0	6.8	6.3 x 5.9	0.10	170	80	1,200
		10	8 x 6.7		125	60	1,500
		22	10 x 7.7		275	50	2,000
		33	8 x 12	0.12	413	30	2,980
		56	10 x 12.6		700	28	3,800
		270	10 x 12.6		1,350	27	2,700
35V (1V)	40.0	39	8 x 12	0.12	273	31	2,100
		68	10 x 12.6	0.12	476	28	2,700

### Part Numbering System

OCV Series    470 $\mu F$      $\pm 20\%$     6.3V    Carrier Tape    8  $\phi$  x 12L

**OCV**    **471**    **M**    **0J**    **TR**    -    **0812**    **XX**

Series Name    Capacitance    Capacitance Tolerance    Rated Voltage    Package Type    Terminal Type    Case Size

**XX**  
S = Standard  
KS = AEC-Q200 Qualified, Safety Critical Application  
LS = AEC-Q200 Qualified, Non-Safety Critical Application