

## OCRZ Series

### Features

- 105°C, 2000 hours assured
- Ultra low ESR with large permissible ripple current
- RoHS compliant



Marking color: Blue

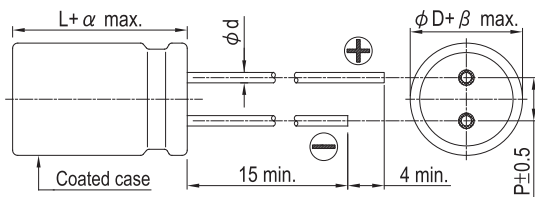
### Specifications

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
	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										
* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2000 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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	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 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 18 for soldering 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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	Tanδ	Within specified value									
	ESR	Within specified value									
Leakage Current	Within specified value										
Ripple Current and Frequency Multipliers											
<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.05</td> <td>0.3</td> <td>0.7</td> <td>1.0</td> </tr> </tbody> </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							

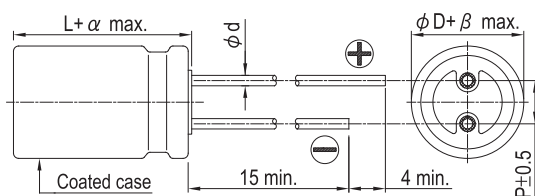
\* For any doubt about measured values, measure the leakage current again after the following voltage treatment.  
Voltage treatment: DC rated voltage is applied to the capacitors for 2 hours at 105 °C.

### Diagram of Dimensions

5 φ, 6.3 φ and 8 φ × 8L



8 φ × 12L and 10 φ × 12L



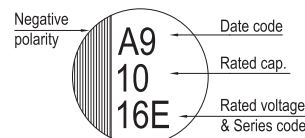
### Lead Spacing and Diameter

Unit: mm

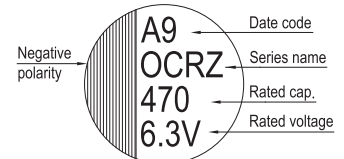
φ D	5	6.3	6.3	8	8	10
L	8	6	8	8	12	12
P	2.0	2.5		3.5		5.0
φ d	0.5	0.45	0.6			
α	1.0					
β	0.5					

### 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	330	6.3 × 8	0.10	500	7	5,600	
		390	6.3 × 6*			10	3,900	
		470	5 × 8			235	7	4,200
			8 × 8					5,000
		560	5 × 8	500	10	4,200		
			6.3 × 6*			4,000		
			6.3 × 8			5,600		
		820	8 × 8	280	0.12	6,200		
			8 × 8	0.10			500	5,600
			8 × 8	0.10			410	6,200
		1,000	8 × 12	410	0.12	500		
			8 × 8				7	
			8 × 12					
		1,200	10 × 12	600	0.10	600		5,600
			6.3 × 8				6,200	
		1,500	8 × 8	600	0.12	750	6,200	
			8 × 12	750			6,200	
		1,800	10 × 12	900	0.12	900	6,200	
			8 × 8				1,100	6,200
		2,200	8 × 12	1,350	0.12	1,100	6,200	
8 × 8	1,350		7,200					
2,700	10 × 12	1,950	0.12	1,350	7,200			
	10 × 12				1,950	7,200		
4V (0G)	4.6	560	6.3 × 8	0.10	500	7	5,600	
			8 × 8	0.10	448		6,200	
			8 × 12	0.12	448			
		820	0.10	656				
		1,000		8 × 8	800			
		1,200	8 × 12	960	0.12		1,200	6,500
		2,200	10 × 12	1,760	8		7,200	
2,700	10 × 12	2,160	8	7,200				
6.3V (0J)	7.2	270	5 × 8	0.10	680	8	3,900	
			5 × 8		832		3,900	
		470	6.3 × 8	592	0.12	706	7	5,600
			8 × 8					6,200
			8 × 12					6,200
		560	6.3 × 8	706	0.10	857	7	5,600
			8 × 8					6,200
			8 × 12					6,200
		680	6.3 × 8	857	0.10	1,033	8	5,600
			8 × 8					6,200
			8 × 12					5,500
			10 × 12					7
		820	8 × 8	1,260	0.10	1,260	7	6,200
			8 × 12					8
1,000	8 × 8	1,260	0.12	1,260	8	6,200		
	8 × 12					5,500		

Remark: The case size with "\*" of case length is 6.0 mm maximum.

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)
6.3V (0J)	7.2	1,200	10 × 12	0.12	1,512	8	5,500
		1,500			1,890		
		1,800			2,268	7	6,200
		2,200			2,772		
10V (1A)	12.0	270	8 × 12	0.12	540	8	5,000
		390	8 × 12		780		5,000
		470	10 × 12		940		6,000
		560	8 × 8		1,120	9	5,600
			10 × 12		1,120		6,000
		820	8 × 12		1,640	8	5,000
			10 × 12		1,640		6,000
		1,200	10 × 12		2,400	6,000	
16V (1C)	18.0	100	6.3 × 6*	0.10	320	24	2,490
			6.3 × 8		500		4,680
		180	6.3 × 8		576	10	4,680
			8 × 8				5,000
		270	6.3 × 8		864	8	4,680
			8 × 8				5,000
		330	8 × 12	0.12	8	5,000	
			8 × 8	0.10	10	6,000	
		470	10 × 12	0.12	1,056	8	6,000
			8 × 8		1,504	16	4,000
			8 × 12		10	5,400	
			8		6,000		
820	10 × 12	0.10	2,624	10	6,100		
1,000		0.10	3,200	10	6,100		
20V (1D)	23.0	330	8 × 8	0.12	1,320	17	3,880
		390	8 × 12		1,560	14	4,970
		680	10 × 12		2,720	12	5,400
25V (1E)	29.0	180	8 × 8	0.12	900	18	3,770
		220	8 × 12		1,100	16	4,650
		390	10 × 12		1,950	14	5,000
35V (1V)	40.0	47	8 × 12	0.12	329	24	3,600
		82	8 × 12		574	20	4,000
		120	10 × 12		840	18	4,400
		150	10 × 12		1,050	20	3,800

Remark: The case size with "\*" of case length is 6.0 mm maximum.

Part Numbering System

OCRZ Series	470 $\mu$ F	$\pm$ 20%	6.3V	Bulk Package	Gas Type	6.3 $\phi$ × 8L	General Purpose
<b>ORZ</b>	<b>471</b>	<b>M</b>	<b>0J</b>	<b>BK</b>	-	<b>0608</b>	
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration and Package	Rubber Type	Case Size	Application

Note: For more details, please refer to "Part Numbering System" on page 20.

OP-CAP