

## ORS Series

### Features

- 105°C, 15,000 hours assured
- Ultra low ESR with large permissible ripple current
- RoHS Compliant



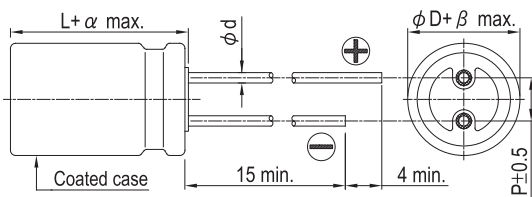
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### Specifications

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>15,000 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	15,000 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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	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 specified 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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	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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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
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\* 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.

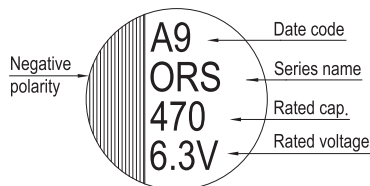
### Diagram of Dimensions



Lead Spacing and Diameter Unit: mm

φD	8	10
L	11.5	12
P	3.5	5.0
φd	0.6	
α	1.0	
β	0.5	

### Marking





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	680	8 × 11.5	0.12	340	10	5,230
		820	8 × 11.5		410	10	5,230
		1,500	10 × 12		750	8	5,500
4V (0G)	4.6	560	8 × 11.5	0.12	448	10	5,230
		820	10 × 12		656	8	5,500
		1,000			800		
		1,200			960		
6.3V (0J)	7.2	390	8 × 11.5	0.12	491	12	4,770
		470	8 × 11.5		592	12	4,770
		680	10 × 12		857	10	5,500
		820			1,033		
		1,000			1,260		
10V (1A)	12.0	270	8 × 11.5	0.12	540	14	4,420
		330	8 × 11.5		660	14	4,420
		470	10 × 12		940	12	5,300
		560	10 × 12		1,360	12	5,300
16V (1C)	18.0	100	8 × 11.5	0.12	320	16	4,360
		180	8 × 11.5		576	16	4,360
		270	10 × 12		864	14	5,050
		330	10 × 12		1,056	14	5,050
20V (1D)	23.0	100	8 × 11.5	0.12	400	24	3,320
		150	10 × 12	0.12	600	20	4,320
25V (1E)	29.0	68	8 × 11.5	0.12	340	24	3,320
		100	10 × 12	0.12	500	20	4,320
35V (1V)	40.0	18	8 × 11.5	0.12	315	34	2,830
		33	10 × 12	0.12	578	30	3,270

OP-CAP

Part Numbering System

ORS Series    470 $\mu F$      $\pm 20\%$     6.3V    Bulk Package    Gas Type    8  $\phi$  × 11.5L    General Purpose

**ORS**    **471**    **M**    **0J**    **BK**    -    **0811**

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.