

ORA Series

Features

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



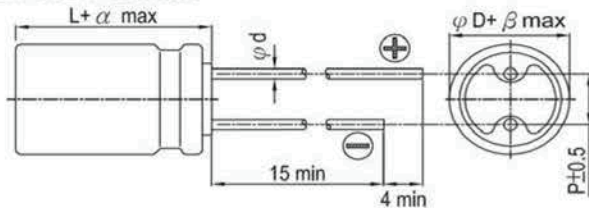
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Specifications

Items	Performance										
Category Temperature Range	-55°C ~ +105°C										
Capacitance Tolerance	±20% (at 120Hz, 20°C)										
Leakage Current (at 20°C)*	Rated voltage applied, after 2 minutes at 20°C. See Standard Ratings										
Tanδ (at 120Hz, 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 15,000 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 to 95% RH for 1,000 hours. Leakage current should be tested after voltage treatment*.											
Resistance to Soldering Heat* (Please refer to page 11 for soldering conditions)	<table border="1"> <tr><td>Capacitance Change</td><td>Within ±10% of initial value</td></tr> <tr><td>Tanδ</td><td>Less than 130% of specified value</td></tr> <tr><td>ESR</td><td>Less than 130% of specified value</td></tr> <tr><td>Leakage Current</td><td>Within specified value</td></tr> </table>	Capacitance Change	Within ±10% of initial value	Tanδ	Less than 130% of specified value	ESR	Less than 130% of specified value	Leakage Current	Within specified value		
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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.											
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



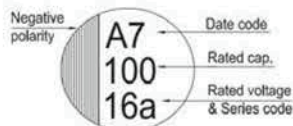
Lead Spacing and Diameter Unit: mm

φD	6.3	8	10
L	11	11.5	12
P	2.5	3.5	5.0
φd	0.5	0.6	
α	1.0		
β	0.5		

Marking

φD = 5 ~ 6.3

φD = 8 ~ 10



All product specifications in the catalog are subject to change without notice. (CAT. 2017E1)

Dimension:  $\phi$  D×L(mm)  
Ripple Current: mA/rms at 100k Hz

Standard Ratings

W. V. (V)	Surge Voltage (V)	Capacitance (μF)	Size $\phi$ D×L(mm)	Tanδ (120Hz, 20°C)	L C (μA)	E S R (mΩ/at 100k ~ 300k Hz, 20°C Max)	Rated R. C. (mA/rms at 100k Hz, 105°C)
2.5V (0E)	2.9	390	6.3 × 11	0.12	195	20	3,150
		680	8 × 11.5	0.08	340	7	5,580
		820	8 × 11.5	0.08	410	7	5,580
		1,000	10 × 12	0.08	500	6	5,860
		1,500	10 × 12	0.08	750	7	5,860
4V (0G)	4.6	270	6.3 × 11	0.12	216	20	3,160
		390	6.3 × 11	0.12	312	24	3,300
		560	8 × 11.5	0.08	448	7	5,580
		820	10 × 12	0.08	656	6	5,860
6.3V (0J)	7.2	220	6.3 × 11	0.12	277	20	3,160
		330	6.3 × 11	0.12	416	28	3,190
		390	8 × 11.5	0.08	491	8	5,080
		470	8 × 11.5	0.08	592	7	5,700
		680	10 × 12	0.08	857	7	5,860
10V (1A)	12.0	47	6.3 × 11	0.12	94	25	2,820
		68	6.3 × 11	0.12	136	25	2,820
		100	6.3 × 11	0.12	200	25	2,820
		150	6.3 × 11	0.12	300	25	2,820
		270	8 × 11.5	0.08	540	9	4,710
		470	10 × 12	0.08	940	8	5,650
16V (1C)	18.0	100	6.3 × 11	0.12	320	25	2,820

OP-CAP

Part Numbering System

ORA Series    470μF    ±20%    6.3V    Bulk Package    Gas Type    8  $\phi$  × 11.5L    Pb-free and PET coating case

**ORA**    **471**    **M**    **0J**    **BK**    -    **0811**    **S**

Series Name    Capacitance    Capacitance Tolerance    Rated Voltage    Lead Configuration & Package    Rubber Type    Case size    Lead Wire and Coating Type    Supplement Code

Note: For more details, please refer to "Part Numbering System (Radial Type)".