



RNG Series

Features

- 105°C, 2,000 hours assured, standard bi-polarized series
- Suitable for use in circuits which has a reversed or unknown polarity
- RoHS Compliance

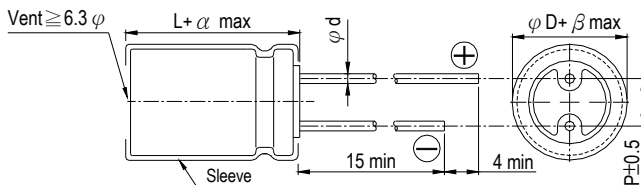


Sleeve & Marking Color: Yellow & Black

Specifications

Items	Performance																																						
Category Temperature Range	-40°C ~ +105°C																																						
Capacitance Tolerance	±20% (at 120Hz, 20°C)																																						
Leakage Current (at 20°C)	<table border="1"> <tr> <td>Rated voltage</td> <td>≤ 100V</td> <td colspan="2">> 100V</td> </tr> <tr> <td>Time</td> <td>after 2 minutes</td> <td colspan="2">after 5 minutes</td> </tr> <tr> <td>Leakage Current</td> <td>I = 0.03CV or 4 (μA) whichever is greater</td> <td>CV ≤ 1,000 I = 0.03CV+15(μA)</td> <td>CV > 1,000 I = 0.02CV+25(μA)</td> </tr> </table> <p>Where, C = rated capacitance in μF V = rated DC working voltage in V</p>	Rated voltage	≤ 100V	> 100V		Time	after 2 minutes	after 5 minutes		Leakage Current	I = 0.03CV or 4 (μA) whichever is greater	CV ≤ 1,000 I = 0.03CV+15(μA)	CV > 1,000 I = 0.02CV+25(μA)																										
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Tanδ (at 120 Hz, 20°C)	<table border="1"> <tr> <td>Rated Voltage</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> <td>200</td> <td>250</td> </tr> <tr> <td>Tanδ (max)</td> <td>0.25</td> <td>0.22</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.15</td> <td>0.15</td> <td>0.20</td> </tr> </table> <p>When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.</p>	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	Tanδ (max)	0.25	0.22	0.18	0.16	0.14	0.12	0.10	0.09	0.15	0.15	0.20														
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Low Temperature Characteristics (at 120Hz)	<p>Impedance ratio shall not exceed the values given in the table below.</p> <table border="1"> <tr> <td colspan="2">Rated Voltage</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> <td>200</td> <td>250</td> </tr> <tr> <td rowspan="2">Impedance</td> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Ratio</td> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>4</td> </tr> </table>	Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250	Impedance	Z(-25°C)/Z(+20°C)	4	3	3	2	2	2	2	2	2	2	2	Ratio	Z(-40°C)/Z(+20°C)	8	6	6	4	4	3	3	3	4	4
Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250																											
Impedance	Z(-25°C)/Z(+20°C)	4	3	3	2	2	2	2	2	2	2	2																											
	Ratio	Z(-40°C)/Z(+20°C)	8	6	6	4	4	3	3	3	4	4																											
Endurance (After application of the rated voltage at 105°C, the polarity inverted every 250 hours.)	<table border="1"> <tr> <td>Test Time</td> <td>2,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>With in ±20% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table> <p>* The above Specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2,000 hours at 105°C.</p>	Test Time	2,000 Hrs	Capacitance Change	With in ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																														
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Shelf Life Test	<table border="1"> <tr> <td>Test Time</td> <td>1,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>With in ±20% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table> <p>* The above Specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 250V (Refer to JIS C 5101-4 4.1).</p>	Test Time	1,000 Hrs	Capacitance Change	With in ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																														
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Diagram of Dimensions



Lead Spacing and Diameter Unit: mm

	5	6.3	8	10	12.5	16	18
φD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5		0.6			0.8	
α	L < 20: 1.5, L ≥ 20: 2.0						
β	0.5						



Dimension: $\phi D \times L$ (mm)
Ripple Current: mA/rms at 120 Hz, 105°C

Dimension & Permissible Ripple Current

μF	V. DC Contents	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
1	010											5×11	10	5×11	11	5×11	12
2.2	2R2											5×11	15	5×11	16	6.3×11	20
3.3	3R3											5×11	18	5×11	20	6.3×11	25
4.7	4R7									5×11	21	5×11	22	6.3×11	24	6.3×11	30
10	100					5×11	27	5×11	27	5×11	30	6.3×11	37	6.3×11	40	8×11.5	50
22	220	5×11	34	5×11	34	5×11	40	6.3×11	46	6.3×11	51	8×11.5	63	8×11.5	68	10×16	97
33	330	5×11	45	5×11	45	5×11	49	6.3×11	56	8×11.5	72	8×11.5	77	10×12.5	98	10×20	140
47	470	5×11	54	5×11	54	6.3×11	67	6.3×11	67	8×11.5	86	10×12.5	105	10×16	130	12.5×20	170
100	101	6.3×11	90	6.3×11	90	8×11.5	110	8×11.5	110	10×16	160	10×20	190	12.5×20	225	16×25	300
220	221	8×11.5	150	8×11.5	150	10×12.5	195	10×16	215	12.5×20	290	12.5×25	340	16×25	405	16×35.5	510
330	331	8×11.5	185	10×16	240	10×16	265	12.5×20	320	12.5×20	350	16×25	460	16×31.5	535		
470	471	10×12.5	260	10×20	290	10×20	345	12.5×25	380	12.5×25	465	16×31.5	590	18×35.5	680		
1,000	102	10×20	460	12.5×20	510	12.5×25	605	16×25	670	16×31.5	805						
2,200	222	12.5×25	820	16×25	940	16×31.5	1,070	18×35.5	1,140								

μF	V. DC Contents	160V (2C)		200V (2D)		250V (2E)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
0.47	R47	5×11	8	5×11	9	6.3×11	10
1	010	6.3×11	11	8×11.5	12	8×11.5	13
2.2	2R2	8×11.5	18	8×11.5	22	10×12.5	26
3.3	3R3	8×11.5	26	10×12.5	30	10×16	37
4.7	4R7	10×12.5	31	10×16	37	10×20	50
10	100	10×16	60	10×20	66	10×20	79
22	220	12.5×20	117	12.5×20	117	12.5×25	138
33	330	12.5×20	143	12.5×25	158	16×25	169
47	470	16×25	188				

Part Numbering System

RNG series 470 μF $\pm 20\%$ 6.3V Bulk Package Gas Type 10 $\phi \times 12.5L$ Pb-free and PET coating case

RNG **471** **M** **0J** **BK** - **1012**

Series Capacitance Capacitance Tolerance Rated Voltage Lead Configuration & Package Rubber Type Case Size Lead Wire and Coating Type

Note: For more details, please refer to "Part Numbering System (Radial Type)" on page 10.