



RGA Series

Features

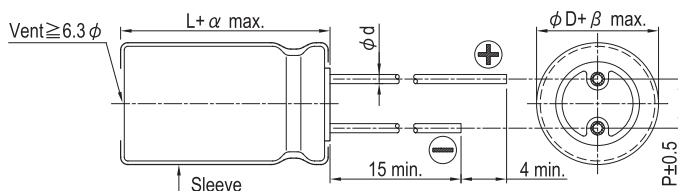
- 105°C, 2,000 hours assured
- 105°C standard series for general purposes
- RoHS compliant
- If there is any requirement on ESR, it's suggested to use low ESR series instead of RGA. Please consult us for any inquiry.



Specifications

Items	Performance																																											
Category Temperature Range	6.3~400V							450V																																				
	-40℃ ~ +105℃							-25℃ ~ +105℃																																				
Capacitance Tolerance	±20% (at 120 Hz, 20℃)																																											
Leakage Current (at 20℃)	Rated voltage		≤ 100V					> 100V																																				
	Time		after 2 minutes					after 5 minutes																																				
	Leakage Current		I = 0.01CV or 3 (μA) whichever is greater					CV ≤ 1,000 I = 0.03CV + 15(μA)			CV > 1,000 I = 0.02CV + 25(μA)																																	
			Where, C = rated capacitance in μF, V = rated DC working voltage in V																																									
Tanδ (at 120 Hz, 20℃)	<table><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><td>350</td><td>400</td><td>450</td></tr><tr><td>Tanδ (max)</td><td>0.23</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.08</td><td>0.12</td><td>0.14</td><td>0.17</td><td>0.20</td><td>0.25</td><td>0.25</td></tr></table>														Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	Tanδ (max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.12	0.14	0.17	0.20	0.25	0.25
	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450																													
Tanδ (max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.12	0.14	0.17	0.20	0.25	0.25																														
When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.																																												
Low Temperature Characteristics (at 120 Hz)	Impedance ratio shall not exceed the values given in the table below.																																											
	Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250	350	400	450																												
	Impedance Ratio	Z(-25℃)	φ D < 16	4	3	3	2	2	2	2	2	3	6	8	12	14	16																											
		Z(+20℃)	φ D ≥ 16	6	4	4	3	3	3	3	3							3																										
		Z(-40℃)	φ D < 16	8	6	6	4	4	3	3	3	4	8	10	16	18	-																											
		Z(+20℃)	φ D ≥ 16	12	10	8	8	8	8	6	6																																	
Endurance	Test Time		2,000 Hrs																																									
	Capacitance Change		Within ±20% of initial value																																									
	Tanδ		Less than 200% of specified value																																									
	Leakage Current		Within specified value																																									
* The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied with rated ripple current for 2,000 hours at 105℃.																																												
Shelf Life Test	Test Time		1,000 Hrs																																									
	Capacitance Change		Within ±20% of initial value																																									
	Tanδ		Less than 200% of specified value																																									
	Leakage Current		Within specified value																																									
* The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1).																																												
Ripple Current and Frequency Multipliers	Freq. (Hz)		60 (50)	120	500	1k	10k up																																					
	Cap. (μF)		≤ 100	0.70	1.00	1.30	1.40	1.50																																				
			100 < C ≤ 1,000	0.75	1.00	1.20	1.30	1.35																																				
			1,000 <	0.80	1.00	1.10	1.12	1.15																																				

Diagram of Dimensions

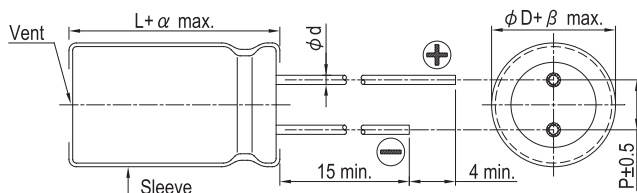


Lead Spacing and Diameter

Unit: mm

ϕD	5	6.3	8	10	12.5	16	18	22	25
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	12.5
ϕd	0.5		0.6			0.8		1.0	
α	L<20: 1.5, L $\geq$ 20: 2.0							2.0	
β	0.5								

The case size of 12.5×16, 16×16, 16×20, 18×16, 18×20 and 18×25 are suitable for below diagram:



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

Ripple Current: mA/rms at 120 Hz, 105°C

Dimension and Permissible Ripple Current

Cap.(μ F)	Contents	Rated Volt. (V _{DC})		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	$\phi D \times L$	mA
2.2	2R2													5×11	20			5×11	30
3.3	3R3													5×11	30			5×11	31
4.7	4R7													5×11	33			5×11	36
10	100													5×11	50			6.3×11	54
22	220													5×11	78	6.3×11	86	6.3×11	93
33	330											5×11	75	5×11	90	6.3×11	100	8×11.5	130
47	470									5×11	97	5×11	90	6.3×11	120	6.3×11	130	10×12.5	165
100	101							5×11	110	6.3×11	142	6.3×11	150	8×11.5	188	10×12.5	235	10×20	265
220	221	5×11	140	6.3×11	175	6.3×11	190	8×11.5	236	8×11.5	270	10×12.5	300	10×16	335	10×20	510	12.5×25	440
330	331			6.3×11	200	8×11.5	270	8×11.5	310	10×12.5	350	10×16	410	10×20	510	12.5×25	640	16×25	620
470	471	6.3×11	230	8×11.5	290	8×11.5	310	10×12.5	380	10×16	460	10×20	530	12.5×20	640	12.5×25	665	16×31.5	715
1,000	102	8×11.5	380	10×12.5	460	10×16	560	10×20	680	12.5×20	810	12.5×25	950	16×25	930	18×40	1,275		
2,200	222	10×16	690	10×20	760	12.5×16	780	12.5×25	1,110	16×25	1,260	16×31.5	1,420	18×35.5	1,770	22×40	2,510		
3,300	332	10×20	840	12.5×20	1,100	12.5×25	1,170	16×25	1,440	16×31.5	1,420	18×25	1,570	18×35.5	1,770	22×40	2,510		
4,700	472	12.5×20	1,090	12.5×25	1,260	16×20	1,185	16×31.5	1,650	18×25	1,550	18×35.5	1,900	22×40	2,340	25×40	3,000		
6,800	682	12.5×25	1,460	16×20	1,270	16×31.5	1,930	16×40	2,000	18×35.5	2,160	18×40	2,250	25×40	2,530				
10,000	103	16×20	1,340	16×31.5	2,220	16×35.5	2,210	22×40	2,720										
15,000	153	16×31.5	2,365	18×25	2,290	18×31.5	2,620	18×40	2,950	25×40	3,200								
22,000	223	16×40	2,800	18×35.5	2,930	18×40	3,230	22×40	3,460										
33,000	333	18×45	3,080	22×40	4,090	25×45	4,500												

Cap.(μ F)	Contents	Rated Volt. (V _{DC})		160V (2C)		200V (2D)		250V (2E)		350V (2V)		400V (2G)		450V (2W)	
		$\phi D \times L$	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											6.3×11	21	8×11.5	27
2.2	2R2			6.3×11	30	6.3×11	35	6.3×11	35	8×11.5	39	8×11.5	39	8×11.5	39
3.3	3R3			6.3×11	39	6.3×11	40	8×11.5	43	8×11.5	45	8×11.5	45	8×11.5	45
4.7	4R7			6.3×11	43	8×11.5	45	8×11.5	45	8×11.5	50	8×11.5	50	8×11.5	50
10	100	8×11.5	65	8×11.5	65	10×12.5	92	10×16	95	10×16	95	10×16	95	10×20	105
22	220	10×12.5	110	10×16	140	10×16	140	12.5×20	220	12.5×20	160	12.5×20	160	12.5×20	160
33	330	10×16	150	10×20	170	12.5×16	175	12.5×25	215	16×20	225	16×20	225	16×20	225
47	470	10×20	195	12.5×16	215	12.5×20	230	16×20	255	16×25	295	16×25	295	16×25	280
68	680	12.5×20	275	12.5×20	265	16×16	290	16×20	320	18×25	360	18×25	360	16×35.5	400
100	101	12.5×25	355	16×20	365	16×25	425	18×31.5	460	18×31.5	460	18×35.5	540	18×40	560
150	151	16×25	470	18×20	510	16×31.5	550	18×40	600	22×40	730	22×40	770		
220	221	16×31.5	660	18×31.5	750	18×35.5	760	25×40	865	22×45	930				
330	331	18×35.5	820	18×40	965	22×40	1,140	25×45	1,070						
470	471	22×40	1,130	22×40	1,130	25×40	1,325								

Part Numbering System

RGA Series 470 μ F $\pm 20\%$ 6.3V Bulk Package Gas Type 6.3 $\phi \times 11L$ General Purpose

RGA **471** **M** **0J** **BK** **-** **0611**

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 - Radial Type" on page 139.