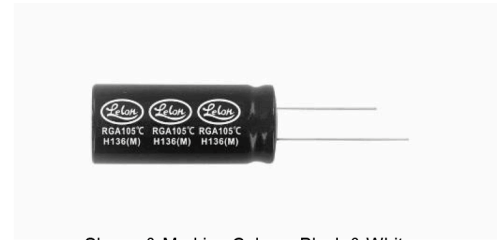


RGA Series

Features

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

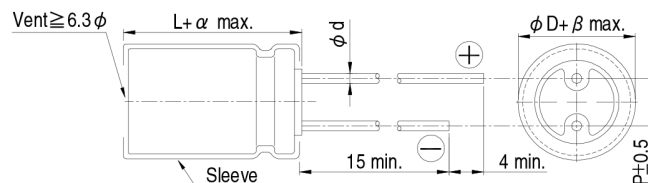


Sleeve & Marking Color: Black & White

Specifications

Items	Performance																																																																																														
Category Temperature Range	6.3~400V							450V																																																																																							
	-40℃ ~ +105℃							-25℃ ~ +105℃																																																																																							
Capacitance Tolerance	±20% (at 120Hz, 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> When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.														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																																																																																	
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below. <table><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><td>350</td><td>400</td><td>450</td></tr><tr><td rowspan="4">Impedance Ratio</td><td>Z(-25℃)</td><td>φD < 16</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>3</td><td>6</td><td>8</td><td>12</td><td>14</td><td>16</td></tr><tr><td>/Z(+20℃)</td><td>φD ≥ 16</td><td>6</td><td>4</td><td>4</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>4</td><td>8</td><td>10</td><td>16</td><td>18</td><td>-</td></tr><tr><td>Z(-40℃)</td><td>φD < 16</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>8</td><td>10</td><td>16</td><td>18</td><td>-</td></tr><tr><td>/Z(+20℃)</td><td>φD ≥ 16</td><td>12</td><td>10</td><td>8</td><td>8</td><td>8</td><td>8</td><td>6</td><td>6</td><td>4</td><td>8</td><td>10</td><td>16</td><td>18</td><td>-</td></tr></table>														Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	Impedance Ratio	Z(-25℃)	φD < 16	4	3	3	2	2	2	2	2	3	6	8	12	14	16	/Z(+20℃)	φD ≥ 16	6	4	4	3	3	3	3	3	4	8	10	16	18	-	Z(-40℃)	φD < 16	8	6	6	4	4	3	3	3	4	8	10	16	18	-	/Z(+20℃)	φD ≥ 16	12	10	8	8	8	8	6	6	4	8	10	16	18	-
Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250	350	400	450																																																																																
Impedance Ratio	Z(-25℃)	φD < 16	4	3	3	2	2	2	2	2	3	6	8	12	14	16																																																																															
	/Z(+20℃)	φD ≥ 16	6	4	4	3	3	3	3	3	4	8	10	16	18	-																																																																															
	Z(-40℃)	φD < 16	8	6	6	4	4	3	3	3	4	8	10	16	18	-																																																																															
	/Z(+20℃)	φD ≥ 16	12	10	8	8	8	8	6	6	4	8	10	16	18	-																																																																															
Endurance	<table><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 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> * 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℃.														Test Time	2,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																																																																									
Test Time	2,000 Hrs																																																																																														
Capacitance Change	Within ±20% of initial value																																																																																														
Tanδ	Less than 200% of specified value																																																																																														
Leakage Current	Within specified value																																																																																														
Shelf Life Test	<table><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 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> * 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).														Test Time	1,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																																																																									
Test Time	1,000 Hrs																																																																																														
Capacitance Change	Within ±20% of initial value																																																																																														
Tanδ	Less than 200% of specified value																																																																																														
Leakage Current	Within specified value																																																																																														
Ripple Current and Frequency Multipliers	<table><tr><td rowspan="2">Cap. (μF)</td><td>Freq. (Hz)</td><td>60 (50)</td><td>120</td><td>500</td><td>1k</td><td>10k up</td></tr><tr><td>Under 100</td><td>0.70</td><td>1.00</td><td>1.30</td><td>1.40</td><td>1.50</td></tr><tr><td colspan="2">100 < C ≤ 1,000</td><td>0.75</td><td>1.00</td><td>1.20</td><td>1.30</td><td>1.35</td></tr><tr><td colspan="2">1,000 up above</td><td>0.80</td><td>1.00</td><td>1.10</td><td>1.12</td><td>1.15</td></tr></table>														Cap. (μF)	Freq. (Hz)	60 (50)	120	500	1k	10k up	Under 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 up above		0.80	1.00	1.10	1.12	1.15																																																						
Cap. (μF)	Freq. (Hz)	60 (50)	120	500	1k	10k up																																																																																									
	Under 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 up above		0.80	1.00	1.10	1.12	1.15																																																																																									

Diagram of Dimensions

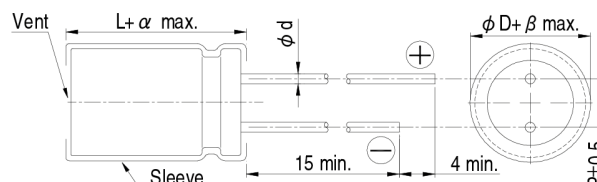


Lead Spacing and Diameter

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:



All product specifications in the catalog are subject to change without notice. (CAT. 2019E1)

Dimension: $\phi D \times L(\text{mm})$

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

Dimension and Permissible Ripple Current

Cap.(μF)	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
																		12.5×16	290
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	10×16	335	12.5×25	440
																		16×16	420
330	331			6.3×11	200	8×11.5	270	8×11.5	310	10×12.5	350	10×16	410	10×20	510	10×20	510	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	12.5×20	640	16×31.5	715
																		18×25	745
1,000	102	8×11.5	380	10×12.5	460	10×16	560	10×20	680	12.5×16	810	12.5×20	950	16×20	830	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	16×35.5	1,470	18×31.5	1,520	18×40	2,280	25×45	2,400
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	18×35.5	1,770	22×40	2,510				
		12.5×16	850	16×16	940	16×16	950	18×20	1,220	18×25	1,570								
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		
		16×16	1,010	16×16	1,060	18×16	1,290	18×25	1,550										
6,800	682	12.5×25	1,460	16×20	1,270	16×31.5	1,930	16×40	2,000	18×40	2,250	25×40	2,530						
		16×20	1,190			18×20	1,585	18×35.5	2,160										
10,000	103	16×20	1,340	16×31.5	2,220	16×35.5	2,210	22×40	2,720										
				18×25	1,800	18×31.5	2,330	18×45	2,410										
15,000	153	16×31.5	2,365	18×31.5	2,620	18×40	2,950	25×40	3,200										
		18×25	2,290	16×35.5	2,590														
22,000	223	16×40	2,800	18×40	3,230	22×40	3,460												
		18×35.5	2,930																
33,000	333	18×45	3,080	22×40	4,090	25×45	4,500												

Cap.(μF)	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		
3.3	3R3			6.3×11	39	6.3×11	40	8×11.5	43	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		
								10×12.5	55	10×12.5	55	10×12.5	55		
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		
33	330	10×16	150	10×20	170	12.5×16	175	12.5×25	215	16×16	205	16×20	225	16×20	225
														18×16	220
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
						16×16	245							18×20	285
68	680	12.5×20	275	12.5×20	265	16×20	320	18×25	360	18×25	360	16×35.5	400	16×35.5	400
				16×16	290			16×31.5	370	16×31.5	375	18×31.5	420		
100	101	12.5×25	355	16×20	365	16×25	425	18×31.5	460	16×35.5	430	18×35.5	540	18×40	560
				18×16	360	18×20	415	16×35.5							
150	151	16×25	470	18×20	510	16×31.5	550	18×40	600	22×40	730	22×40	770		
						18×25	535								
220	221	16×31.5	660	18×31.5	750	18×35.5	760	25×40	865	22×45	930				
								22×45	850						
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 μF	±20%	6.3V	Bulk Package	Gas Type	6.3 ϕ ×11L	Pb-free and PET sleeve
RGA	471	M	0J	BK	-	0611	S
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration & Package	Rubber Type	Case Size	Lead Wire and Sleeve type
							Supplement Code

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