RGA Series

Features

- 105℃, 2,000 hours assured
- 105℃ 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.

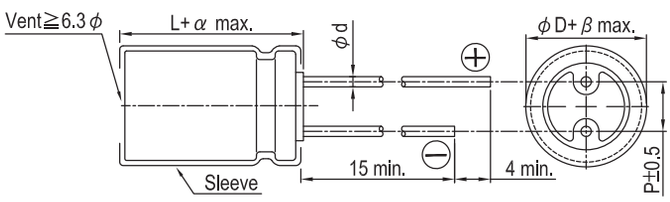


Sleeve & Marking Color: Black & White

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℃)	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 120Hz)	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℃) /Z(+20℃)	φD<16	4	3	3	2	2	2	2	2	3	6	8	12	14	16
			φD≧16	6	4	4	3	3	3	3	3						
		Z(-40℃) /Z(+20℃)	φD<16	8	6	6	4	4	3	3	3	4	8	10	16	18	-
			φD≧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) / Cap. (μF)	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										

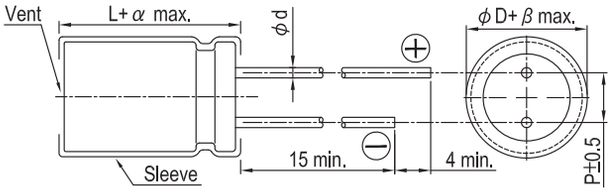
Diagram of Dimensions



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≧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 and Permissible Ripple Current

Dimension: ϕD × L(mm)

Ripple Current: mA/rms at 120 Hz, 105℃

Cap.(μF) \ Rated Volt. (VDC) / Contents		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
		ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×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 8×11.5	93 99
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 8×11.5	130 141	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 12.5×16	265 290
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	12.5×25 16×16	440 420
330	331			6.3×11	200	8×11.5	270	8×11.5 10×12.5	310 335	10×12.5	350	10×16	410	10×20 12.5×16	510 460	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 12.5×16	530 425	12.5×20 16×16	640 665	16×31.5 18×25	715 745
1,000	102	8×11.5	380	10×12.5	460	10×16	560	10×20 12.5×16	680 590	12.5×20 16×16	810 720	12.5×25 16×20	950 830	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 18×20	1,260 1,110	16×35.5 18×31.5	1,470 1,520	18×40	2,280	25×45	2,400
3,300	332	10×20 12.5×16	840 850	12.5×20 16×16	1,100 940	12.5×25 16×16	1,170 950	16×25 18×20	1,440 1,220	16×31.5 18×25	1,420 1,570	18×35.5	1,770	22×40	2,510		
4,700	472	12.5×20 16×16	1,090 1,010	12.5×25 16×16	1,260 1,060	16×20 18×16	1,185 1,290	16×31.5 18×25	1,650 1,550	18×35.5	1,900	22×40	2,340	25×40	3,000		
6,800	682	12.5×25 16×20	1,460 1,190	16×20	1,270	16×31.5 18×20	1,930 1,585	16×40 18×35.5	2,000 2,160	18×40	2,250	25×40	2,530				
10,000	103	16×20	1,340	16×31.5 18×25	2,220 1,800	16×35.5 18×31.5	2,210 2,330	22×40 18×45	2,720 2,410								
15,000	153	16×31.5 18×25	2,365 2,290	18×31.5 16×35.5	2,620 2,590	18×40	2,950	25×40	3,200								
22,000	223	16×40 18×35.5	2,800 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.(μF) \ Rated Volt. (VDC) / Contents		160V (2C)		200V (2D)		250V (2E)		350V (2V)		400V (2G)		450V (2W)	
		ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×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 10×12.5	45 55	8×11.5 10×12.5	50 55	8×11.5 10×12.5	50 55
10	100	8×11.5	65	8×11.5	65	10×12.5	92	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 16×16	215 205	16×20	225	16×20 18×16	225 220
47	470	10×20	195	12.5×16	215	12.5×20 16×16	230 245	16×20	255	16×25	295	16×25 18×20	280 285
68	680	12.5×20	275	12.5×20 16×16	265 290	16×20	320	18×25 16×31.5	360 370	18×25 16×31.5	360 375	16×35.5 18×31.5	400 420
100	101	12.5×25	355	16×20 18×16	365 360	16×25 18×20	425 415	18×31.5 16×35.5	460 430	18×35.5	540	18×40	560
150	151	16×25	470	18×20	510	16×31.5 18×25	550 535	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 22×45	865 850	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	470μF	±20%	6.3V	Bulk Package	Gas Type	6.3ϕ×11L	Pb-free and PET sleeve
RGA	**471**	**M**	**0J**	**BK**	**-**	**0611**	
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration & Package	Rubber Type	Case Size	Lead Wire and Sleeve type

Note: For more details, please refer to “Part Numbering System (Radial Type)” on page 13.

All product specifications in the catalog are subject to change without notice. (CAT. 2018E1)

RGL Series

Features

- 105℃, for general purposes
- 8ϕ ~ 18ϕ with large permissible ripple current
- Slim type included
- RoHS Compliance

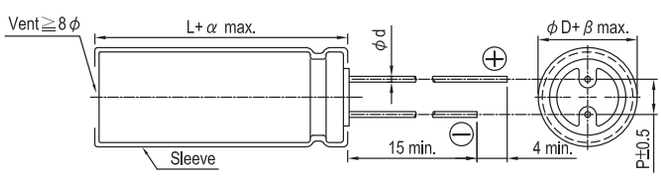


Sleeve & Marking Color: Black & Golden

Specifications

Items	Performance			
Category Temperature Range	400V		420 ~ 450V	
	-40℃ ~ +105℃		-25℃ ~ +105℃	
Capacitance Tolerance	±20% (at 120Hz, 20℃)			
Leakage Current (at 20℃)	Time	after 5 minutes		
	Leakage Current	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 120Hz, 20℃)	Rated Voltage	400	420	450
	Tanδ (max)	0.24	0.24	0.24
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below.			
	Rated Voltage		400	420	450
	Impedance Ratio	Z(-25℃)/Z(+20℃)	5	6	6
		Z(-40℃)/Z(+20℃)	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°C after the rated voltage applied with rated ripple current for 2,000 hours at 105°C.			
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°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 (Refer to JIS C 5101-4 4.1).			
Ripple Current and Frequency Multipliers	Frequency (Hz)	60	120	500	1k	10k up
	Multipliers	0.8	1.00	1.25	1.45	1.50

Diagram of Dimensions



Lead Spacing and Diameter Unit: mm

ϕD	8	10	12.5	16	18
P	3.5	5.0	5.0	7.5	7.5
ϕd	0.6			0.8	
α	2.0				
β	0.5				

All product specifications in the catalog are subject to change without notice. (CAT. 2018E1)

Dimension: ϕD × L(mm)
Ripple Current: mA/rms at 105°C

Dimension and Permissible Ripple Current

Rated Voltage V_{DC}	Cap. (μF)	8ϕ			10ϕ			12.5ϕ			16ϕ			18ϕ		
		ϕD×L	Ripple Current 120 Hz	Ripple Current 100k Hz	ϕD×L	Ripple Current 120 Hz	Ripple Current 100k Hz	ϕD×L	Ripple Current 120 Hz	Ripple Current 100k Hz	ϕD×L	Ripple Current 120 Hz	Ripple Current 100k Hz	ϕD×L	Ripple Current 120 Hz	Ripple Current 100k Hz
400V (2G)	15	8×30	190	285												
	22	8×35	250	375												
	27	8×40	300	450	10×30	245	370									
	33	8×45	350	525	10×35	295	445									
	39	8×50	390	585	10×40	345	515									
	47				10×45	400	600									
	56				10×50	450	675	12.5×30	470	705						
	68							12.5×35	540	810						
	82							12.5×40	620	930						
	100															
	120										16×35.5 16×40	800 840	1,200 1,260			
	150										16×45	940	1,410	18×35.5	920	1,380
	180										16×50	1,050	1,575	18×40	1,060	1,590
	220													18×45	1,200	1,800
420V (2P)	15	8×30	195	293												
	22	8×35	255	383												
	27	8×45	320	480	10×30	245	370									
	33	8×50	370	555	10×35	295	445									
	39				10×40	345	515									
	47				10×45	400	600									
	56				10×50	450	675	12.5×30	470	705						
	68							12.5×35	540	810						
	82							12.5×45	630	945						
	100							12.5×50	730	1,095	16×35.5	730	1,095			
	120										16×40 16×45	840 885	1,260 1,330	18×35.5	850	1,275
	150										16×50	1030	1,545	18×35.5 18×40	920 960	1,380 1,440
	180													18×45	1,100	1,650
	220													18×50	1,220	1,830
450V (2W)	15	8×30	195	293												
	22	8×40	270	405	10×30	225	330									
	27	8×45	320	480	10×35	265	400									
	33	8×50	370	555	10×40	315	475									
	39				10×45	360	545	12.5×30	400	600						
	47				10×50	420	625	12.5×35	460	690						
	56							12.5×40	520	780						
	68							12.5×45	580	870						
	82							12.5×50	660	990	16×35.5	660	990			
	100										16×40	750	1,125			
	120										16×45	840	1,260	18×35.5	820	1,230
	150										16×50	980	1,470	18×45	995	1,490
	180													18×50	1,140	1,710

Remark: Other sizes and specification are available, please contact us for detail.

Part Numbering System

RGL Series	22μF	±20%	450V	Bulk Package	Gas Type	10ϕ×30L	Pb-free and PET sleeve
RGL	**220**	**M**	**2W**	**BK**	**-**	**1030**	
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration & Package	Rubber Type	Case Size	Lead Wire and Sleeve type

Note: For more details, please refer to “Part Numbering System (Radial Type)” on page 13.