RA Series

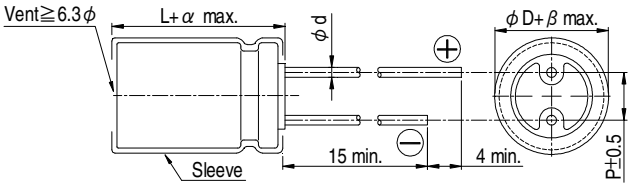
Features
- 105℃, 1,000 hours assured
- Very low leakage current
- Use in high temperature industrial equipment
- RoHS Compliance

Sleeve & Marking Color: Purple & Black

Specifications

Items	Performance
Category Temperature Range	-40℃ ~ +105℃
Capacitance Tolerance	±20% (at 120Hz, 20℃)
Leakage Current (at 20℃)	I = 0.002CV or 0.4 (μA) whichever is greater (after 2 minutes) Where, C = rated capacitance in μF V = rated DC working voltage in V
Tanδ (at 120Hz, 20℃)	Rated Voltage: 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 Tanδ (max): 0.24 / 0.21 / 0.16 / 0.14 / 0.12 / 0.10 / 0.09 / 0.08 When the capacitance exceeds 1,000 μF, 0.02 shall be added every 1,000 μF 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 Impedance Ratio Z(-25℃)/Z(+20℃): 4 / 3 / 3 / 2 / 2 / 2 / 2 / 2 Impedance Ratio Z(-40℃)/Z(+20℃): 8 / 6 / 6 / 4 / 4 / 3 / 3 / 3
Endurance	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 the rated voltage applied with rated ripple current for 1,000 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.
Ripple Current and Frequency Multipliers	Freq.(Hz) / Cap.(μF): 60 (50) / 120 / 500 / 1k / 10k up Under 100: 0.75 / 1.00 / 1.35 / 1.55 / 1.90 100 ＜ C ≦ 1,000: 0.83 / 1.00 / 1.23 / 1.32 / 1.45 1,000 up above: 0.90 / 1.00 / 1.10 / 1.12 / 1.12

Diagram of Dimensions



Lead Spacing and Diameter Unit: mm

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: ϕD × L(mm)

Dimension and Permissible Ripple Current

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

Rated Volt. (Vdc) / Cap. (μF)	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	23
3.3	3R3											5×11	25			5×11	29
4.7	4R7							5×11	26	5×11	28	5×11	30	5×11	32	5×11	34
10	100					5×11	35	5×11	38	5×11	41	5×11	46	5×11	50	6.3×11	56
22	220			5×11	49	5×11	54	5×11	57	5×11	61	5×11	68	6.3×11	82	8×11.5	96
33	330	5×11	54	5×11	60	5×11	64	5×11	69	5×11	75	6.3×11	90	6.3×11	100	10×12.5	140
47	470	5×11	65	5×11	70	5×11	99	5×11	82	6.3×11	100	6.3×11	110	8×11.5	135	10×16	180
100	101	5×11	95	5×11	105	6.3×11	125	6.3×11	135	8×11.5	170	8×11.5	180	10×12.5	225	12.5×20	320
220	221	6.3×11	160	6.3×11	175	8×11.5	215	8×11.5	230	10×12.5	300	10×16	345	10×20	400	16×25	570
330	331	6.3×11	195	8×11.5	245	8×11.5	260	10×12.5	335	10×16	400	10×20	460	12.5×20	540	16×25	700
470	471	8×11.5	270	8×11.5	290	10×12.5	370	10×16	440	10×20	520	12.5×20	610	12.5×25	700	16×31.5	880
1,000	102	10×12.5	460	10×16	550	10×20	640	12.5×20	770	12.5×25	920	16×25	1,080	16×31.5	1,210		
2,200	222	12.5×20	810	12.5×20	860	12.5×25	1,000	16×25	1,170	16×31.5	1,340	18×35.5	1,530				
3,300	332	12.5×20	960	12.5×25	1,100	16×25	1,300	16×31.5	1,460	18×35.5	1,650						
4,700	472	16×25	1,330	16×25	1,400	16×31.5	1,600	18×35.5	1,780	18×40	1,900						

Part Numbering System

RA Series	470μF	±20%	6.3V	Bulk Package	Gas Type	8ϕ×11.5L	Pb-free and PET sleeve
RA-	**471**	**M**	**0J**	**BK**	**-**	**0811**	
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.