RUA Series

Features
- 130℃, 2,000 ~ 3,000 hours assured
- For automobile modules and other high temperature applications
- RoHS Compliance

Sleeve & Marking Color: Black & White

Specifications

Items	Performance	
Category Temperature Range	10 ~ 250V	350 ~ 450V
	-40℃ ~ +130℃	-25℃ ~ +130℃
Capacitance Tolerance	±20% (at 120Hz, 20℃)	

Leakage Current (at 20℃)

Rated voltage	≦100V	>100V	
Time	after 2 minutes	after 1 minutes	
Leakage Current	I = 0.01CV or 3 (μA) whichever is greater	CV ≦ 1,000 I = 0.1CV + 40(μA)	CV > 1,000 I = 0.04CV + 100(μA)

Where, C = rated capacitance in μF V = rated DC working voltage in V

Tanδ (at 120 Hz, 20℃)

Rated Voltage	10	16	25	35	50	63	160	200	250	350	400	450
Tanδ (max)	0.15	0.12	0.10	0.10	0.08	0.08	0.20	0.20	0.20	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		10	16	25	35	50	63	160	200	250	350	400	450
Impedance Ratio	Z(-25℃) / Z(+20℃)	3	2	2	2	2	2	3	3	3	6	6	6
	Z(-40℃) / Z(+20℃)	6	4	4	4	4	4	6	6	6	-	-	-

Endurance

Test Time	2,000 Hrs for φD ≦ 8 mm; 3,000 Hrs for φD ≧10 mm
Capacitance Change	With in ±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 applied with ratedsubjected to DC voltage with the rated ripple current is applied for 2,000 / 3,000 hours at 130℃.

Shelf Life Test

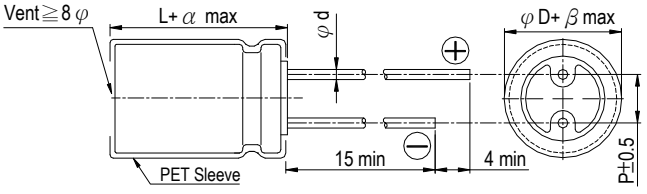
Test Time	1,000 hrs
Capacitance Change	With in ±20% of initial value
Tanδ	Less than 200% of specified value
Leakage Current	Less than 500% of specified value

* The above Specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 130℃ 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 & Frequency Multipliers

W. V.(V)	Freq.(Hz) / Cap.(μF)	120	1k	10k	100k up
10 ~ 63	0.47 ~ 100	1.00	1.85	2.25	2.50
	150 ~ 470	1.00	1.70	1.88	2.00
	1,000	1.00	1.45	1.58	1.65
160 ~ 450	Under 33	1.00	1.50	1.75	1.80
	47 up above	1.00	1.30	1.40	1.50

Diagram of Dimensions

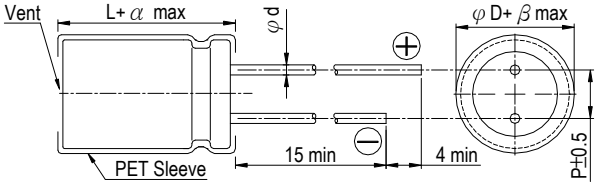


Lead Spacing and Diameter

Unit: mm

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

The case size of 16×20 is suitable for below diagram:



Dimension: ϕD × L(mm)

Ripple Current: mA/rms at 120 Hz, 130°C

Dimension & Permissible Ripple Current

V. DC / μF	Contents	10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)	
		ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA
10	100									8×11.5	84	8×11.5	84
22	220							8×11.5	113	10×12.5	149	10×12.5	149
33	330					8×11.5	138	10×12.5	162	10×16	200	10×16	200
47	470			8×11.5	150	10×12.5	194	10×16	213	10×16	239	10×20	260
100	101	10×12.5	231	10×16	285	10×16	312	10×20	338				
220	221	10×16	378	10×20	458	12.5×20	557	12.5×25	605	12.5×20	419	12.5×20	419
330	331	10×16	462	12.5×20	621	12.5×25	740	16×20	755				
470	471	10×20	599	12.5×25	806	16×20	902			16×20	689		
1,000	102	16×20	1073										

V. DC / μF	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
4.7	4R7							10×20	53	10×20	53	10×25	58
10	100			10×20	78	10×20	78	10×25	85	10×25	86	12.5×20	86
22	220	10×20	115	10×25	126	12.5×20	128	12.5×25	139	12.5×25	142	16×25	154
33	330	10×25	154	12.5×20	157	12.5×25	171	16×25	189	16×25	189	16×31.5	203
47	470	12.5×20	187	12.5×25	204	16×25	225	16×31.5	243	16×31.5	243		
68	680	12.5×25	245	16×20	250	16×31.5	292						
100	101	16×25	329	16×25	329								
150	151	16×31.5	434										

Part Numbering System

RUA series	470μF	±20%	16V	Bulk Package	Gas Type	12.5ϕ×25L	Pb-free and PET sleeve
RUA	**471**	**M**	**1C**	**BK**	**-**	**1325**	
Series	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 10.