

### ■ FEATURES

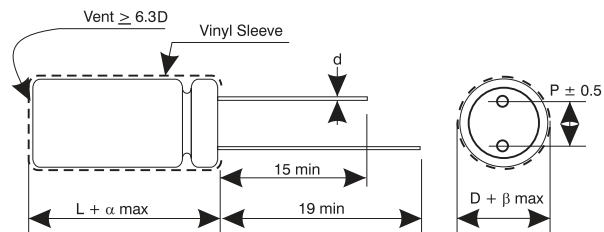
- 130°C
- 1,000 ~ 3,000 hours assured
- For high temperature applications

### ■ SPECIFICATIONS

Items	Performance														
Operating Temperature Range	10 ~ 250V							350 ~ 450V							
	-40°C ~ +130°C							-25°C ~ 130°C							
Capacitance Tolerance	±20% (at 120Hz, 20°C)														
Leakage Current (at 20°C)	Rated Voltage	≤ 100V					> 100V								
	Time	after 2 minutes					after 1 minutes								
	Leakage Current	I = 0.01CV or 3 (μA) whichever is greater					CV ≤ 1000 I = 0.1CV+40 (μA)			CV ≥ 1000 I = 0.04CV+100 (μA)					
	Where C = rated capacitance in μF. V = rated DC working voltage in V.														
Dissipation Factor (Tan at 120Hz, 20 C)	Rated Voltage	10	16	25	35	50	63	160	200	250	350	400	450		
	Tan (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°C)	3	2	2	2	2	2	3	3	3	6	6	6	
Z (-40) / Z (+20°C)		6	4	4	4	4	4	6	6	6	-	-	-		
Load Life Test	Test Time	2,000 hrs for D ≤ 8 mm (125°C) 3,000 hrs for D ≥ 10 mm (130°C)													
	Capacitance Change	Within ± 20% of initial value													
	Dissipation Factor	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 applied with rated subjected to DC voltage with the rated ripple current is applied for 2,000 / 3,000 hrs at 125°C / 130°C														
Shelf Life Test	Test Time	1,000 hours													
	Capacitance Change	Within + 20% of initial value													
	Dissipation Factor	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°C after exposing them for 1,000 hrs at 130°C without voltage applied. (The procedures before testing JIS C 5102 4.4)														
Other Standards	JIS C 5101-4														

### ■ LEAD SPACING AND DIAMETER SPECIFICATIONS

	mm			
D	8	10	12.5	16
P	3.5	5.0	5.0	7.5
d	0.6		0.8	
α	1.0	1.5		
β	0.5			



### ■ DIMENSIONS AND PERMISSIBLE RIPPLE CURRENT

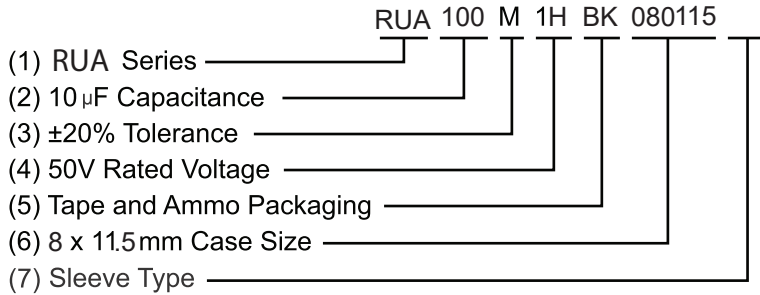
Dimension: D×L(mm)      Ripple Current: mA/RMS at 120Hz 130°C

V.DC		10V (1A)		16V (1C)		25V (1E)		35V (1V)	
μF	Code	D x L	mA	D x L	mA	D x L	mA	D x L	mA
22	220							8 x 11.5	75
33	330					8 x 11.5	92	10 x 13	108
47	470			8 x 11.5	100	10 x 12.5	129	10 x 16	142
100	101	10 x 12.5	154	10 x 16	190	10 x 16	208	10 x 20	225
220	221	10 x 16	252	10 x 20	305	12.5 x 20	371	12.5 x 25	403
330	331	10 x 16	308	12.5 x 20	414	12.5 x 25	493	16 x 20	503
470	471	10 x 20	399	12.5 x 25	537	16 x 20	601		
1,000	102	16 x 20	715						

V.DC		50V (1H)		63V (1J)		160V (2C)		200V (2D)	
μF	Code	D x L	mA	D x L	MA	D x L	mA	D x L	mA
0.47	R47	8 x 11.5	12	8 x 11.5	12				
1	010	8 x 11.5	17	8 x 11.5	17				
2.2	2R2	8 x 11.5	26	8 x 11.5	26				
3.3	3R3	8 x 11.5	32	8 x 11.5	32				
4.7	4R7	8 x 11.5	38	8 x 11.5	38				
10	100	8 x 11.5	56	8 x 11.5	56			10 x 20	78
22	220	10 x 12.5	99	10 x 12.5	99	10 x 20	115	10 x 25	126
33	330	10 x 16	133	10 x 16	133	10 x 25	154	12.5 x 20	157
47	470	10 x 16	159	10 x 20	173	12.5 x 20	187	12.5 x 25	204
68	680					12.5 x 25	245	16 x 20	250
100	101	12.5 x 20	279	12.5 x 20	279	16 x 25	329	16 x 25	329
150	151					16 x 31.5	434		
220	221	16 x 20	459						

V.DC		250V (2E)		350V (2V)		400V (2G)		450V (2W)	
μF	Code	D x L	mA	D x L	mA	D x L	MA	D x L	mA
4.7	4R7			10 x 20	53	10 x 20	53	10 x 25	58
10	100	10 x 20	78	10 x 25	85	10 x 25	86	12.5 x 20	86
22	220	13 x 20	128	12.5 x 25	139	12.5 x 25	142	16 x 25	154
33	330	13 x 25	171	16 x 25	189	16 x 25	189	16 x 31.5	203
47	470	16 x 25	225	16 x 31.5	243	16 x 31.5	243		
68	680	16 x 31.5	292						

### ■ HOW TO MAKE A PART NUMBER



#### 1. Series: RUA

2. Capacitance: Rated capacitance in  $\mu\text{F}$  is represented by a three digit number. The first two digits are the significant figures of the nominal capacitance and the third digit indicates the number of zeros following these figures. The decimal point is represented by the capital letter R. Please refer to the following example.

$\mu\text{F}$	0.1	0.47	1	4.7	10	47	100	470	1000	4700	10000
Part Number	0R1	R47	010	4R7	100	470	101	471	102	472	103

#### 3. Tolerance: (20% IS Typical)

Code	K	M	T	W
Tolerance	$\pm 10\%$	$\pm 20\%$	$\pm 50\% / -10\%$	$\pm 100\% / -10\%$

4. Rated Voltage: Voltage in volts (V) is represented by a two digit code showing the rated working voltage indicated as follows:

Voltage (WV)	6.3	10	16	25	35	40	50	63	80	100	160	200	250	350	400	450
Code	0J	1A	1C	1E	1V	1G	1H	1J	1K	2A	2C	2D	2E	2V	2G	2W

#### 5. Lead Forming & Package

Code	Lead Description	Packaging
BC	Bending Cut	Bulk Packing
BK	Straight Lead	Bulk Packing
CC	Lead Cutting	Bulk Packing
FC	Lead Forming & Cutting	Bulk Packing
SD	Cathode Lead Beading	Bulk Packing
SF	Snap-in, Forming & Cutting	Bulk Packing
SA	Straight Lead	Tape & Ammo
TA	Lead Forming	Tape & Ammo
SR	Straight Lead	Tape & Reel
TR	Lead Forming	Tape & Reel

#### 6. Can Size

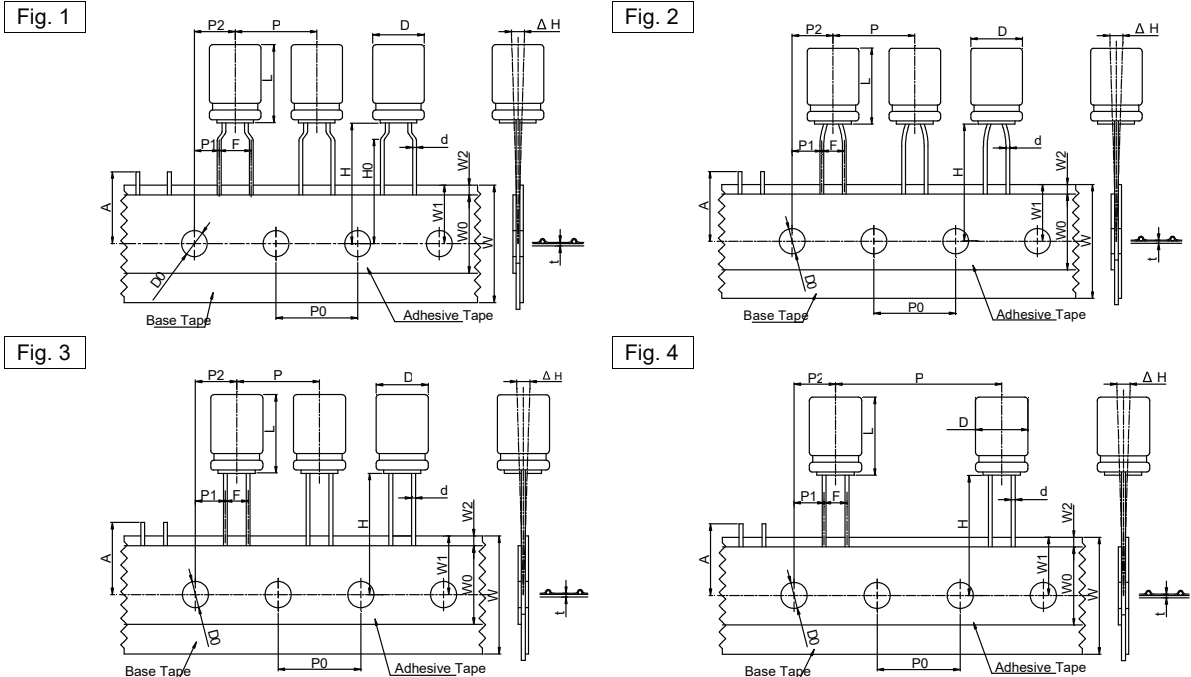
Diameter (mm)x10 & Length (mm)x10. Can Size 063110, represents 6.3mm diameter by 11mm length.

#### 7. Sleeve Type\* = (Omit) PVC Sleeve

P = PET Sleeve

\*Note: All standard RFE Aluminum Electrolytic Capacitors are Lead (Pb) free and RoHS compliant. PET sleeve is available for those companies that also require PVC free product.

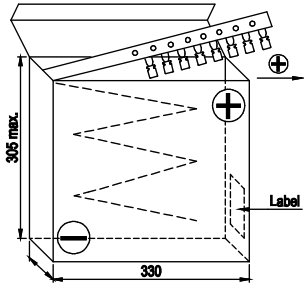
### LEADED TAPING & PACKAGING SPECIFICATIONS Taping Specification for Radial Lead Type



Packing	TA,TR (Fig. 1)								SA, SR (Fig. 2, 3, 4)											
	L ≤ 7mm				L ≥ 7mm				L ≤ 7mm					L ≥ 7mm						
Symbol	3	4	5	6.3	8	5	6.3	8	3	4	5	6.3	8	5	6.3	8	Tol.	10	13	Tol.
d	0.4	0.45	0.5	0.5	0.5	0.5	0.5	0.6	0.4	0.45	0.45	0.45	0.45	0.5	0.5	0.6	± 0.05	0.6	0.6	± 0.05
F	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.5	2.5	2.5	2.5	3.5	2.5	2.5	3.5	-0.2/+0.8	5.0	5.0	-0.2/+0.8
P	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	± 1.0	12.7	25.4	± 1.0
P0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	± 0.2	12.7	12.7	± 0.30
P2	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	± 1.0	6.35	6.35	± 1.3
P1	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	5.1	5.1	5.1	5.1	4.6	5.1	5.1	4.6	± 0.5	3.85	3.85	± 0.7
H	17.5	17.5	17.5	17.5	17.5	18.5	18.5	20.0	17.5	17.5	17.5	17.5	17.5	18.5	18.5	18.5	± 0.75	18.5	18.5	± 0.75
H0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	--	--	--	--	--	--	--	--	± 0.5	--	--	± 0.5
W	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	± 0.5	18.0	18.0	± 0.5
W0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	Min	12.0	12.0	Min.
W1	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	± 0.5	9.0	9.0	± 0.5
W2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	Max.	1.5	1.5	Max.
D0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	± 0.2	4.0	4.0	± 0.2
t	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	± 0.2	0.7	0.7	± 0.2
ΔH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	± 1.0	0	0	± 1.0
ε	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	Max.	1.0	1.0	Max.
A	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	Max.	11	11	Max.
Fig. No.	1	1	1	1	1	1	1	1	2	2	2	3	3	2	3	3		3	3,4	

Ammo pack box.(SA,TA)  
10 Boxes per carton

Reel pack box.(SR,TR)



#### Packaging Quantity

D	3	4	5	6.3	8	10	13
TA, SA	3000	2000	2000	2000	1000	500	250
TR, SR	3000	1500	1200	1000	800	500	500

NOTES:  
1. The above quantities are typical. Quantities may vary.  
2. The component will be oriented on the tape so that the positive lead is leading or the negative lead is leading, depending on the customer's request

■ **RADIAL FORMING**

Lead Forming & Cutting Specifications for Radial Type (Unit: mm)

Forming Method	Code	Shape	Dimensions																																																																																
Forming Cut (4 ~ 8 )	FC		<table border="1"> <thead> <tr> <th>D x L</th> <th>d</th> <th>F</th> <th>F'</th> <th>H</th> </tr> </thead> <tbody> <tr><td>3 x 5</td><td>0.40</td><td>1.0</td><td>5.0</td><td>5.0</td></tr> <tr><td>4 x 5</td><td>0.45</td><td>1.5</td><td>5.0</td><td>5.0</td></tr> <tr><td>5 x 5</td><td>0.45</td><td>2.0</td><td>5.0</td><td>5.0</td></tr> <tr><td>6.3 ~ 8 x 5</td><td>0.45</td><td>2.5</td><td>5.0</td><td>5.0</td></tr> <tr><td>4 x 7</td><td>0.45</td><td>1.5</td><td>5.0</td><td>5.0</td></tr> <tr><td>5 x 7 ~ 11</td><td>0.5</td><td>2.0</td><td>5.0</td><td>5.0</td></tr> <tr><td>6 x 7 ~ 15</td><td>0.5</td><td>2.5</td><td>5.0</td><td>5.0</td></tr> <tr><td>8 x 7 ~ 9</td><td>0.5</td><td>3.5</td><td>5.0</td><td>5.0</td></tr> <tr><td>8 x 11.5 ~ 20</td><td>0.6</td><td>3.5</td><td>5.0</td><td>5.0</td></tr> <tr><td>10</td><td>0.6</td><td>5.0</td><td>-</td><td>4.5</td></tr> <tr><td>12.5</td><td>0.6</td><td>5.0</td><td>-</td><td>4.5</td></tr> <tr><td>16</td><td>0.8</td><td>7.5</td><td>-</td><td>4.5</td></tr> <tr><td>18</td><td>0.8</td><td>7.5</td><td>-</td><td>4.5</td></tr> <tr><td>22</td><td>1.0</td><td>10.0</td><td>-</td><td>4.5</td></tr> <tr><td>25</td><td>1.0</td><td>12.5</td><td>-</td><td>4.5</td></tr> </tbody> </table>	D x L	d	F	F'	H	3 x 5	0.40	1.0	5.0	5.0	4 x 5	0.45	1.5	5.0	5.0	5 x 5	0.45	2.0	5.0	5.0	6.3 ~ 8 x 5	0.45	2.5	5.0	5.0	4 x 7	0.45	1.5	5.0	5.0	5 x 7 ~ 11	0.5	2.0	5.0	5.0	6 x 7 ~ 15	0.5	2.5	5.0	5.0	8 x 7 ~ 9	0.5	3.5	5.0	5.0	8 x 11.5 ~ 20	0.6	3.5	5.0	5.0	10	0.6	5.0	-	4.5	12.5	0.6	5.0	-	4.5	16	0.8	7.5	-	4.5	18	0.8	7.5	-	4.5	22	1.0	10.0	-	4.5	25	1.0	12.5	-	4.5
D x L	d	F	F'	H																																																																															
3 x 5	0.40	1.0	5.0	5.0																																																																															
4 x 5	0.45	1.5	5.0	5.0																																																																															
5 x 5	0.45	2.0	5.0	5.0																																																																															
6.3 ~ 8 x 5	0.45	2.5	5.0	5.0																																																																															
4 x 7	0.45	1.5	5.0	5.0																																																																															
5 x 7 ~ 11	0.5	2.0	5.0	5.0																																																																															
6 x 7 ~ 15	0.5	2.5	5.0	5.0																																																																															
8 x 7 ~ 9	0.5	3.5	5.0	5.0																																																																															
8 x 11.5 ~ 20	0.6	3.5	5.0	5.0																																																																															
10	0.6	5.0	-	4.5																																																																															
12.5	0.6	5.0	-	4.5																																																																															
16	0.8	7.5	-	4.5																																																																															
18	0.8	7.5	-	4.5																																																																															
22	1.0	10.0	-	4.5																																																																															
25	1.0	12.5	-	4.5																																																																															
Cut (3 ~ 25 )	CC																																																																																		
Bending Cut (5 ~ 25 )	BC		<table border="1"> <thead> <tr> <th>D x L</th> <th>d</th> <th>F±0.5</th> </tr> </thead> <tbody> <tr><td>5 X 11</td><td>0.5</td><td>2.0</td></tr> <tr><td>6.3 X 11 ~ 15</td><td>0.5</td><td>2.5</td></tr> <tr><td>8 X 11.5 ~ 20</td><td>0.6</td><td>3.5</td></tr> <tr><td>10</td><td>0.6</td><td>5.0</td></tr> <tr><td>12.5</td><td>0.6</td><td>5.0</td></tr> <tr><td>16</td><td>0.8</td><td>7.5</td></tr> <tr><td>18</td><td>0.8</td><td>7.5</td></tr> <tr><td>22</td><td>1.0</td><td>10.0</td></tr> <tr><td>25</td><td>1.0</td><td>12.5</td></tr> </tbody> </table>	D x L	d	F±0.5	5 X 11	0.5	2.0	6.3 X 11 ~ 15	0.5	2.5	8 X 11.5 ~ 20	0.6	3.5	10	0.6	5.0	12.5	0.6	5.0	16	0.8	7.5	18	0.8	7.5	22	1.0	10.0	25	1.0	12.5																																																		
D x L	d	F±0.5																																																																																	
5 X 11	0.5	2.0																																																																																	
6.3 X 11 ~ 15	0.5	2.5																																																																																	
8 X 11.5 ~ 20	0.6	3.5																																																																																	
10	0.6	5.0																																																																																	
12.5	0.6	5.0																																																																																	
16	0.8	7.5																																																																																	
18	0.8	7.5																																																																																	
22	1.0	10.0																																																																																	
25	1.0	12.5																																																																																	
(10 ~ 25 )	SD																																																																																		