

### ■ FEATURES

- 105° C, Solvent-proof type
- Suitable for high reliability products

### ■ SPECIFICATIONS

Item	Performance									
	RJA									
Life	At 105°C 2000 Hrs									
Operating Temperature	-55°C ~ +105°C									
Capacitance Tolerance	± 20% (120Hz, 20°C)									
Leakage Current (at 20°C)	I = 0.01CV or 3 (μ A) whichever is greater (after 2 minutes) Where, C = rated capacitance in μ F. V=rated DC working voltage in V.									
Dissipation Factor Tan δ at 120 Hz, 20°C	Rated Voltage	6.3	10	16	25	35	50	63		
	Tan δ(max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09		
When the capacitance exceed 1000 μF 0.02 shall be added every 1000 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
	Impedance Ratio	Z(-25°C)	D<16	4	3	3	2	2	2	2
		Z(+20°C)	D>16	5	4	3	2	2	3	3
		Z(-55°C)	D<16	8	6	4	4	4	3	3
		Z(+20°C)	D>16	10	8	6	4	3	3	3
Load Life Test	Test Time	1000hrs / 2000hrs								
	Capacitance Δ	Within ≤± 20%								
	Dissipation Factor	Less than 200% of specified value.								
	Leakage Current	Within specified value								
	The above specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 1000/2000 hrs at 105°C.									
Shelf Life Test	Test Time	1000 Hrs								
	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 exposing them for 1000 hrs at 105°C without voltage applied.									
Ripple Current & Frequency Multipliers	Freq. (Hz) Cap. (μF)	60	120	500	1K	10K up				
	Under 100	0.70	1.00	1.30	1.40	1.50				
	100 to 1000	0.75	1.00	1.20	1.30	1.35				
	1000 and above	0.80	1.00	1.10	1.12	1.15				
Riple Current & Temperature Multipliers	Temperature (°C)	45	70	85	105					
	Multipliers	1.95	1.78	1.40	1.00					
Standards	Satisfies Characteristic W of JIS C 5141									

#### DIMENSIONS AND PERMISSIBLE RIPPLE CURRENT

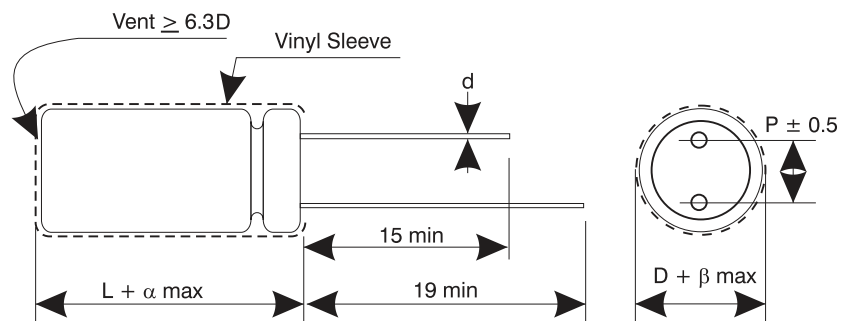
Dimension: D×L(mm)

Ripple Current: mA/RMS at 120Hz 105°C

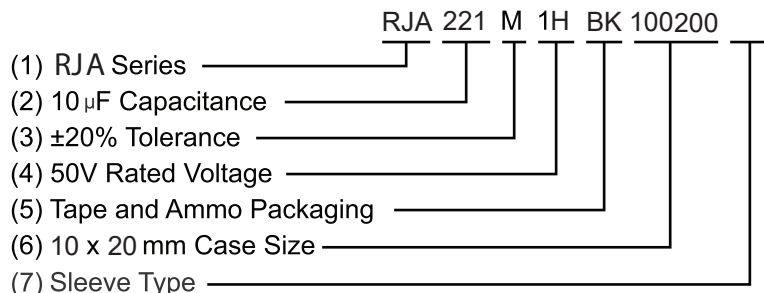
μF	VDC	Code	6.3v(0J)		10V(1A)		16V(1C)		25V(1E)		35V(1V)		50V(1H)		63V(1J)	
			DxL	mA	DxL	mA	DxL	mA	DxL	mA	DxL	mA	DxL	mA	DxL	mA
0.1	0R1												5 x 11	1.3	5 x 11	2.1
0.22	R22												5 x 11	2.9	5 x 11	3.2
0.33	R33												5 x 11	4.3	5 x 11	5.4
0.47	R47												5 x 11	7.1	5 x 11	7.1
1	010												5 x 11	13	5 x 11	15
2.2	2R2												5 x 11	20	5 x 11	26
3.3	3R3												5 x 11	30	5 x 11	31
4.7	4R7												5 x 11	33	5 x 11	36
10	100						5 x 11	36	5 x 11	40	5 x 11	45	5 x 11	50	5 x 11	54
22	220						5 x 11	58	5 x 11	68	5 x 11	71	5 x 11	78	6.3 x 11	96
33	330						5 x 11	76	5 x 11	78	6.3 x 11	90	6.3 x 11	96	8 x 11.5	141
											5 x 11	85	5 x 11	90	6.3 x 11	100
47	470				5 x 11	76	5 x 11	90	5 x 11	97	6.3 x 11	105	8 x 11.5	130	8 x 11.5	151
											5 x 11	90	6.3 x 11	117	6.3 x 11	129
100	101		5 x 11	103	5 x 11	111	6.3 x 11	133	6.3 x 11	142	8 x 11.5	170	8 x 11.5	188	10 x 12.5	235
							5 x 11	110			6.3 x 11	150				
220	221		6.3 x 11	160	6.3 x 11	175	8 x 11.5	215	8 x 11.5	236	10 x 12.5	300	10 x 20	355	10 x 20	400
			5 x 11	140	5 x 11	150	6.3 x 11	180			8 x 11.5	270	10 x 16	335	10 x 16	360
330	331		8 x 11.5	219	8 x 11.5	245	8 x 11.5	260	10 x 12.5	335	10 x 16	400	10 x 20	460	13 x 20	520
			6.3 x 11	190	6.3 x 11	200			8 x 11.5	330	10 x 12.5	350	10 x 16	410	10 x 20	490
470	471		8 x 11.5	261	8 x 11.5	290	10 x 12.5	370	10 x 16	440	10 x 20	520	13 x 20	610	13 x 25	720
			6.3 x 11	230	6.3 x 11	250	8 x 11.5	310	10 x 12.5	380	10 x 16	460	10 x 20	530	13 x 20	665
1000	102		10 x 12.5	455	10 x 16	550	10 x 20	640	13 x 20	770	13 x 25	920	16 x 25	1080	16 x 31.5	1260
			8 x 11.5	380	10 x 12.5	460	10 x 16	560	10 x 20	680	13 x 20	830	13 x 25	980	16 x 25	1190
2200	222		10 x 20	750	13 x 20	860	13 x 25	1000	16 x 25	1170	16 x 31.5	1340	18 x 35.5	1530		
					10 x 20	760	13 x 20	920	13 x 25	1090	16 x 25	1260	16 x 35.5	1470		
3300	332		13 x 20	920	13 x 20	1100	16 x 25	1300	16 x 31.5	1460	18 x 35.5	1650	22 x 40	1707		
			10 x 20	840			13 x 25	1170	16 x 25	1400	16 x 35.5	1610	18 x 35.5	1650		
4700	472		16 x 25	1330	16 x 25	1400	16 x 31.5	1600	18 x 35.5	1780	18 x 40	1900				
			16 x 20	1090	13 x 25	1260	16 x 25	1480	16 x 31.5	1710	18 x 35.5	1875				

#### LEAD SPACING AND DIAMETER SPECIFICATIONS

D	5	6.3	8	10	13	16	18	22
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
d	0.5		0.6			0.8		1.0
$\alpha$	1.0			1.5				2.0
$\beta$	0.5							



### ■ HOW TO MAKE A PART NUMBER



#### 1. Series: RJA

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
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

Fig. 1

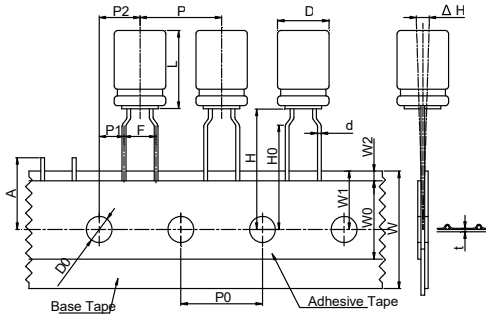


Fig. 2

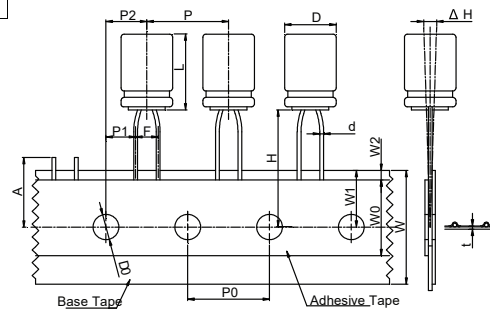


Fig. 3

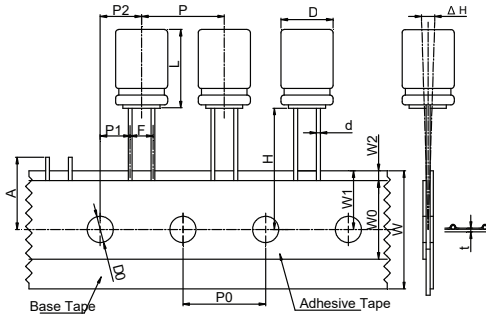
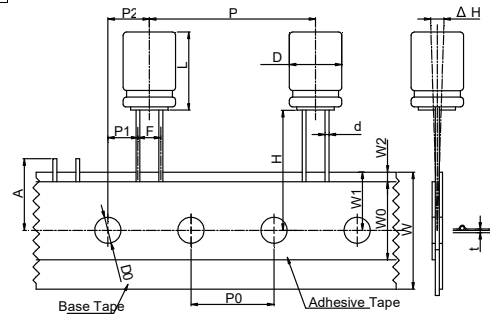
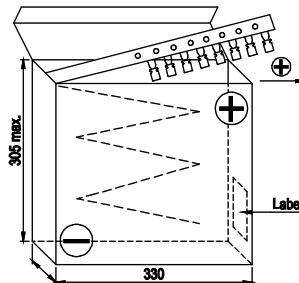


Fig. 4



Packing	TA, TR (Fig. 1)								SA, SR (Fig. 2, 3, 4)												
L	L ≤ 7mm					L ≥ 7mm			L ≤ 7mm					L ≥ 7mm							
Symbol	D	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
Δ H		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) Reel pack box.(SR,TR)  
10 Boxes per carton



#### 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><tr><th>D x L</th><th>d</th><th>F</th><th>F'</th><th>H</th></tr><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></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
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