

■ FEATURES

- 105°C, 2000 ~ 5000 hours assured.
- Low ESR, suitable for switching power supplies.
- Smaller size with large permissible ripple current.

■ SPECIFICATIONS

Item	Performance															
Operating Temperature	6.3 ~ 63V										100V					
Temperature	-55°C ~ +105°C										-40°C ~ +105°C					
Capacitance Tolerance	± 20% (120Hz, 20°C)															
Leakage Current (at 20°C)	Rated Voltage	<100V														
	Time	After 2 minutes														
	Leakage Current	I = 0.01CV or 3 (μ A)														
		whichever is greater														
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	100	160	200	250	350	400	450	
	Tan δ (max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.20	0.24	0.24	0.24	0.24	0.24	
When the capacitance exceed 1000 μ F 0.02 shall be added every 1000 μ F.																
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(-55°C) / Z(+20°C)	4		4	3	3	3	3	3	3						
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below															
	Impedance Ratio	Rated Voltage	6.3		10	16	25	35	50	63	100					
		Z(-55°C)/Z(+20°C)	4		4	3	3	3	3	3	3					
		Rated Voltage	160		200	250	350	400	450							
Z(-40)/Z(+200176C)	6		6	6	6	6	6									
Load Life Test	Test Time	2000hrs for φ D =5~8mm 5000hrs for φ D > 10mm														
	Capacitance Change	Within ± 20% of initial value														
	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 2000 hrs at 105°C. High than 2000 hrs load life are available upon request.															
Shelf Life Test	Test Time	1000 Hrs														
	Capacitance Change	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 hours at 105°C without voltage applied.																
Ripple Current & Frequency Multipliers	Freq. (Hz)	60(50)	120	500	1K	10K	100K									
		Cap. (μF)	Under 33	0.40	0.55	0.65	0.80	0.90	1.00							
		39 to 330	0.60	0.70	0.80	0.90	0.95	1.00								
		390 to 1000	0.65	0.80	0.85	0.98	1.00	1.00								
		1200 up above	0.80	0.90	0.95	0.98	1.00	1.00								
Ripple Current & Temperature Multipliers	Temperature (°C)	Under 50	70	85	105											
	Multipliers	2.40	2.05	1.70	1.00											
Standards	Satisfies Characteristic W of JIS C 5141															

■ LEAD SPACING AND DIAMETERS SPECIFICATIONS

φD	5	6.3	8	10	13	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	1.0			1.5			
β	0.5						



DIMENSIONS AND PERMISSIBLE RIPPLE CURRENT

Dimension: D×L(mm)

Ripple Current: mA/rms at 100K Hz 105°C

VDC Item μF	6.3V(0J)					10V(1A)					16V(1C)				
	DxL	Impedance (Ω) Max @ 100KHz		Ripple current (mA rms) @ 105°C		DxL	Impedance (Ω) Max @ 100KHz		Ripple current (mA rms) @ 105°C		DxL	Impedance (Ω) Max @ 100KHz		Ripple current (mA rms) @ 105°C	
		20°C	-10°C	120Hz	100KHz		20°C	-10°C	120Hz	100KHz		20°C	-10°C	120Hz	100KHz
33											5 x 11	1.30	3.90	108	154
39											5 x 11	1.30	3.90	108	154
47						5 x 11	2.10	5.50	78	111	6.3 x 11	0.60	1.80	182	260
56						5 x 11	1.90	4.80	85	121	6.3 x 11	0.60	1.80	182	260
68						5 x 11	1.30	3.90	108	154	6.3 x 11	0.60	1.80	182	260
100	5 x 11	1.30	3.90	108	154	6.3 x 11	0.60	1.80	182	260	6.3 x 11	0.60	1.80	182	260
220	6.3 x 11	0.60	1.80	182	260	8 x 11.5	0.33	0.99	280	400	8 x 11.5	0.33	0.99	320	400
330	8 x 11.5	0.33	0.88	280	400	8 x 11.5	0.33	0.99	280	400	10 x 12.5	0.25	0.75	360	510
390	8 x 11.5	0.33	0.88	320	400	10 x 12.5	0.27	0.70	410	510	10 x 16	0.19	0.57	510	635
470	10 x 12.5	0.25	0.75	410	510	10 x 12.5	0.25	0.75	410	510	10 x 16	0.19	0.57	510	635
560	10 x 12.5	0.25	0.75	410	510	10 x 16	0.19	0.57	510	635	10 x 20	0.14	0.42	775	860
680	10 x 16	0.19	0.57	510	635	10 x 16	0.19	0.57	510	635	10 x 20	0.14	0.42	775	860
1000	10 x 20	0.14	0.42	690	860	10 x 20	0.14	0.37	690	860	12.5 x 20	0.085	0.26	1000	1250
1200	10 x 20	0.14	0.42	775	860	10 x 25	0.12	0.30	930	1030	12.5 x 20	0.085	0.26	1125	1250
2200	12.5 x 20	0.085	0.26	1125	1250	12.5 x 25	0.070	0.21	1200	1355	12.5 x 25	0.070	0.21	1200	1355
3300	12.5 x 25	0.070	0.21	1200	1355	12.5 x 25	0.070	0.21	1200	1355	16 x 31.5	0.048	0.14	1830	2030
4700	16 x 25	0.060	0.18	1595	1770	16 x 31.5	0.048	0.14	1830	2030	16 x 35.5	0.044	0.13	2065	2295

VDC Item μF	25V(1E)					35V(1V)					50V(1H)				
	φDxL	Impedance (Ω) Max @ 100KHz		Ripple current (mA rms) @ 105°C		φDxL	Impedance (Ω) Max @ 100KHz		Ripple current (mA rms) @ 105°C		φDxL	Impedance (Ω) Max @ 100KHz		Ripple current (mA rms) @ 105°C	
		20°C	-10°C	120Hz	100KHz		20°C	-10°C	120Hz	100KHz		20°C	-10°C	120Hz	100KHz
1											5 x 11	5.0	15.0	43	78
2.2											5 x 11	4.0	12.0	48	88
3.3											5 x 11	3.50	11.0	52	94
4.7											5 x 11	3.00	9.00	55	100
6.8											5 x 11	3.00	9.00	55	100
10											5 x 11	2.00	6.00	68	124
22						5 x 11	1.30	3.90	108	154	6.3 x 11	0.60	1.80	143	260
33	5 x 11	1.30	3.90	108	154	6.3 x 11	0.60	1.80	182	260	6.3 x 11	0.60	1.80	143	260
39	6.3 x 11	0.60	1.80	182	260	6.3 x 11	0.60	1.80	182	260	6.3 x 11	0.60	1.80	182	260
47	6.3 x 11	0.60	1.80	182	260	6.3 x 11	0.60	1.80	182	260	8 x 11.5	0.33	0.99	320	400
56	6.3 x 11	0.60	1.80	182	260	6.3 x 11	0.60	1.80	182	260	8 x 11.5	0.33	0.99	320	400
68	6.3 x 11	0.60	1.80	182	260	6.3 x 11	0.60	1.80	182	260	8 x 11.5	0.33	0.99	320	400
100	8 x 11.5	0.33	0.99	320	400	8 x 11.5	0.33	0.99	320	400	10 x 16	0.19	0.57	445	635
220	10 x 12.5	0.25	0.75	360	510	10 x 16	0.19	0.57	445	635	10 x 25	0.12	0.30	825	1030
330	10 x 16	0.19	0.57	445	635	10 x 20	0.12	0.42	600	860	12.5 x 20	0.085	0.26	875	1250
390	10 x 20	0.14	0.42	775	635	10 x 25	0.12	0.30	930	1030	12.5 x 25	0.070	0.21	1085	1355
470	10 x 20	0.14	0.42	775	635	12.5 x 20	0.085	0.26	1000	1250	12.5 x 25	0.070	0.21	1085	1355
560	10 x 25	0.12	0.30	930	1030	12.5 x 20	0.085	0.26	1000	1250	12.5 x 25	0.070	0.21	1085	1355
680	12.5 x 20	0.085	0.26	1000	1250	12.5 x 25	0.070	0.21	1085	1355	16 x 25	0.060	0.18	1415	1770
1000	12.5 x 25	0.070	0.23	1080	1355	12.5 x 25	0.070	0.21	1085	1355	16 x 25	0.060	0.18	1595	1770
1200	12.5 x 25	0.070	0.21	1200	1355	12.5 x 25	0.070	0.21	1200	1355	16 x 31.5	0.048	0.14	1830	2030
2200	16 x 25	0.060	0.18	1595	1770	16 x 35.5	0.044	0.13	2065	2295	18 x 40	0.037	0.1	2465	2740
3300	16 x 35.5	0.044	0.13	2065	2295	18 x 40	0.037	0.10	2465	2740					
4700	18 x 40	0.037	0.1	2465	2740										

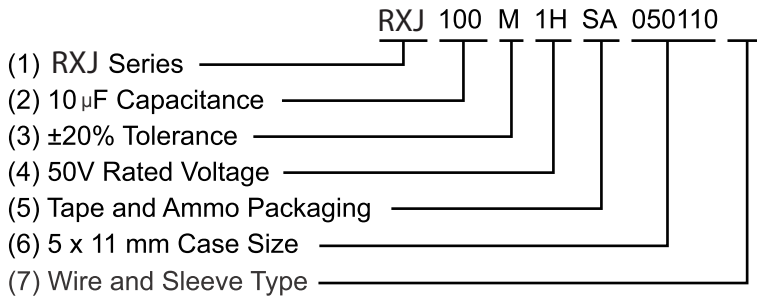
DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: $\phi D \times L$ (mm)

Ripple Current: mA/rms at 100K Hz 105°C

VDC Item μF	63V(1J)					100V(2A)				
	DxL	Impedance		Ripple current		DxL	Impedance		Ripple current	
		(Ω) Max @ 100KHz		(mA rms) @ 105°C			(Ω) Max @ 100KHz		(mA rms) @ 105°C	
		20°C	-10°C	120Hz	100KHz		20°C	-10°C	120Hz	100KHz
1						5 x 11	7.00	25	36	66
2.2						5 x 11	6.00	21	40	72
3.3						5 x 11	5.00	18.0	43	78
4.7						6.3 x 11	1.20	4.20	100	180
6.8						6.3 x 11	1.20	4.20	100	180
10	6.3 x 11	1.20	4.2	100	180	8 x 11.5	0.56	2.00	168	305
22	6.3 x 11	1.20	4.2	100	180	8 x 11.5	0.56	2.00	168	308
33	8 x 11.5	0.56	2.00	170	305	10 x 12.5	0.50	1.80	210	380
39	8 x 11.5	0.56	2.00	170	305	10 x 16	0.32	1.10	350	500
47	8 x 11.5	0.56	2.00	170	305	10 x 20	0.27	0.95	435	620
56	10 x 12.5	0.50	1.80	265	380	10 x 20	0.27	0.95	435	620
68	10 x 12.5	0.50	1.80	265	380	10 x 25	0.21	0.63	530	760
100	10 x 20	0.27	0.95	600	620	13 x 20	0.16	0.56	625	890
220	12.5 x 20	0.094	0.24	570	820	16 x 25	0.090	0.32	1010	1440
330	12.5 x 25	0.073	0.21	770	1100	16 x 31.5	0.060	0.17	1255	1790
390	12.5 x 25	0.073	0.21	770	1100	16 x 35.5	0.056	0.14	1650	2065
470	16 x 25	0.060	0.18	1420	1770					
560	16 x 31.5	0.048	0.14	1625	2030					
680	16 x 31.5	0.048	0.14	1625	2030					
1000	18 x 35.5	0.041	0.11	1790	2240					

HOW TO MAKE A PART NUMBER (Example Below)



1. Series: RXJ

2. Capacitance: Rated capacitance in μF 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.

μF	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
FF	Lead Forming	Bulk Packing
SC	Snap-in & 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

Fig. 1

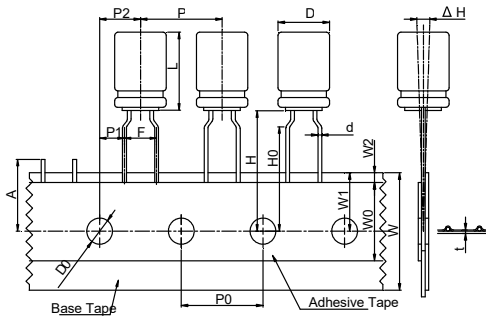


Fig. 2

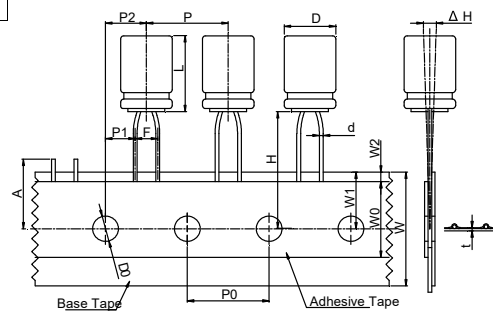


Fig. 3

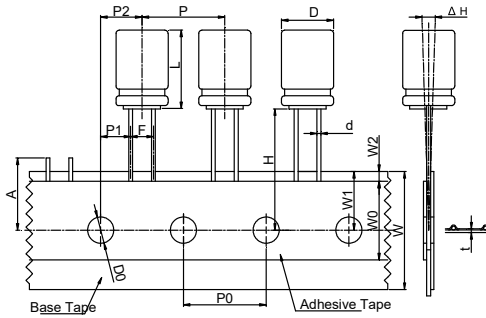
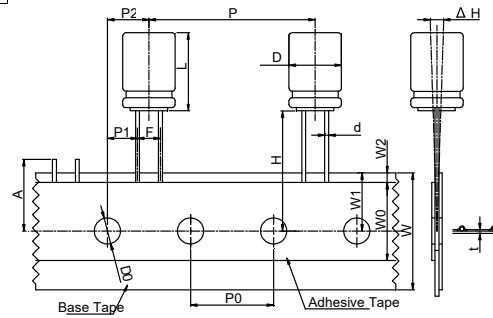
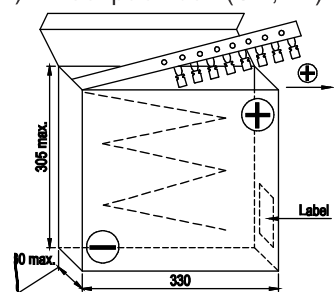


Fig. 4



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) 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 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
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