

■ FEATURES

- Low ESR at high frequency, life time: 5,000 - 7,000 hours at 105°C
- Used in LED lighting, main board, switching power supply

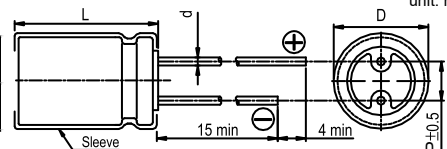
■ SPECIFICATIONS

Item	Performance										
Life	at 105 °C 4,000 ~ 10,000 Hours										
Operating Temp.	-55 °C ~ +105 °C										
Capacitance Tolerance	±20% (at 120Hz, 20 °C)										
Leakage Current (at 20 °C)	I = - 0.1CV or 3 (µA) whichever is greater (after 2 minutes) Where C = rated capacitance in µF. V = rated DC working voltage in V.										
Dissipation Factor (Tan φ at 120Hz, 20°C)	Rated Voltage	6.3	10	16	25	35	50	63			
	Tan φ (max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09			
Temperature Characteristics (Impedance Ratio at 120Hz)	Impedance ratio shall not exceed the values given in the table below .										
	Rated Voltage	6	10	16	25	35	50	63	100	160-250	400-450
	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2	3	5, 6
	Z(-40°C)/Z(+20°C)	8	6	4	3	3	3	3	3	-	-
Load Life Test	Test Time	6.3 ~ 10V	4,000 Hrs for D = 5 ~ 6.3mm								
			6,000 Hrs for D = 8 ~ 10mm								
	8,000 Hrs for D ≥ 12.5mm										
	16 ~ 63V	5,000 Hrs for D = 5 ~ 6.3mm									
		7,000 Hrs for D = 8 ~ 10mm									
		10,000 Hrs for D ≥ 12.5mm									
	Capacitance Change	Within ± 25% 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 the rated voltage applied with rated ripple current for 4,000 ~ 10,000hrs at 105 °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	Within specified value									
	*The above specifications shall be satisfied when the capacitors are restored to 20 °C after exposing them for 1,000 hrs at 105 °C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS C 5101-4 4.1).										
Ripple Current & Frequency Multipliers	Freq. (Hz)	120	1k	10k	100k up						
	Cap.(µF)										
	under ~180	0.40	0.75	0.90	1.0						
	220 ~ 560	0.50	0.73	0.92	1.0						
	680 ~ 1,800	0.55	0.77	0.94	1.0						
	2,200 ~ 3,900	0.60	0.80	0.96	1.0						
4,700 ~ 18,000	0.70	0.85	0.98	1.0							

■ DIMENSIONS

D	5	6.3	8	10	12.5	16~18
P	2.0	2.5	3.5	5.0	5.0	7.5
d	0.5		0.5-0.6	0.6	0.6	0.8

D	D+βmax
L	L+αmax



β	(L < 20) 0.5
	(L ≥ 20) 1.0

α	(L < 20) 1.5
	(L ≥ 20) 2.0



STANDARD RATINGS (continued)

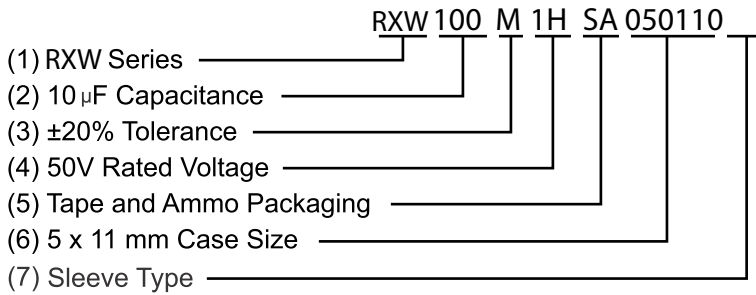
V(Code) Item Code		35(1V)			50(1H)			63(1J)			100(2A)		
		Case size D×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)	Case size D×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)	Case size D×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)	Case size D×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)
1	010				5×11	2.900	80						
2.2	2R2				5×11	2.500	90						
3.3	3R3				5×11	2.000	100						
4.7	4R7	5×11	0.850	158	5×11	1.700	105				5×11	1.800	105
10	100				5×11	1.700	115						
15	150										6.3×11	0.864	300
22	220	5×11	0.650	180	5×11	1.200	160	6.3×11	0.960	260	8×11.5	0.750	370
					6.3×11	0.360	220						
27	270							6.3×11	0.950	275	8×11.5	0.454	375
33	330	5×11	0.600	200	6.3×11	0.270	300	6.3×11	0.860	300	8×11.5	0.454	385
39	390				6.3×11	0.265	310	8×11.5	0.450	460	8×16	0.324	460
					8×11.5	0.260	510						
47	470	6.3×11	0.360	345	6.3×11	0.250	320	8×11.5	0.435	480	10×12.5	0.344	500
56	560	6.3×11	0.350	355	8×11.5	0.160	560	8×11.5	0.430	520	8×20	0.238	610
68	680	6.3×11	0.340	365	8×11.5	0.153	575	8×11.5	0.420	550	10×16	0.223	700
82	820	8×11.5	0.250	645	8×11.5	0.153	585	10×12.5	0.344	680	10×20	0.151	765
100	101	8×11.5	0.220	655	8×11.5	0.153	720	8×16	0.300	780	10×20	0.135	970
					10×12.5	0.112	753	10×12.5	0.330	790	12.5×12.5	0.135	970
120	121	8×11.5	0.200	665	8×16	0.108	735	10×16	0.248	850	12.5×20	0.115	1050
					10×12.5	0.108	765						
150	151	8×11.5	0.180	675	10×16	0.076	1055	8×20	0.238	1050	12.5×25	0.090	1180
180	181	8×11.5	0.160	685	8×20	0.082	915	10×20	0.151	1190	12.5×25	0.098	1210
		10×12.5	0.150	865	10×16	0.076	1100	12.5×15	0.166	1180	18×16	0.086	1200
220	221	8×11.5	0.102	695	10×16	0.072	1150	10×20	0.151	1400	12.5×25	0.096	1700
		10×12.5	0.072	885	10×12.5	0.085	950	12.5×20	0.135	1550	16×20	0.066	1750
270	271	10×16	0.060	1210	10×25	0.055	1440	12.5×20	0.128	1590	12.5×35	0.059	1960
											16×25	0.052	1940
330	331	8×20	0.069	1050	10×20	0.043	1270	10×25	0.108	1570	12.5×30	0.051	2050
		10×12.5	0.065	905	12.5×20	0.041	1665	12.5×20	0.115	1650	16×25	0.058	2150
390	391	10×16	0.060	1255	12.5×20	0.041	1695	12.5×25	0.090	1780	16×30	0.039	2310
		10×20	0.050	1405							18×25	0.041	2280
470	471	10×16	0.048	1400	10×20	0.055	1350	12.5×20	0.075	1720	16×35	0.032	2900
		12.5×12.5	0.048	1450	12.5×25	0.031	1955	12.5×25	0.072	2000	18×30	0.034	2900
560	561	10×20	0.045	1565	12.5×25	0.031	2015	16×25	0.052	2350	18×40	0.029	3300
680	681	10×20	0.046	1685	12.5×30	0.027	2320	12.5×35	0.059	2720	18×35	0.029	3150
		12.5×20	0.043	1905	16×20	0.031	2220	16×25	0.052	2700			
820	821	10×25	0.042	1650	12.5×35	0.023	2520	12.5×40	0.051	2760	18×40	0.026	3460
		12.5×20	0.042	1965	18×20	0.032	2500	16×30	0.039	2760			
1000	102	12.5×20	0.041	2015	12.5×35	0.019	2555	16×30	0.039	2785	18×40	0.026	3490
		12.5×25	0.035	2230	12.5×25	0.032	2250	16×35	0.032	2950			
1200	122	12.5×30	0.023	2530	16×30	0.020	3020	16×40	0.029	3450			
		16×20	0.032	2220	18×25	0.023	2750	18×30	0.034	3480			
1500	152	12.5×35	0.020	2750	16×35	0.017	3160	18×35	0.029	3750			
		16×25	0.025	2560									
1800	182	12.5×40	0.017	3200	16×40	0.017	3600	18×40	0.026	3880			
		16×25	0.025	2590	18×30	0.019	3500						
2200	222	16×25	0.028	2630	18×30	0.019	3550						
		18×25	0.022	2780	18×35	0.016	3690						
2700	272	16×35	0.018	3130	18×40	0.014	3810						
		18×30	0.018	3610									
3300	332	18×35	0.017	3695									
3900	392	18×40	0.014	3790									

■ STANDARD RATINGS (continued)

V(Code) Item Cap.(μF) Code		160(2C)			200(2D)			250(2E)		
		Case size ΦD×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)	Case size ΦD×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)	Case size ΦD×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)
1	010	6.3×11	18.8	50	6.3×11	18.2	50	6.3×11	18.7	50
2.2	2R2	6.3×11	12.5	74	6.3×11	12.4	74	6.3×11	12.6	74
3.3	3R3	6.3×11	10.3	91	6.3×11	10.2	91	6.3×11	10.2	91
4.7	4R7	6.3×11	8.84	109	8×11.5	8.28	127	8×11.5	8.28	127
5.6	5R6	8×11.5	6.96	138	8×11.5	7.80	138	8×11.5	7.80	138
6.8	6R8	8×11.5	7.50	153	8×16	7.20	176	8×16	7.20	176
10	100	8×11.5	8.04	185	8×16	5.10	214	8×16	5.16	214
22	220	10×16	2.28	339	10×16	2.34	339	10×20	2.40	374
33	330	10×16	1.68	416	10×20	1.80	458	12.5×20	1.80	498
47	470	10×20	1.18	547	12.5×20	1.20	595	12.5×25	1.20	656
56	560	12.5×20	1.02	649	12.5×20	1.08	649	12.5×25	1.08	716
68	680	12.5×25	0.84	789	12.5×25	0.90	789	16×25	0.86	906
100	101	16×25	0.66	1099	16×25	0.72	1099	16×30	0.72	1190
120	121	16×20	0.60	1095	16×25	0.65	1204	16×30	0.65	1303
150	151	16×25	0.48	1346	16×30	0.54	1457	16×35	0.58	1561
180	181	16×30	0.39	1451	16×35	0.42	1554	18×35	0.42	1623
220	221	16×35	0.34	1512	18×35	0.36	1579	18×40	0.36	1675
330	331	18×35	0.22	1933	18×40	0.24	2052			

V(Code) Item Cap.(μF) Code		400(2G)			420(2M)			450(2W)		
		Case size ΦD×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)	Case size ΦD×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)	Case size ΦD×L (mm)	Max Imp 20°C, 100kHz (Ω)	Rated ripple 105°C, 100kHz (mArms)
1	010	6.3×11	19.8	50	6.3×11	19.00	47	6.3×11	19.00	45
2.2	2R2	6.3×11	17.6	74	8×11.5	16.50	82	8×11.5	16.50	78
3.3	3R3	8×11.5	13.2	106	8×11.5	12.50	100	8×16	12.50	110
4.7	4R7	8×11.5	8.80	127	8×16	8.50	138	10×16	8.50	140
5.6	5R6	8×16	8.25	160	10×16	7.50	161	10×16	7.50	153
6.8	6R8	10×16	7.70	189	10×16	6.50	178	10×20	6.50	186
10	100	10×16	5.50	229	10×20	5.30	238	10×20	5.30	226
22	220	12.5×20	2.59	407	12.5×25	2.50	423	12.5×25	2.80	401
33	330	12.5×25	1.87	549	16×25	1.80	595	16×25	1.80	565
47	470	16×25	1.38	753	16×30	1.25	769	16×30	1.25	730
56	560	16×30	1.10	890	16×35	1.05	899	16×35	1.05	853
68	680	16×30	0.94	981	18×30	0.90	967	18×35	0.90	981
100	101	18×35	0.74	1330	18×40	0.70	1331	18×40	0.74	1263
120	121	18×40	0.61	1547						
150	151	18×45	0.55	1824						

■ **HOW TO MAKE A PART NUMBER (Example below)**



1. Series: **RXW**

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	± 10%	± 20%	+ 50% / -10%	+ 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 (V)	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

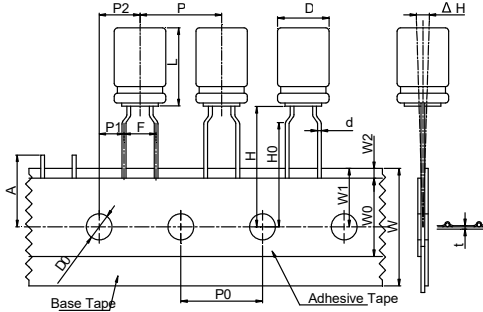


Fig. 2

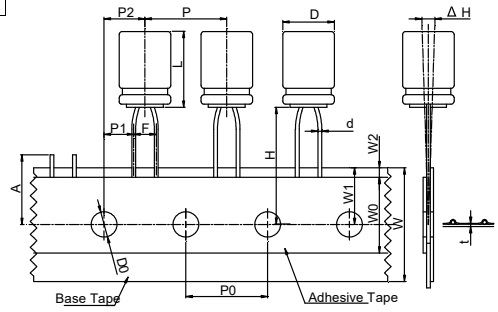


Fig. 3

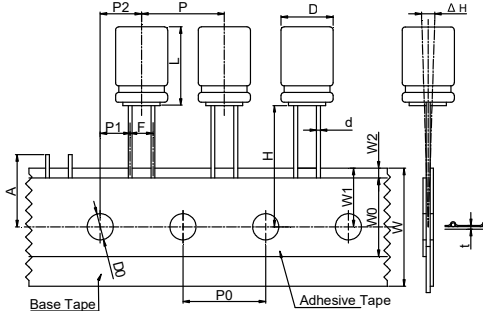
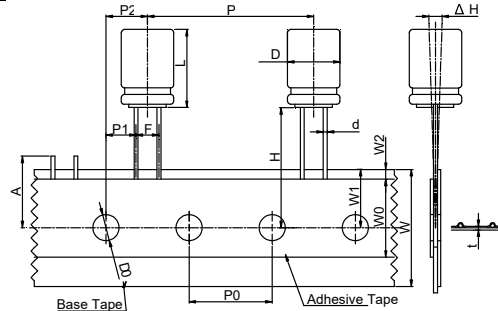


Fig. 4



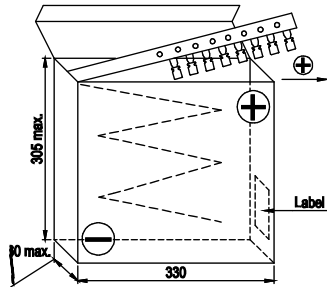
Packing	TA, TR (Fig. 1)									SA, SR (Fig. 2, 3, 4)										
	L ≤ 7mm					L ≥ 7mm				L ≤ 7mm					L ≥ 7mm					
Symbol	3	4	5	6.3	8	5	6.3	8	3	4	5	6.3	8	5	6.3	8	Tol.	10	13	Tol.
d	0.4	0.45	0.5	0.5	0.5	0.5	0.5	0.6	0.4	0.45	0.45	0.45	0.45	0.5	0.5	0.6	± 0.05	0.6	0.6	± 0.05
F	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	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	

■ **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> </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
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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