

ELNA

T Y P E R S H

ED-8801C

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS
FOR SWITCHING REGULATORS AND OTHER HIGH FREQUENCY APPLICATIONS.

◆ Highlights

Series name	Terminal	Working temperature range(°C)	Rated Voltage range(V)	Capacitance range (μF)	Guaranteed Time at 105°C (hour)
R S H	Radial lead type	-55~ +105	6.3~100	0.47	φ 5~6.3 :2000
				~	φ 8~10 :3000
				15000	φ 12.5~18 :5000

◆ Key Features

- Low Impedance, Low ESR
- High Ripple Current Capability
- Wide Operating Temperature Range
- Excellent Temperature Stability
- Wide Variety of Case Size

◆ Applications

Switching regulators, High Frequency coupling, By-pass circuits

— MARATHONCAP —

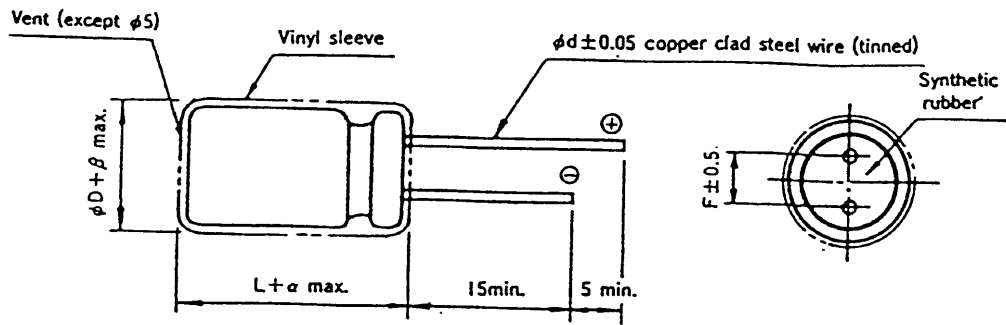
MARATHONCAP is the affectionate name given to the aluminum electrolytic capacitors of long life and high reliability developed for smoothing high frequencies of power supply, and for use in control circuits. The capacitors are suitable for use in switching regulators in which internal temperature is actually raised, or in other electronic equipment, and aid in the design of small-size and highly reliable equipment.



R S H C O N F I G U R A T I O N S

● Radial lead type

Unit:mm



Lead spacing and Wire diameter

ϕD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0		7.5	
ϕd	0.5	0.6			0.8		
α	1.0			2.0			
β	0.5						

Standard Ratings

Case φD×L(mm)	Parameter Case code	WV(V)		35			50		
		Capacitance μF	Impedance Ω/100kHz		Ripple current mA _{rms}	Capacitance μF	Impedance Ω/100kHz		Ripple current mA _{rms}
			20°C	-10°C			20°C	-10°C	
5×11.5	A21	—	—	—	—	—	—	—	
5×11.5	A21	—	—	—	0.47	3.9	7.8	22	
5×11.5	A21	—	—	—	1	3.5	7.0	36	
5×11.5	A21	—	—	—	2.2	3.0	6.0	54	
5×11.5	A21	—	—	—	3.3	2.6	5.2	63	
5×11.5	A21	—	—	—	4.7	2.2	4.4	75	
5×11.5	A21	27	0.65	1.3	10	1.4	2.8	110	
5×15	A22	39	0.46	0.92	18	0.95	1.9	120	
6.3×11.5	A31	56	0.30	0.60	27	0.55	1.1	135	
6.3×15	A32	82	0.20	0.40	39	0.36	0.72	148	
8×12	A41	120	0.17	0.34	400	0.28	0.56	153	
8×15	A42	180	0.13	0.26	506	0.20	0.40	360	
8×20	A43	220	0.095	0.19	637	0.18	0.36	460	
10×12.5	A51	150	0.12	0.24	760	0.13	0.26	670	
10×16	A52	180	0.095	0.19	635	0.18	0.36	443	
10×20	A53	330	0.065	0.13	795	0.15	0.30	553	
10×25	A54	390	0.055	0.11	1010	0.085	0.17	676	
10×30	A55	560	0.045	0.090	1190	0.075	0.15	876	
12.5×15	A61	330	0.065	0.13	1010	0.055	0.11	1010	
12.5×20	A62	560	0.042	0.084	1400	0.095	0.19	745	
12.5×25	A63	680	0.038	0.076	1690	0.060	0.12	979	
12.5×30	A64	1000	0.032	0.064	1950	0.044	0.088	1180	
12.5×35	A65	1200	0.028	0.056	2200	0.040	0.080	1310	
12.5×40	A66	1500	0.026	0.052	2390	0.036	0.072	1470	
16×15	A71	560	0.046	0.092	1360	0.034	0.068	1590	
16×20	A72	1000	0.034	0.068	1730	0.065	0.13	982	
16×25	A73	1200	0.028	0.056	2070	0.045	0.090	1210	
16×31.5	A74	1800	0.025	0.050	2350	0.038	0.076	1490	
16×35.5	A75	2200	0.022	0.044	2550	0.032	0.064	1890	
16×40	A76	2700	0.020	0.040	2900	0.028	0.056	2140	
18×15	A81	680	0.043	0.086	1520	0.026	0.052	2110	
18×20	A82	1200	0.036	0.072	1900	0.048	0.096	1080	
18×25	A83	1800	0.027	0.054	2200	0.036	0.072	1450	
18×31.5	A84	2200	0.023	0.046	2490	0.032	0.064	1720	
18×35.5	A85	2700	0.019	0.038	2770	0.026	0.052	1970	
18×40	A86	3300	0.018	0.036	3110	0.025	0.050	2310	
					2200	0.024	0.048	2530	

Case φD×L(mm)	Parameter Case code	WV(V)		63			100		
		Capacitance μF	Impedance Ω/100kHz		Ripple current mA _{rms}	Capacitance μF	Impedance Ω/100kHz		Ripple current mA _{rms}
			20°C	-10°C			20°C	-10°C	
5×11.5	A21	12	1.2	3.6	120	5.6	7.6	57	
5×15	A22	18	0.85	2.6	135	8.2	5.2	74	
6.3×11.5	A31	27	0.55	1.7	148	1.3	5.2	74	
6.3×15	A32	39	0.38	1.1	153	1.1	4.4	78	
8×12	A41	47	0.32	0.96	360	18	0.62	2.5	85
8×15	A42	68	0.24	0.72	469	22	0.53	2.1	275
8×20	A43	82	0.17	0.51	682	33	0.35	1.4	360
10×12.5	A51	56	0.23	0.69	448	39	0.27	1.1	490
10×16	A52	68	0.17	0.51	553	27	0.47	1.9	319
10×20	A53	120	0.12	0.36	676	33	0.32	1.3	424
10×25	A54	150	0.10	0.30	876	56	0.25	1.0	490
10×30	A55	180	0.085	0.26	1020	68	0.18	0.72	634
12.5×15	A61	150	0.11	0.33	745	100	0.15	0.60	739
12.5×20	A62	220	0.075	0.23	979	68	0.20	0.80	613
12.5×25	A63	270	0.065	0.20	1180	100	0.13	0.52	805
12.5×30	A64	390	0.055	0.17	1310	120	0.11	0.44	857
12.5×35	A65	470	0.048	0.14	1470	180	0.090	0.36	1120
12.5×40	A66	560	0.042	0.13	1590	220	0.075	0.30	1240
16×15	A71	220	0.080	0.24	982	270	0.060	0.24	1330
16×20	A72	390	0.057	0.17	1210	120	0.13	0.52	706
16×25	A73	470	0.052	0.16	1490	180	0.11	0.44	916
16×31.5	A74	680	0.042	0.13	1890	220	0.081	0.32	1290
16×35.5	A75	820	0.036	0.11	2140	330	0.059	0.23	1630
16×40	A76	1000	0.032	0.11	2400	390	0.052	0.21	1750
18×15	A81	330	0.065	0.096	2410	470	0.045	0.18	1920
18×20	A82	470	0.058	0.17	1460	150	0.12	0.48	871
18×25	A83	680	0.050	0.15	1740	270	0.085	0.34	1170
18×31.5	A84	820	0.042	0.13	1900	330	0.071	0.28	1500
18×35.5	A85	1000	0.035	0.11	2340	390	0.058	0.23	1630
18×40	A86	1200	0.032	0.096	2560	560	0.054	0.22	1920
						680	0.041	0.16	2100

Note : Allowable ripple current : 105°C, 100kHz Impedance : at 20°C.

Standard Ratings

Case #(D) x L(mm)	Parameter Case code	WV (V)		6.3			10		
		Capacitance μF	Impedance $\Omega/100kHz$		Ripple current mA rms	Capacitance μF	Impedance $\Omega/100kHz$		Ripple current mA rms
			20°C	-10°C			20°C	-10°C	
5 x 11.5	A21	100	0.65	1.3	175	82	0.65	1.3	175
5 x 15	A22	150	0.46	0.92	235	100	0.46	0.92	235
6.3 x 11.5	A31	220	0.30	0.60	290	180	0.31	0.62	290
6.3 x 15	A32	330	0.20	0.40	400	220	0.20	0.40	400
8 x 12	A41	470	0.17	0.34	488	330	0.17	0.34	490
8 x 15	A42	680	0.13	0.26	617	470	0.13	0.26	617
8 x 20	A43	1000	0.095	0.19	800	680	0.095	0.19	800
10 x 12.5	A51	680	0.12	0.24	613	470	0.12	0.24	620
10 x 16	A52	820	0.095	0.19	734	560	0.095	0.19	734
10 x 20	A53	1200	0.065	0.13	1010	1000	0.060	0.12	1010
10 x 25	A54	1500	0.055	0.11	1190	1200	0.055	0.11	1190
10 x 30	A55	2200	0.045	0.090	1440	1500	0.045	0.090	1440
12.5 x 15	A61	1200	0.065	0.13	1010	1000	0.065	0.13	1010
12.5 x 20	A62	2200	0.042	0.084	1400	1800	0.042	0.084	1400
12.5 x 25	A63	2700	0.038	0.076	1690	2200	0.036	0.072	1690
12.5 x 30	A64	3900	0.032	0.064	1690	2200	0.036	0.072	1690

ELNA**TYPE RSH**ED-8801

TABLE OF STANDARDS

No.	Item	Performance																		
1	Working temp. range	-55 to +105°C																		
2	Voltage range	6.3 to 100 V																		
3	Cap. tolerance	± 20%																		
4	Leakage current	Less than 0.01CV (μ A) after 2min.: C; Capacitance, V; Rated voltage																		
5	Tangent of loss angle(120Hz)	<table border="1"> <thead> <tr> <th>Rated voltage</th> <th>6.3 V</th> <th>10 V</th> <th>16 V</th> <th>25 V</th> <th>35 V</th> <th>50 V</th> <th>63 V</th> <th>100 V</th> </tr> </thead> <tbody> <tr> <td>Tan δ</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.07</td> </tr> </tbody> </table>	Rated voltage	6.3 V	10 V	16 V	25 V	35 V	50 V	63 V	100 V	Tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.07
		Rated voltage	6.3 V	10 V	16 V	25 V	35 V	50 V	63 V	100 V										
Tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.07												
For those in excess of 1,000 μ F, 0.02 is added to the value every increase of 1,000 μ F.																				
6	Temperature characteristic	<table border="1"> <thead> <tr> <th>Item</th> <th>Voltage</th> <th>6.3V</th> <th>10~100V</th> </tr> </thead> <tbody> <tr> <td>Capacitance(120Hz): $\Delta C/C(-55^{\circ}C/20^{\circ}C)$</td> <td></td> <td>± 30%</td> <td>± 20%</td> </tr> <tr> <td>Impedance ratio : Z/Z (-55°C/20°C)</td> <td></td> <td colspan="2">Less than 3</td> </tr> </tbody> </table>	Item	Voltage	6.3V	10~100V	Capacitance(120Hz): $\Delta C/C(-55^{\circ}C/20^{\circ}C)$		± 30%	± 20%	Impedance ratio : Z/Z (-55°C/20°C)		Less than 3							
		Item	Voltage	6.3V	10~100V															
		Capacitance(120Hz): $\Delta C/C(-55^{\circ}C/20^{\circ}C)$		± 30%	± 20%															
Impedance ratio : Z/Z (-55°C/20°C)		Less than 3																		
7	Rated ripple current	Less than the value given on the table of standards(105°C, 100kHz)																		
8	Load life characteristic (105±2°C)	<table border="1"> <tbody> <tr> <td>Test Time</td> <td>ϕ 5~6.3:2,000 hours, ϕ 8~10:3,000 hours ϕ 12.5~18:5,000 hours</td> </tr> <tr> <td>Leakage current</td> <td>Less than the value in item No. 4</td> </tr> <tr> <td>Capacitance change</td> <td>Within ± 20% the initial value</td> </tr> <tr> <td>Tangent of loss angle</td> <td>Less than 200% the value in item No. 5</td> </tr> </tbody> </table>	Test Time	ϕ 5~6.3:2,000 hours, ϕ 8~10:3,000 hours ϕ 12.5~18:5,000 hours	Leakage current	Less than the value in item No. 4	Capacitance change	Within ± 20% the initial value	Tangent of loss angle	Less than 200% the value in item No. 5										
		Test Time	ϕ 5~6.3:2,000 hours, ϕ 8~10:3,000 hours ϕ 12.5~18:5,000 hours																	
		Leakage current	Less than the value in item No. 4																	
		Capacitance change	Within ± 20% the initial value																	
Tangent of loss angle	Less than 200% the value in item No. 5																			
9	Shelf life characteristic (105±2°C)	<table border="1"> <tbody> <tr> <td>Test time</td> <td>1,000 hours</td> </tr> <tr> <td>Leakage current</td> <td>Less than the value in item No. 4</td> </tr> <tr> <td>Capacitance change</td> <td>Within ± 15% the initial value</td> </tr> <tr> <td>Tangent of loss angle</td> <td>Less than 150% the value in item No. 5</td> </tr> </tbody> </table>	Test time	1,000 hours	Leakage current	Less than the value in item No. 4	Capacitance change	Within ± 15% the initial value	Tangent of loss angle	Less than 150% the value in item No. 5										
		Test time	1,000 hours																	
		Leakage current	Less than the value in item No. 4																	
		Capacitance change	Within ± 15% the initial value																	
Tangent of loss angle	Less than 150% the value in item No. 5																			
Pretreatment performed: After the test, it shall be subjected to standard atmospheric condition of 20°C and the rated DC voltage shall be applied across it and its protective resistance for 30 min. after which it shall be discharged.																				

CONTENTS

1. Lowering and Stabilizing impedance
 - 1.1 Lowering impedance
 - 1.2 Stabilizing low impedance at high frequency
2. Performance at high frequency
3. Solvent-proofness
4. Performance of developed capacitors "RSH series"

1. Lowering and Stabilizing impedance

1.1 Lowering impedance

Figure 1, which shows the relationship between impedance (at 100KHz) and volume using an example of capacitor rated at 10V 1000 μ F, represents that the impedance of RSH series is lower than others.

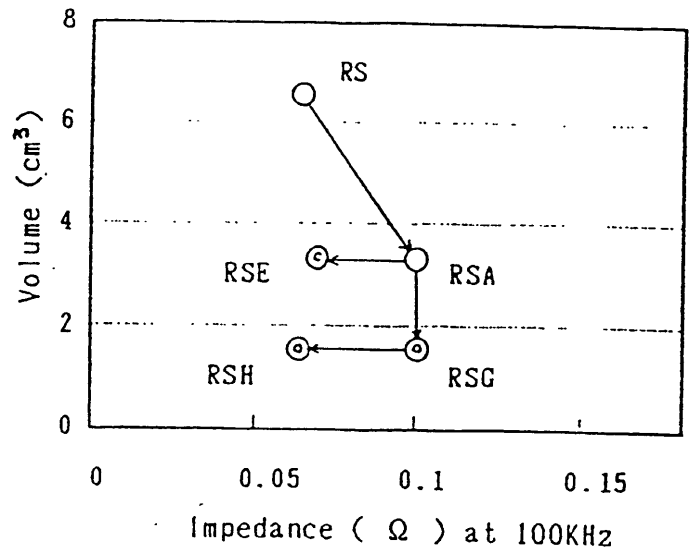


Figure 1 Volume vs. impedance at 100KHz
(for capacitor rated at 10V 1000 μ F)

1.2 Stabilizing impedance at high frequency

Our company has developed an electrolyte with excellent heat-stability and low specific resistance, because life-time of aluminum electrolytic capacitor has been very influenced by heat-stability of electrolyte.

Figure 2 shows the change in specific resistance with time passage for the developed electrolyte.

The developed electrolyte B using RSH series is lower than the developed electrolyte A in initial specific resistance and has less change in specific resistance with time passage at 105°C.

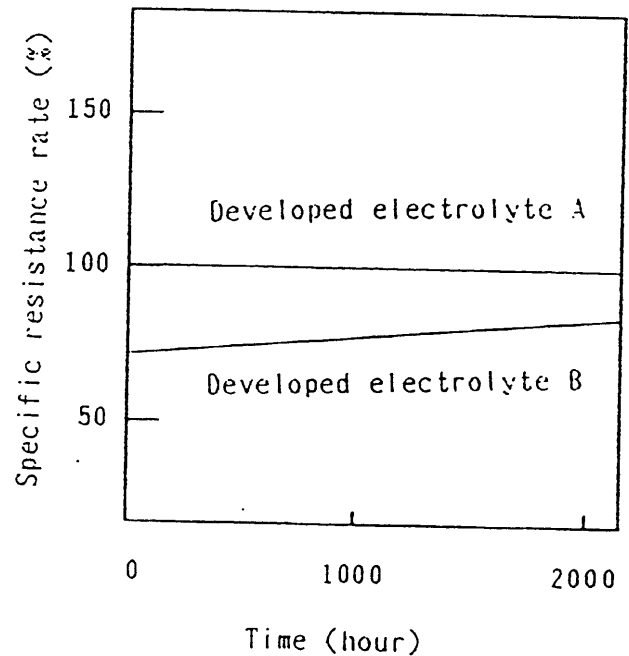
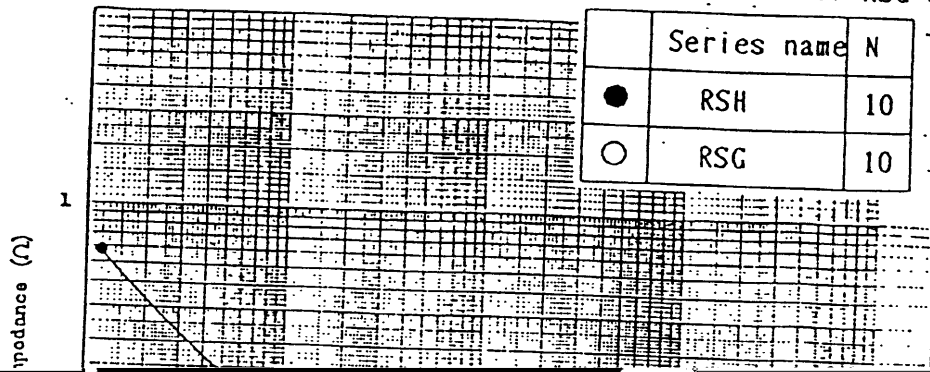


Figure 2 Long-time stability of electrolyte at 105°C (where the initial specific resistance of developed electrolyte A is taken as 100)

2. Performance at high frequency

Figure 3, which shows frequency characteristics of RSH series, represents that impedance of RSH series is lower than one of RSG series.



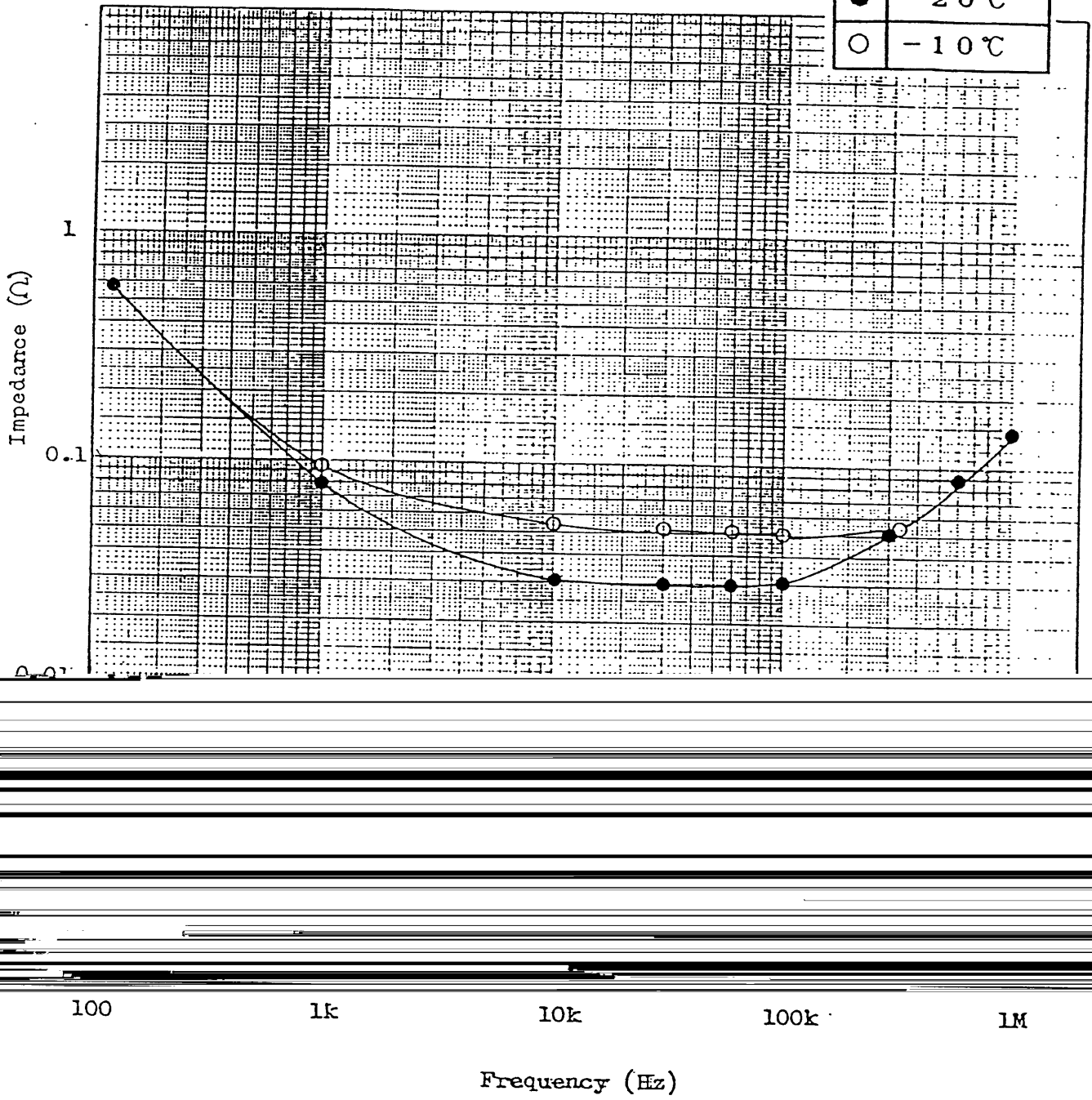
4. Performance of developed capacitors "RSH series"

- Frequency characteristic(20°C.-10°C)
- Ripple current vs. Ripple rise temperature
- Ripple life test at 105 °C
- Life test at 110°C,115°C

● Frequency characteristic

10V2200 μ F (ϕ 12.5 \times 25L)
N=10

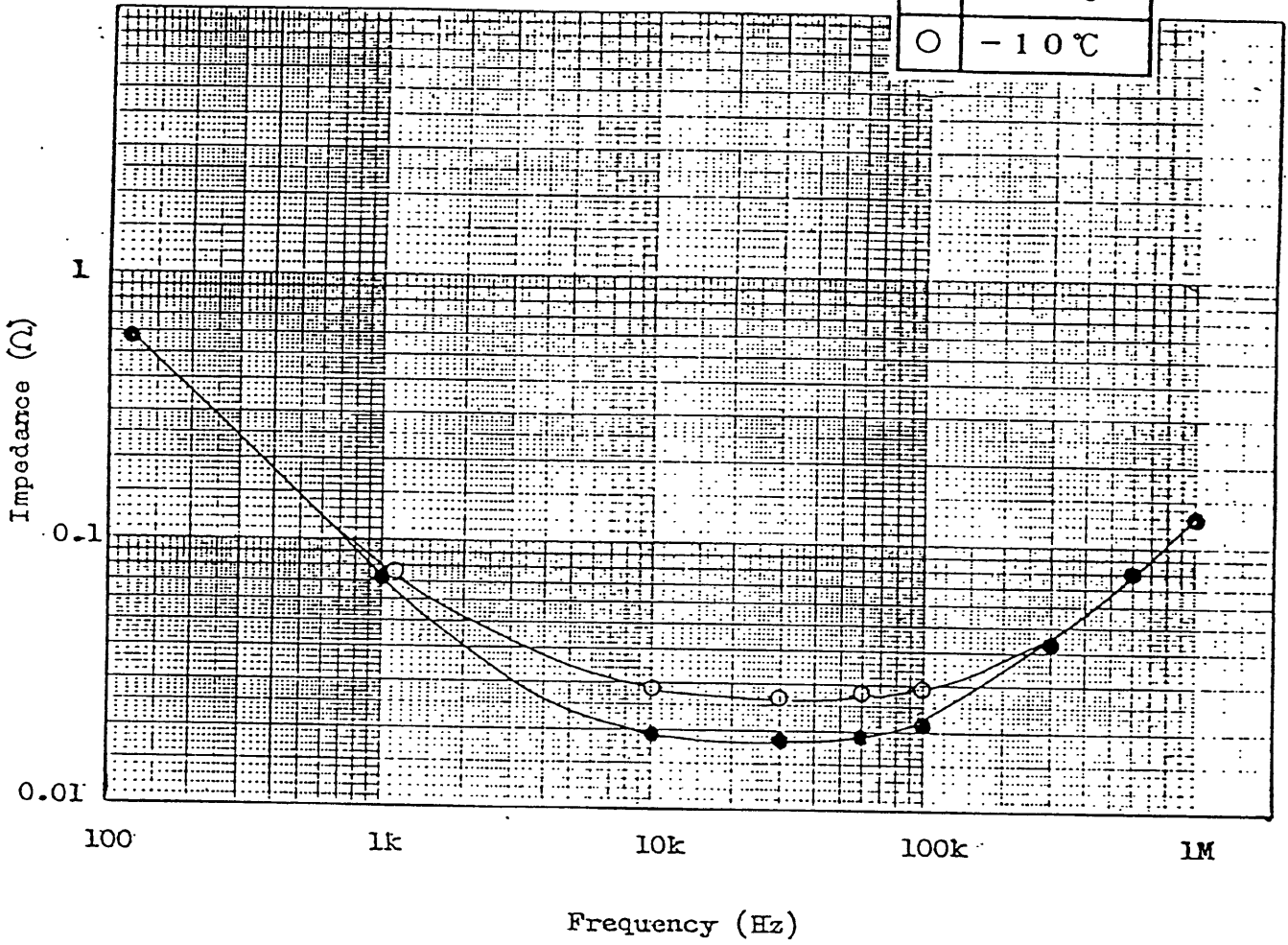
●	20 $^{\circ}$ C
○	-10 $^{\circ}$ C



● Frequency characteristic

25V2200 μ F (ϕ 12.5 \times 40L)
N=10

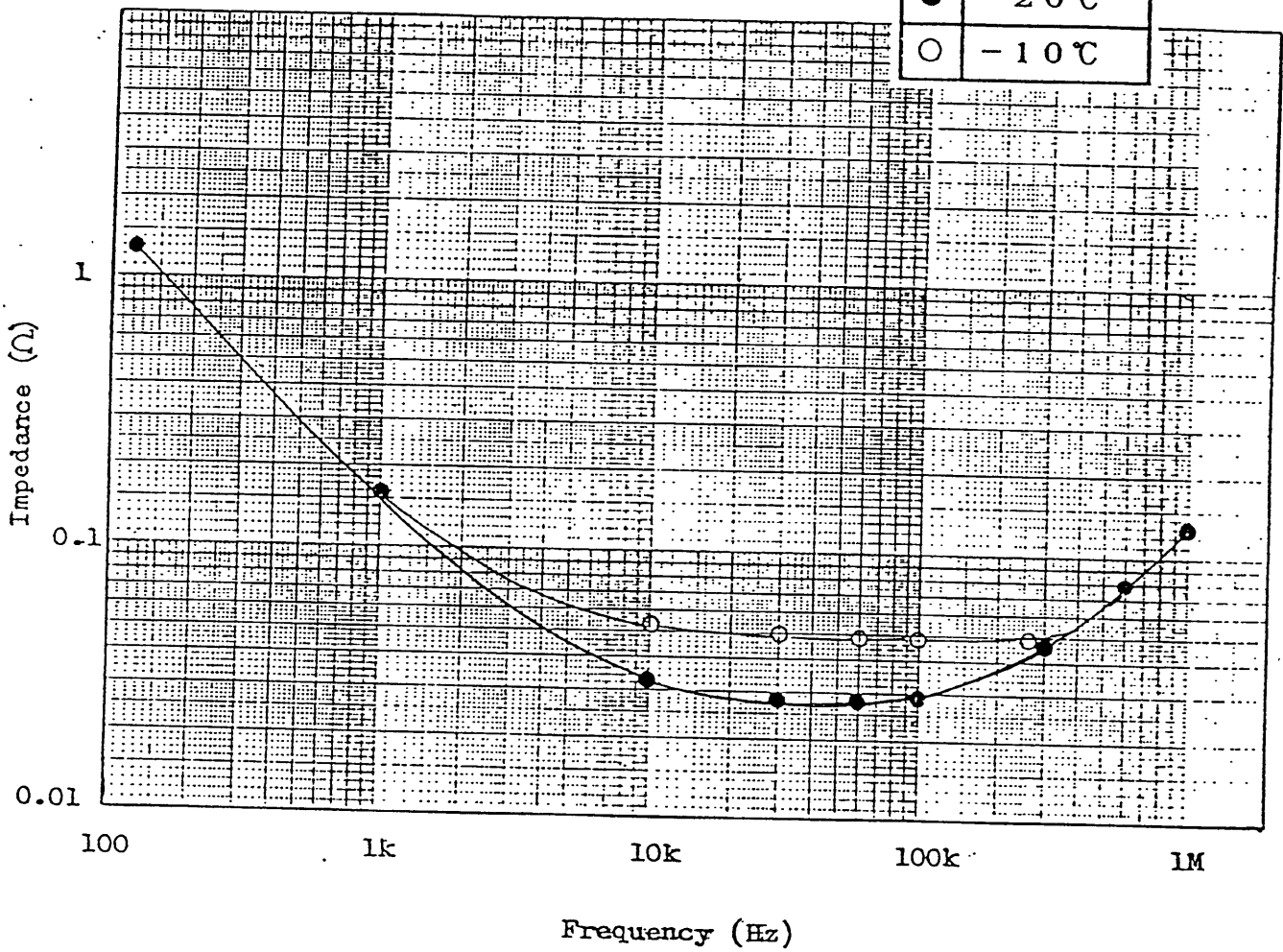
●	20 $^{\circ}$ C
○	-10 $^{\circ}$ C



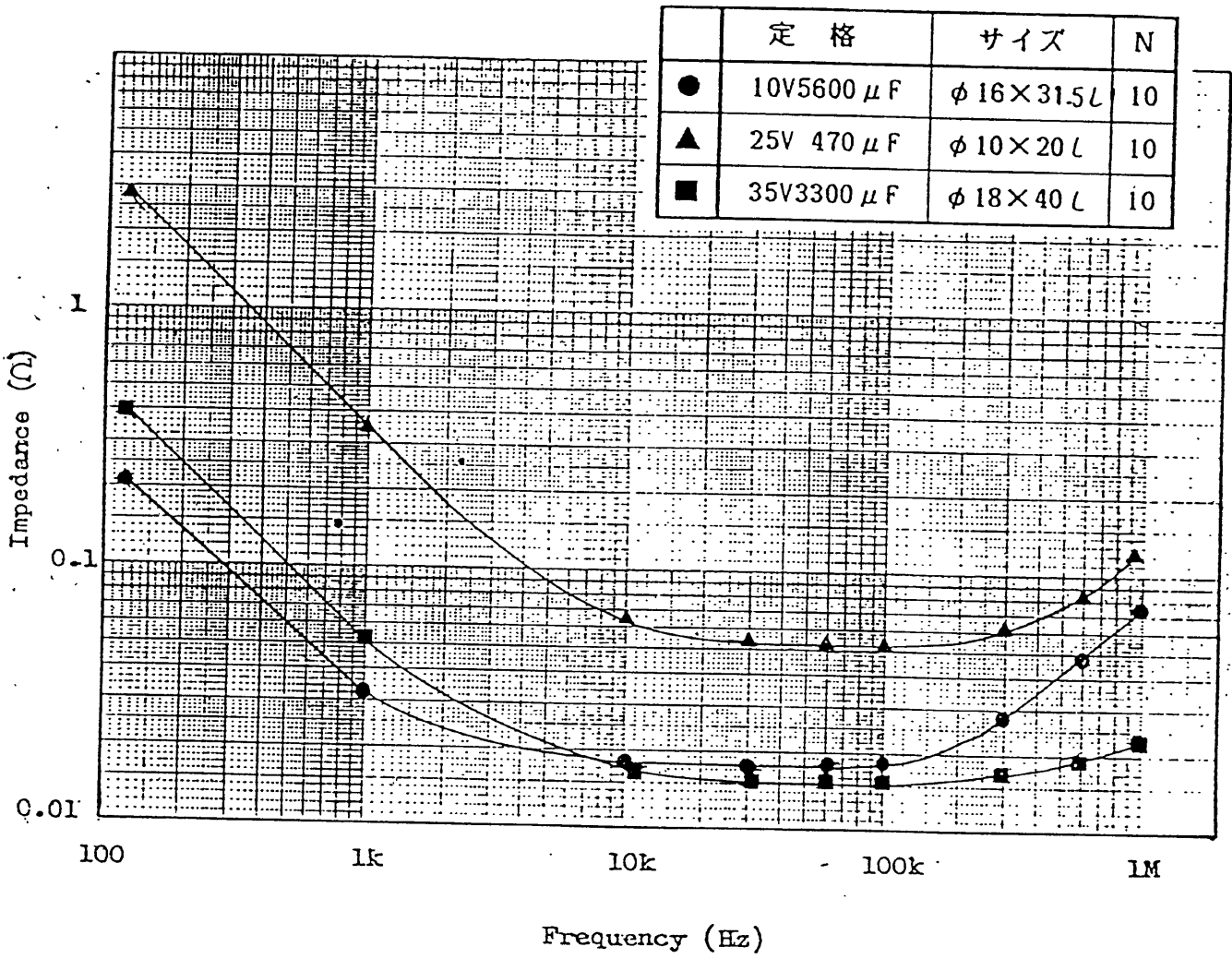
● Frequency characteristic

50V1000 μ F (ϕ 16 \times 31.5)
N=10

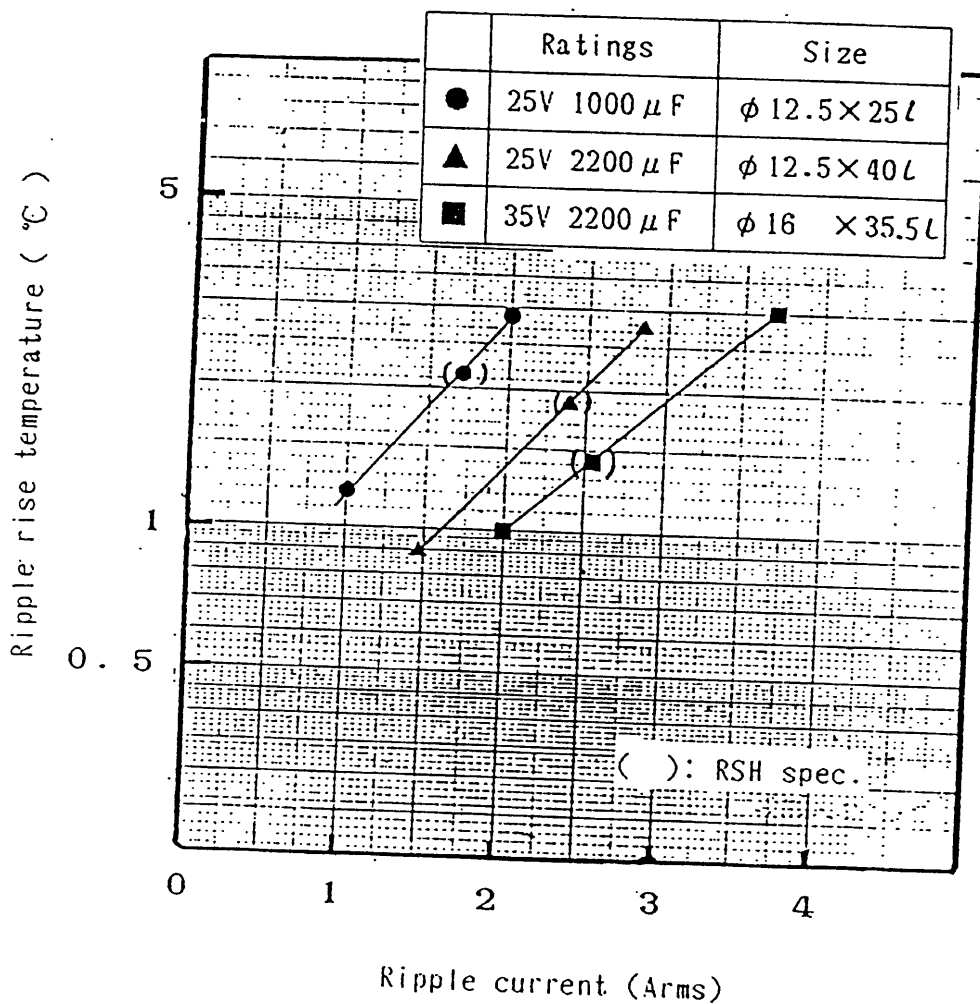
●	20 $^{\circ}$ C
○	-10 $^{\circ}$ C



● Frequency characteristic

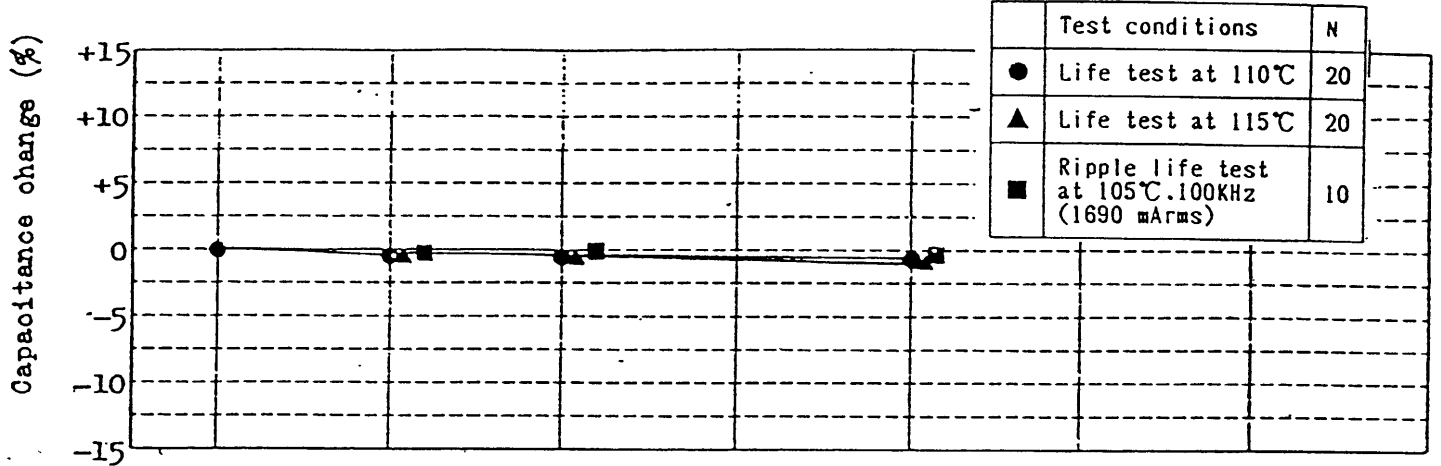


● Ripple current vs. Ripple rise temperature

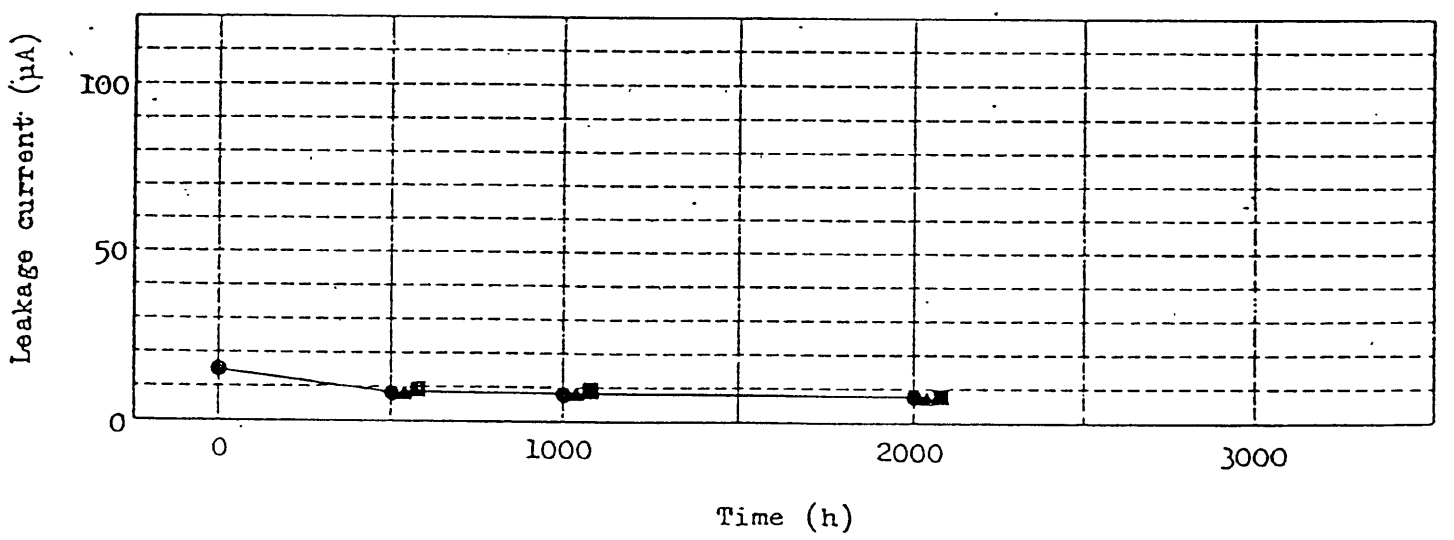
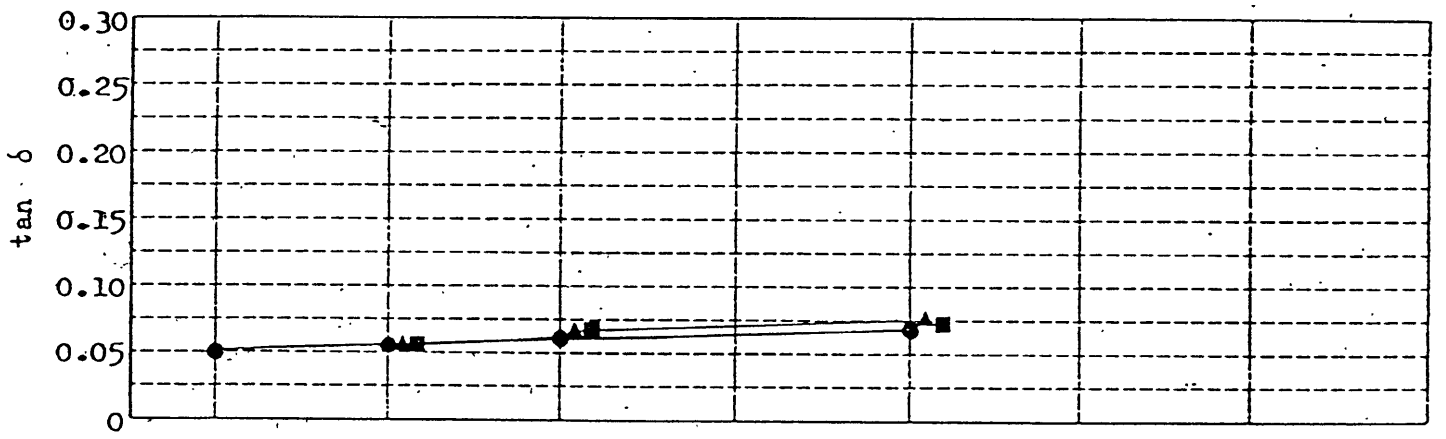


● Ripple life test and Life test

25V 1000 μ F (ϕ 12.5 \times 25L)



Test conditions		N
●	Life test at 110°C	20
▲	Life test at 115°C	20
■	Ripple life test at 105°C, 100KHz (1690 mArms)	10



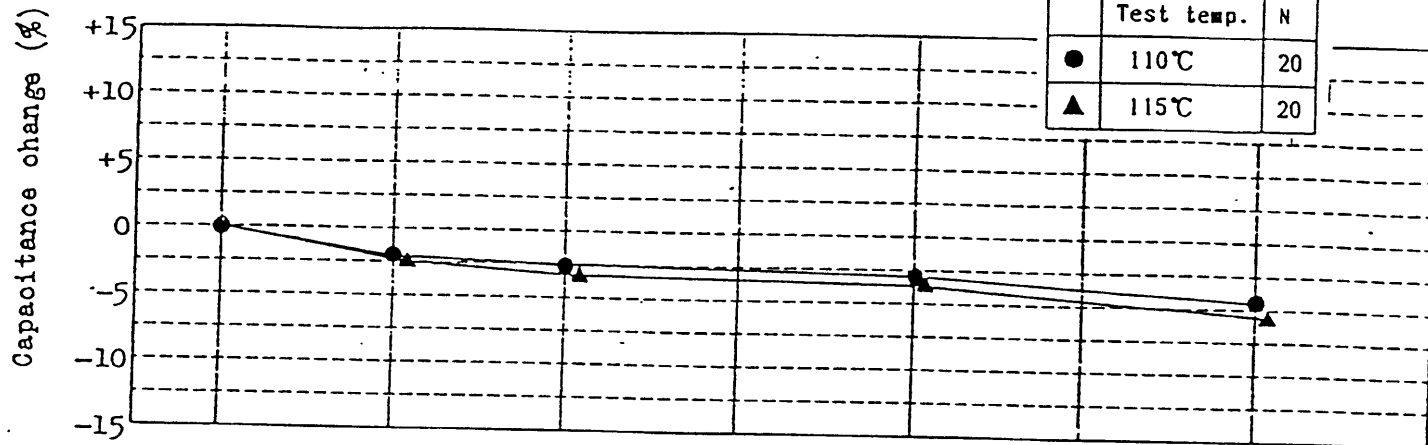
●Ripple life test and Life test

35V 2200 μ F (ϕ 16 \times 35.5 L)

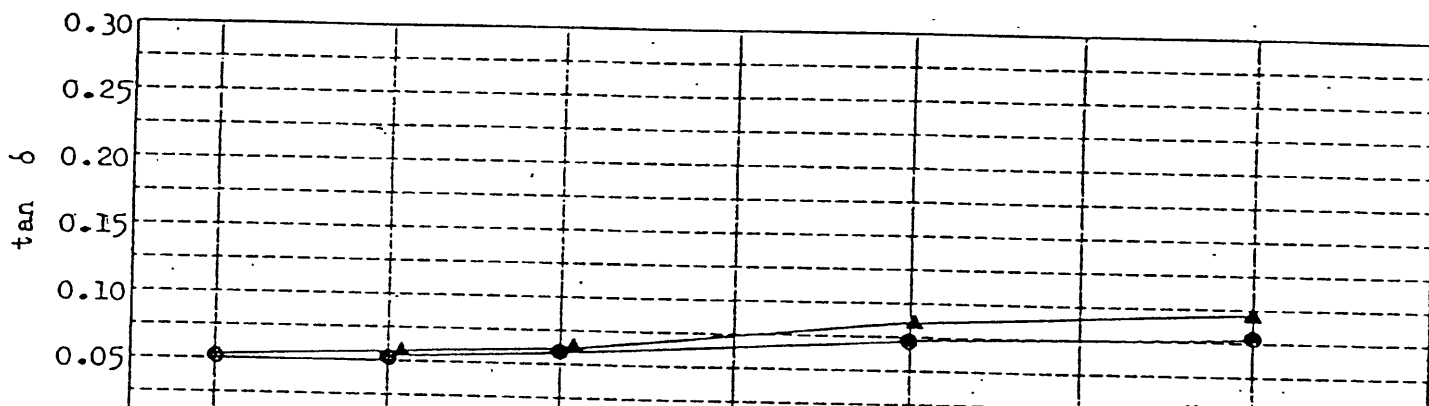
Test conditions	N
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● Life test at 110°C

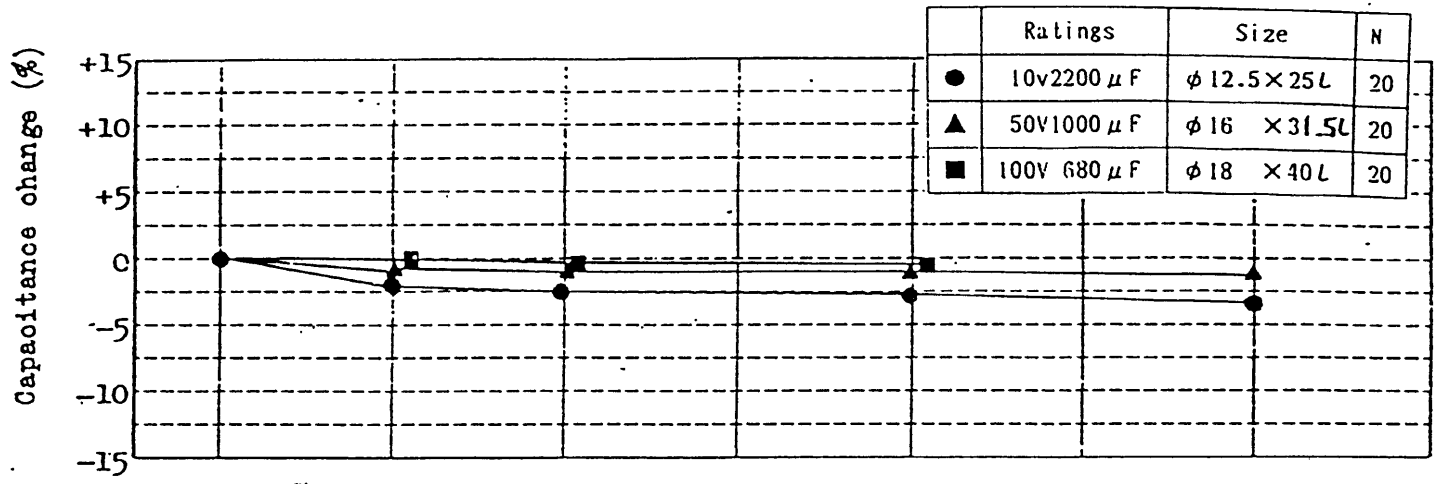
10V 560 μ F (ϕ 10 \times 16L)



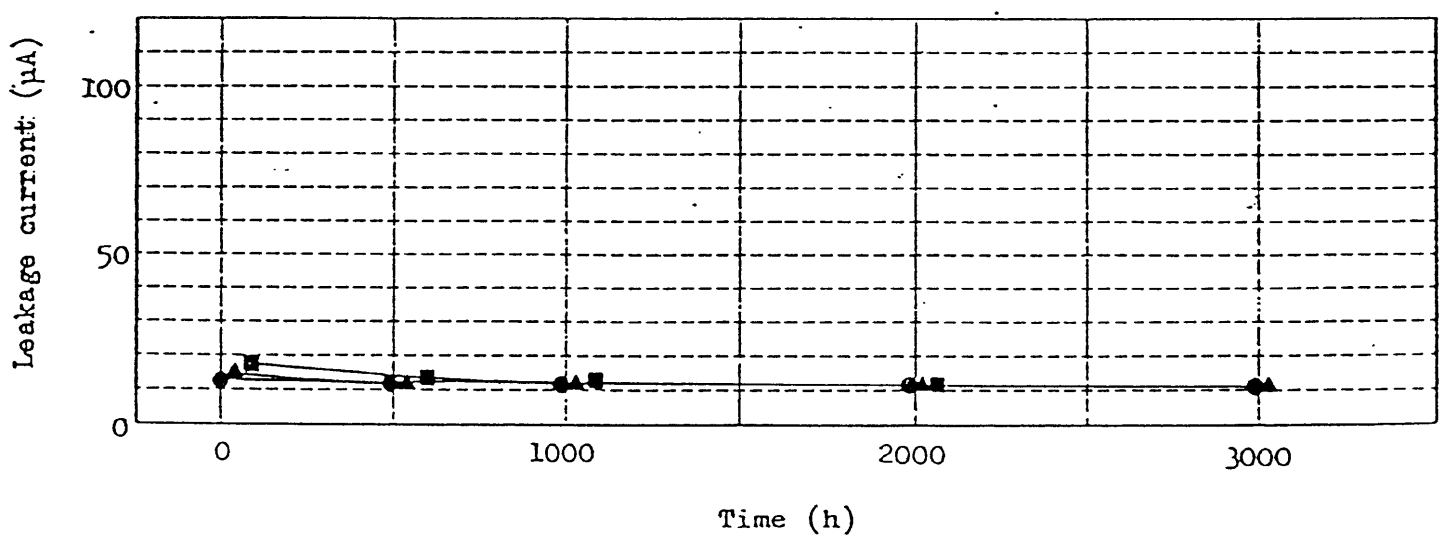
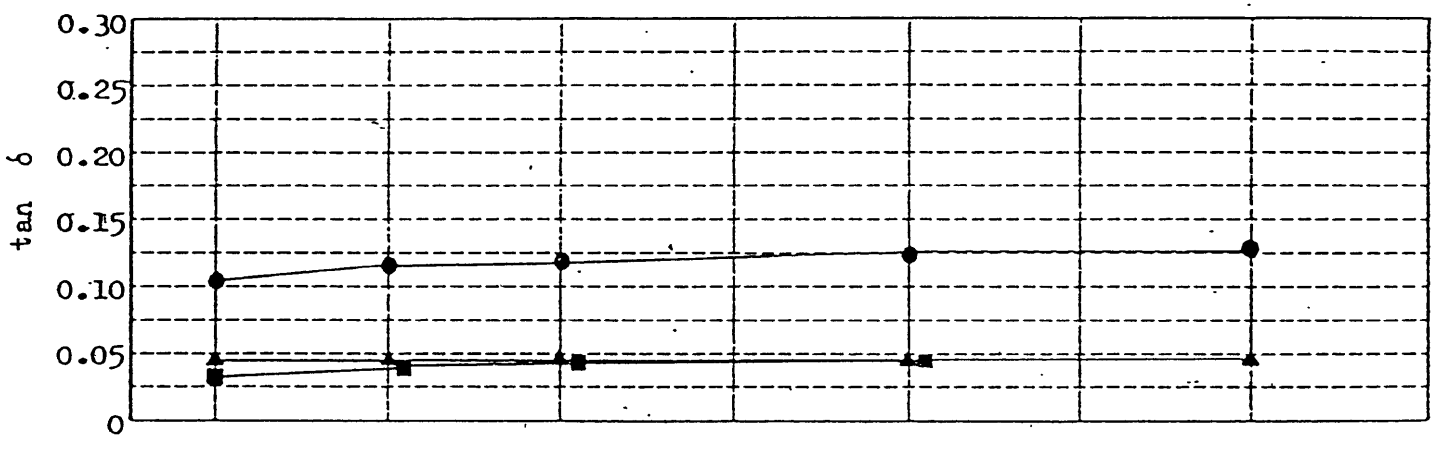
	Test temp.	N
●	110°C	20
▲	115°C	20



● Life test



	Ratings	Size	N
●	10V 2200 μF	$\phi 12.5 \times 25 L$	20
▲	50V 1000 μF	$\phi 16 \times 31.5 L$	20
■	100V 680 μF	$\phi 18 \times 40 L$	20



current (mA) 100kHz	Case size (mm)		
	D	L	F
57	5	11.5	2.0
74	5	15	2.0
78	6.3	11.5	2.5
85	6.3	15	2.5
275	8	12	3.5
360	8	15	3.5
490	8	20	3.5
319	10	12.5	5.0
424	10	16	5.0
499	10	20	5.0
634	10	25	5.0
739	10	30	5.0
613	12.5	15	5.0
805	12.5	20	5.0
857	12.5	25	5.0
120	12.5	30	5.0
240	12.5	35	5.0
330	12.5	40	5.0
706	16	15	7.5
916	16	20	7.5
290	16	25	7.5
630	16	31.5	7.5
750	16	35.5	7.5
920	16	40	7.5
871	18	15	7.5
170	18	20	7.5
500	18	25	7.5
630	18	31.5	7.5
920	18	35.5	7.5
100	18	40	7.5

Part	L. C. μA	TANδ	Impedance (Ω)		100kHz -10°C	Ripple current (mA rms) 105°C 100kHz	Case size (mm)		
			20°C				D	L	F
2	9.5	0.08	1.2		3.6	120	5	11.5	2.0
3	13	0.08	0.85		2.6	135	5	15	2.0
4	19	0.08	0.55		1.7	148	6.3	11.5	2.5
5	25	0.08	0.33		1.1	153	6.3	15	2.5
6	31	0.08	0.32		0.96	360	8	12	3.5
7	41	0.08	0.21		0.72	469	8	15	3.5
8	53	0.08	0.17		0.51	582	8	20	3.5
9	37	0.08	0.23		0.69	448	10	12.5	5.0
10	44	0.08	0.17		0.51	553	10	16	5.0
11	77	0.08	0.12		0.36	676	10	20	5.0
12	36	0.08	0.10		0.30	876	10	25	5.0
13	115	0.08	0.085		0.26	1020	10	30	5.0
14	96	0.08	0.11		0.33	745	12.5	15	5.0
15	140	0.08	0.075		0.23	979	12.5	20	5.0
16	172	0.08	0.065		0.20	1180	12.5	25	5.0
17	247	0.08	0.055		0.17	1310	12.5	30	5.0
18	298	0.08	0.048		0.14	1470	12.5	35	5.0
19	354	0.08	0.042		0.13	1590	12.5	40	5.0
20	140	0.08	0.080		0.24	982	16	15	7.5
21	247	0.08	0.057		0.17	1210	16	20	7.5
22	298	0.08	0.052		0.16	1490	16	25	7.5
23	430	0.08	0.042		0.13	1890	16	31.5	7.5
24	518	0.08	0.036		0.11	2140	16	35.5	7.5
25	632	0.08	0.032		0.096	2410	16	40	7.5
26	209	0.08	0.055		0.20	1200	18	15	7.5
27	238	0.08	0.058		0.17	1460	18	20	7.5
28	430	0.08	0.050		0.15	1710	19	25	7.5
29	518	0.08	0.042		0.13	1900	18	31.5	7.5
30	632	0.08	0.035		0.11	2340	18	35.5	7.5
31	758	0.08	0.032		0.096	2560	18	40	7.5

Part No.	R. V. V. DC	S. V. V. DC	Cap. μF	L. C. μA	TANδ	Impedance (Ω)		Ripple current (mA rms) 105°C 100kHz	Case size (mm)		
						20°C	100kHz		D	L	F
	50	63	0.17	2.2	0.10	3.9	7.8	22	5	11.5	2.0
	50	63	1	2.5	0.10	3.5	7.0	36	5	11.5	2.0
	50	63	2.2	3.1	0.10	3.0	6.0	54	5	11.5	2.0
	50	63	3.3	3.6	0.10	2.6	5.2	63	5	11.5	2.0
	50	63	4.7	4.3	0.10	2.2	4.4	75	5	11.5	2.0
	50	63	10	7.0	0.10	1.4	2.8	110	5	11.5	2.0
	50	63	18	11	0.10	0.95	1.9	120	5	11.5	2.0
	50	63	27	15	0.10	0.55	1.1	135	5	15	2.0
	50	63	33	21	0.10	0.36	0.72	148	6.3	11.5	2.5
	50	63	56	30	0.10	0.28	0.56	153	6.3	15	2.5
	50	63	68	36	0.10	0.20	0.40	360	8	12	3.5
	50	63	82	43	0.10	0.18	0.36	460	8	15	3.5
	50	63	120	62	0.10	0.13	0.26	670	8	20	3.5
	50	63	33	43	0.10	0.13	0.35	443	10	12.5	5.0
	50	63	100	52	0.10	0.15	0.30	553	10	16	5.0
	50	63	130	32	0.10	0.085	0.17	676	10	20	5.0
	50	63	220	112	0.10	0.075	0.15	876	10	25	5.0
	50	63	330	167	0.10	0.055	0.11	1010	10	30	5.0
	50	63	180	92	0.10	0.095	0.19	745	12.5	15	5.0
	50	63	330	167	0.10	0.060	0.12	979	12.5	20	5.0
	50	63	470	237	0.10	0.041	0.088	1180	12.5	25	5.0
	50	63	550	282	0.10	0.040	0.080	1310	12.5	30	5.0
	50	63	650	342	0.10	0.035	0.072	1470	12.5	35	5.0
	50	63	520	412	0.10	0.034	0.058	1590	12.5	40	5.0
	50	63	330	167	0.10	0.055	0.13	982	16	15	7.5
	50	63	680	342	0.10	0.045	0.090	1210	16	20	7.5
	50	63	820	412	0.10	0.038	0.075	1490	16	25	7.5
	50	63	1000	502	0.10	0.032	0.064	1890	16	31.5	7.5
	50	63	1200	602	0.10	0.028	0.056	2140	16	35.5	7.5
	50	63	1500	752	0.10	0.026	0.052	2410	16	40	7.5
	50	63	470	237	0.10	0.048	0.096	1080	18	15	7.5
	50	63	820	412	0.10	0.035	0.072	1450	18	20	7.5
	50	63	1000	502	0.10	0.030	0.060	1720	18	25	7.5

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Part No.	R. V. V. DC	S. V. V. DC	Cap. μF	L. C. μA	TAN δ	Impedance (Ω)		Ripple current (mA rms) 105°C 100kHz	Case size (mm)		
						20°C	100kHz -10°C		D	L	F
	50	63	1500	752	0.10	0.026	0.052	1970	18	31.5	7.5
	50	63	1800	902	0.10	0.025	0.050	2310	18	35.5	7.5
	50	63	2200	1102	0.12	0.024	0.048	2530	18	40	7.5

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Part No.	2 V. V. DC	5 V. V. DC	Cap. uF	L.
	16	20	55	
	16	20	82	
	16	20	120	
	16	20	180	
	16	20	270	
	16	20	330	
	16	20	470	
	16	20	330	
	16	20	390	
	16	20	680	
	16	20	820	
	16	20	1200	
	16	20	680	
	16	20	1200	
	16	20	1500	
	16	20	2200	
	16	20	2700	
	16	20	3300	
	16	20	4700	
	16	20	5600	
	16	20	1500	
	16	20	2700	
	16	20	3900	
	16	20	4700	
	16	20	6800	
	16	20	8200	
	16	20	8200	

Part No.	R. V. V. DC	S. V. V. DC	Cap. uF	L. C. uA	TANδ	Impedance (Ω)		Ripple current (pA rms) 105°C 100kHz	Case size (mm)		
						20°C	-10°C		D	L	F
25	32	39	11	0.14	0.65	1.3	175	5.	11.5	2.0	
25	32	56	16	0.14	0.46	0.92	235	5	15	2.0	
25	32	82	22	0.14	0.31	0.62	290	6.3	11.5	2.5	
25	32	120	32	0.14	0.20	0.40	400	6.3	15	2.5	
25	32	180	47	0.14	0.17	0.24	503	8	12	3.5	
25	32	220	57	0.14	0.13	0.26	575	8	15	3.5	
25	32	330	84	0.14	0.095	0.19	751	8	20	3.5	
25	32	220	57	0.14	0.12	0.24	629	10	12.5	5.0	
25	32	270	69	0.14	0.090	0.19	795	10	16	5.0	
25	32	470	119	0.14	0.065	0.13	1010	10	20	5.0	
25	32	560	142	0.14	0.055	0.11	1130	10	25	5.0	
25	32	820	207	0.14	0.045	0.090	1440	10	30	5.0	
25	32	470	119	0.14	0.065	0.13	1010	12.5	15	5.0	
25	32	820	207	0.14	0.042	0.084	1400	12.5	20	5.0	
25	32	1000	252	0.14	0.036	0.072	1690	12.5	25	5.0	
25	32	1500	377	0.14	0.030	0.060	1950	12.5	30	5.0	
25	32	1800	452	0.14	0.028	0.056	2200	12.5	35	5.0	
25	32	2200	552	0.16	0.024	0.048	2390	12.5	40	5.0	
25	32	820	207	0.14	0.046	0.092	1360	16	15	7.5	
25	32	1500	377	0.14	0.034	0.068	1730	16	20	7.5	
25	32	1800	452	0.14	0.028	0.056	2070	16	25	7.5	
25	32	2700	677	0.16	0.025	0.050	2350	16	31.5	7.5	
25	32	3000	827	0.18	0.022	0.044	2550	16	35.5	7.5	
25	32	3900	977	0.18	0.020	0.040	2900	16	40	7.5	
25	32	1200	302	0.14	0.043	0.086	1500	18	15	7.5	
25	32	1800	452	0.14	0.036	0.072	1890	18	20	7.5	
25	32	2700	677	0.16	0.027	0.054	2180	18	25	7.5	
25	32	3000	827	0.18	0.023	0.046	2470	18	31.5	7.5	
25	32	3900	977	0.18	0.019	0.038	2740	18	35.5	7.5	
25	32	4700	1177	0.20	0.018	0.036	3070	18	40	7.5	

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Part No.	R. V. V. DC	S. V. V. DC	Cap. µF	L. C. µA	TAN δ	Impedance (Ω)		Pulse current (mA rms) 105°C 100Hz	Case size (mm)		
						20°C	-10°C		D	L	F
	6.3	8	100	8.3	0.22	0.65	1.3	175	5	11.5	2.0
	6.3	8	150	11	0.22	0.46	0.92	235	5	15	2.0
	6.3	8	220	15	0.22	0.30	0.60	230*	6.3	11.5	2.5
	6.3	6	330	22	0.22	0.20	0.40	400	6.3	15	2.5
	6.3	8	470	31	0.22	0.17	0.34	488	8	12	3.5
	6.3	8	680	44	0.22	0.13	0.26	617	8	15	3.5
	6.3	8	1000	55	0.22	0.095	0.19	800	8	20	3.5
	6.3	6	650	44	0.22	0.12	0.24	613	10	12.5	5.0
	6.3	6	820	53	0.22	0.095	0.19	754	10	16	5.0
	6.3	8	1250	77	0.22	0.065	0.13	1010	10	20	5.0
	6.3	8	1500	95	0.22	0.055	0.11	1120	10	25	5.0
	6.3	8	2200	140	0.24	0.045	0.090	1440	10	30	5.0
	6.3	8	3300	77	0.22	0.065	0.13	1010	12.5	15	5.0
	6.3	8	4700	140	0.24	0.042	0.084	1400	12.5	20	5.0
	6.3	8	6800	172	0.24	0.038	0.076	1630	12.5	25	5.0
	6.3	8	10000	247	0.26	0.032	0.064	1950	12.5	30	5.0
	6.3	8	15000	296	0.28	0.028	0.056	2220	12.5	35	5.0
	6.3	8	22000	394	0.30	0.026	0.052	2390	12.5	40	5.0
	6.3	8	33000	172	0.24	0.046	0.092	1910	16	15	7.5
	6.3	8	47000	298	0.28	0.034	0.068	1660	16	20	7.5
	6.3	8	68000	354	0.30	0.028	0.056	2070	16	25	7.5
	6.3	8	100000	430	0.32	0.025	0.050	2350	16	31.5	7.5
	6.3	8	150000	518	0.36	0.022	0.044	2550	16	35.5	7.5
	6.3	8	220000	758	0.44	0.020	0.040	2970	16	40	7.5
	6.3	8	330000	209	0.26	0.043	0.086	1460	18	15	7.5
	6.3	8	470000	354	0.30	0.030	0.060	1850	18	20	7.5
	6.3	8	680000	430	0.32	0.027	0.054	2120	18	25	7.5
	6.3	8	1000000	632	0.40	0.023	0.046	2410	18	31.5	7.5
	6.3	8	1500000	758	0.44	0.019	0.038	2680	16	35.5	7.5
	6.3	8	2200000	947	0.50	0.018	0.036	3010	16	40	7.5

Table 1
Standard ratings

Part No.	R. V. V. DC	S. V. V. DC	Cap. μF	L. C. μA	TAN δ	Impedance (Ω)		Ripple current (mA rms) 105°C 100Hz	Case size (mm)		
						20°C	-10°C		D	L	F
	6.3	8	100	8.3	0.22	0.65	1.3	175	5	11.5	2.0
	6.3	8	150	11	0.22	0.46	0.92	235	5	15	2.0
	6.3	8	220	15	0.22	0.30	0.60	290	6.3	11.5	2.5
	6.3	8	330	22	0.22	0.20	0.40	400	6.3	15	2.5
	6.3	8	470	31	0.22	0.17	0.34	488	8	12	3.5
	6.3	8	680	44	0.22	0.13	0.26	617	8	15	3.5
	6.3	8	1000	65	0.22	0.095	0.19	800	8	20	3.5
	6.3	8	650	44	0.22	0.12	0.24	613	10	12.5	5.0
	6.3	8	820	53	0.22	0.095	0.19	754	10	15	5.0
	6.3	8	1200	77	0.22	0.065	0.13	1010	10	20	5.0
	6.3	8	1500	95	0.22	0.055	0.11	1150	10	25	5.0
	6.3	8	2200	140	0.24	0.045	0.090	1440	10	30	5.0
	6.3	8	3300	77	0.22	0.065	0.13	1010	10	35	5.0
	6.3	8	4700	140	0.24	0.042	0.084	1400	10	40	5.0
	6.3	8	6800	172	0.24	0.035	0.075	1630	10	45	5.0
	6.3	8	10000	247	0.25	0.032	0.064	1950	10	50	5.0
	6.3	8	15000	295	0.28	0.028	0.056	2220	10	55	5.0
	6.3	8	22000	354	0.30	0.025	0.052	2330	10	60	5.0
	6.3	8	33000	430	0.30	0.045	0.092	1310	15	65	5.0
	6.3	8	47000	298	0.28	0.034	0.068	1660	15	70	5.0
	6.3	8	68000	354	0.30	0.028	0.056	2070	15	75	5.0
	6.3	8	100000	430	0.32	0.025	0.050	2350	15	80	5.0
	6.3	8	150000	518	0.36	0.022	0.044	2550	15	85	5.0
	6.3	8	220000	758	0.44	0.020	0.040	2970	15	90	5.0
	6.3	8	330000	209	0.26	0.043	0.086	1460	18	95	5.0
	6.3	8	470000	354	0.30	0.030	0.060	1850	18	100	5.0
	6.3	8	680000	430	0.32	0.027	0.054	2120	18	105	5.0
	6.3	8	1000000	632	0.40	0.023	0.046	2410	18	110	5.0
	6.3	8	1500000	758	0.44	0.019	0.038	2680	18	115	5.0
	6.3	8	2200000	947	0.50	0.018	0.036	3010	18	120	5.0

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