

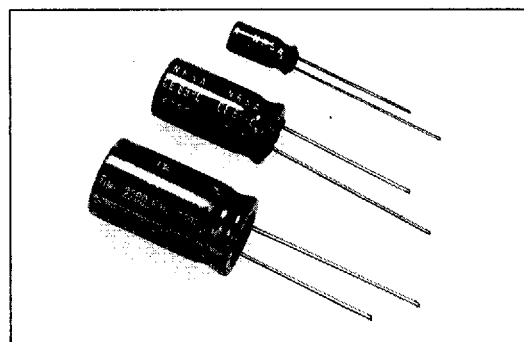
RADIAL LEADS, POLARIZED, STANDARD CASE SIZING

NRSA → NRSS

(today's standard) (reduced sizes)

CHARACTERISTICS

Rated Voltage Range	6.3 ~ 100 VDC
Capacitance Range	0.47 ~ 10,000μF
Operating Temperature Range	-40 ~ +85°C
Capacitance Tolerance	±20% (M)
Leakage Current (20°C)	After 1 min. 0.03CV or 4μA, whichever is greater After 2 min. 0.01CV or 3μA, whichever is greater



Dissipation Factor (Tan δ) 120Hz 20°C	W.V. (Vdc)	6.3	10	16	25	35	50	63	100
	S.V. (Vdc)	8	13	20	32	44	63	79	125
	C ≤ 1,000μF	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08
	C = 2,200μF	0.24	0.21	0.18	0.16	0.14	0.12	0.11	
	C = 3,300μF	0.26	0.23	0.20	0.18	0.16	0.14	0.13	
	C = 4,700μF	0.28	0.25	0.22	0.20	0.18	0.20		
	C = 6,800μF	0.32	0.29	0.26	0.24				
	C = 10,000μF	0.40	0.37	0.34	0.32				

Impedance Ratio	W.V. (Vdc)	6.3	10	16	25	35 ~ 100
	Z - 25°C/Z + 20°C *1	4	3	2	2	2
	Z - 40°C/Z + 20°C *2	10	8	6	4	3

Load Life Test 85°C, 2,000 hrs. 5-8Ø 4,000 hrs 10Ø~	Capacitance Change	Within ±20% of initial value
	Dissipation Factor	Less than 200% of initial specified value
	Leakage Current	Less than initial specified value

Shelf Life Test 85°C 1,000 hrs. No Load	Capacitance Change	Within ±20%
	Dissipation Factor	Less than 200% of initial specified value
	Leakage Current	Less than initial specified value (with pre-conditioning)

Note: Capacitors shall conform to JIS-C-5141, unless otherwise specified here.

*1. Add 0.5 every 1000μF for more than 1000μF

*2. Add 1.0 every 1000μF for more than 1000μF

PERMISSIBLE RIPPLE CURRENT (mA rms)

AT 85°C AND 120Hz

W.V. (Vdc) Cap (μF)	6.3	10	16	25	35	50	63	100
0.47						10		11
1.0						12		15
2.2						20		25
3.3						26		35
4.7						33	35	45
10					50	55	60	70
22				70	75	85	100	120
33			80	85	95	110	140	170
47			95	100	120	140	190	230
100		130	160	170	210	230	300	370
220		210	260	270	370	420	490	600
330	240	290	330	400	470	580	680	700
470	330	350	440	510	600	730	880	930
1,000	570	660	760	900	960	1100	1300	
2,200	940	1000	1200	1300	1400	1700	2200	
3,300	1100	1200	1400	1600	1700	2200	2300	
4,700	1300	1500	1700	1900	2400	2500		
6,800	1600	1700	2000	2550				
10,000	1800	1900	2650	2750				

MAXIMUM E.S.R. (Ω) AT 20°C AND 120Hz

W.V. (Vdc) Cap (μF)	6.3	10	16	25	35	50	63	100
0.47						353		283
1.0						166		133
2.2						75.4		60.4
3.3						50.3		40.3
4.7						35.3	31.8	28.3
10					19.9	16.6	15.0	13.3
22				10.6	9.05	7.54	6.79	6.04
33			8.05	7.04	6.04	5.03	4.53	4.03
47			5.65	4.94	4.24	3.53	3.18	2.83
100		3.16	2.66	2.33	1.99	1.66	1.50	1.33
220		1.44	1.21	1.06	0.905	0.754	0.679	0.604
330	1.11	0.956	0.805	0.704	0.604	0.503	0.453	0.403
470	0.777	0.671	0.565	0.494	0.424	0.353	0.318	0.283
1,000	0.365	0.316	0.266	0.233	0.199	0.166	0.150	
2,200	0.181	0.159	0.136	0.121	0.106	0.0905	0.083	
3,300	0.131	0.116	0.101	0.0905	0.0805	0.0829	0.065	
4,700	0.0988	0.0883	0.0777	0.0706	0.0635	0.07		
6,800	0.0781	0.0708	0.0653	0.059				
10,000	0.0663	0.0614	0.0564	0.0531				

RIPPLE CURRENT CORRECTION FACTOR

1. Temperature Factor

Ambient Temperature (°C)	60	70	85
Correction Rate	1.50	1.30	1.00

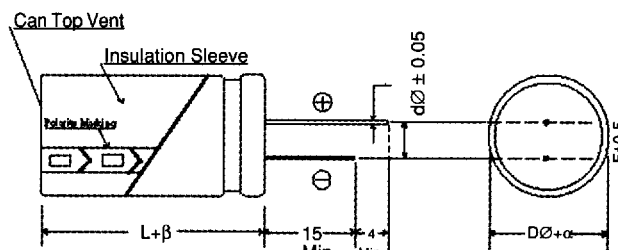
2. Frequency Factor

Frequency (Hz)	50	120	300	1K	10K
~ 47μF	0.75	1.00	1.35	1.57	2.00
100 ~ 470μF	0.80	1.00	1.23	1.34	1.50
1000μF ~	0.85	1.00	1.10	1.13	1.15
2200 ~ 10000μF	0.85	1.00	1.03	1.05	1.08



LEAD SPACING AND DIAMETER mm

Case Dia. (D ϕ)	5	6.3	8	10	12.5	16	18	22
Leads Dia. (d ϕ)	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
Lead Spacing (F)	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
Dim. α	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0
Dim. β	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0



SLEEVE COLOR: DARK BLUE

STANDARD PRODUCTS AND CASE SIZE TABLE mm D ϕ x L

Cap μ F	WV	Code	6.3	10	16	25	35	50	63	100
0.47	R47							5 x 11		5 x 11
1.0	1R0							5 x 11		5 x 11
2.2	2R2							5 x 11		5 x 11
3.3	3R3							5 x 11		5 x 11
4.7	4R7							5 x 11		5 x 11
10	100						5 x 11	5 x 11	5 x 11	6.3 x 11
22	220				5 x 11	5 x 11	5 x 11	5 x 11	6.3 x 11	8 x 11.5
33	330				5 x 11	5 x 11	5 x 11	6.3 x 11	6.3 x 11	10 x 12.5
47	470				5 x 11	5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	10 x 16
100	101		5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 20	12.5 x 20
220	221		6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	10 x 20	10 x 20	16 x 25
330	331	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	10 x 20	12.5 x 20	12.5 x 20	16 x 25
470	471	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	10 x 20	12.5 x 20	12.5 x 25	12.5 x 25	16 x 31
1000	102	10 x 12.5	10 x 16	10 x 20	12.5 x 20	12.5 x 25	16 x 25	16 x 31	18 x 36	
1500	152	10 x 20	12.5 x 20	12.5 x 25	12.5 x 25	16 x 25	16 x 31	18 x 36	18 x 36	
2200	222	12.5 x 20	12.5 x 20	12.5 x 25	16 x 25	16 x 31	18 x 36	18 x 36	18 x 36	
3300	332	12.5 x 20	12.5 x 25	16 x 25	16 x 31	18 x 36	22 x 36	22 x 41	22 x 41	
4700	472	16 x 25	16 x 25	16 x 31	18 x 36	22 x 36	22 x 42			
6800	682	16 x 25	16 x 31	18 x 36	22 x 36					
10,000	103	16 x 31	18 x 36	22 x 36	22 x 41					

See page 8 for complete part numbering system.

