Miniature Aluminum Electrolytic Capacitors

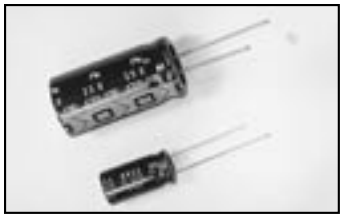
RADIAL LEADS, POLARIZED, STANDARD CASE SIZING

NRSA (today's standard) → **NRSS (reduced sizes)**

RoHS Compliant

includes all homogeneous materials

*See Part Number System for Details



CHARACTERISTICS

Rated Voltage Range		6.3 ~ 100 VDC							
Capacitance Range		0.47 ~ 10,000µF							
Operating Temperature Range		-40 ~ +85°C							
Capacitance Tolerance		± 20% (M)							
Max. Leakage Current @ (20°C)	After 1 min.	0.03CV or 4µA , whichever is greater							
	After 2 min.	0.01CV or 3µA , whichever is greater							
Max. 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	0.24	0.20	0.16	0.14	0.12	0.10	0.10	0.10
	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				
Low Temperature Stability Impedance Ratio @ 120Hz	Z-25°C/Z+20°C	4	3	2	2	2	2	2	2
	Z-40°C/Z+20°C	10	8	6	4	3	3	3	3
Load Life Test at Rated W.V. 85°C 2,000 Hours	Capacitance Change	Within ±20% of initial measured value							
	Tan δ	Less than 200% of specified maximum value							
	Leakage Current	Less than specified maximum value							
Shelf Life Test 85°C 1,000 Hours No Load	Capacitance Change	Within ±20% of initial measured value							
	Tan δ	Less than 200% of specified maximum value							
	Leakage Current	Less than specified maximum value							

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

PERMISSIBLE RIPPLE CURRENT (mA rms AT 120HZ AND 85°C)

Cap (µF)	Working Voltage (Vdc)							
	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	-	-	28		50	55	60	70
22	-	-	50	70	75	85	100	120
33	-	-	80	85	95	110	140	170
47	-	70	95	100	120	140	190	230
100	-	130	160	170	210	230	300	370
150	-	170	210	220	290	330	400	490
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
680	460	-	-	-	-	-	-	-
1,000	570	660	760	900	960	1100	1300	-
1,500	790	870	1050	1100	1200	1500	1600	-
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 ESR (Ω AT 120HZ AND 20°C)

Cap (µF)	Working Voltage (Vdc)							
	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	-	-	26.5	-	19.9	16.6	15.0	13.3
22	-	-	7.53	10.6	9.05	7.54	6.79	6.04
33	-	-	8.05	7.04	6.04	5.03	4.53	4.03
47	-	7.05	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
150	-	1.68	1.42	1.24	1.08	0.880	0.800	0.710
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
680	0.526	-	-	-	-	-	-	-
1,000	0.365	0.316	0.266	0.233	0.199	0.166	0.150	-
1,500	0.243	0.210	0.177	0.155	0.133	0.111	0.099	-
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	-	-	-	-

PRECAUTIONS

Please review the notes on correct use, safety and precautions found on **pages T10 & T11** of NIC's **Electrolytic Capacitor catalog**.
Also found at **www.niccomp.com/precautions**
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: **tpmg@niccomp.com**

RIPPLE CURRENT FREQUENCY CORRECTION 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

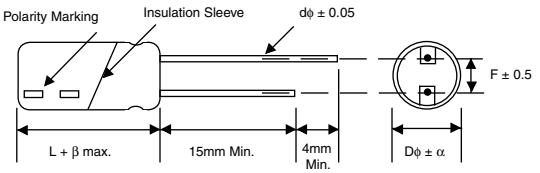
STANDARD PRODUCTS AND CASE SIZE TABLE: D ϕ x L (mm)

Cap (µF)	Code	Working Voltage (WVDC)							
		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	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	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	12.5 x 20
150	151	-	5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	10 x 12.5	10 x 16	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	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	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	16 x 31
680	681	10x12.5	-	-	-	-	-	-	-
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	-
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	-
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	-
3300	332	12.5 x 20	12.5 x 25	16 x 25	16 x 31	18 x 36	22 x 36	22 x 42	-
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 36	-	-	-	-

LEAD SPACING AND DIAMETER (mm)

Case Dia. (DØ)	5	6.3	8	10	12.5	16	18	22
Leads Dia. (dØ)	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

DIMENSIONS (mm)



PART NUMBERING SYSTEM

NRSA 101 M 25V 6.3X11 TR F

- F — RoHS Compliant
- TR — Tape and Reel*
- 6.3X11 — Size (DØ x L)
- 25V — Rated Voltage
- M — Tolerance Code
- 101 — Capacitance Code
- NRSA — Series

*see tape specification for details