

Miniature Aluminum Electrolytic Capacitors

NRE-LS Series

REDUCED SIZE, EXTENDED RANGE
LOW PROFILE, RADIAL LEAD, POLARIZED

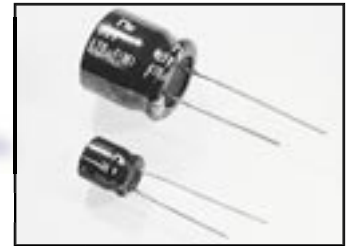
FEATURES

- LOW PROFILE APPLICATIONS
- HIGH STABILITY AND PERFORMANCE

RoHS Compliant

includes all homogeneous materials

*See Part Number System for Details



CHARACTERISTICS

Rated Voltage Range		6.3 ~ 50 VDC						
Capacitance Range		220 ~ 10,000μF						
Operating Temperature Range		-40 ~ +85° C						
Capacitance Tolerance		± 20%						
Max. Leakage Current @ (20°C)	After 1 min.	0.03CV or 4μA , whichever if greater						
	After 2 min.	0.01CV or 3μA , whichever if greater						
Max. Tan δ @ 120Hz/20° C		W.V. (Vdc)	6.3	10	16	25	35	50
		S.V. (Vdc)	8	13	20	32	44	63
		C ≤ 1,000μF	0.28	0.24	0.20	0.16	0.14	0.12
		C = 2,200μF	-	-	0.22	0.18	0.16	0.14
		C = 3,300μF	0.32	0.28	-	0.20		
		C = 4,700μF	0.34	-	0.26			
		C = 6,800μF	0.36	0.32				
Low Temperature Stability Impedance Ratio @ 120Hz		C = 10,000μF	0.38					
		Z-25° C/Z+20° C	5	4	3	2	2	2
		Z-40° C/Z+20° C	12	10	8	5	4	3
Load Life Test at Rated W.V. 85° C 2,000 Hours		Capacitance Change	Within ±25% of initial measured value					
		Tan δ	Less than 200% of specified maximum value					
		Leakage Current	Less than specified maximum value					

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

Cap (μ F)	Working Voltage (Vdc)					
	6.3	10	16	25	35	50
220	-	-	-	-	300	-
330	-	-	-	350	-	-
470	-	-	400	-	-	700
1000	500	-	-	-	1000	1000
2200	-	-	1100	1250	1500	1600
3300	1200	1250	-	1700	-	-
4700	1400	-	1700	-	-	-
6800	-	1850	-	-	-	-
10,000	2000	-	-	-	-	-

MAXIMUM ESR (Ω) AT 120Hz 120Hz/20°C

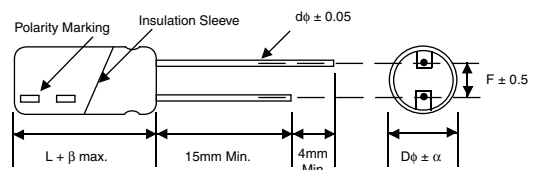
Cap (μ F)	Working Voltage (Vdc)					
	6.3	10	16	25	35	50
220	-	-	-	-	1.06	-
330	-	-	-	0.80	-	-
470	-	-	0.70	-	-	0.42
1000	0.46	-	-	-	0.23	0.20
2200	-	-	0.17	0.13	0.12	0.11
3300	0.16	0.14	-	0.10	-	-
4700	0.12	-	0.09	-	-	-
6800	-	0.08	-	-	-	-
10,000	0.06	-	-	-	-	-

STANDARD PRODUCT AND CASE SIZE TABLE $D \phi \times L$ (mm)

Cap (μ F)	Code	Working Voltage (Vdc)					
		6.3	10	16	25	35	50
220	221	-	-	-	-	10 x 9	-
330	331	-	-	-	10 x 9	-	-
470	471	-	-	10 x 9	-	-	16 x 16
1000	102	10 x 9	-	-	-	16 x 16	16 x 21
2200	222	-	-	16 x 16	16 x 16	18 x 21	18 x 25
3300	332	16 x 16	16 x 16	-	18 x 21	-	-
4700	472	16 x 16	-	18 x 21	-	-	-
6800	682	-	18 x 21	-	-	-	-
10,000	103	18 x 21	-	-	-	-	-

LEAD SPACING AND DIAMETER (mm)

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



PART NUMBER SYSTEM

NRELS 102 M 35V 16X16 F

- Series
- Capacitance Code: First 2 characters significant, third character is multiplier
- Tolerance Code (M=20%)
- Working Voltage (Vdc)
- Case Size (D ϕ x L)
- RoHS Compliant

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

