

# Miniature Aluminum Electrolytic Capacitors

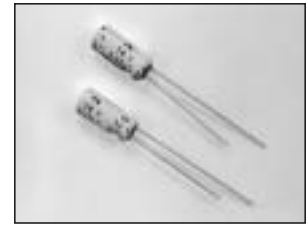
NLE-L Series

LOW LEAKAGE CURRENT AND LONG LIFE ALUMINUM ELECTROLYTIC CAPACITORS, POLARIZED, RADIAL LEADS

## FEATURES

- LOW LEAKAGE CURRENT & LOW NOISE
- CLOSE TOLERANCE AVAILABLE ( $\pm 10\%$ )
- NEW REDUCED SIZES (Alternate Sizes on Request)

**RoHS Compliant**  
includes all homogeneous materials  
\*See Part Number System for Details



## CHARACTERISTICS

Rated Voltage Range	10 ~ 50Vdc					
Capacitance Range	0.1 ~ 2200 $\mu$ F					
Operating Temperature Range	-40 ~ +85°C					
Capacitance Tolerance	$\pm 20\%$ (M), $\pm 10\%$ (K)					
Max. Leakage Current After 2 minutes At +20°C	0.002CV or 0.4 $\mu$ A, whichever is greater					
Surge Voltage & Max. Tan $\delta$ @ 120Hz/+20°C	W.V. (Vdc)	10	16	25	35	50
	S.V. (Vdc)	13	20	32	44	63
	Tan $\delta$	0.16	0.13	0.12	0.10	0.08
Low Temperature Stability (Impedance Ratio @ 120Hz)	Z-25°C/Z+20°C	2	1.5	1.5	1.5	1.5
	Z-40°C/Z+20°C	5	4	3	3	3
Load Life Test at Rated W.V. & +85°C 2,000 Hours for 5 ~ 10mm diameter 4,000 Hours for 12.5mm & up	Capacitance Change	Within $\pm 20\%$ of initial measured value				
	Tan $\delta$	Less than 200% of specified maximum value				
	Leakage Current	Less than specified maximum value				

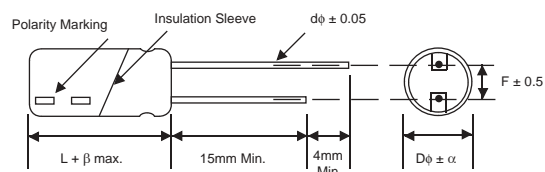
## STANDARD PRODUCT AND CASE SIZE TABLE D $\phi$ x L (mm)

Cap. ( $\mu$ F)		Working Voltage (Vdc)				
		10	16	25	35	50
0.1	R10	-	-	-	-	5x11
0.22	R22	-	-	-	-	5x11
0.33	R33	-	-	-	-	5x11
0.47	R47	-	-	-	-	5x11
1.0	1R0	-	-	-	-	5x11
2.2	2R2	-	-	-	-	5x11
3.3	3R3	-	-	-	-	5x11
4.7	4R7	-	-	5x11	5x11	5x11
10	100	-	5x11	5x11	5x11	5x11
22	220	-	5x11	5x11	6.3x11	6.3x11
33	330	-	5x11	6.3x11	6.3x11	8x11.5
47	470	5x11	6.3x11	6.3x11	8x11.5	8x11.5
100	101	6.3x11	8x11.5	8x11.5	10x12.5	10x16
220	221	8x11.5	10x12.5	10x16	10x20	12.5x20
330	331	10x12.5	10x16	10x20	12.5x25	12.5x25
470	471	10x16	10x16	12.5x20	12.5x25	16x25
1000	102	12.5x20	12.5x20	16x25	16x25	-
2200	222	16x25	16x25	-	-	-

## LEAD SPACING AND DIAMETER (mm)

Case Dia. (D $\phi$ )	5	6.3	8	10	12.5	16
Lead Dia. (d $\phi$ )	0.5	0.5	0.6	0.6	0.6	0.8
Lead Spacing (F)	2.0	2.5	3.5	5.0	5.0	7.5
Dim. $\alpha$	0.5	0.5	0.5	0.5	0.5	0.5

## DIMENSIONS (mm)



Drawing is representative of parts as supplied in bulk or straight lead format, please see taping specifications for details on taped format packaging.

## 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](http://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](mailto:tpmg@niccomp.com)



### STANDARD PRODUCT, SPECIFICATIONS AND CASE SIZES D $\phi$ x L (mm)

Part Number	Cap. ( $\mu$ F)	W.V. (Vdc)	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +85°C/120Hz	Max. ESR ( $\Omega$ ) +20°C/120Hz	Load Life Hours @ +85°C
NLE-L470M10V5x11F	47	10	0.16	110	5.29	2,000
NLE-L101M10V6.3x11F	100		0.16	180	2.49	2,000
NLE-L221M10V8x11.5F	220		0.16	300	1.13	2,000
NLE-L331M10V10x12.5F	330		0.16	400	0.76	2,000
NLE-L471M10V10x16F	470		0.16	500	0.53	2,000
NLE-L102M10V12.5x20F	1000		0.16	800	0.25	4,000
NLE-L222M10V16x25F	2200		0.16	1200	0.12	4,000
NLE-L100M16V5x11F	10	16	0.13	65	19.9	2,000
NLE-L220M16V5x11F	22		0.13	95	9.05	2,000
NLE-L330M16V5x11F	33		0.13	100	6.03	2,000
NLE-L100M16V6.3x11F	47		0.13	140	4.23	2,000
NLE-L101M16V8x11.5F	100		0.13	230	1.99	2,000
NLE-L221M16V10x12.5F	220		0.13	350	0.91	2,000
NLE-L331M16V10x16F	330		0.13	450	0.61	2,000
NLE-L471M16V10x16F	470		0.13	550	0.43	2,000
NLE-L102M16V12.5x20F	1000		0.13	900	0.20	4,000
NLE-L222M16V16x25F	2200		0.13	1300	0.09	4,000
NLE-L4R7M25V5x11F	4.7	25	0.12	45	26.2	2,000
NLE-L100M25V5x11F	10		0.12	65	13.3	2,000
NLE-L220M25V5x11F	22		0.12	100	6.03	2,000
NLE-L330M25V6.3x11F	33		0.12	140	4.02	2,000
NLE-L470M25V6.3x11F	47		0.12	170	2.82	2,000
NLE-L101M25V8x11.5F	100		0.12	280	1.33	2,000
NLE-L221M25V10x16F	220		0.12	400	0.61	2,000
NLE-L331M25V10x20F	330		0.12	500	0.41	2,000
NLE-L471M25V12.5x20F	470		0.12	650	0.29	4,000
NLE-L102M25V16x25F	1000		0.12	1000	0.14	4,000
NLE-L4R7M35V5x11F	4.7	35	0.10	45	28.2	2,000
NLE-L100M35V5x11F	10		0.10	70	13.3	2,000
NLE-L220M35V6.3x11F	22		0.10	110	6.03	2,000
NLE-L330M35V6.3x11F	33		0.10	140	4.02	2,000
NLE-L470M35V8x11.5F	47		0.10	190	2.82	2,000
NLE-L101M35V10x12.5F	100		0.10	300	1.33	2,000
NLE-L221M35V10x20F	220		0.10	450	0.41	2,000
NLE-L331M35V12.5x25F	330		0.10	550	0.41	4,000
NLE-L471M35V12.5x25F	470		0.10	700	0.29	4,000
NLE-L102M35V16x25F	1000		0.10	1100	0.14	4,000
NLE-LR10M50V5x11F	0.1	50	0.08	1.5	1326	2,000
NLE-LR22M50V5x11F	0.22		0.08	2.5	603	2,000
NLE-LR33M50V5x11F	0.33		0.08	3.5	402	2,000
NLE-LR47M50V5x11F	0.47		0.08	5.0	282	2,000
NLE-L1R0M50V5x11F	1.0		0.08	11	133	2,000
NLE-L2R2M50V5x11F	2.2		0.08	23	60.3	2,000
NLE-L3R3M50V5x11F	3.3		0.08	40	40.2	2,000
NLE-L4R7M50V5x11F	4.7		0.08	45	28.2	2,000
NLE-L100M50V5x11F	10		0.08	70	13.3	2,000
NLE-L220M50V6.3x11F	22		0.08	110	6.03	2,000
NLE-L330M50V8x11.5F	33		0.08	170	4.02	2,000
NLE-L470M50V8x11.5F	47		0.08	200	2.82	2,000
NLE-L101M50V10x16F	100		0.08	350	1.33	2,000
NLE-L221M50V12.5x20F	220		0.08	500	0.41	4,000
NLE-L331M50V12.5x25F	330		0.08	600	0.41	4,000
NLE-L471M50V16x25F	470	0.08	800	0.29	4,000	

### PART NUMBER SYSTEM

