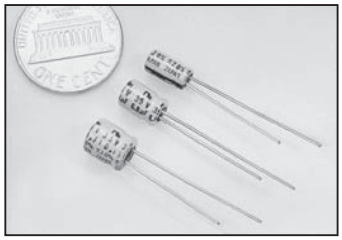
Miniature Aluminum Electrolytic Capacitors

NLE Series

SUBMINIATURE, LOW-LEAKAGE CURRENT, RADIAL LEAD, POLARIZED



FEATURES

- LOW PROFILE, 7mm HEIGHT
- LOW LEAKAGE CURRENT & LOW NOISE
- LOW COST REPLACEMENT FOR MANY TANTALUM APPLICATIONS

CHARACTERISTICS

RoHS Compliant
includes all homogeneous materials

*See Part Number System for Details

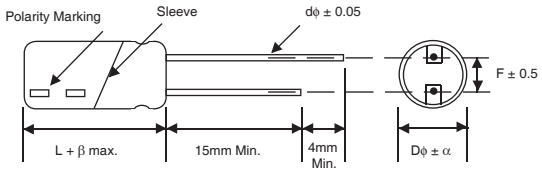
Rated Voltage Range	6.3 ~ 50Vdc						
Capacitance Range	1.0 ~ 100µF						
Operating Temperature Range	-40 ~ +85°C						
Capacitance Tolerance	±20%(M)						
Max. Leakage Current After 2 minutes At +20°C	0.002CV or 0.4µA, whichever is greater						
Surge Voltage & Max. Tan δ @ 120Hz/+20°C	W.V. (Vdc)	6.3	10	16	25	35	50
	S.V. (Vdc)	8	13	20	32	44	63
	Tan δ	0.20	0.18	0.16	0.14	0.12	0.10
Low Temperature Stability (Impedance Ratio @ 120Hz)	Z-25°C/Z+20°C	432222					
	Z-40°C/Z+20°C	8	6	4	4	3	3
Load Life Test at Rated W.V. & +85°C 1,000 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				

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

Cap. (µF)	Code	Working Voltage (Vdc)					
		6.3	10	16	25	35	50
1.0	1R0	-	-	-	-	-	4x7
2.2	2R2	-	-	-	-	-	4x7
3.3	3R3	-	-	-	-	-	4x7
4.7	4R7	-	-	-	-	4x7	5x7
10	100	-	-	4x7	5x7	5x7	6.3x7
22	220	4x7	5x7	5x7	6.3x7	6.3x7	-
33	330	5x7	5x7	6.3x7	6.3x7	-	-
47	470	5x7	6.3x7	6.3x7	-	-	-
100	101	6.3x7	6.3x7	6.3x7	-	-	-

LEAD SPACING AND DIAMETER (mm)

Case Dia. (Dϕ)	4	5	6.3
Lead Dia. (dϕ)	0.45	0.5	0.5
Lead Spacing (F)	1.5	2.0	2.5
Dim. α	0.5	0.5	0.5
Dim. β	1.0	1.0	1.0



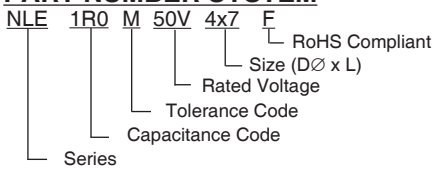
PRECAUTIONS

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**

STANDARD PRODUCT, SPECIFICATIONS AND CASE SIZES D ϕ x L (mm)

Part Number	Cap. (µF)	W.V. (Vdc))	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +85°C/120Hz	Max. ESR (Ω) +20°C/120Hz	Load Life Hours @ +85°C
NLE220M6.3V4x7F	22	6.3	0.20	34	18.1	1,000
NLE330M6.3V5x7F	33		0.20	42	12.1	1,000
NLE470M6.3V5x7F	47		0.20	50	8.47	1,000
NLE101M6.3V6.3x7F	100		0.20	77	3.98	1,000
NLE220M10V5x7F	22	10	0.18	38	15.1	1,000
NLE330M10V5x7F	33		0.18	47	10.1	1,000
NLE470M10V6.3x7F	47		0.18	59	7.06	1,000
NLE101M10V6.3x7F	100		0.18	82	3.32	1,000
NLE100M16V4x7F	10	16	0.16	29	25.6	1,000
NLE220M16V5x7F	22		0.16	44	12.1	1,000
NLE330M16V6.3x7F	33		0.16	57	8.05	1,000
NLE470M16V6.3x7F	47		0.16	68	5.65	1,000
NLE101M16V6.3x7F	100		0.16	95	2.26	1,000
NLE100M25V5x7F	10	25	0.14	33	23.2	1,000
NLE220M25V6.3x7F	22		0.14	51	10.6	1,000
NLE330M25V6.3x7F	33		0.14	63	7.04	1,000
NLE4R7M35V4x7F	4.7	35	0.12	24	42.3	1,000
NLE100M35V5x7F	10		0.12	36	19.9	1,000
NLE220M35V6.3x7F	22		0.12	57	9.05	1,000
NLE1R0M50V4x7F	1.0	50	0.10	10	166	1,000
NLE2R2M50V4x7F	2.2		0.10	19	75.5	1,000
NLE3R3M50V4x7F	3.3		0.10	24	50.3	1,000
NLE4R7M50V5x7F	4.7		0.10	29	35.3	1,000
NLE100M50V6.3x7F	10		0.10	44	16.6	1,000

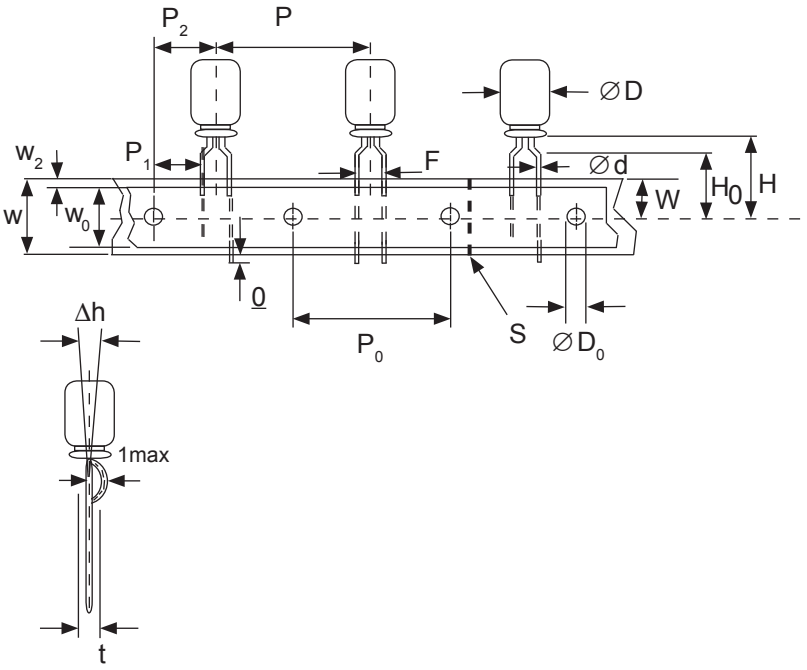
PART NUMBER SYSTEM



STANDARD RADIAL TAPING (5mm LEAD SPACING, FORMED LEADS) TB

Taping Dimensions (mm)

Case Dia. (Dϕ)	4	5		6.3		8
Case Size Dim.	4x5 4x7	5x5 5x7	5x11	6.3x5 6.3x7	6.3x11	8x11.5
dϕ ±0.05	0.45	0.45	0.5	0.45	0.5	0.6
H ±0.75	17.5	17.5	18.5	17.5	18.5	20.0
F +0.8 ~ -0.2	5.0 -02 ~ +0.8					
P	12.7 ±1.0					
P_0	12.7 ±0.2					
P_1	3.85 ±0.5 (at end of tape)					
P_2	6.35 ±1.0					
W	18.0 ±0.5					
W_0	11.5 min.					
W_1	9.0 ±0.5					
W_2	0 ~ 2.5					
H_0	16.0 ±0.5					
I	1.0 max.					
$D_0\phi$	4.0 ±0.2					
Δh	0 ±1.0 (at top of can)					
t	0.7 ±0.2 (not including lead)					



STANDARD RADIAL TAPING (5mm LEAD SPACING, STRAIGHT LEADS) TB

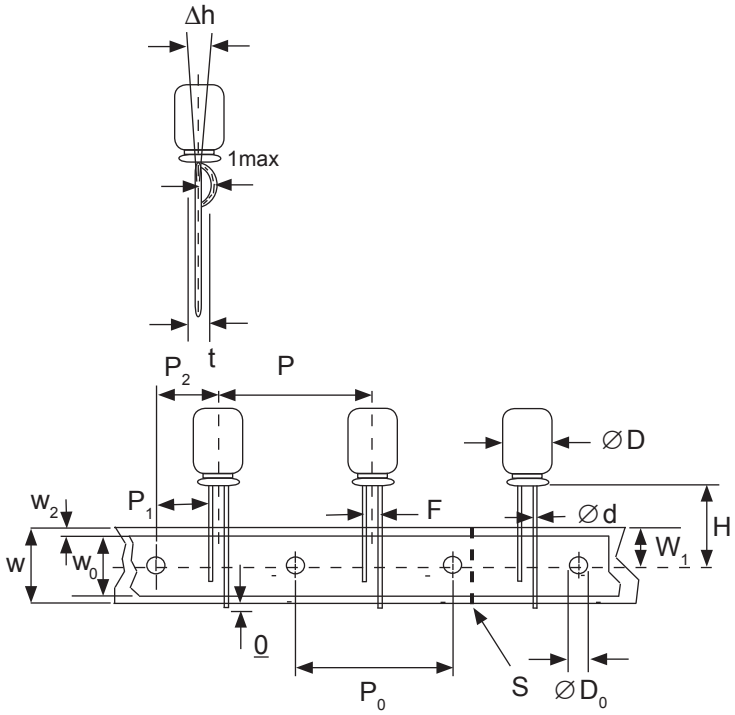
Taping Dimensions (mm)

Case Dia. (Dϕ)	10	12.5
Case Size Dim.	All	All
dϕ ±0.05	0.6	0.6
H ±0.75	19.0	19.0
F +0.8 ~ -0.2	5.0	5.0
P ±1.0	25.4*	
P_0	12.7 ±0.2	
P_1	3.85	
P_2	6.35 ±1.0	
W	18.0 ±0.5	
W_0	11.5 min	
W_1	9.0 ±0.5	
W_2	0 ~ 2.5	
H_0	16.0 ±0.5	
I	1.0 max.	
$D_0\phi$	4.0 ±0.2	
Δh	0 ±1.0 (at top of can)	
t	0.7 ±0.2 (not including lead)	

***Optional Taping Specifications**

10mm diameter available with P dim. = 12.7mm (P/N Suf x: TB12.7MMP)

12.5mm diameter available with P dim. = 15mm, P_1 = 5.0mm, P_0 = 15.0mm & P_2 = 7.5mm (P/N Suf x: TB15MMP)

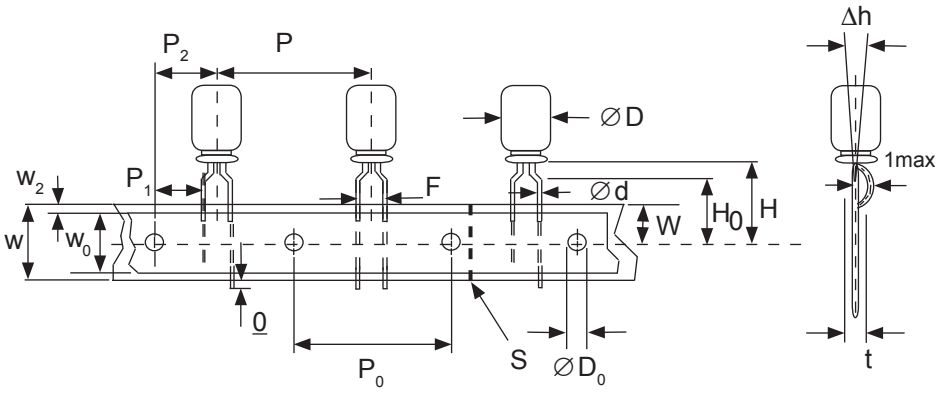


NOTE: ANODE (+) LEAD FEEDS OFF FIRST. FOR OPTION OF NEGATIVE (–) LEAD FIRST, SPECIFY "TBN".

SPECIAL RADIAL TAPING (2.5mm LEAD SPACING, FORMED LEADS) TBF1

Taping Dimensions (mm)

Case Dia. (Dϕ)	4	5	
Case Size Dim.	4x5 4x7	5x5 5x7	5x11
dϕ ±0.05	0.45	0.45	0.5
H ±0.75	17.5	17.5	18.5
H_0 ±0.5	16.0	-	-
F	2.5 -02 ~ +0.8		
P	12.7 ±1.0		
P_0	12.7 ±0.2		
P_1	5.1 ±0.5		
P_2	6.35 ±1.0		
W	18.0 ±0.5		
W_0	11.5 min.		
W_1	9.0 ±0.5		
W_2	0 ~ 1.5		
I	1.0 max.		
D_0ϕ	4.0 ±0.2		
Δh	0 ±1.0		
t	0.7 ±0.2		

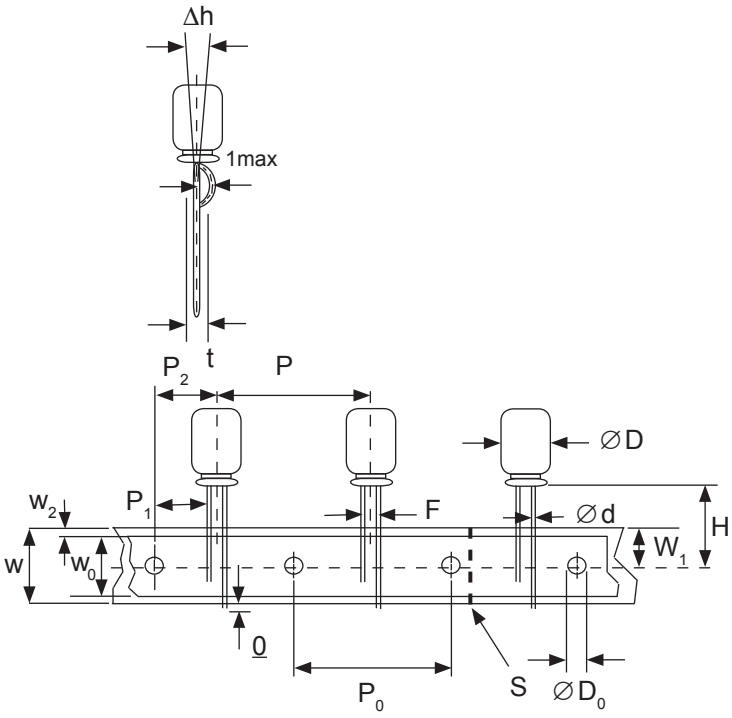


SPECIAL STRAIGHT LEAD TAPING TBST

Taping Dimensions (mm)

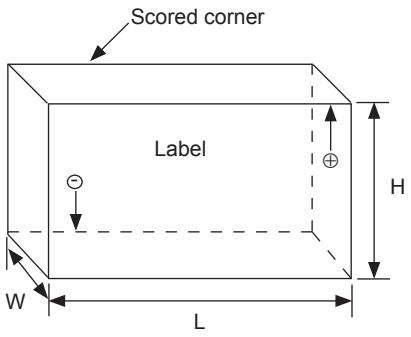
Case Dia. (Dϕ)	4	5		6.3		8
Case Size Dim.	4x5 4x7	5x5 5x7	5x11	6.3x5 6.3x7	6.3x11	8x11.5
dϕ ±0.05	0.45	0.45	0.5	0.45	0.5	0.6
H ±0.75	17.5	17.5	18.5	17.5	18.5	20.0
F +0.8 ~ -0.2	2.0*	2.0	2.0	2.5	2.5	3.5
P ±1.0	12.7 ±0.2					
P_0	12.7 ±0.2					
P_1	5.1	5.1	5.1	5.1	5.1	4.6
P_2	6.35 ±1.0					
W	18.0 ±0.5					
W_0	11.5 min.					
W_1	9.0 ±0.5					
W_2	0 ~ 2.5					
H_0	16.0 ±0.5					
I	1.0 max.					
D_0ϕ	4.0 ±0.2					
Δh	0 ±1.0 (at top of can)					
t	0.7 ±0.2 (not including lead)					

* Parts with 4mm diameter are taped with a slight are in the lead and a 2.0mm lead-space.



RADIAL TAPED PACKAGING

Ammo Box Dimensions (mm)



Ammo Box (Tape & Box) TB, TBF1, TBST

Size of box and component quantity

Case Dia (Dϕ) or Case Size	Q'ty per Box (pcs)	Dim. L	Dim. H	Dim. W
4x5, 4x7	2,000	331	175	43
5x5, 5x7	2,000	331	220	43
5x11	2,000	340	255	55
6.3x5, 6.3x7	2,000	331	280	43
6.3x11	2,000	331	280	48
8x11.5, 8x12.5	1,000	335	235	53
10x12.5*	500	335	190	53
10x16*	500	335	300	53
10x20*	500	335	300	55
12.x20*	500	335	300	55
12.5x25*	500	335	300	61

*Special Taping Consult Factory For Availability