

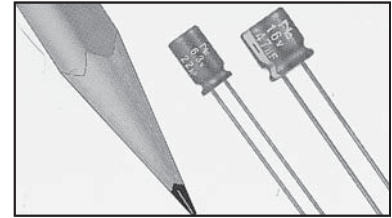
LOW IMPEDANCE, SUBMINIATURE, RADIAL LEADS,  
POLARIZED ALUMINUM ELECTROLYTIC CAPACITORS

### FEATURES

- VERY LOW IMPEDANCE AT HIGH FREQUENCY
- LOW PROFILE 7mm HEIGHT
- WIDE TEMPERATURE, -55°C~ +105°C

**RoHS Compliant**  
includes all homogeneous materials

\*See Part Number System for Details



### CHARACTERISTICS

Rated Voltage Range	6.3 ~ 35Vdc					
Capacitance Range	0.47 ~ 330μF					
Operating Temperature Range	-55 ~ +105°C					
Capacitance Tolerance	±20%(M)					
Max. Leakage Current After 1 minutes At +20°C	0.01CV or 3μA, whichever is greater					
Max. Tan δ @ 120Hz/+20°C	W.V. (Vdc)	6.3	10	16	25	35
	S.V. (Vdc)	8	13	20	32	44
	Tan δ	0.24	0.20	0.18	0.14	0.12
Low Temperature Stability Impedance Ratio @ 120Hz	Z-40°C/Z+20°C	3	2	2	2	2
	Z-55°C/Z+20°C	5	4	4	3	3
Load Life Test at Rated W.V. +105°C 1,000 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				

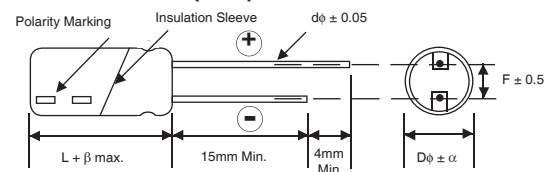
### STANDARD PRODUCT AND CASE SIZE TABLE Dφ x L (mm)

Cap. (μF)	Code	Working Voltage (Vdc)				
		6.3	10	16	25	35
4.7	4R7	-	-	-	-	4x7
10	100	-	-	-	4x7	5x7
15	150	-	-	4x7	5x7	6.3x7
22	220	-	4x7	5x7	5x7	6.3x7
33	330	-	5x7	-	6.3x7	6.3x7
47	470	5x7	5x7	6.3x7	6.3x7	6.3x7
68	680	-	-	-	6.3x7	-
100	101	-	6.3x7	6.3x7	6.3x7	-
150	151	-	6.3x7	6.3x7	-	-
220	221	6.3x7	6.3x7	6.3x7	-	-
330	331	6.3x7	-	-	-	-

### LEAD SPACING AND DIAMETER (mm)

Case Dia. (Dφ)	4	5	6.3
Lead Dia. (dφ)	0.45	0.45	0.45
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

### DIMENSIONS (mm)



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

### PRECAUTIONS

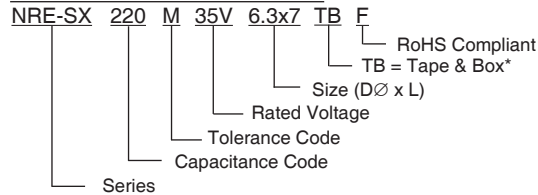
Please review the notes on correct use, safety and precautions found on pages T10 & T11 of NIC's Electrolytic Capacitor catalog.  
Also found at [www.niccomp.com/precautions](http://www.niccomp.com/precautions)  
If in doubt or uncertainty, please review your specific application - process details with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



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

Part Number	Cap. ( $\mu$ F)	W.V. (Vdc)	Max. Tan $\delta$	Max. Impedance 100KHz/20°C	Max. Ripple Current at 100KHz/105°C (mA rms)	Load Life Hours @ +105°C
NRE-SX470M6.3V5 x 7F	47	6.3	0.24	0.49	0.49	1000
NRE-SX221M6.3V6.3 x 7F	220		0.24	0.24	0.24	1000
NRE-SX331M6.3V6.3 x 7F	330		0.24	0.29	0.29	1000
NRE-SX220M10V4 x 7F	22	10	0.20	1.15	90	1000
NRE-SX330M10V5 x 7F	33		0.20	0.49	160	1000
NRE-SX470M10V5 x 7F	47		0.20	0.49	160	1000
NRE-SX101M10V6.3 x 7F	100		0.20	0.24	280	1000
NRE-SX151M10V6.3 x 7F	150		0.20	0.24	280	1000
NRE-SX221M10V6.3 x 7F	220		0.20	0.29	280	1000
NRE-SX150M16V4 x 7F	15		16	0.18	1.15	90
NRE-SX220M16V5 x 7F	22	0.18		0.49	160	1000
NRE-SX470M16V6.3 x 7F	47	0.18		0.24	280	1000
NRE-SX101M16V6.3 x 7F	100	0.18		0.24	280	1000
NRE-SX151M16V6.3 x 7F	150	0.18		0.29	280	1000
NRE-SX221M16V6.3 x 7F	220	0.18		0.29	280	1000
NRE-SX100M25V4 x 7F	10	25		0.14	1.15	90
NRE-SX150M25V5 x 7F	15		0.14	0.49	160	1000
NRE-SX220M25V5 x 7F	22		0.14	0.49	160	1000
NRE-SX330M25V6.3 x 7F	33		0.14	0.24	280	1000
NRE-SX470M25V6.3 x 7F	47		0.14	0.24	280	1000
NRE-SX680M25V6.3 x 7F	68		0.14	0.24	280	1000
NRE-SX101M25V6.3 x 7F	100		0.14	0.24	280	1000
NRE-SX4R7M35V4 x 7F	4.7	35	0.12	1.15	90	1000
NRE-SX100M35V5 x 7F	10		0.12	0.49	160	1000
NRE-SX150M35V6.3 x 7F	15		0.12	0.29	280	1000
NRE-SX220M35V6.3 x 7F	22		0.12	0.29	280	1000
NRE-SX330M35V6.3 x 7F	33		0.12	0.29	280	1000
NRE-SX470M35V6.3 x 7F	47		0.12	0.29	280	1000

### PART NUMBER SYSTEM



\*see tape specification for details

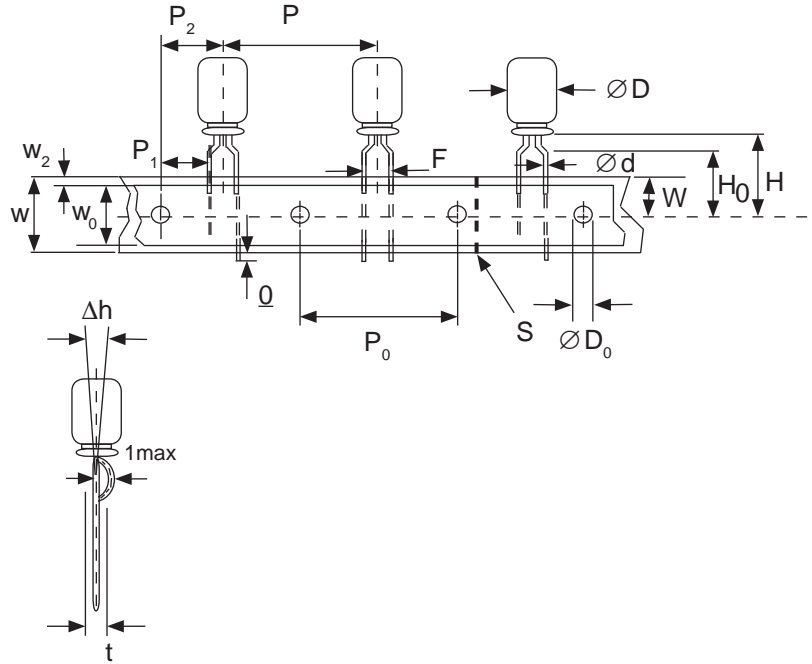


# Miniature Aluminum Electrolytic Capacitors Taping Specifications

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

Taping Dimensions (mm)

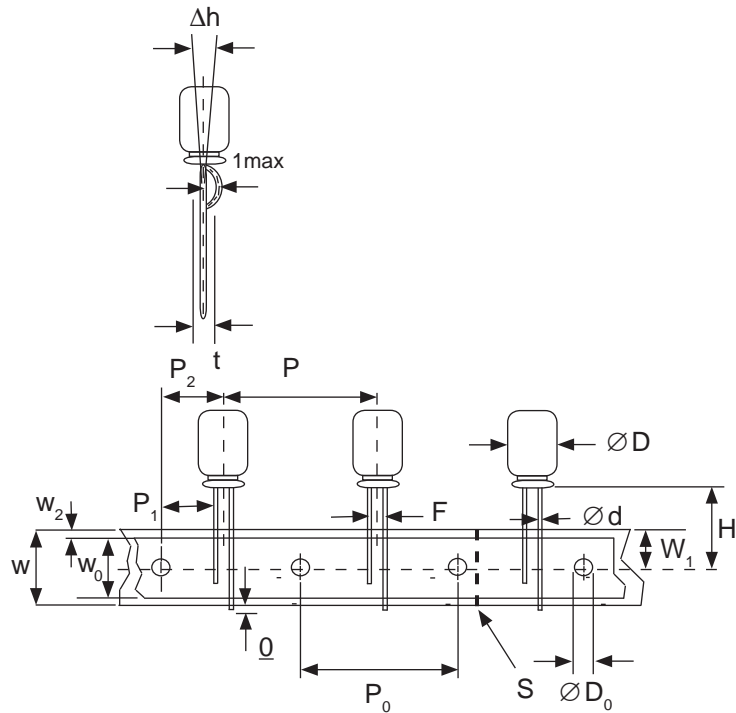
Case Dia. (D $\phi$ )	4			5			6.3			8		
Case Size	4x5	5x5	5x11	6.3x5	6.3x11	8x11.5						
Dim.	4x7	5x7	5x11	6.3x7	6.3x11	8x11.5						
d $\phi$ $\pm$ 0.05	0.45	0.45	0.5	0.45	0.5	0.6						
H $\pm$ 0.75	17.5	17.5	18.5	17.5	18.5	20.0						
F +0.8 ~ -0.2				5.0 -0.2 ~ +0.8								
P				12.7 $\pm$ 1.0								
P <sub>0</sub>				12.7 $\pm$ 0.2								
P <sub>1</sub>				3.85 $\pm$ 0.5 (at end of tape)								
P <sub>2</sub>				6.35 $\pm$ 1.0								
W				18.0 $\pm$ 0.5								
W <sub>0</sub>				11.5 min.								
W <sub>1</sub>				9.0 $\pm$ 0.5								
W <sub>2</sub>				0 ~ 2.5								
H <sub>0</sub>				16.0 $\pm$ 0.5								
l				1.0 max.								
D <sub>0</sub> $\phi$				4.0 $\pm$ 0.2								
$\Delta$ h				0 $\pm$ 1.0 (at top of can)								
t				0.7 $\pm$ 0.2 (not including lead)								



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

Taping Dimensions (mm)

Case Dia. (D $\phi$ )	10	12.5
Case Size	All	All
Dim.	All	All
d $\phi$ $\pm$ 0.05	0.6	0.6
H $\pm$ 0.75	19.0	19.0
F +0.8 ~ -0.2	5.0	5.0
P $\pm$ 1.0	25.4*	
P <sub>0</sub>	12.7 $\pm$ 0.2	
P <sub>1</sub>	3.85	
P <sub>2</sub>	6.35 $\pm$ 1.0	
W	18.0 $\pm$ 0.5	
W <sub>0</sub>	11.5 min	
W <sub>1</sub>	9.0 $\pm$ 0.5	
W <sub>2</sub>	0 ~ 2.5	
H <sub>0</sub>	16.0 $\pm$ 0.5	
l	1.0 max.	
D <sub>0</sub> $\phi$	4.0 $\pm$ 0.2	
$\Delta$ h	0 $\pm$ 1.0 (at top of can)	
t	0.7 $\pm$ 0.2 (not including lead)	
<b>*Optional Taping Specifications</b>		
10mm diameter available with P dim. = 12.7mm (P/N Suffix: TB12.7MMP)		
12.5mm diameter available with P dim. = 15mm, P <sub>1</sub> = 5.0mm, P <sub>0</sub> = 15.0mm & P <sub>2</sub> = 7.5mm (P/N Suffix: TB15MMP)		



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

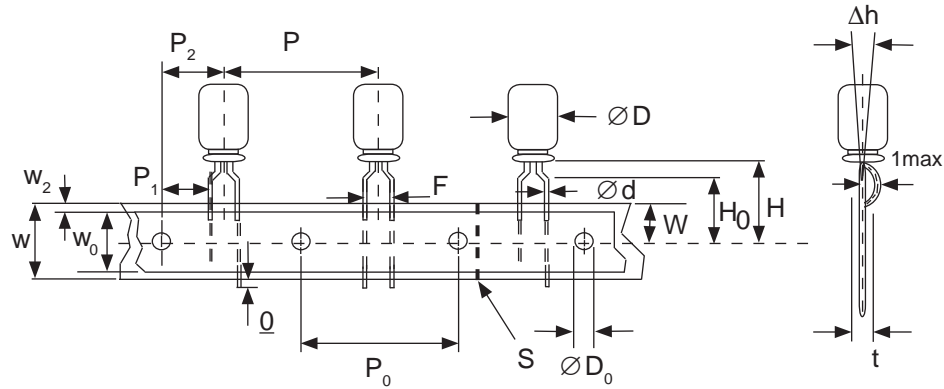


# Miniature Aluminum Electrolytic Capacitors Taping Specifications

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

Taping Dimensions (mm)

Case Dia. (D $\phi$ )	4		5	
Case Size Dim.	4x5 4x7	5x5 5x7	5x11	
d $\phi$ $\pm$ 0.05	0.45	0.45	0.5	
H $\pm$ 0.75	17.5	17.5	18.5	
H <sub>0</sub> $\pm$ 0.5	16.0	-	-	
F	2.5 -0.2 ~ +0.8			
P	12.7 $\pm$ 1.0			
P <sub>0</sub>	12.7 $\pm$ 0.2			
P <sub>1</sub>	5.1 $\pm$ 0.5			
P <sub>2</sub>	6.35 $\pm$ 1.0			
W	18.0 $\pm$ 0.5			
W <sub>0</sub>	11.5 min.			
W <sub>1</sub>	9.0 $\pm$ 0.5			
W <sub>2</sub>	0 ~ 1.5			
l	1.0 max.			
D <sub>0</sub> $\phi$	4.0 $\pm$ 0.2			
$\Delta$ h	0 $\pm$ 1.0			
t	0.7 $\pm$ 0.2			

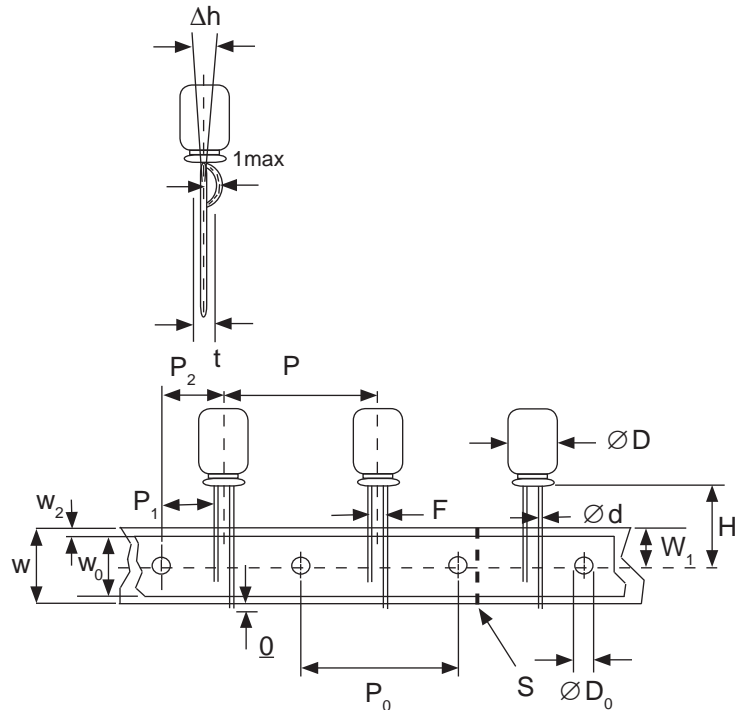


## SPECIAL STRAIGHT LEAD TAPING TBST

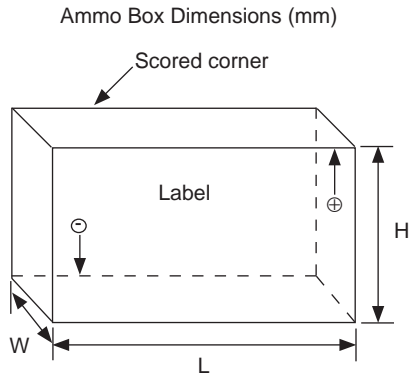
Taping Dimensions (mm)

Case Dia. (D $\phi$ )	4			5			6.3		8	
Case Size Dim.	4x5 4x7	5x5 5x7	5x11		6.3x5 6.3x7	6.3x11	8x11.5			
d $\phi$ $\pm$ 0.05	0.45	0.45	0.5		0.45	0.5	0.6			
H $\pm$ 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 $\pm$ 1.0	12.7 $\pm$ 0.2									
P <sub>0</sub>	12.7 $\pm$ 0.2									
P <sub>1</sub>	5.1	5.1	5.1	5.1	5.1	5.1	4.6			
P <sub>2</sub>	6.35 $\pm$ 1.0									
W	18.0 $\pm$ 0.5									
W <sub>0</sub>	11.5 min.									
W <sub>1</sub>	9.0 $\pm$ 0.5									
W <sub>2</sub>	0 ~ 2.5									
H <sub>0</sub>	16.0 $\pm$ 0.5									
l	1.0 max.									
D <sub>0</sub> $\phi$	4.0 $\pm$ 0.2									
$\Delta$ h	0 $\pm$ 1.0 (at top of can)									
t	0.7 $\pm$ 0.2 (not including lead)									

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



## RADIAL TAPED PACKAGING



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

Size of box and component quantity

Case Dia (D $\phi$ ) 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