

# Miniature Aluminum Electrolytic Capacitors

NRE-AX Series

HIGH CV, RADIAL LEADS, POLARIZED

## FEATURES

- LOW AND HIGH VOLTAGE, WIDE TEMPERATURE
- NEW REDUCED SIZES

**RoHS Compliant**  
includes all homogeneous materials

\*See Part Number System for Details



## CHARACTERISTICS

Rated Voltage Range		6.3 ~ 35 & 400Vdc						
Capacitance Range		4.7 ~ 1,200μF						
Operating Temperature Range		-40 ~ +105°C						
Capacitance Tolerance		±20%(M)						
Max. Leakage Current @ 20°C		6.3 ~ 35Vdc				400Vdc		
		0.01CV or 3μA whichever is less (after 2 minutes)				0.04CV + 100μA (after 1 minute) 0.02CV + 25μA (after 5 minutes)		
Max. Tan δ @ 120Hz/20°C	W.V. (Vdc)	6.3	8	10	16	25	35	400
	S.V. (Vdc)	8	10	13	20	32	44	450
	Tan δ	0.22	0.20	0.19	0.16	0.14	0.12	0.25
Low Temperature Stability Impedance Ratio @ 120Hz	W.V. (Vdc)	6.3	8	10	20	32	44	400
	Z-25°C/Z+20°C	2	2	2	2	2	2	6
	Z-40°C/Z+20°C	12	12	12	10	8	6	10
Load Life Test at Rated W.V. @ +105°C		Hours			L ≤ 7.5 = 1,000, L ≥ 9 = 2,000			
		Capacitance Change			Within ±25% of initial measured value			
		Tan δ			Less than 200% of specified value			
		Leakage Current			Less than specified value			

## 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) +105°C/120Hz	Impedance (Ω) +20°C/100KHz	Load Life Hours @ +105°C
NRE-AX820M6.3V5X7F	82	6.3	0.22	510	0.25	1,000
NRE-AX221M6.3V6.3X7F	220		0.22	720	0.13	1,000
NRE-AX221M6.3V5X11F	220		0.22	800	0.14	2,000
NRE-AX471M6.3V8X7.5F	470		0.22	1080	0.065	1,000
NRE-AX471M6.3V6.3X11F	470		0.22	1140	0.067	2,000
NRE-AX681M6.3V8X9F	680		0.22	1360	0.049	2,000
NRE-AX821M6.3V8X10.8F	820		0.22	1600	0.042	2,000
NRE-AX102M6.3V8X16F	1000		0.22	2010	0.027	2,000
NRE-AX102M6.3V10X9F	1000		0.22	1540	0.036	2,000
NRE-AX122M6.3V10X12.5F	1200		0.22	1970	0.025	2,000
NRE-AX750M8V5X7F	75		8	0.20	510	0.25
NRE-AX201M8V6.3X7F	200	0.20		720	0.13	1,000
NRE-AX201M8V5X11F	200	0.20		800	0.14	2,000
NRE-AX391M8V8X7.5F	390	0.20		1080	0.065	1,000
NRE-AX431M8V6.3X11F	430	0.20		1140	0.067	2,000
NRE-AX621M8V8X9F	620	0.20		1360	0.049	2,000
NRE-AX751M8V8X10.8F	750	0.20		1600	0.042	2,000
NRE-AX911M8V8X16F	910	0.20		2010	0.027	2,000
NRE-AX911M8V10X9F	910	0.20		1540	0.036	2,000
NRE-AX112M8V10X12.5F	1100	0.20		1970	0.025	2,000
NRE-AX680M10V5x7F	68	10		0.19	510	0.25
NRE-AX181M10V6.3x7F	180		0.19	720	0.13	1,000
NRE-AX181M10V5x11F	180		0.19	800	0.14	2,000
NRE-AX331M10V8x7.5F	330		0.19	1080	0.065	1,000
NRE-AX391M10V6.3x11F	390		0.19	1140	0.067	2,000
NRE-AX561M10V8x9F	560		0.19	1360	0.049	2,000
NRE-AX681M10V8x10.8F	680		0.19	1600	0.042	2,000
NRE-AX821M10V8x16F	820		0.19	2010	0.027	2,000
NRE-AX821M10V10x9F	820		0.19	1540	0.036	2,000
NRE-AX102M10V10x12.5F	1000		0.19	1970	0.025	2,000



### 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) +105°C/120Hz	Impedance (Ω) +20°C/100KHz	Load Life Hours @ +105°C
NRE-AX391M16V8X9F	390	16	0.16	1360	0.049	2,000
NRE-AX471M16V8X10.8F	470		0.16	1600	0.042	2,000
NRE-AX561M16V8X16F	560		0.16	2010	0.027	2,000
NRE-AX561M16V10X9F	560		0.16	1540	0.036	2,000
NRE-AX681M16V10X12.5F	680		0.16	1970	0.025	2,000
NRE-AX102M16V10X16F	1000		0.16	2480	0.019	2,000
NRE-AX221M25V8X9F	220	25	0.14	1360	0.049	2,000
NRE-AX271M25V8X10.8F	270		0.14	1600	0.042	2,000
NRE-AX391M25V8X16F	390		0.14	2010	0.027	2,000
NRE-AX391M25V10X9F	390		0.14	1540	0.036	2,000
NRE-AX471M25V10X12.5F	470		0.14	1970	0.025	2,000
NRE-AX681M25V10X16F	680		0.14	2480	0.019	2,000
NRE-AX151M35V8X9F	150	35	0.12	1360	0.049	2,000
NRE-AX181M35V8X10.8F	180		0.12	1600	0.042	2,000
NRE-AX221M35V8X16F	220		0.12	2010	0.027	2,000
NRE-AX221M35V10X9F	220		0.12	1540	0.036	2,000
NRE-AX271M35V10X12.5F	270		0.12	1970	0.025	2,000
NRE-AX391M35V10X16F	390		0.12	2480	0.019	2,000

### 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) +105°C/120Hz	Load Life Hours @ +105°C
NRE-AX4R7M400V6.3X14F	4.7	400	0.25	50	2,000
NRE-AX4R7M400V8X9F	4.7		0.25	50	2,000
NRE-AX6R8M400V8X10.8F	6.8		0.25	70	2,000
NRE-AX7R5M400V8X10.8F	7.5		0.25	75	2,000
NRE-AX8R2M400V8X16F	8.2		0.25	85	2,000
NRE-AX8R2M400V10X9F	8.2		0.25	85	2,000
NRE-AX100M400V8X16F	10		0.25	90	2,000
NRE-AX100M400V10X12.5F	10		0.25	100	2,000
NRE-AX120M400V10X12.5F	12		0.25	110	2,000
NRE-AX120M400V8X20F	12		0.25	120	2,000
NRE-AX150M400V8X20F	15		0.25	130	2,000
NRE-AX150M400V10X16F	15		0.25	150	2,000
NRE-AX180M400V10X16F	18		0.25	150	2,000
NRE-AX220M400V12.5X16F	22		0.25	180	2,000
NRE-AX240M400V12.5X16F	24		0.25	190	2,000

### RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

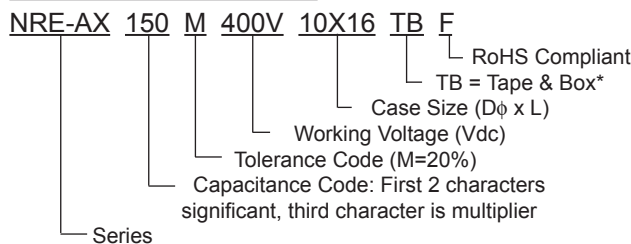
6.3V ~ 35V

Frequency (Hz)	120	500	1K	100K ≤
68 ~ 82μF	0.21	0.73	0.92	1.00
150 ~ 270μF	0.36	0.73	0.92	1.00
330 ~ 750μF	0.55	0.77	0.94	1.00
820 ~ 1200μF	0.60	0.80	0.96	1.00

400V

Frequency (Hz)	60	120	500	1K	10K ≥
4.7 ~ 8.2μF	0.65	1.00	1.20	1.30	1.50
10 ~ 24μF	0.80	1.00	1.20	1.30	1.50

### PART NUMBER SYSTEM



\*see taping specifications for details



### LEAD SPACING AND DIAMETER (mm)

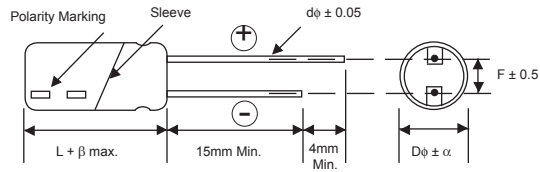
$L \leq 7.5\text{mm}$

Case Dia. (D $\phi$ )	5	6.3	8
Lead Dia. (d $\phi$ )	0.45		
Lead Spacing (F)	2.0	2.5	3.5
Dim. $\alpha$	0.5		
Dim. $\beta$	1.0		

$L \geq 9.0\text{mm}$

Case Dia. (D $\phi$ )	5	6.3	8	10	12.5
Lead Dia. (d $\phi$ )	0.5		0.6		
Lead Spacing (F)	2.0	2.5	3.5	5.0	5.0
Dim. $\alpha$	0.5				
Dim. $\beta$	6.3V ~ 35V $\beta = 1.5$				
	400V $L \leq 10.8$ $\beta = 1.5$				
	$L \geq 12.5$ $\beta = 2.0$				

### DIMENSIONS (mm)

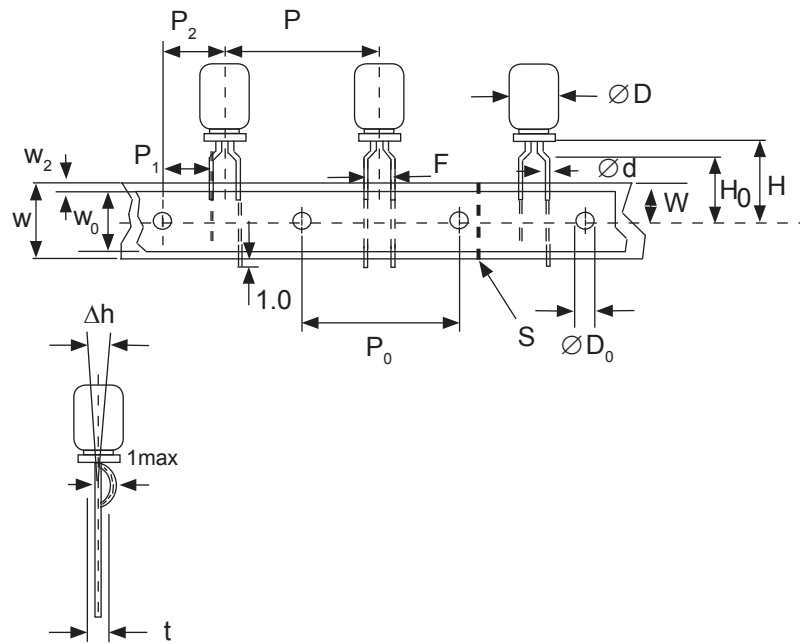


Drawing is representative of parts as supplied in bulk or straight lead format, please see taping specification for details on taped format packaging.

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

Taping Dimensions (mm)

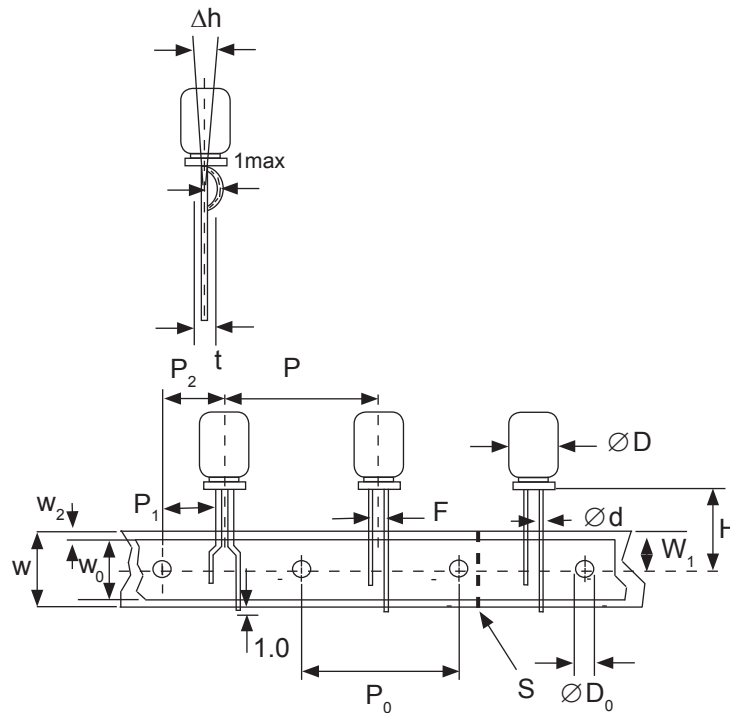
Case Dia. (D $\phi$ )	5		6.3		8				
Case Size Dim.	5x7	5x11	6.3x7	6.3x11	8x7.5	8x9	8x10.8	8x16	8x20
d $\phi$ $\pm$ 0.05	0.45	0.5	0.45	0.5	0.6	0.6	0.6	0.6	0.6
H $\pm$ 0.75	17.5	18.5	17.5	18.5	20.0	20.0	20.0	20.0	20.0
F +0.8 ~ -0.2	5.0 -0.2 ~ +0.8								
P	12.7 $\pm$ 1.0								
P <sub>0</sub>	12.7 $\pm$ 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)								



## SPECIAL STRAIGHT LEAD TAPING TBST\*

Taping Dimensions (mm)

Case Dia. (D $\phi$ )	6.3		8				
Case Size Dim.	6.3x7	6.3x11	8x7.5	8x9	8x10.8	8x16	8x20
d $\phi$ $\pm$ 0.05	0.45	0.5	0.6	0.6	0.6	0.6	0.6
H $\pm$ 0.75	17.5	18.5	20.0	20.0	20.0	20.0	20.0
F $+0.8 \sim -0.2$	2.5	2.5	3.5	3.5	3.5	3.5	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	4.6	4.6	4.6	4.6	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 $\sim$ 2.5						
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)						



\*Straight leads will extend from the based of the component to the edge of the carrier. The section of lead below the adhesive tape may be straight or formed.

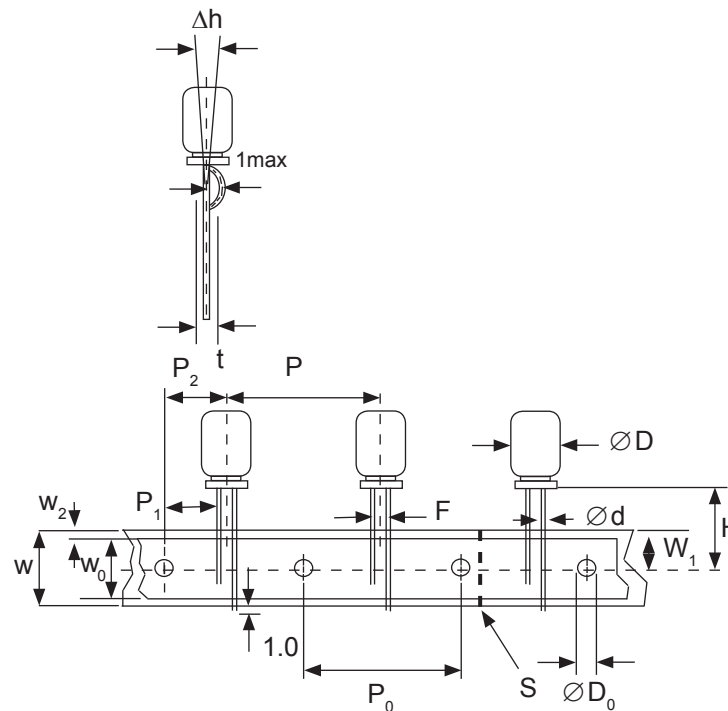


### STANDARD RADIAL TAPING (5mm LEAD SPACING, STRAIGHT LEADS) TB

Taping Dimensions (mm)

Case Dia. (D $\phi$ )	10x9	10x12.5	10x16
d $\phi$ $\pm$ 0.05	0.6	0.6	0.6
H $\pm$ 0.75	20.0	20.0	20.0
F +0.8 ~ -0.2		5.0	
P $\pm$ 1.0		12.7*	
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	
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)	

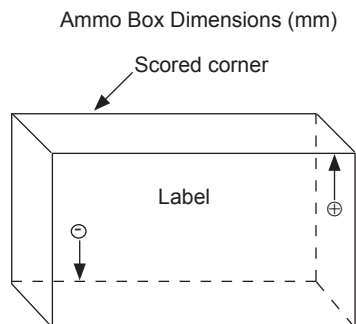
**\*Optional Taping Specifications**  
P<sub>0</sub> = 15.0mm & P<sub>2</sub> = 7.5mm (P/N Suffix: TB15MMP)



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



## RADIAL TAPED PACKAGING



Ammo Box (Tape & Box) TB, TBST

Size of box and component quantity

Case Dia (D $\phi$ ) or Case Size	Q'ty per Box (pcs)
5x7	2,000
5x11	2,000
6.3x7	2,000
6.3x11	2,000
8x7.5	1,000
8x9	1,000
8x10.8	1,000
8x16	1,000
8x20	1,000
10x9	500
10x12.5	500
10x16	500