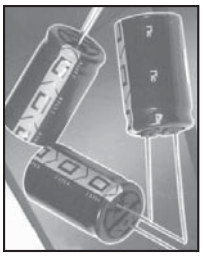
Miniature Aluminum Electrolytic Capacitors

NRBX Series

HIGH TEMPERATURE, EXTENDED LOAD LIFE, RADIAL LEADS, POLARIZED



FEATURES

- IMPROVED ENDURANCE AT HIGH TEMPERATURE (up to 12,000HRS @ 105°C)
- IDEAL FOR HIGH VOLTAGE LIGHTING BALLAST

RoHS Compliant
includes all homogeneous materials

*See Part Number System for Details

CHARACTERISTICS

Rated Voltage Range		160 ~ 450VDC					
Capacitance Range		6.8 ~ 220µF					
Operating Temperature Range		-25°C ~ +105°C					
Capacitance Tolerance		±20% (M)					
Maximum Leakage Current @ 20°C	After 1 min.	0.04CV +100µA					
	After 5 min.	0.02CV +25µA					
Max. Tan δ	W.V. (Vdc)	160	200	250	350	400	450
	@120Hz/20°C	0.15	0.15	0.15	0.20	0.20	0.20
Low Temperature Stability Impedance Ratio @ 120Hz	Z-25°C/Z+20°C	3	3	3	6	6	6
Load Life Test at Rated Voltage @ 105°C	Duration	ϕ D = 10mm: 10,000 hours, ϕ D = 12.5≥: 12,000 hours					
	Δ Capacitance	Within ±20% of initial measured value					
	Δ Tan δ	Less than 200% of specified value					
	Δ LC	Less than specified value					

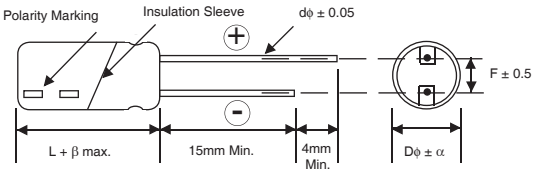
STANDARD PRODUCT AND CASE SIZE TABLE Dϕ x L (mm)

Capacitance (µF)	Code	Working Voltage (Vdc)					
		160	200	250	350	400	450
6.8	6R8	-	-	-	10x16	10x16	10x20
10	100	10x16	10x16	10x20	10x20	10x20	12.5x20
22	220	10x20	10x20	12.5x20	12.5x20	12.5x25	16x25
						16x20	18x20
33	330	10x20	12.5x20	12.5x20	16x20	16x25	16x31.5
						18x20	18x25
47	470	12.5x20	12.5x20	12.5x25	16x25	16x31.5	18x31.5
				16x20	18x20	18x25	
68	680	12.5x25	12.5x25	16x25	16x31.5	18x31.5	-
		16x20	16x20	18x20	18x25		
100	101	16x25	16x25	16x31.5	-	-	-
		18x20	18x20	18x25	-	-	-
150	151	16x31.5	16x31.5	18x31.5	-	-	-
		18x25	18x25		-	-	-
220	221	16x31.5	18x31.5	-	-	-	-
		18x25		-	-	-	-

LEAD SPACING AND DIAMETER (mm)

Case Dia. (Dϕ)	10	12.5	16	18
Lead Dia. (dϕ)	0.6	0.6	0.8	0.8
Lead Spacing (F)	5.0	5.0	7.5	7.5
Dim. α	0.5			
Dim. β	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.

PART NUMBER SYSTEM

NRBX 100 M 200V 10X16 TB F

- F — RoHS Compliant
- TB = Tape & Box*
- 10X16 — Case Size (Dϕ x L)
- 200V — Working Voltage (Vdc)
- M — Tolerance Code (M=20%)
- 100 — Capacitance Code: First 2 characters significant, third character is multiplier
- NRBX — Series

*see taping specifications for details

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 VALUES, SPECIFICATIONS AND CASE SIZES (mm)

Part Number	Cap. (µF)	W.V. (Vdc)	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +105°C/100KHz	Max. ESR (Ω) +20°C/120Hz	Load Life Hours @+105°C
NRBX100M160V10x16F	10	160	0.15	250	24.88	10,000
NRBX220M160V10x20F	22		0.15	500	11.31	10,000
NRBX330M160V10x20F	33		0.15	500	7.54	10,000
NRBX470M160V12.5x20F	47		0.15	660	5.29	12,000
NRBX680M160V12.5x25F	68		0.15	760	3.66	12,000
NRBX680M160V16x20F			0.15			
NRBX101M160V16x25F	100		0.15	1120	2.49	12,000
NRBX101M160V18x20F			0.15			
NRBX151M160V16x31.5F	150		0.15	1360	1.66	12,000
NRBX151M160V18x25F			0.15			
NRBX221M160V16x31.5F	220		0.15	1400	1.13	12,000
NRBX221M160V18x25F			0.15			
NRBX100M200V10x16F	10	200	0.15	250	24.88	10,000
NRBX220M200V10x20F	22		0.15	500	11.31	10,000
NRBX330M200V12.5x20F	33		0.15	600	7.54	12,000
NRBX470M200V12.5x20F	47		0.15	660	5.29	12,000
NRBX680M200V12.5x25F	68		0.15	760	3.66	12,000
NRBX680M200V16x20F			0.15			
NRBX101M200V16x25F	100		0.15	1120	2.49	12,000
NRBX101M200V18x20F			0.15			
NRBX151M200V16x31.5F	150		0.15	1360	1.66	12,000
NRBX151M200V18x25F			0.15			
NRBX221M200V18x31.5F	220		0.15	1700	1.13	12,000
NRBX100M250V10x20F	10	250	0.15	280	24.88	10,000
NRBX220M250V12.5x20F	22		0.15	600	11.31	12,000
NRBX330M250V12.5x20F	33		0.15	600	7.54	12,000
NRBX470M250V12.5x25F	47		0.15	720	5.29	12,000
NRBX470M250V16x20F			0.15			
NRBX680M250V16x25F	68		0.15	920	3.66	12,000
NRBX680M250V18x20F			0.15			
NRBX101M250V16x31.5F	100		0.15	1200	2.49	12,000
NRBX101M250V18x25F			0.15			
NRBX151M250V18x31.5F	150		0.15	1500	1.66	12,000
NRBX6R8M350V10x16F	6.8	350	0.20	220	48.79	10,000
NRBX100M350V10x20F	10		0.20	280	33.17	10,000
NRBX220M350V12.5x20F	22		0.20	350	15.08	12,000
NRBX330M350V16x20F	33		0.20	500	10.05	12,000
NRBX470M350V16x25F	47		0.20	660	7.06	12,000
NRBX680M350V16x31.5F	68		0.20	850	4.88	12,000
NRBX680M350V18x25F			0.20			
NRBX6R8M400V10x16F	6.8	400	0.20	220	48.79	10,000
NRBX100M400V10x20F	10		0.20	280	33.17	10,000
NRBX220M400V12.5x25F	22		0.20	430	15.08	12,000
NRBX220M400V16x20F			0.20			
NRBX330M400V16x25F	33		0.20	640	10.05	12,000
NRBX330M400V18x20F			0.20			
NRBX470M400V16x31.5F	47		0.20	840	7.06	12,000
NRBX470M400V18x25F			0.20			
NRBX680M400V18x31.5F	68		0.20	1000	4.88	12,000
NRBX6R8M450V10x20F	6.8	450	0.20	150	48.79	10,000
NRBX100M450V12.5x20F	10		0.20	320	33.17	12,000
NRBX220M450V16x25F	22		0.20	560	15.08	12,000
NRBX220M450V18x20F			0.20			
NRBX330M450V16x31.5F	33		0.20	700	10.05	12,000
NRBX330M450V18x25F			0.20			
NRBX470M450V18x31.5F	47		0.20	880	7.06	12,000

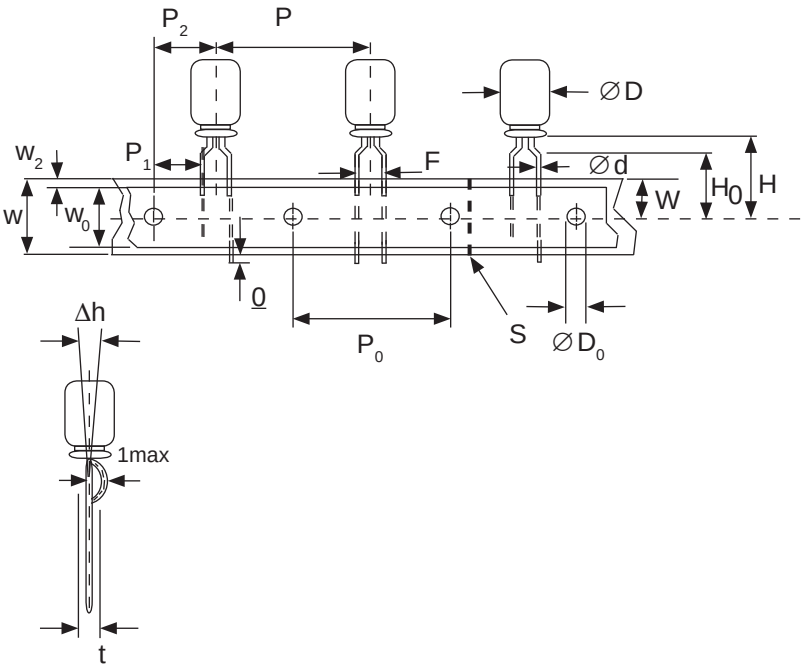
RIPPLE CURRENT FREQUECY CORRECTION FACTOR

Frequency (Hz)	120	1K	10K	100K
Multiplier	0.50	0.80	0.90	1.00

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

Taping Dimensions (mm)

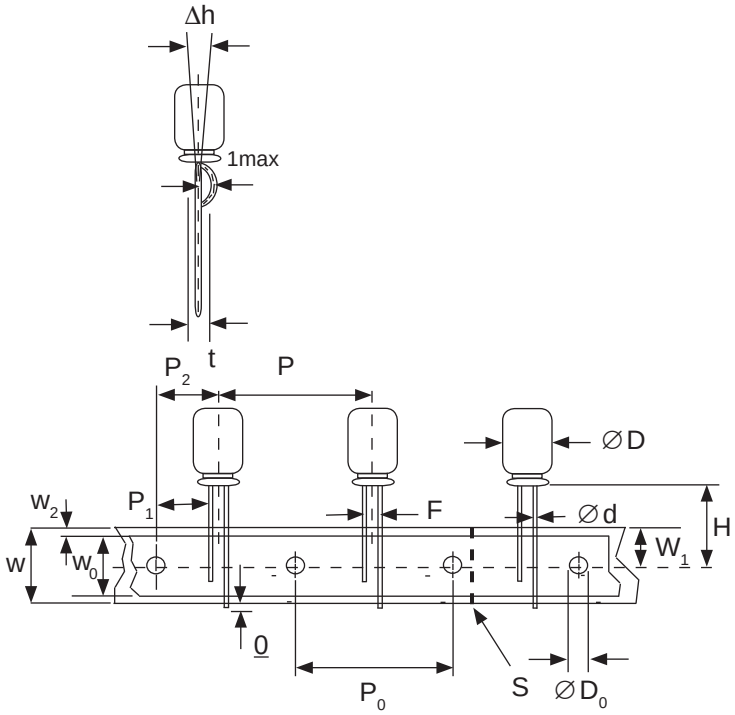
Case Dia. (Dϕ)	4	5		6.3		8
Case Size / Dim.	4x5 4x7	5x5 5x7	5x11	6.3x5 6.3x7	6.3x11	8x11.5
dϕ ±0.05	0.45	0.45	0.5	0.45	0.5	0.6
H ±0.75	17.5	17.5	18.5	17.5	18.5	20.0
F +0.8 ~ -0.2	5.0 -02 ~ +0.8					
P	12.7 ±1.0					
P_0	12.7 ±0.2					
P_1	3.85 ±0.5 (at end of tape)					
P_2	6.35 ±1.0					
W	18.0 ±0.5					
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 Suffix: TB12.7MMP)		
12.5mm diameter available with P dim. = 15mm, P_1= 5.0mm, P_0 = 15.0mm & P_2 = 7.5mm (P/N Suffix: TB15MMP)		

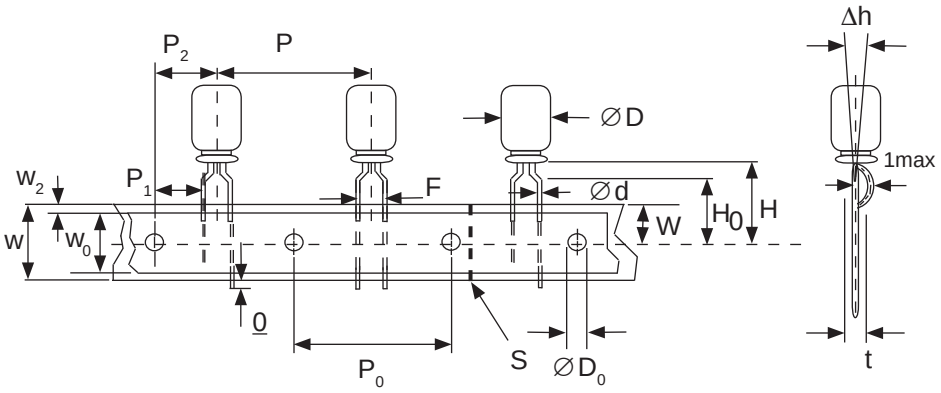


NOTE: ANODE (+) LEAD FEEDS OFF FIRST. FOR OPTION OF NEGATIVE (–) LEAD FIRST, SPECIFY "TBN".

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		

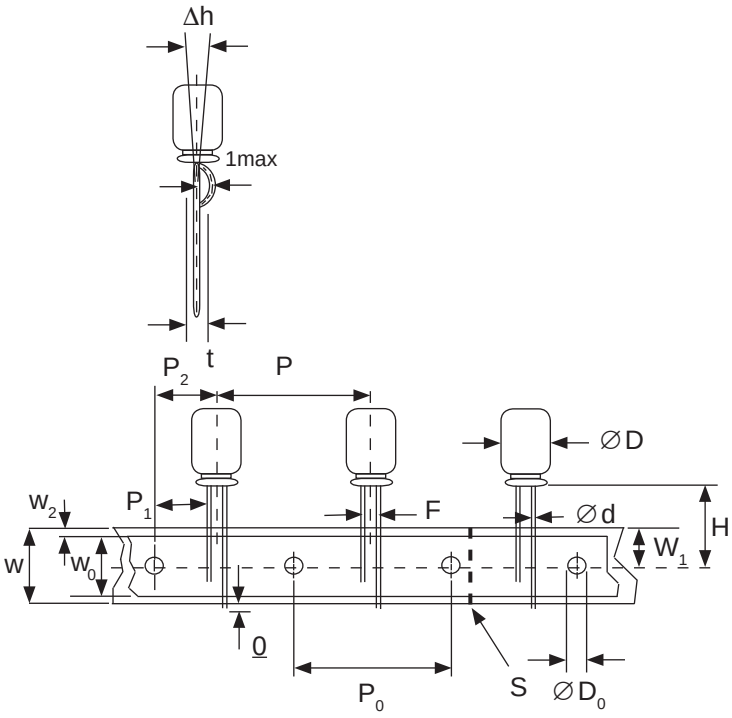


SPECIAL STRAIGHT LEAD TAPING TBST

Taping Dimensions (mm)

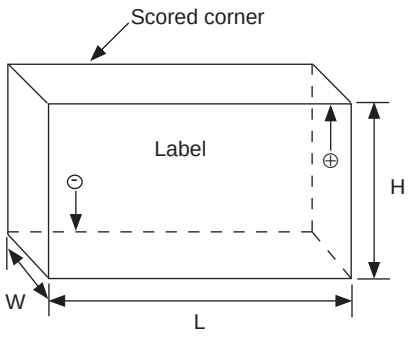
Case Dia. (Dϕ)	4	5		6.3		8
Case Size Dim.	4x5 4x7	5x5 5x7	5x11	6.3x5 6.3x7	6.3x11	8x11.5
dϕ ±0.05	0.45	0.45	0.5	0.45	0.5	0.6
H ±0.75	17.5	17.5	18.5	17.5	18.5	20.0
F +0.8 ~ -0.2	2.0*	2.0	2.0	2.5	2.5	3.5
P ±1.0	12.7 ±0.2					
P_0	12.7 ±0.2					
P_1	5.1	5.1	5.1	5.1	5.1	4.6
P_2	6.35 ±1.0					
W	18.0 ±0.5					
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 flare 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