

HIGH TEMPERATURE, EXTENDED LOAD LIFE, RADIAL LEADS, POLARIZED

FEATURES

- HIGH RIPPLE CURRENT AT HIGH TEMPERATURE (+105°C)
- IDEAL FOR HIGH VOLTAGE LIGHTING BALLAST
- LONG LIFE 8,000 ~ 12,000 HOURS (500WV: 10,000 HOURS)
- REDUCED SIZE (FROM NRBX)

**RoHS
Compliant**
includes all homogeneous materials

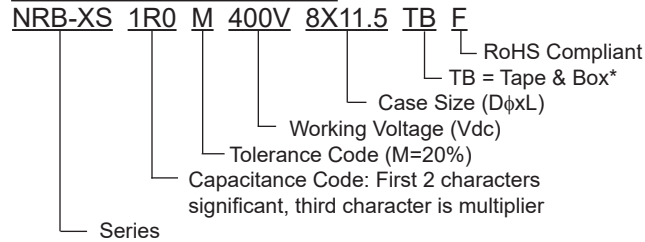
*See Part Number System for Details



CHARACTERISTICS

| | | | | | | | | |
|--|-----------------------|--|------|------|--|------|------|------|
| Rated Voltage Range | | 160 ~ 500VDC | | | | | | |
| Capacitance Range | | 1.0 ~ 220 μ F | | | | | | |
| Operating Temperature Range | | -25°C ~ +105°C | | | | | | |
| Capacitance Tolerance | | \pm 20% (M) | | | | | | |
| Maximum Leakage Current @ +20°C | | CV \leq 1,000 | | | CV > 1,000 | | | |
| | | 0.1CV +40 μ A (1 minute) 0.03CV +15 μ A (5 minutes) | | | 0.04CV +100 μ A (1 minute) 0.02CV +25 μ A (5 minutes) | | | |
| Max. Tan δ at 120Hz/20°C | W.V. (Vdc) | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
| | S.V. (Vdc) | 200 | 250 | 300 | 400 | 450 | 500 | 550 |
| | Tan δ | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.24 |
| Low Temperature Stability Impedance Ratio @ 120Hz | Z-25°C/Z+20°C | 3 | 3 | 3 | 6 | 6 | 6 | 6 |
| Load Life at W.V. & 105°C 8x11.5mm, 10x12.5mm: 8,000 Hours 10x16mm, 10x20mm: 10,000 Hours ϕ D \geq 12.5mm: 12,000 Hours* *500W.V.: 10,000 Hours | Δ Capacitance | Within \pm 20% of initial measured value | | | | | | |
| | Δ Tan δ | Less than 200% of specified value | | | | | | |
| | Δ LC | Less than specified value | | | | | | |

PART NUMBER SYSTEM



*see taping specifications for details

PRECAUTIONS

Please review the notes on correct use, safety and precautions found at <https://www.niccomp.com/resource/files/aluminum/AlumApplInfoCautions.pdf>
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: tpmg@niccomp.com



STANDARD PRODUCT AND CASE SIZE TABLE DφxL (mm)

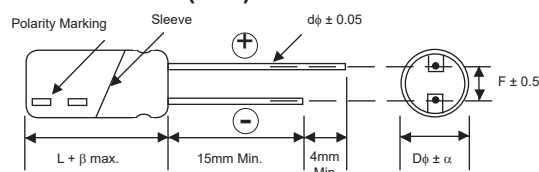
| Cap. (μF) | Code | Working Voltage (Vdc) | | | | | | |
|-----------|------|-----------------------|---------|---------|---------|---------|---------|---------|
| | | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
| 1.0 | 1R0 | - | - | - | - | 8X11.5 | - | - |
| | | | | | | 10X12.5 | | |
| 1.5 | 1R5 | - | - | - | - | 8X11.5 | - | - |
| | | | | | | 10X12.5 | | |
| 1.8 | 1R8 | - | - | - | - | 8X11.5 | - | - |
| | | | | | | 10X12.5 | | |
| 2.2 | 2R2 | - | - | - | - | 8X11.5 | - | - |
| | | | | | | 10X12.5 | | |
| 3.3 | 3R3 | - | - | - | - | 10X12.5 | - | - |
| | | | | | | 10X16 | | |
| 4.7 | 4R7 | - | - | 8X11.5 | 10X12.5 | 10X16 | 10X16 | - |
| | | | | | | | 10X20 | |
| 5.6 | 5R6 | - | - | - | 10X12.5 | 10X16 | 10X16 | - |
| | | | | | | | 10X20 | |
| 6.8 | 6R8 | - | - | 10X12.5 | 10X16 | 10X16 | 10X16 | - |
| | | | | | | | 10X20 | |
| 8.2 | 8R2 | - | - | - | - | - | 10X20 | - |
| | | | | | | | 10X20 | |
| 10 | 100 | 10X16 | 10X16 | 10X16 | 10X20 | 10X20 | 10X20 | 12.5X20 |
| | | | | | | | 12.5X16 | |
| | | | | | | | 12.5X20 | |
| 15 | 150 | - | - | - | - | 12.5X20 | 12.5X20 | 12.5X25 |
| | | | | | | | 12.5X25 | |
| | | | | | | | 16X16 | |
| 22 | 220 | 10X20 | 10X20 | 10X16 | 12.5X20 | 12.5X25 | 12.5X25 | 12.5X35 |
| | | | | 10X20 | | | | |
| | | | | 16X20 | | | | |
| 33 | 330 | 10X20 | 10X20 | 12.5X16 | 16X20 | 16X20 | 16X20 | 16X31.5 |
| | | | | 12.5X20 | | | | |
| | | | | 16X25 | | | | |
| 47 | 470 | 10X20 | 12.5X20 | 12.5X20 | 16X20 | 16X25 | 18X25 | 18X31.5 |
| | | | | | | | 18X20 | |
| | | | | | | | 18X20 | |
| 56 | 560 | - | - | 12.5X20 | - | - | - | - |
| | | | | 18X16 | | | | |
| 68 | 680 | 12.5x20 | 12.5x25 | 12.5X25 | 18x25 | 18x25 | - | - |
| | | | 16x20 | | | | | |
| 82 | 820 | - | 16x20 | 12.5X30 | 18x25 | - | - | - |
| | | | | 16x20 | | | | |
| 100 | 101 | 12.5x25 | 16x20 | 16x25 | - | - | - | - |
| | | 16x20 | | | | | | |
| 120 | 121 | - | - | 18X20 | - | - | - | - |
| 150 | 151 | 16x25 | 16x25 | 18x25 | - | - | - | - |
| 220 | 221 | 18x25 | - | - | - | - | - | - |

Special items, 100uF @ 400VDC / 10x16mm and 100uF @ 450VDC / 10x16mm are available under special order, contact NIC to review your requirements

LEAD SPACING AND DIAMETER (mm)

| Case Dia. (Dφ) | 8 | 10 | 12.5 | 16 | 18 |
|------------------|-----|-----|------|-----|-----|
| Lead Dia. (Dφ) | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| Lead Spacing (F) | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| Dim. α | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Dim. β | 2.0 | 2.0 | 2.0 | 2.0 | 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 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 | |
|------------------------|-----------|------------|--------------------------------|--|--------------------------|-------------------------|--------|
| NRB-XS100M160V10X16F | 10 | 160 | 0.15 | 320 | 24.9 | 10,000 | |
| NRB-XS220M160V10X20F | 22 | | 0.15 | 500 | 11.3 | 10,000 | |
| NRB-XS330M160V10X20F | 33 | | 0.15 | 650 | 7.54 | 10,000 | |
| NRB-XS470M160V10X20F | 47 | | 0.15 | 750 | 5.29 | 10,000 | |
| NRB-XS680M160V12.5x20F | 68 | | 0.15 | 1180 | 3.66 | 12,000 | |
| NRB-XS101M160V12.5x25F | 100 | | 0.15 | 1420 | 2.49 | 12,000 | |
| NRB-XS101M160V16x20F | 100 | | 0.15 | 1420 | 2.49 | 12,000 | |
| NRB-XS151M160V16x25F | 150 | | 0.15 | 1890 | 1.66 | 12,000 | |
| NRB-XS221M160V18x25F | 220 | | 0.15 | 2370 | 1.13 | 12,000 | |
| NRB-XS100M200V10X16F | 10 | 200 | 0.15 | 320 | 24.9 | 10,000 | |
| NRB-XS220M200V10X20F | 22 | | 0.15 | 500 | 11.3 | 10,000 | |
| NRB-XS330M200V10X20F | 33 | | 0.15 | 650 | 7.54 | 10,000 | |
| NRB-XS470M200V12.5X20F | 47 | | 0.15 | 980 | 5.29 | 12,000 | |
| NRB-XS680M200V12.5x25F | 68 | | 0.15 | 1300 | 3.66 | 12,000 | |
| NRB-XS680M200V16x20F | 68 | | 0.15 | 1300 | 3.66 | 12,000 | |
| NRB-XS820M200V16x20F | 82 | | 0.15 | 1380 | 3.03 | 12,000 | |
| NRB-XS101M200V16x20F | 100 | | 0.15 | 1420 | 2.49 | 12,000 | |
| NRB-XS151M200V16x25F | 150 | | 0.15 | 1890 | 1.66 | 12,000 | |
| NRB-XS4R7M250V8X11.5F | 4.7 | 250 | 0.15 | 160 | 52.9 | 8,000 | |
| NRB-XS6R8M250V10X12.5F | 6.8 | | 0.15 | 250 | 36.6 | 8,000 | |
| NRB-XS100M250V10X16F | 10 | | 0.15 | 320 | 24.9 | 8,000 | |
| NRB-XS220M250V10X16V | 22 | | 0.15 | 470 | 11.3 | 10,000 | |
| NRB-XS220M250V10X20F | 22 | | 0.15 | 500 | 11.3 | 10,000 | |
| NRB-XS330M250V12.5X16F | 33 | | 0.15 | 760 | 7.54 | 12,000 | |
| NRB-XS330M250V12.5X20F | 33 | | 0.15 | 800 | 7.54 | 12,000 | |
| NRB-XS470M250V12.5X20F | 47 | | 0.15 | 980 | 5.29 | 12,000 | |
| NRB-XS560M250V12.5X20F | 56 | | 0.15 | 1080 | 4.45 | 12,000 | |
| NRB-XS560M250V18X16F | 56 | | 0.15 | 960 | 4.45 | 12,000 | |
| NRB-XS680M250V12.5X25F | 68 | | 0.15 | 1300 | 3.66 | 12,000 | |
| NRB-XS680M250V16x20F | 68 | | 0.15 | 1300 | 3.66 | 12,000 | |
| NRB-XS820M250V12.5X30F | 82 | | 0.15 | 1500 | 3.03 | 12,000 | |
| NRB-XS820M250V16x20F | 82 | | 0.15 | 1440 | 3.03 | 12,000 | |
| NRB-XS101M250V16x25F | 100 | | 0.15 | 1530 | 2.49 | 12,000 | |
| NRB-XS101M250V18X20F | 100 | | 0.15 | 1440 | 2.49 | 12,000 | |
| NRB-XS121M250V18X20F | 120 | | 0.15 | 1500 | 2.08 | 12,000 | |
| NRB-XS151M250V18x25F | 150 | | 0.15 | 1940 | 1.66 | 12,000 | |
| NRB-XS4R7M350V10X12.5F | 4.7 | | 350 | 0.20 | 150 | 70.6 | 8,000 |
| NRB-XS5R6M350V10X12.5 | 5.6 | | | 0.20 | 180 | 59.2 | 8,000 |
| NRB-XS6R8M350V10X16F | 6.8 | | | 0.20 | 280 | 48.8 | 10,000 |
| NRB-XS100M350V10X20F | 10 | 0.20 | | 350 | 33.2 | 10,000 | |
| NRB-XS220M350V12.5X20F | 22 | 0.20 | | 650 | 15.1 | 12,000 | |
| NRB-XS330M350V16X20F | 33 | 0.20 | | 900 | 10.1 | 12,000 | |
| NRB-XS470M350V16X20F | 47 | 0.20 | | 1080 | 7.06 | 12,000 | |
| NRB-XS680M350V18x25F | 68 | 0.20 | | 1470 | 4.88 | 12,000 | |
| NRB-XS820M350V18x25F | 82 | 0.20 | | 1530 | 4.05 | 12,000 | |
| NRB-XS1R0M400V8X11.5F | 1.0 | 400 | | 0.20 | 60 | 332 | 8,000 |
| NRB-XS1R0M400V10X12.5F | 1.0 | | | 0.20 | 70 | 332 | 8,000 |
| NRB-XS1R5M400V8X11.5F | 1.5 | | | 0.20 | 90 | 221 | 8,000 |
| NRB-XS1R5M400V10X12.5F | 1.5 | | 0.20 | 100 | 221 | 8,000 | |
| NRB-XS1R8M400V8X11.5F | 1.8 | | 0.20 | 95 | 184 | 8,000 | |
| NRB-XS1R8M400V10X12.5F | 1.8 | | 0.20 | 120 | 184 | 8,000 | |
| NRB-XS2R2M400V8X11.5F | 2.2 | | 0.20 | 95 | 151 | 8,000 | |
| NRB-XS2R2M400V10X12.5F | 2.2 | | 0.20 | 140 | 151 | 8,000 | |
| NRB-XS3R3M400V10X12.5F | 3.3 | | 0.20 | 150 | 101 | 8,000 | |
| NRB-XS3R3M400V10X16F | 3.3 | | 0.20 | 180 | 101 | 10,000 | |
| NRB-XS4R7M400V10X16F | 4.7 | | 0.20 | 220 | 70.6 | 10,000 | |
| NRB-XS5R6M400V10X16F | 5.6 | | 0.20 | 250 | 59.2 | 10,000 | |
| NRB-XS6R8M400V10X16F | 6.8 | | 0.20 | 280 | 48.8 | 10,000 | |

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 | |
|------------------------|-----------|------------|--------------------------------|--|--------------------------|-------------------------|--------|
| NRB-XS100M400V10X20F | 10 | 400 | 0.20 | 350 | 33.2 | 10,000 | |
| NRB-XS150M400V12.5X20F | 15 | | 0.20 | 550 | 22.1 | 12,000 | |
| NRB-XS220M400V12.5X25F | 22 | | 0.20 | 760 | 15.1 | 12,000 | |
| NRB-XS220M400V16X20F | | | 0.20 | 760 | 15.1 | 12,000 | |
| NRB-XS330M400V16X20F | 33 | | 0.20 | 900 | 10.1 | 12,000 | |
| NRB-XS470M400V16X25F | 47 | | 0.20 | 1180 | 7.06 | 12,000 | |
| NRB-XS470M400V18X20F | | | 0.20 | 1180 | 7.06 | 12,000 | |
| NRB-XS680M400V18X25F | 68 | | 0.20 | 1470 | 4.88 | 12,000 | |
| NRB-XS4R7M450V10X16F | 4.7 | | 450 | 0.20 | 180 | 70.6 | 10,000 |
| NRB-XS4R7M450V10X20F | 4.7 | | | 0.20 | 220 | 70.6 | 10,000 |
| NRB-XS5R6M450V10X16F | 5.6 | 0.20 | | 200 | 59.2 | 10,000 | |
| NRB-XS5R6M450V10X20F | 5.6 | 0.20 | | 250 | 59.2 | 10,000 | |
| NRB-XS6R8M450V10X16F | 6.8 | 0.20 | | 230 | 48.8 | 10,000 | |
| NRB-XS6R8M450V10X20F | 6.8 | 0.20 | | 280 | 48.8 | 10,000 | |
| NRB-XS8R2M450V10X20F | 8.2 | 0.20 | | 280 | 40.5 | 10,000 | |
| NRB-XS100M450V10X20F | 10 | 0.20 | | 330 | 33.2 | 10,000 | |
| NRB-XS100M450V12.5X16F | 10 | 0.20 | | 360 | 33.2 | 12,000 | |
| NRB-XS100M450V12.5X20F | 10 | 0.20 | | 450 | 33.2 | 12,000 | |
| NRB-XS150M450V12.5X20F | 15 | 0.20 | | 450 | 22.1 | 12,000 | |
| NRB-XS150M450V12.5X25F | 15 | 0.20 | | 600 | 22.1 | 12,000 | |
| NRB-XS150M450V16X16F | 15 | 0.20 | | 600 | 22.1 | 12,000 | |
| NRB-XS220M450V12.5X25F | 22 | 0.20 | | 600 | 15.1 | 12,000 | |
| NRB-XS220M450V16X20F | 22 | 0.20 | | 730 | 15.1 | 12,000 | |
| NRB-XS330M450V16X20F | 33 | 0.20 | | 730 | 10.1 | 12,000 | |
| NRB-XS330M450V16X25F | 33 | 0.20 | | 980 | 10.1 | 12,000 | |
| NRB-XS330M450V18X20F | 33 | 0.20 | | 780 | 10.1 | 12,000 | |
| NRB-XS470M450V18X25F | 47 | 0.20 | 1200 | 7.06 | 12,000 | | |
| NRB-XS100M500V12.5X20F | 10 | 500 | 0.24 | 320 | 39.8 | 10,000 | |
| NRB-XS150M500V12.5X25F | 15 | | 0.24 | 440 | 26.6 | 10,000 | |
| NRB-XS150M500V16X20F | 15 | | 0.24 | 440 | 26.6 | 10,000 | |
| NRB-XS220M500V12.5X35F | 22 | | 0.24 | 560 | 18.1 | 10,000 | |
| NRB-XS220M500V16X25F | 22 | | 0.24 | 560 | 18.1 | 10,000 | |
| NRB-XS220M500V18X20F | 22 | | 0.24 | 560 | 18.1 | 10,000 | |
| NRB-XS330M500V16X31.5F | 33 | | 0.24 | 700 | 12.1 | 10,000 | |
| NRB-XS330M500V18X25F | 33 | | 0.24 | 700 | 12.1 | 10,000 | |
| NRB-XS470M500V18X31.5F | 47 | | 0.24 | 880 | 8.47 | 10,000 | |

RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

| Cap. (μF) | 120Hz | 1KHz | 10KHz | 100KHz ~ up |
|-----------|-------|------|-------|-------------|
| 1 ~ 4.7 | 0.2 | 0.4 | 0.8 | 1.0 |
| 6.8 ~ 15 | 0.3 | 0.6 | 0.9 | 1.0 |
| 22 ~ 82 | 0.4 | 0.7 | 0.9 | 1.0 |
| 100 ~ 220 | 0.45 | 0.75 | 0.9 | 1.0 |