

HIGH TEMPERATURE, EXTENDED LOAD LIFE, RADIAL LEADS, POLARIZED

### FEATURES

- HIGH RIPPLE CURRENT
- LONG LIFE AT HIGH TEMPERATURE

### CHARACTERISTICS

|                                                      |                       |                                                 |      |      |      |      |      |
|------------------------------------------------------|-----------------------|-------------------------------------------------|------|------|------|------|------|
| Rated Voltage Range                                  |                       | 200 ~ 450VDC                                    |      |      |      |      |      |
| Capacitance Range                                    |                       | 33 ~ 560 $\mu$ F                                |      |      |      |      |      |
| Operating Temperature Range                          |                       | -25°C ~ +105°C                                  |      |      |      |      |      |
| Capacitance Tolerance                                |                       | $\pm 20\%$ (M)                                  |      |      |      |      |      |
| Maximum Leakage Current @ +20°C                      |                       | 3 x $\sqrt{CV}$ after 5 minute at rated voltage |      |      |      |      |      |
| Max. Tan $\delta$ at 120Hz/20°C                      | W.V. (Vdc)            | 200                                             | 220  | 250  | 400  | 420  | 450  |
|                                                      | S.V. (Vdc)            | 250                                             | 270  | 300  | 450  | 470  | 500  |
|                                                      | Tan $\delta$          | 0.20                                            | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 |
| Low Temperature Stability Impedance Ratio @ 120Hz    |                       | Z-25°C/Z+20°C                                   | 3    | 3    | 3    | 8    | 8    |
| Load Life at W.V. & 105°C<br>All Sizes: 10,000 Hours | $\Delta$ Capacitance  | Within $\pm 20\%$ of initial measured value     |      |      |      |      |      |
|                                                      | $\Delta$ Tan $\delta$ | Less than 200% of specified value               |      |      |      |      |      |
|                                                      | $\Delta$ LC           | Less than specified value                       |      |      |      |      |      |



### MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA AT 120Hz AND 105°C)

| Cap. ( $\mu$ F) | Working Voltage (Vdc) |      |      |      |     |     |
|-----------------|-----------------------|------|------|------|-----|-----|
|                 | 200                   | 220  | 250  | 400  | 420 | 450 |
| 33              | -                     | -    | -    | -    | -   | 370 |
| 39              | -                     | -    | -    | -    | 390 | 420 |
| 47              | -                     | -    | -    | 440  | 450 | 480 |
|                 |                       |      |      |      | 460 | 440 |
| 56              | -                     | -    | -    | 500  | 520 | 510 |
|                 |                       |      |      |      | 460 |     |
| 68              | -                     | -    | -    | 580  | 550 | 590 |
|                 |                       |      |      | 510  |     | 570 |
| 82              | -                     | -    | -    | 610  | 630 | 680 |
|                 |                       |      |      | 610  | 560 | 650 |
| 100             | -                     | -    | 690  | 740  | 730 | 740 |
|                 |                       |      |      | 740  | 670 |     |
| 120             | -                     | 740  | 790  | 800  | 770 | 830 |
|                 |                       |      | 740  | 790  |     |     |
| 150             | 800                   | 860  | 920  | 910  | 900 | 950 |
|                 |                       | 800  | 890  |      |     |     |
| 180             | 920                   | 940  | 950  | 1040 | -   | -   |
|                 | 850                   |      | 880  |      |     |     |
| 220             | 1010                  | 1010 | 1110 | -    | -   | -   |
|                 | 1000                  | 940  | 1100 |      |     |     |
| 270             | 1180                  | 1190 | 1270 | -    | -   | -   |
|                 | 1160                  | 1130 | 1230 |      |     |     |
| 330             | 1310                  | 1300 | 1420 | -    | -   | -   |
|                 | 1300                  |      |      |      |     |     |
| 390             | 1430                  | 1490 | 1590 | -    | -   | -   |
| 470             | 1580                  | 1690 | -    | -    | -   | -   |
| 560             | 1770                  | -    | -    | -    | -   | -   |

### MAXIMUM ESR ( $\Omega$ AT 120Hz AND 20°C)

| Cap. ( $\mu$ F) | Working Voltage (Vdc) |           |
|-----------------|-----------------------|-----------|
|                 | 200 ~ 400             | 420 ~ 450 |
| 33              | -                     | 12.57     |
| 39              | -                     | 10.63     |
| 47              | 7.06                  | 8.82      |
| 56              | 5.92                  | 7.40      |
| 68              | 4.99                  | 6.10      |
| 82              | 4.05                  | 5.06      |
| 100             | 3.32                  | 4.15      |
| 120             | 2.76                  | 3.46      |
| 150             | 2.21                  | 2.76      |
| 180             | 1.84                  | -         |
| 220             | 1.51                  | -         |
| 270             | 1.23                  | -         |
| 330             | 1.01                  | -         |
| 390             | 0.85                  | -         |
| 470             | 0.71                  | -         |
| 560             | 0.59                  | -         |

### PART NUMBER SYSTEM

NRB-XW 101 M 250V 12.5X30 F

Series      Capacitance Code: First 2 characters significant, third character is multiplier      Tolerance Code (M=20%)      Working Voltage (Vdc)      Case Size (D $\phi$  x L)      RoHS Compliant

### RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

| Voltage Rating | 60 (50)Hz | 120Hz | 500Hz | 1KHz | 10KHz ~ up |
|----------------|-----------|-------|-------|------|------------|
| 200 ~ 250Vdc   | 0.8       | 1.0   | 1.20  | 1.30 | 1.40       |
| 400 ~ 450Vdc   | 0.8       | 1.0   | 1.25  | 1.40 | 1.50       |

### 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 PRODUCT AND CASE SIZE TABLE D  $\phi$  x L (mm)**

| Cap. ( $\mu$ F) | Code | Working Voltage (Vdc) |                  |                  |                  |                  |                 |
|-----------------|------|-----------------------|------------------|------------------|------------------|------------------|-----------------|
|                 |      | 200                   | 220              | 250              | 400              | 420              | 450             |
| 33              | 330  | -                     | -                | -                | -                | -                | 12.5x30         |
| 39              | 390  | -                     | -                | -                | -                | 12.5x30          | 12.5x35         |
| 47              | 470  | -                     | -                | -                | 12.5x30          | 12.5x35          | 2.5x40<br>16x25 |
| 56              | 560  | -                     | -                | -                | 12.5x35          | 12.5x40<br>16x25 | 16x30           |
| 68              | 680  | -                     | -                | -                | 12.5x40<br>16x25 | 16x30            | 16x35<br>18x25  |
| 82              | 820  | -                     | -                | -                | 16x30<br>18x25   | 16x35<br>18x25   | 16x40<br>18x30  |
| 100             | 101  | -                     | -                | 12.5x30          | 16x35<br>18x30   | 16x40<br>18x30   | 18x35           |
| 120             | 121  | -                     | 12.5x30          | 12.5x35<br>16x25 | 16x40<br>18x35   | 18x35            | 18x40           |
| 150             | 151  | 12.5x30               | 12.5x35<br>16x25 | 12.5x40<br>16x30 | 18x40            | 18x40            | 18x45           |
| 180             | 181  | 12.5x35<br>16x25      | 16x30            | 16x30<br>18x25   | 18x45            | -                | -               |
| 220             | 221  | 16x30<br>18x25        | 16x30<br>18x25   | 16x35<br>18x30   | -                | -                | -               |
| 270             | 271  | 16x35<br>18x30        | 16x35<br>18x30   | 16x40<br>18x35   | -                | -                | -               |
| 330             | 331  | 16x40<br>18x30        | 18x35            | 18x40            | -                | -                | -               |
| 390             | 391  | 18x35                 | 18x40            | 18x45            | -                | -                | -               |
| 470             | 471  | 18x40                 | 18x45            | -                | -                | -                | -               |
| 560             | 561  | 18x45                 | -                | -                | -                | -                | -               |

**LEAD SPACING AND DIAMETER (mm)**

| Case Dia. (D $\phi$ ) | 12.5 | 16  | 18  |
|-----------------------|------|-----|-----|
| Lead Dia. (D $\phi$ ) | 0.6  | 0.8 | 0.8 |
| Lead Spacing (F)      | 5.0  | 7.5 | 7.5 |
| Dim. $\alpha$         | 0.5  | 0.5 | 0.5 |
| Dim. $\beta$          | 2.5  | 2.5 | 2.5 |

