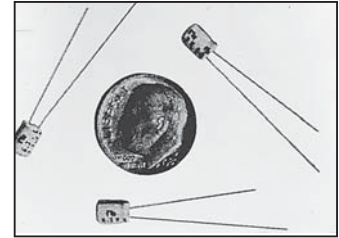


### FEATURES

- LOW PROFILE 5mm HEIGHT
- SPACE SAVING AT COMPETITIVE PRICING

**RoHS Compliant**  
includes all homogeneous materials

\*See Part Number System for Details



### CHARACTERISTICS

|                                                      |              |                                     |                                           |                                                                                     |      |      |                   |      |      |
|------------------------------------------------------|--------------|-------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|------|------|-------------------|------|------|
| Rated Voltage Range                                  |              | 4 ~ 50Vdc                           |                                           |  |      |      |                   |      |      |
| Capacitance Range                                    |              | 10 ~ 470μF                          |                                           |                                                                                     |      |      |                   |      |      |
| Operating Temperature Range                          |              | -40 ~ +85°C                         |                                           |                                                                                     |      |      |                   |      |      |
| Capacitance Tolerance                                |              | ±20%(M)                             |                                           |                                                                                     |      |      |                   |      |      |
| Max. Leakage Current @ 20°C                          | After 1 min. | 0.01CV or 3μA, whichever is greater |                                           |                                                                                     |      |      |                   |      |      |
| Max. Tan δ @ 120Hz/+20°C                             |              | W.V. (Vdc)                          | 4                                         | 6.3                                                                                 | 10   | 16   | 25                | 35   | 50   |
|                                                      |              | S.V. (Vdc)                          | 5                                         | 8                                                                                   | 13   | 20   | 32                | 44   | 63   |
|                                                      |              | Tan δ                               | 0.35                                      | 0.24                                                                                | 0.20 | 0.16 | 0.14<br>(8φ=0.15) | 0.12 | 0.10 |
| Low Temperature Stability<br>Impedance Ratio @ 120Hz |              | Z-25°C/Z+20°C                       | 7                                         | 4                                                                                   | 3    | 2    | 2                 | 2    | 2    |
|                                                      |              | Z-40°C/Z+20°C                       | 15                                        | 10                                                                                  | 8    | 6    | 4                 | 4    | 4    |
| Load Life Test at Rated W.V.<br>+85°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)

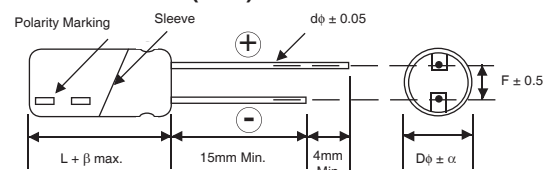
| Cap. (μF) | Code | Working Voltage (Vdc) |       |       |       |       |       |       |
|-----------|------|-----------------------|-------|-------|-------|-------|-------|-------|
|           |      | 4                     | 6.3   | 10    | 16    | 25    | 35    | 50    |
| 10        | 100  | -                     | -     | -     | -     | -     | -     | 6.3x5 |
| 22        | 220  | -                     | -     | -     | -     | 6.3x5 | 6.3x5 | 6.3x5 |
| 33        | 330  | -                     | -     | -     | 6.3x5 | 6.3x5 | 6.3x5 | -     |
| 47        | 470  | -                     | -     | 6.3x5 | 6.3x5 | 6.3x5 | 6.3x5 | -     |
| 100       | 101  | -                     | 6.3x5 | 6.3x5 | 6.3x5 | 8x5   | -     | -     |
| 220       | 221  | 6.3x5                 | 6.3x5 | 6.3x5 | -     | -     | -     | -     |
| 330       | 331  | 6.3x5                 | 6.3x5 | -     | -     | -     | -     | -     |
| 470       | 471  | 8x5                   | -     | -     | -     | -     | -     | -     |

### LEAD SPACING AND DIAMETER (mm)

|                  |     |     |
|------------------|-----|-----|
| Case Dia. (Dφ)   | 6.3 | 8*  |
| Lead Dia. (dφ)   | 0.5 | 0.6 |
| Lead Spacing (F) | 2.5 | 3.5 |
| Dim. α           | 0.5 | 0.5 |
| dim. β           | 1.5 | 1.5 |

\*LEAD SPACING OF 8x5mm SIZE IS 2.5mm.

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

| Part Number       | Cap.<br>( $\mu$ F) | W.V.<br>(Vdc) | Dissipation Factor<br>+20°C/120Hz | Ripple Current Rating (mA)<br>+85°C/120Hz | Max. ESR ( $\Omega$ )<br>+20°C/120Hz | Load Life Hours<br>@ +85°C |
|-------------------|--------------------|---------------|-----------------------------------|-------------------------------------------|--------------------------------------|----------------------------|
| NSR221M4V6.3x5F   | 220                | 4             | 0.35                              | 82                                        | 2.60                                 | 1,000                      |
| NSR331M4V6.3x5F   | 330                |               | 0.35                              | 85                                        | 1.80                                 | 1,000                      |
| NSR471M4V8x5F     | 470                |               | 0.35                              | 145                                       | 1.23                                 | 1,000                      |
| NSR101M6.3V6.3x5F | 100                | 6.3           | 0.24                              | 71                                        | 4.00                                 | 1,000                      |
| NSR221M6.3V6.3x5F | 220                |               | 0.24                              | 90                                        | 1.80                                 | 1,000                      |
| NSR331M6.3V6.3x5F | 330                |               | 0.24                              | 92                                        | 1.20                                 | 1,000                      |
| NSR470M10V6.3x5F  | 47                 | 10            | 0.20                              | 59                                        | 7.10                                 | 1,000                      |
| NSR101M10V6.3x5F  | 100                |               | 0.20                              | 76                                        | 3.30                                 | 1,000                      |
| NSR221M10V6.3x5F  | 220                |               | 0.20                              | 90                                        | 1.50                                 | 1,000                      |
| NSR330M16V6.3x5F  | 33                 | 16            | 0.16                              | 57                                        | 8.00                                 | 1,000                      |
| NSR470M16V6.3x5F  | 47                 |               | 0.16                              | 68                                        | 5.60                                 | 1,000                      |
| NSR101M16V6.3x5F  | 100                |               | 0.16                              | 86                                        | 2.70                                 | 1,000                      |
| NSR220M25V6.3x5F  | 22                 | 25            | 0.14                              | 52                                        | 10.6                                 | 1,000                      |
| NSR330M25V6.3x5F  | 33                 |               | 0.14                              | 63                                        | 7.00                                 | 1,000                      |
| NSR470M25V6.3x5F  | 47                 |               | 0.14                              | 73                                        | 4.90                                 | 1,000                      |
| NSR101M25V8x5F    | 100                |               | 0.15                              | 110                                       | 2.49                                 | 1,000                      |
| NSR220M35V6.3x5F  | 22                 | 35            | 0.12                              | 54                                        | 9.00                                 | 1,000                      |
| NSR330M35V6.3x5F  | 33                 |               | 0.12                              | 68                                        | 6.00                                 | 1,000                      |
| NSR470M35V6.3x5F  | 47                 |               | 0.12                              | 73                                        | 4.20                                 | 1,000                      |
| NSR100M50V6.3x5F  | 10                 | 50            | 0.10                              | 34                                        | 16.6                                 | 1,000                      |
| NSR220M50V6.3x5F  | 22                 |               | 0.10                              | 54                                        | 7.50                                 | 1,000                      |

### RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

| Frequency (Hz)       |       | 120  | 1K   | 10K  | 100K |
|----------------------|-------|------|------|------|------|
| Correction<br>Factor | 6.3x5 | 1.00 | 1.15 | 1.20 | 1.25 |
|                      | 8x5   | 1.00 | 1.13 | 1.15 | 1.20 |

### PART NUMBER SYSTEM

