

VERY LOW IMPEDANCE(LOWER THAN NRSZ) AT HIGH FREQUENCY  
RADIAL LEADS, POLARIZED ALUMINUM ELECTROLYTIC CAPACITORS

### FEATURES

- VERY LOW IMPEDANCE
- LONG LIFE AT 105°C (2000 ~ 7000 hrs.)
- HIGH STABILITY AT LOW TEMPERATURE
- IDEALLY FOR SWITCHING POWER SUPPLIES
- MEETS THE REQUIREMENTS OF AEC-Q200\*

\*Contact NIC for supporting test data

### CHARACTERISTICS

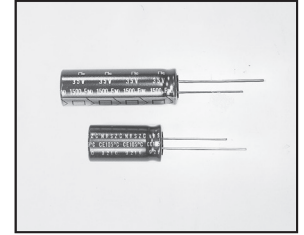
|                                                                                                                                                     |                    |                                           |      |      |      |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------|------|------|------|------|
| Rated Voltage Range                                                                                                                                 | 6.3 ~ 35VDC        |                                           |      |      |      |      |
| Capacitance Range                                                                                                                                   | 47 ~ 18,000μF      |                                           |      |      |      |      |
| Operating Temperature Range                                                                                                                         | -55 ~ +105°C       |                                           |      |      |      |      |
| Capacitance Tolerance                                                                                                                               | ±20% (M)           |                                           |      |      |      |      |
| Max. Leakage Current @ 20°C after 2 min.                                                                                                            | 0.01CV             |                                           |      |      |      |      |
| Max. Tanδ ~ 120Hz/20°C                                                                                                                              | W.V. (VDC)         | 6.3                                       | 10   | 16   | 25   | 35   |
|                                                                                                                                                     | S.V. (VDC)         | 8                                         | 13   | 20   | 32   | 44   |
|                                                                                                                                                     | C < 1,000μF        | 0.22                                      | 0.19 | 0.16 | 0.14 | 0.12 |
|                                                                                                                                                     | C = 1,800μF        | 0.22                                      | 0.19 | 0.16 | 0.14 | 0.12 |
|                                                                                                                                                     | C = 2,200μF        | 0.24                                      | -    | 0.18 | 0.16 | 0.14 |
|                                                                                                                                                     | C = 2,700μF        | 0.24                                      | 0.21 | 0.18 | 0.16 | 0.14 |
|                                                                                                                                                     | C = 3,300μF        | -                                         | -    | 0.20 | 0.18 | 0.16 |
|                                                                                                                                                     | C = 3,900μF        | 0.26                                      | 0.23 | 0.20 | 0.18 | 0.16 |
|                                                                                                                                                     | C = 4,700μF        | 0.28                                      | 0.26 | 0.22 | -    | 0.18 |
|                                                                                                                                                     | C = 5,600μF        | 0.30                                      | 0.27 | 0.24 | 0.22 | -    |
|                                                                                                                                                     | C = 6,800μF        | 0.32                                      | 0.29 | 0.26 | 0.24 | -    |
|                                                                                                                                                     | C = 8,200μF        | 0.36                                      | 0.33 | 0.30 | -    | -    |
|                                                                                                                                                     | C = 10,000μF       | 0.40                                      | 0.37 | 0.34 | -    | -    |
|                                                                                                                                                     | C = 12,000μF       | 0.44                                      | 0.41 | -    | -    | -    |
| C = 15,000μF                                                                                                                                        | 0.50               | 0.47                                      | -    | -    | -    |      |
| C = 18,000μF                                                                                                                                        | 0.56               | -                                         | -    | -    | -    |      |
| Low Temperature Stability Impedance Ratio @ 120Hz                                                                                                   | Z-25°C/Z+20°C      | 3                                         | 2    | 2    | 2    | 2    |
|                                                                                                                                                     | Z-40°C/Z+20°C      | 4                                         | 4    | 3    | 3    | 3    |
| Load Life Test at Rated W.V. & 105°C<br>7,000 Hours: 16 ~ 18φ<br>5,000 hours: 12.5φ<br>4,000 hours: 10φ<br>3,000 hours: 8φ<br>2,000 hours: 5 ~ 6.3φ | Capacitance Change | Within ±25% of initial measured value     |      |      |      |      |
|                                                                                                                                                     | Tanδ               | Less than 200% of specified maximum value |      |      |      |      |
|                                                                                                                                                     | Leakage Current    | Less than specified maximum value         |      |      |      |      |
| Shelf Life Test<br>105°C for 1,000 hours<br>No Load                                                                                                 | Capacitance Change | Within ±20% of initial measured value     |      |      |      |      |
|                                                                                                                                                     | Tanδ               | Less than 200% of specified maximum value |      |      |      |      |
|                                                                                                                                                     | Leakage Current    | Less than specified maximum value         |      |      |      |      |

RoHS

Compliant

includes all homogeneous materials

\*See Part Number System for Details



### PART NUMBER SYSTEM

NRSZC 102 M 16V 10X16 TB Y F

Series      Capacitance Code: First 2 characters significant, third character is multiplier      Tolerance Code (M=20%)      Working Voltage (Vdc)      Case Size (Dφ x L)      TB = Tape & Box\*      RoHS Compliant

\*see taping specifications for details

Optional: For automotive equipment, sourced to special production and inspection at TS-16949 certified production site

### 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](mailto:tpmg@niccomp.com)



NIC COMPONENTS CORP.

[www.niccomp.com](http://www.niccomp.com)

SPECIFICATIONS ARE SUBJECT TO CHANGE

### STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS

| Part Number           | Cap.<br>(μF) | W.V.<br>(Vdc) | Max.<br>Tanδ | Max. LC<br>(μA) | Max. Impedance | Max. Ripple Current at<br>100KHz/105°C<br>(mA rms) | Load Life Hours<br>@ +105°C |
|-----------------------|--------------|---------------|--------------|-----------------|----------------|----------------------------------------------------|-----------------------------|
|                       |              |               |              |                 | 100KHz/20°C    |                                                    |                             |
| NRSZC181M6.3V5x11F    | 180          | 6.3           | 0.22         | 11.3            | 0.340          | 205                                                | 2,000                       |
| NRSZC331M6.3V6.3x11F  | 330          |               | 0.22         | 20.8            | 0.170          | 330                                                | 2,000                       |
| NRSZC391M6.3V6.3x11F  | 390          |               | 0.22         | 24.6            | 0.170          | 330                                                | 2,000                       |
| NRSZC681M6.3V8x11.5F  | 680          |               | 0.22         | 42.8            | 0.110          | 580                                                | 3,000                       |
| NRSZC102M6.3V8x15F    | 1000         |               | 0.22         | 63.0            | 0.080          | 750                                                | 3,000                       |
| NRSZC122M6.3V8x20F    | 1200         |               | 0.22         | 75.6            | 0.060          | 1000                                               | 3,000                       |
| NRSZC122M6.3V10x12.5F |              |               | 0.22         | 75.6            | 0.063          | 900                                                | 4,000                       |
| NRSZC152M6.3V8x20F    | 1500         |               | 0.22         | 94.5            | 0.060          | 1000                                               | 3,000                       |
| NRSZC152M6.3V10x16F   |              |               | 0.22         | 94.5            | 0.049          | 1200                                               | 4,000                       |
| NRSZC222M6.3V10x20F   | 2200         |               | 0.24         | 138.6           | 0.036          | 1450                                               | 4,000                       |
| NRSZC272M6.3V10x22F   | 2700         |               | 0.24         | 170.1           | 0.036          | 1500                                               | 4,000                       |
| NRSZC392M6.3V12.5x20F | 3900         |               | 0.26         | 245.7           | 0.035          | 1660                                               | 5,000                       |
| NRSZC472M6.3V12.5x25F | 4700         |               | 0.28         | 296.1           | 0.027          | 2000                                               | 5,000                       |
| NRSZC562M6.3V12.5x25F | 5600         |               | 0.30         | 352.8           | 0.027          | 2000                                               | 5,000                       |
| NRSZC562M6.3V16x21F   |              |               | 0.30         | 352.8           | 0.032          | 2000                                               | 7,000                       |
| NRSZC682M6.3V12.5x30F | 6800         |               | 0.32         | 428.4           | 0.24           | 2450                                               | 5,000                       |
| NRSZC682M6.3V16x25F   |              |               | 0.32         | 428.4           | 0.022          | 2560                                               | 7,000                       |
| NRSZC822M6.3V16x25F   | 8200         |               | 0.36         | 516.6           | 0.022          | 2560                                               | 7,000                       |
| NRSZC103M6.3V16x25F   | 10000        |               | 0.40         | 630.0           | 0.17           | 3010                                               | 7,000                       |
| NRSZC103M6.3V18x25F   |              |               | 0.40         | 630.0           | 0.022          | 2740                                               | 7,000                       |
| NRSZC123M6.3V16x35.5F | 12000        |               | 0.44         | 756.0           | 0.016          | 3150                                               | 7,000                       |
| NRSZC123M6.3V18x30.5F |              |               | 0.44         | 756.0           | 0.17           | 3330                                               | 7,000                       |
| NRSZC153M6.3V18x35.5F | 15000        |               | 0.50         | 945.0           | 0.016          | 3680                                               | 7,000                       |
| NRSZC151M10V5x11F     | 150          | 10            | 0.19         | 15.0            | 0.340          | 205                                                | 2,000                       |
| NRSZC271M10V6.3x11F   | 270          |               | 0.19         | 27.0            | 0.170          | 330                                                | 2,000                       |
| NRSZC471M10V8x11.5F   | 470          |               | 0.19         | 47.0            | 0.110          | 580                                                | 3,000                       |
| NRSZC561M10V8x11.5F   | 560          |               | 0.19         | 56.0            | 0.110          | 580                                                | 3,000                       |
| NRSZC681M10V8x15F     | 680          |               | 0.19         | 68.0            | 0.080          | 750                                                | 3,000                       |
| NRSZC821M10V10x12.5F  | 820          |               | 0.19         | 82.0            | 0.063          | 900                                                | 4,000                       |
| NRSZC102M10V8x20F     | 1000         |               | 0.19         | 100.0           | 0.060          | 1000                                               | 3,000                       |
| NRSZC102M10V10x16F    |              |               | 0.19         | 100.0           | 0.049          | 1200                                               | 4,000                       |
| NRSZC122M10V10x16F    | 1200         |               | 0.19         | 120.0           | 0.049          | 1200                                               | 4,000                       |
| NRSZC152M10V10x20F    | 1500         |               | 0.19         | 150.0           | 0.036          | 1450                                               | 4,000                       |
| NRSZC182M10V10x22F    | 1800         |               | 0.19         | 180.0           | 0.036          | 1500                                               | 4,000                       |
| NRSZC272M10V12.5x20F  | 2700         |               | 0.21         | 270.0           | 0.035          | 1660                                               | 5,000                       |
| NRSZC392M10V12.5x25F  | 3900         |               | 0.23         | 390.0           | 0.027          | 2000                                               | 5,000                       |
| NRSZC392M10V16x21F    |              |               | 0.23         | 390.0           | 0.032          | 2000                                               | 7,000                       |
| NRSZC472M10V12.5x30F  | 4700         |               | 0.25         | 470.0           | 0.024          | 2450                                               | 5,000                       |
| NRSZC472M10V16x25F    |              |               | 0.25         | 470.0           | 0.022          | 2560                                               | 7,000                       |
| NRSZC562M10V16x25F    | 5600         |               | 0.27         | 560.0           | 0.022          | 2560                                               | 7,000                       |
| NRSZC562M10V18x21F    |              |               | 0.27         | 560.0           | 0.030          | 2490                                               | 7,000                       |
| NRSZC682M10V16x31.5F  | 6800         |               | 0.29         | 680.0           | 0.017          | 3010                                               | 7,000                       |
| NRSZC682M10V18x25F    |              |               | 0.29         | 680.0           | 0.022          | 2740                                               | 7,000                       |
| NRSZC822M10V16x31.5F  | 8200         |               | 0.33         | 820.0           | 0.017          | 3010                                               | 7,000                       |
| NRSZC103M10V16x35.5F  | 10000        |               | 0.37         | 1000            | 0.016          | 3150                                               | 7,000                       |
| NRSZC103M10V18x30.5F  |              |               | 0.37         | 1000            | 0.017          | 3330                                               | 7,000                       |
| NRSZC123M10V18x35.5F  | 12000        | 0.41          | 1200         | 0.016           | 3680           | 7,000                                              |                             |

For Automotive Applications see part number system

### STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS

| Part Number          | Cap.<br>(μF) | W.V.<br>(Vdc) | Max.<br>Tanδ | Max. LC<br>(μA) | Max. Impedance | Max. Ripple Current at<br>100KHz/105°C<br>(mA rms) | Load Life Hours<br>@ +105°C |
|----------------------|--------------|---------------|--------------|-----------------|----------------|----------------------------------------------------|-----------------------------|
|                      |              |               |              |                 | 100KHz/20°C    |                                                    |                             |
| NRSZC101M16V5x11F    | 100          | 16            | 0.16         | 16.0            | 0.340          | 205                                                | 2,000                       |
| NRSZC181M16V6.3x11F  | 180          |               | 0.16         | 28.8            | 0.170          | 330                                                | 2,000                       |
| NRSZC331M16V8x11.5F  | 330          |               | 0.16         | 52.8            | 0.110          | 580                                                | 3,000                       |
| NRSZC471M16V8x15F    | 470          |               | 0.16         | 75.2            | 0.080          | 750                                                | 3,000                       |
| NRSZC561M16V10x12.5F | 560          |               | 0.16         | 89.6            | 0.063          | 900                                                | 4,000                       |
| NRSZC681M16V8X20F    | 680          |               | 0.16         | 108.8           | 0.060          | 1000                                               | 3,000                       |
| NRSZC821M16V10X16F   | 820          |               | 0.16         | 131.2           | 0.049          | 1200                                               | 4,000                       |
| NRSZC102M16V10X20F   | 1000         |               | 0.16         | 160.0           | 0.036          | 1450                                               | 4,000                       |
| NRSZC122M16V10X22F   | 1200         |               | 0.16         | 192.0           | 0.036          | 1500                                               | 4,000                       |
| NRSZC152M16V12.5X20F | 1500         |               | 0.16         | 240.0           | 0.035          | 1660                                               | 5,000                       |
| NRSZC182M16V12.5X20F | 1800         |               | 0.16         | 288.0           | 0.035          | 1660                                               | 5,000                       |
| NRSZC222M16V12.5X25F | 2200         |               | 0.18         | 352.0           | 0.027          | 2000                                               | 5,000                       |
| NRSZC272M16V12.5X25F | 2700         |               | 0.18         | 432.0           | 0.027          | 2000                                               | 5,000                       |
| NRSZC272M16V16X21F   |              |               | 0.18         | 432.0           | 0.032          | 2000                                               | 7,000                       |
| NRSZC332M16V12.5x30F | 3300         |               | 0.20         | 528.0           | 0.024          | 2450                                               | 5,000                       |
| NRSZC332M16V16x25F   |              |               | 0.20         | 528.0           | 0.022          | 2560                                               | 7,000                       |
| NRSZC332M16V18x21F   |              |               | 0.20         | 528.0           | 0.030          | 2490                                               | 7,000                       |
| NRSZC392M16V16x25F   | 3900         |               | 0.20         | 624.0           | 0.022          | 2560                                               | 7,000                       |
| NRSZC472M16V16x31.5F | 4700         |               | 0.22         | 752.0           | 0.017          | 3010                                               | 7,000                       |
| NRSZC472M16V18x25F   |              |               | 0.22         | 752.0           | 0.022          | 2740                                               | 7,000                       |
| NRSZC562M16V16x31.5F | 5600         |               | 0.24         | 896.0           | 0.017          | 3010                                               | 7,000                       |
| NRSZC682M16V16x35.5F | 6800         |               | 0.26         | 1088            | 0.016          | 3150                                               | 7,000                       |
| NRSZC822M16V18x35.5F | 8200         |               | 0.30         | 1312            | 0.016          | 3680                                               | 7,000                       |
| NRSZC680M25V5x11F    | 68           | 25            | 0.14         | 17.0            | 0.340          | 205                                                | 2,000                       |
| NRSZC121M25V6.3x11F  | 120          |               | 0.14         | 30.0            | 0.170          | 330                                                | 2,000                       |
| NRSZC221M25V8x11.5F  | 220          |               | 0.14         | 55.0            | 0.110          | 580                                                | 3,000                       |
| NRSZC331M25V8x15F    | 330          |               | 0.14         | 82.5            | 0.080          | 750                                                | 3,000                       |
| NRSZC391M25V10x12.5F | 390          |               | 0.14         | 97.5            | 0.063          | 900                                                | 4,000                       |
| NRSZC471M25V8x20F    | 470          |               | 0.14         | 117.5           | 0.060          | 1000                                               | 3,000                       |
| NRSZC561M25V10x16F   | 560          |               | 0.14         | 140.0           | 0.049          | 1200                                               | 4,000                       |
| NRSZC681M25V10x20F   | 680          |               | 0.14         | 170.0           | 0.036          | 1450                                               | 4,000                       |
| NRSZC821M25V10x20F   | 820          |               | 0.14         | 205.0           | 0.036          | 1450                                               | 4,000                       |
| NRSZC102M25V10x22F   | 1000         |               | 0.14         | 250.0           | 0.036          | 1500                                               | 4,000                       |
| NRSZC122M25V12.5x20F | 1200         |               | 0.14         | 300.0           | 0.035          | 1660                                               | 5,000                       |
| NRSZC182M25V12.5x25F | 1800         |               | 0.14         | 450.0           | 0.027          | 2000                                               | 5,000                       |
| NRSZC182M25V16x25F   |              |               | 0.14         | 450.0           | 0.032          | 2000                                               | 7,000                       |
| NRSZC222M25V12.5x30F | 2200         |               | 0.16         | 550.0           | 0.024          | 2450                                               | 5,000                       |
| NRSZC222M25V18x21F   |              |               | 0.16         | 550.0           | 0.030          | 2490                                               | 7,000                       |
| NRSZC272M25V16x25F   | 2700         |               | 0.16         | 675.0           | 0.022          | 2560                                               | 7,000                       |
| NRSZC332M25V16x31.5F | 3300         |               | 0.18         | 825.0           | 0.017          | 3010                                               | 7,000                       |
| NRSZC332M25V18x25F   |              |               | 0.18         | 825.0           | 0.022          | 2740                                               | 7,000                       |
| NRSZC392M25V16x35.5F | 3900         |               | 0.18         | 975.0           | 0.016          | 3150                                               | 7,000                       |
| NRSZC392M25V18x30.5F |              |               | 0.18         | 975.0           | 0.017          | 3330                                               | 7,000                       |
| NRSZC562M25V18x35.5F | 5600         |               | 0.22         | 1400            | 0.016          | 3680                                               | 7,000                       |

For Automotive Applications see part number system

### STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS

| Part Number          | Cap.<br>(μF) | W.V.<br>(Vdc) | Max.<br>Tanδ | Max. LC<br>(μA) | Max. Impedance | Max. Ripple Current at<br>100KHz/105°C<br>(mA rms) | Load Life Hours<br>@ +105°C |
|----------------------|--------------|---------------|--------------|-----------------|----------------|----------------------------------------------------|-----------------------------|
|                      |              |               |              |                 | 100KHz/20°C    |                                                    |                             |
| NRSZC470M35V5x11F    | 47           | 35            | 0.12         | 16.5            | 0.340          | 205                                                | 2,000                       |
| NRSZC101M35V6.3x11F  | 100          |               | 0.12         | 35.0            | 0.170          | 330                                                | 2,000                       |
| NRSZC151M35V8x11.5F  | 150          |               | 0.12         | 52.5            | 0.110          | 580                                                | 3,000                       |
| NRSZC221M35V8x15F    | 220          |               | 0.12         | 77.0            | 0.080          | 750                                                | 3,000                       |
| NRSZC271M35V10x12.5F | 270          |               | 0.12         | 94.5            | 0.063          | 900                                                | 4,000                       |
| NRSZC331M35V8x20F    | 330          |               | 0.12         | 115.5           | 0.060          | 1000                                               | 3,000                       |
| NRSZC331M35V10x16F   |              |               | 0.12         | 115.5           | 0.049          | 1200                                               | 4,000                       |
| NRSZC391M35V10x16F   | 390          |               | 0.12         | 136.5           | 0.049          | 1200                                               | 4,000                       |
| NRSZC471M35V10x20F   | 470          |               | 0.12         | 164.5           | 0.036          | 1450                                               | 4,000                       |
| NRSZC561M35V10x20F   | 560          |               | 0.12         | 196.0           | 0.036          | 1450                                               | 4,000                       |
| NRSZC681M35V10x22F   | 680          |               | 0.12         | 238.0           | 0.036          | 1500                                               | 4,000                       |
| NRSZC821M35V12.5x20F | 820          |               | 0.12         | 287.0           | 0.035          | 1660                                               | 5,000                       |
| NRSZC122M35V12.5x25F | 1200         |               | 0.12         | 420.0           | 0.027          | 2000                                               | 5,000                       |
| NRSZC122M35V16x21F   |              |               | 0.12         | 420.0           | 0.032          | 2000                                               | 7,000                       |
| NRSZC152M35V12.5x30F | 1500         |               | 0.12         | 525.0           | 0.024          | 2450                                               | 5,000                       |
| NRSZC152M35V18x21F   |              |               | 0.12         | 525.0           | 0.030          | 2490                                               | 7,000                       |
| NRSZC182M35V16x25F   | 1800         |               | 0.12         | 630.0           | 0.022          | 2560                                               | 7,000                       |
| NRSZC222M35V18x25F   | 2200         |               | 0.14         | 770.0           | 0.022          | 2740                                               | 7,000                       |
| NRSZC272M35V16x31.5F | 2700         |               | 0.14         | 945.0           | 0.017          | 3010                                               | 7,000                       |
| NRSZC332M35V16x35.5F | 3300         |               | 0.16         | 1155            | 0.016          | 3150                                               | 7,000                       |
| NRSZC392M35V18x35.5F | 3900         |               | 0.16         | 1365            | 0.016          | 3680                                               | 7,000                       |

For Automotive Applications see part number system

### RIPPLE CURRENT CORRECTION FACTORS

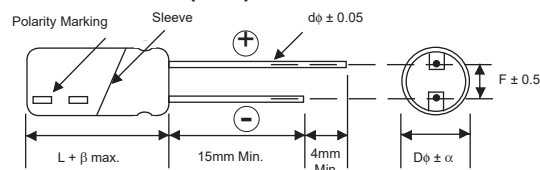
| Frequency (Hz) | Cap. (μF)    | 120  | 1K   | 10K  | 100K |
|----------------|--------------|------|------|------|------|
| Multiplier     | 47 ~ 68      | 0.50 | 0.80 | 1.00 | 1.00 |
|                | 100 ~ 220    | 0.55 | 0.85 | 1.00 | 1.00 |
|                | 270 ~ 1000   | 0.65 | 0.90 | 1.00 | 1.00 |
|                | 1200 ~ 18000 | 0.75 | 0.90 | 1.00 | 1.00 |

### LEAD SPACING AND DIAMETER (mm)

| Case Dia. (Dφ)   | 5   | 6.3 | 8   | 10  | 12.5 | 12.5x30 | 16  | 18  |
|------------------|-----|-----|-----|-----|------|---------|-----|-----|
| Lead Dia. (dφ)   | 0.5 | 0.5 | 0.6 | 0.6 | 0.6  | 0.8     | 0.8 | 0.8 |
| Lead Spacing (F) | 2.0 | 2.5 | 3.5 | 5.0 | 5.0  | 5.0     | 7.5 | 7.5 |
| Dim. α           | 0.5 |     |     |     |      |         |     |     |

$\beta = L < 20\text{mm} = 1.5\text{mm}$ ,  $L \geq 20\text{mm} = 2.0\text{mm}$

### 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.