

# Miniature Aluminum Electrolytic Capacitors

NRSH Series

HIGH TEMPERATURE, EXTENDED LOAD LIFE, RADIAL LEADS, POLARIZED

## FEATURES

- IMPROVED ENDURANCE AT HIGH TEMPERATURE (up to 10,000HRS @ 105°C)
- LOW IMPEDANCE & HIGH RIPPLE CURRENT RATINGS
- NEW REDUCED SIZES
- 63V ~ 100V PARTS MEET THE REQUIREMENTS OF AEC-Q200\*

**EXPANDED!**  
**63V ~ 100V**



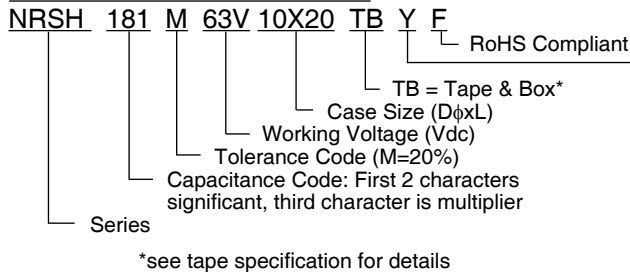
\*Contact NIC for supporting test data. Application review by NIC is required before using NRSH parts in automotive applications.

## CHARACTERISTICS

|   |                                    |   |      |      |      |      |      |      |      |      |
|---|------------------------------------|---|------|------|------|------|------|------|------|------|
| Rated Voltage Range                               | 6.3 ~ 100VDC                       |   |      |      |      |      |      |      |      |      |
| Capacitance Range                                 | 8.2 ~ 8,200µF                      |   |      |      |      |      |      |      |      |      |
| Operating Temperature Range                       | -40°C ~ +105°C                     |   |      |      |      |      |      |      |      |      |
| Capacitance Tolerance                             | ±20% (M)                           |   |      |      |      |      |      |      |      |      |
| Maximum Leakage Current After 2 minutes           | 0.01CV or 3µA whichever is greater |   |      |      |      |      |      |      |      |      |
| Max. Tan δ at 120Hz/20°C                          | W.V. (Vdc)                         | 6.3   | 10   | 16   | 25   | 35   | 50   | 63   | 80   | 100  |
|   | S.V. (Vdc)                         | 8   | 13   | 20   | 32   | 44   | 63   | 79   | 100  | 125  |
|   | C ≤ 1,000µF                        | 0.22  | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 |
|   | C = 1,200µF                        | 0.22  | 0.19 | 0.16 | 0.14 | 0.12 | -    | 0.09 | 0.08 | -    |
|   | C = 1,500µF                        | 0.22  | 0.19 | 0.16 | 0.14 | 0.12 | -    | 0.09 | 0.08 | -    |
|   | C = 1,800µF                        | 0.22  | 0.19 | 0.16 | 0.14 | 0.12 | -    | 0.09 | -    | -    |
|   | C = 2,200µF                        | 0.24  | 0.21 | 0.18 | 0.16 | 0.14 | -    | 0.11 | -    | -    |
|   | C = 2,700µF                        | 0.24  | 0.21 | 0.18 | 0.16 | -    | -    | -    | -    | -    |
|   | C = 3,300µF                        | 0.26  | 0.23 | 0.20 | 0.18 | -    | -    | -    | -    | -    |
|   | C = 3,900µF                        | 0.26  | 0.23 | 0.20 | -    | -    | -    | -    | -    | -    |
|   | C = 4,700µF                        | 0.28  | 0.25 | 0.22 | -    | -    | -    | -    | -    | -    |
|   | C = 5,600µF                        | 0.30  | 0.27 | -    | -    | -    | -    | -    | -    | -    |
| C = 6,800µF                                       | 0.32                               | 0.29  | -    | -    | -    | -    | -    | -    | -    |      |
| C = 8,200µF                                       | 0.36                               | -   | -    | -    | -    | -    | -    | -    | -    |      |
| Low Temperature Stability Impedance Ratio @ 120Hz | Z-25°C/Z+20°C                      | 2   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
|   | Z-40°C/Z+20°C                      | 3   | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Load Life Test @ 105°C                            | Duration                           | φ D = 5 & 6.3: 6,000 hours, φ D = 8: 8,000 hours, φ D = 10≥: 10,000 hours |      |      |      |      |      |      |      |      |
|   | Δ Capacitance                      | Within ±25% of initial measured value                                     |      |      |      |      |      |      |      |      |
|   | Δ Tan δ                            | Less than 200% of specified value   |      |      |      |      |      |      |      |      |
|   | Δ LC                               | Less than specified value   |      |      |      |      |      |      |      |      |

VALUES MEETING REQUIREMENTS OF AEC-Q200

## PART NUMBERING SYSTEM



Optional for 63V ~ 100V only: 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 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 DφxL (mm)

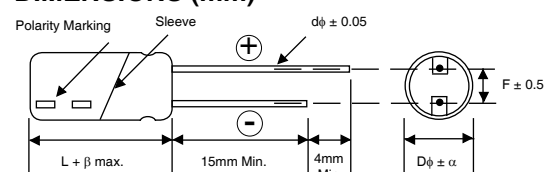
| Cap. (μF) | Code | Working Voltage (Vdc) |         |         |         |         |         |         |         |         |
|-----------|------|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|
|           |      | 6.3                   | 10      | 16      | 25      | 35      | 50      | 63      | 80      | 100     |
| 8.2       | 8R2  | -                     | -       | -       | -       | -       | -       | -       | -       | 5x11    |
| 12        | 120  | -                     | -       | -       | -       | -       | -       | -       | 5x11    | -       |
| 18        | 180  | -                     | -       | -       | -       | -       | -       | 5x11    | -       | -       |
| 27        | 270  | -                     | -       | -       | -       | -       | 5 x11   | -       | -       | -       |
| 33        | 330  | -                     | -       | -       | -       | -       | -       | -       | 6.3x11  | 8x11.5  |
| 47        | 470  | -                     | -       | -       | -       | 5x11    | -       | 6.3x11  | -       | 8x16    |
| 56        | 560  | -                     | -       | -       | -       | -       | 6.3x11  | -       | 8x11.5  | 10x12.5 |
| 68        | 680  | -                     | -       | -       | 5x11    | -       | -       | -       | 8x16    | 8x20    |
| 82        | 820  | -                     | -       | -       | -       | -       | -       | 8x11.5  | 10x12.5 | 10x16   |
| 100       | 101  | -                     | -       | 5x11    | -       | 6.3x11  | 8x11.5  | 8x16    | 8x20    | 10x20   |
| 120       | 121  | -                     | -       | -       | -       | -       | 8x16    | 10x12.5 | 10x16   | 12.5x16 |
| 150       | 151  | -                     | 5x11    | -       | 6.3x11  | -       | 10x12.5 | 8x20    | -       | 10x23   |
| 180       | 181  | -                     | -       | -       | -       | -       | 8x20    | 10x16   | 10x20   | -       |
| 220       | 221  | 5x11                  | -       | 6.3x11  | -       | 8x11.5  | 10x16   | -       | 12.5x16 | 12.5x25 |
| 270       | 271  | -                     | -       | -       | -       | 8x16    | 10x20   | 10x20   | 12.5x20 | 12.5x30 |
| 330       | 331  | -                     | 6.3x11  | -       | 8x11.5  | 10x12.5 | 10x23   | 10x23   | 12.5x20 | 16x20   |
| 390       | 391  | -                     | -       | -       | 8x16    | 8x20    | -       | 12.5x20 | 12.5x25 | 12.5x35 |
| 470       | 471  | 6.3x11                | -       | 8x11.5  | 10x12.5 | 10x16   | 12.5x20 | 12.5x25 | 12.5x30 | 12.5x40 |
| 560       | 561  | -                     | -       | -       | 8x20    | 10x20   | 12.5x25 | 12.5x30 | 16x20   | 16x25   |
| 680       | 681  | -                     | 8x11.5  | 8x16    | 10x16   | 10x23   | 12.5x30 | 12.5x35 | 16x25   | 16x40   |
| 820       | 821  | 8x11.5                | -       | -       | 10x20   | -       | 12.5x35 | 12.5x40 | 16x25   | 16x35.5 |
| 1,000     | 102  | -                     | 8x16    | 8x20    | 10x23   | 12.5x20 | 16x25   | -       | 18x20   | 18x25   |
| 1,200     | 122  | 8x16                  | -       | -       | -       | 12.5x25 | -       | 16x31   | 18x25   | 18x31.5 |
| 1,500     | 152  | 8x20                  | 8x20    | 10x20   | 12.5x20 | 12.5x30 | -       | 16x35.5 | 18x31.5 | 18x40   |
| 1,800     | 182  | 10x16                 | 10x20   | 10x23   | 12.5x25 | 12.5x35 | -       | 16x40   | 18x35.5 | -       |
| 2,200     | 222  | 10x20                 | 10x23   | 12.5x20 | 12.5x30 | 16x25   | -       | 18x40   | -       | -       |
| 2,700     | 272  | 10x23                 | -       | 12.5x25 | 12.5x35 | -       | -       | -       | -       | -       |
| 3,300     | 332  | -                     | 12.5x20 | 12.5x30 | 16x25   | -       | -       | -       | -       | -       |
| 3,900     | 392  | 12.5x20               | 12.5x25 | 12.5x35 | -       | -       | -       | -       | -       | -       |
| 4,700     | 472  | 12.5x25               | 12.5x30 | 16x25   | -       | -       | -       | -       | -       | -       |
| 5,600     | 562  | 12.5x30               | 12.5x35 | -       | -       | -       | -       | -       | -       | -       |
| 6,800     | 682  | 16x20                 | 16x25   | -       | -       | -       | -       | -       | -       | -       |
| 8,200     | 822  | 16x25                 | -       | -       | -       | -       | -       | -       | -       | -       |

### LEAD SPACING AND DIAMETER (mm)

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

β = L ≤ 16mm = 1.5mm, L ≥ 20mm = 2.0mm

### 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/100KHz | Load Life Hours @+105°C |
|----------------------|-----------|------------|--------------------------------|--|---------------------------|-------------------------|
| NRSH221M6.3V5x11F    | 220       | 6.3        | 0.22                           | 345                                      | 0.220                     | 6,000                   |
| NRSH471M6.3V6.3x11F  | 470       |            | 0.22                           | 540                                      | 0.094                     | 6,000                   |
| NRSH821M6.3V8x11.5F  | 820       |            | 0.22                           | 945                                      | 0.056                     | 8,000                   |
| NRSH122M6.3V8x16F    | 1,200     |            | 0.22                           | 1250                                     | 0.045                     | 8,000                   |
| NRSH122M6.3V10x12.5F |           |            | 0.22                           | 1330                                     | 0.039                     | 10,000                  |
| NRSH152M6.3V8x20F    | 1,500     |            | 0.22                           | 1500                                     | 0.029                     | 8,000                   |
| NRSH182M6.3V10x16F   | 1,800     |            | 0.22                           | 1760                                     | 0.028                     | 10,000                  |
| NRSH222M6.3V10x20F   | 2,200     |            | 0.24                           | 1960                                     | 0.020                     | 10,000                  |
| NRSH272M6.3V10x23F   | 2,700     |            | 0.24                           | 2250                                     | 0.018                     | 10,000                  |
| NRSH392M6.3V12.5x20F | 3,900     |            | 0.26                           | 2480                                     | 0.017                     | 10,000                  |
| NRSH472M6.3V12.5x25F | 4,700     |            | 0.28                           | 2900                                     | 0.015                     | 10,000                  |
| NRSH562M6.3V12.5x30F | 5,600     |            | 0.30                           | 3450                                     | 0.013                     | 10,000                  |
| NRSH682M6.3V16x20F   | 6,800     |            | 0.32                           | 3250                                     | 0.015                     | 10,000                  |
| NRSH682M6.3V12.5x35F |           |            | 0.32                           | 3570                                     | 0.012                     | 10,000                  |
| NRSH822M6.3V16x25F   | 8,200     |            | 0.36                           | 3630                                     | 0.013                     | 10,000                  |
| NRSH151M10V5x11F     | 150       | 10         | 0.19                           | 345                                      | 0.220                     | 6,000                   |
| NRSH331M10V6.3x11F   | 330       |            | 0.19                           | 540                                      | 0.094                     | 6,000                   |
| NRSH681M10V8x11.5F   | 680       |            | 0.19                           | 945                                      | 0.056                     | 8,000                   |
| NRSH102M10V8x16F     | 1,000     |            | 0.19                           | 1250                                     | 0.045                     | 8,000                   |
| NRSH102M10V10x12.5F  |           |            | 0.19                           | 1330                                     | 0.039                     | 10,000                  |
| NRSH152M10V8x20F     | 1,500     |            | 0.19                           | 1500                                     | 0.029                     | 8,000                   |
| NRSH152M10V10x16F    |           |            | 0.19                           | 1760                                     | 0.028                     | 10,000                  |
| NRSH182M10V10x20F    | 1,800     |            | 0.19                           | 1960                                     | 0.020                     | 10,000                  |
| NRSH222M10V10x23F    | 2,200     |            | 0.21                           | 2250                                     | 0.018                     | 10,000                  |
| NRSH332M10V12.5x20F  | 3,300     |            | 0.23                           | 2480                                     | 0.017                     | 10,000                  |
| NRSH392M10V12.5x25F  | 3,900     |            | 0.23                           | 2900                                     | 0.015                     | 10,000                  |
| NRSH472M10V12.5x30F  | 4,700     |            | 0.25                           | 3450                                     | 0.013                     | 10,000                  |
| NRSH472M10V16x20F    |           |            | 0.25                           | 3250                                     | 0.015                     | 10,000                  |
| NRSH562M10V12.5x35F  | 5,600     |            | 0.27                           | 3570                                     | 0.012                     | 10,000                  |
| NRSH682M10V16x25F    | 6,800     |            | 0.29                           | 3630                                     | 0.013                     | 10,000                  |
| NRSH101M16V5x11F     | 100       | 16         | 0.16                           | 345                                      | 0.220                     | 6,000                   |
| NRSH221M16V6.3x11F   | 220       |            | 0.16                           | 540                                      | 0.094                     | 6,000                   |
| NRSH471M16V8x11.5F   | 470       |            | 0.16                           | 945                                      | 0.056                     | 8,000                   |
| NRSH681M16V8x16F     | 680       |            | 0.16                           | 1250                                     | 0.045                     | 8,000                   |
| NRSH681M16V10x12.5F  |           |            | 0.16                           | 1330                                     | 0.039                     | 10,000                  |
| NRSH102M16V8x20F     | 1,000     |            | 0.16                           | 1500                                     | 0.029                     | 8,000                   |
| NRSH102M16V10x16F    |           |            | 0.16                           | 1760                                     | 0.028                     | 10,000                  |
| NRSH152M16V10x20F    | 1,500     |            | 0.16                           | 1960                                     | 0.020                     | 10,000                  |
| NRSH182M16V10x23F    | 1,800     |            | 0.16                           | 2250                                     | 0.018                     | 10,000                  |
| NRSH222M16V12.5x20F  | 2,200     |            | 0.18                           | 2480                                     | 0.017                     | 10,000                  |
| NRSH272M16V12.5x25F  | 2,700     |            | 0.18                           | 2900                                     | 0.015                     | 10,000                  |
| NRSH332M16V12.5x30F  | 3,300     |            | 0.20                           | 3450                                     | 0.013                     | 10,000                  |
| NRSH332M16V16x20F    |           |            | 0.20                           | 3250                                     | 0.015                     | 10,000                  |
| NRSH392M16V12.5x35F  | 3,900     |            | 0.20                           | 3570                                     | 0.012                     | 10,000                  |
| NRSH472M16V16x25F    | 4,700     |            | 0.22                           | 3630                                     | 0.013                     | 10,000                  |
| NRSH101M25V5x11F     | 68        | 25         | 0.14                           | 345                                      | 0.220                     | 6,000                   |
| NRSH151M25V6.3x11F   | 150       |            | 0.14                           | 540                                      | 0.094                     | 6,000                   |
| NRSH331M25V8x11.5F   | 330       |            | 0.14                           | 945                                      | 0.056                     | 8,000                   |
| NRSH391M25V8x16F     | 390       |            | 0.14                           | 1250                                     | 0.045                     | 8,000                   |
| NRSH471M25V10x12.5F  | 470       |            | 0.14                           | 1330                                     | 0.039                     | 10,000                  |
| NRSH561M25V8x20F     | 560       |            | 0.14                           | 1500                                     | 0.029                     | 8,000                   |
| NRSH681M25V10x16F    | 680       |            | 0.14                           | 1760                                     | 0.028                     | 10,000                  |
| NRSH821M25V10x20F    | 820       |            | 0.14                           | 1960                                     | 0.020                     | 10,000                  |
| NRSH102M25V10x23F    | 1,000     |            | 0.14                           | 2250                                     | 0.018                     | 10,000                  |
| NRSH152M25V12.5x20F  | 1,500     |            | 0.14                           | 2480                                     | 0.017                     | 10,000                  |
| NRSH182M25V12.5x25F  | 1,800     |            | 0.14                           | 2900                                     | 0.015                     | 10,000                  |
| NRSH222M25V12.5x30F  | 2,200     |            | 0.16                           | 3450                                     | 0.013                     | 10,000                  |
| NRSH222M25V16x20F    |           |            | 0.16                           | 3250                                     | 0.015                     | 10,000                  |
| NRSH272M25V12.5x35F  | 2,700     |            | 0.16                           | 3570                                     | 0.012                     | 10,000                  |
| NRSH332M25V16x25F    | 3,300     |            | 0.18                           | 3630                                     | 0.013                     | 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/100KHz | Load Life Hours @ +105°C |
|---------------------|-----------|------------|--------------------------------|--|---------------------------|--------------------------|
| NRSH470M35V5x11F    | 47        | 35         | 0.12                           | 345                                      | 0.220                     | 6,000                    |
| NRSH101M35V6.3x11F  | 100       |            | 0.12                           | 540                                      | 0.094                     | 6,000                    |
| NRSH221M35V8x11.5F  | 220       |            | 0.12                           | 945                                      | 0.056                     | 8,000                    |
| NRSH271M35V8x16F    | 270       |            | 0.12                           | 1250                                     | 0.045                     | 8,000                    |
| NRSH331M35V10x12.5F | 330       |            | 0.12                           | 1330                                     | 0.039                     | 10,000                   |
| NRSH391M35V8x20F    | 390       |            | 0.12                           | 1500                                     | 0.029                     | 8,000                    |
| NRSH471M35V10x16F   | 470       |            | 0.12                           | 1760                                     | 0.028                     | 10,000                   |
| NRSH561M35V10x20F   | 560       |            | 0.12                           | 1960                                     | 0.020                     | 10,000                   |
| NRSH681M35V10x23F   | 680       |            | 0.12                           | 2250                                     | 0.018                     | 10,000                   |
| NRSH102M35V12.5x20F | 1,000     |            | 0.12                           | 2480                                     | 0.017                     | 10,000                   |
| NRSH122M35V12.5x25F | 1,200     |            | 0.12                           | 2900                                     | 0.015                     | 10,000                   |
| NRSH152M35V12.5x30F | 1,500     |            | 0.12                           | 3450                                     | 0.013                     | 10,000                   |
| NRSH152M35V16x20F   |           |            | 0.12                           | 3250                                     | 0.015                     | 10,000                   |
| NRSH182M35V12.5x35F | 1,800     |            | 0.12                           | 3570                                     | 0.012                     | 10,000                   |
| NRSH222M35V16x25F   | 2,200     | 0.14       | 3630                           | 0.013                                    | 10,000                    |                          |
| NRSH270M50V5x11F    | 27        | 50         | 0.10                           | 238                                      | 0.340                     | 6,000                    |
| NRSH560M50V6.3x11F  | 56        |            | 0.10                           | 385                                      | 0.140                     | 6,000                    |
| NRSH101M50V8x11.5F  | 100       |            | 0.10                           | 724                                      | 0.074                     | 8,000                    |
| NRSH121M50V8x16F    | 120       |            | 0.10                           | 950                                      | 0.061                     | 8,000                    |
| NRSH151M50V10x12.5F | 150       |            | 0.10                           | 979                                      | 0.061                     | 10,000                   |
| NRSH181M50V8x20F    | 180       |            | 0.10                           | 1190                                     | 0.046                     | 8,000                    |
| NRSH221M50V10x16F   | 220       |            | 0.10                           | 1370                                     | 0.042                     | 10,000                   |
| NRSH271M50V10x20F   | 270       |            | 0.10                           | 1580                                     | 0.030                     | 10,000                   |
| NRSH331M50V10x23F   | 330       |            | 0.10                           | 1870                                     | 0.028                     | 10,000                   |
| NRSH471M50V12.5x20F | 470       |            | 0.10                           | 2050                                     | 0.027                     | 10,000                   |
| NRSH561M50V12.5x25F | 560       |            | 0.10                           | 2410                                     | 0.023                     | 10,000                   |
| NRSH681M50V12.5x30F | 680       |            | 0.10                           | 2860                                     | 0.021                     | 10,000                   |
| NRSH821M50V12.5x35F | 820       |            | 0.10                           | 2960                                     | 0.019                     | 10,000                   |
| NRSH821M50V16x20F   |           |            | 0.10                           | 2730                                     | 0.023                     | 10,000                   |
| NRSH102M50V16x25F   | 1,000     | 0.10       | 3010                           | 0.021                                    | 10,000                    |                          |
| NRSH180M63V5x11F    | 18        | 63         | 0.09                           | 173                                      | 0.88                      | 6,000                    |
| NRSH470M63V6.3x11F  | 47        |            | 0.09                           | 278                                      | 0.35                      | 6,000                    |
| NRSH820M63V8x11.5F  | 82        |            | 0.09                           | 525                                      | 0.22                      | 8,000                    |
| NRSH101M63V8x16F    | 100       |            | 0.09                           | 688                                      | 0.16                      | 8,000                    |
| NRSH121M63V10x12.5F | 120       |            | 0.09                           | 725                                      | 0.15                      | 10,000                   |
| NRSH151M63V8x20F    | 150       |            | 0.09                           | 861                                      | 0.12                      | 8,000                    |
| NRSH181M63V10x16F   | 180       |            | 0.09                           | 998                                      | 0.11                      | 10,000                   |
| NRSH271M63V10x20F   | 270       |            | 0.09                           | 1200                                     | 0.078                     | 10,000                   |
| NRSH271M63V12.5x16F | 270       |            | 0.09                           | 1200                                     | 0.082                     | 10,000                   |
| NRSH331M63V10x23F   | 330       |            | 0.09                           | 1410                                     | 0.069                     | 10,000                   |
| NRSH391M63V12.5x20F | 390       |            | 0.09                           | 1570                                     | 0.060                     | 10,000                   |
| NRSH471M63V12.5x25F | 470       |            | 0.09                           | 1990                                     | 0.043                     | 10,000                   |
| NRSH561M63V12.5x30F | 560       |            | 0.09                           | 2410                                     | 0.035                     | 10,000                   |
| NRSH561M63V16x20F   | 560       |            | 0.09                           | 2100                                     | 0.043                     | 10,000                   |
| NRSH681M63V12.5x35F | 680       |            | 0.09                           | 2620                                     | 0.033                     | 10,000                   |
| NRSH821M63V12.5x40F | 820       |            | 0.09                           | 2940                                     | 0.027                     | 10,000                   |
| NRSH821M63V16x25F   | 820       |            | 0.09                           | 2730                                     | 0.032                     | 10,000                   |
| NRSH821M63V18x20F   | 820       |            | 0.09                           | 2500                                     | 0.038                     | 10,000                   |
| NRSH122M63V16x31.5F | 1200      |            | 0.09                           | 2990                                     | 0.024                     | 10,000                   |
| NRSH122M63V18x25F   | 1200      |            | 0.09                           | 2800                                     | 0.031                     | 10,000                   |
| NRSH152M63V16x35.5F | 1500      |            | 0.09                           | 3040                                     | 0.021                     | 10,000                   |
| NRSH152M63V18x31.5F | 1500      |            | 0.09                           | 3300                                     | 0.025                     | 10,000                   |
| NRSH182M63V16x40F   | 1800      | 0.09       | 3570                           | 0.019                                    | 10,000                    |                          |
| NRSH182M63V18x35.5F | 1800      | 0.09       | 3570                           | 0.020                                    | 10,000                    |                          |
| NRSH222M63V18x40F   | 2200      | 0.11       | 3670                           | 0.018                                    | 10,000                    |                          |

VALUES MEETING REQUIREMENTS OF AEC-Q200



## 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/100KHz | Load Life Hours @ +105°C |
|----------------------|-----------|------------|--------------------------------|--|---------------------------|--------------------------|
| NRSH120M80V5x11F     | 12        | 80         | 0.08                           | 163                                      | 1.40                      | 6,000                    |
| NRSH330M80V6.3x11F   | 33        |            | 0.08                           | 267                                      | 0.57                      | 6,000                    |
| NRSH560M80V8x11.5F   | 56        |            | 0.08                           | 462                                      | 0.36                      | 8,000                    |
| NRSH680M80V8x16F     | 68        |            | 0.08                           | 585                                      | 0.25                      | 8,000                    |
| NRSH820M80V10x12.5F  | 82        |            | 0.08                           | 624                                      | 0.96                      | 10,000                   |
| NRSH101M80V8x20F     | 100       |            | 0.08                           | 735                                      | 0.19                      | 8,000                    |
| NRSH121M80V10x16F    | 120       |            | 0.08                           | 780                                      | 0.17                      | 10,000                   |
| NRSH181M80V10x20F    | 180       |            | 0.08                           | 1040                                     | 0.12                      | 10,000                   |
| NRSH181M80V12.5x16F  | 180       |            | 0.08                           | 975                                      | 0.13                      | 10,000                   |
| NRSH221M80V10x23F    | 220       |            | 0.08                           | 1170                                     | 0.11                      | 10,000                   |
| NRSH271M80V12.5x20F  | 270       |            | 0.08                           | 1430                                     | 0.085                     | 10,000                   |
| NRSH331M80V12.5x25F  | 330       |            | 0.08                           | 1620                                     | 0.060                     | 10,000                   |
| NRSH391M80V12.5x30F  | 390       |            | 0.08                           | 1950                                     | 0.058                     | 10,000                   |
| NRSH391M80V16x20F    | 390       |            | 0.08                           | 1750                                     | 0.058                     | 10,000                   |
| NRSH471M80V12.5x35F  | 470       |            | 0.08                           | 2140                                     | 0.043                     | 10,000                   |
| NRSH561M80V12.5x40F  | 560       |            | 0.08                           | 2340                                     | 0.036                     | 10,000                   |
| NRSH561M80V16x25F    | 560       |            | 0.08                           | 2210                                     | 0.044                     | 10,000                   |
| NRSH561M80V18x20F    | 560       |            | 0.08                           | 1950                                     | 0.054                     | 10,000                   |
| NRSH681M80V16x31.5F  | 680       |            | 0.08                           | 2400                                     | 0.033                     | 10,000                   |
| NRSH821M80V16x35.5F  | 820       |            | 0.08                           | 2600                                     | 0.029                     | 10,000                   |
| NRSH821M80V18x25F    | 820       |            | 0.08                           | 2270                                     | 0.038                     | 10,000                   |
| NRSH102M80V16x40F    | 1000      |            | 0.08                           | 2860                                     | 0.027                     | 10,000                   |
| NRSH102M80V18x31.5F  | 1000      |            | 0.08                           | 2470                                     | 0.031                     | 10,000                   |
| NRSH122M80V18x35.5F  | 1200      |            | 0.08                           | 2860                                     | 0.027                     | 10,000                   |
| NRSH152M80V18x40F    | 1500      |            | 0.08                           | 3510                                     | 0.026                     | 10,000                   |
| NRSH8R2M100V5x11F    | 8.2       | 100        | 0.08                           | 163                                      | 1.40                      | 6,000                    |
| NRSH180M100V6.3x11F  | 18        |            | 0.08                           | 267                                      | 0.57                      | 6,000                    |
| NRSH330M100V8x11.5F  | 33        |            | 0.08                           | 462                                      | 0.36                      | 8,000                    |
| NRSH470M100V8x16F    | 47        |            | 0.08                           | 585                                      | 0.25                      | 8,000                    |
| NRSH560M100V10x12.5F | 56        |            | 0.08                           | 624                                      | 0.23                      | 10,000                   |
| NRSH680M100V8x20F    | 68        |            | 0.08                           | 735                                      | 0.19                      | 8,000                    |
| NRSH820M100V10x16F   | 82        |            | 0.08                           | 780                                      | 0.17                      | 10,000                   |
| NRSH101M100V10x20F   | 100       |            | 0.08                           | 1040                                     | 0.12                      | 10,000                   |
| NRSH101M100V12.5x16F | 100       |            | 0.08                           | 975                                      | 0.13                      | 10,000                   |
| NRSH121M100V10x23F   | 120       |            | 0.08                           | 1170                                     | 0.11                      | 10,000                   |
| NRSH151M100V12.5x20F | 150       |            | 0.08                           | 1430                                     | 0.085                     | 10,000                   |
| NRSH221M100V12.5x25F | 220       |            | 0.08                           | 1620                                     | 0.060                     | 10,000                   |
| NRSH271M100V12.5x30F | 270       |            | 0.08                           | 1950                                     | 0.051                     | 10,000                   |
| NRSH271M100V16x20F   | 270       |            | 0.08                           | 1750                                     | 0.058                     | 10,000                   |
| NRSH331M100V12.5x35F | 330       |            | 0.08                           | 2140                                     | 0.043                     | 10,000                   |
| NRSH391M100V12.5x40F | 390       |            | 0.08                           | 2340                                     | 0.036                     | 10,000                   |
| NRSH391M100V16x25F   | 390       |            | 0.08                           | 2210                                     | 0.044                     | 10,000                   |
| NRSH391M100V18x20F   | 390       |            | 0.08                           | 1950                                     | 0.054                     | 10,000                   |
| NRSH471M100V16x31.5F | 470       |            | 0.08                           | 2400                                     | 0.033                     | 10,000                   |
| NRSH471M100V18x25F   | 470       |            | 0.08                           | 2270                                     | 0.038                     | 10,000                   |
| NRSH561M100V16x35.5F | 560       |            | 0.08                           | 2600                                     | 0.029                     | 10,000                   |
| NRSH681M100V16x40F   | 680       |            | 0.08                           | 2860                                     | 0.027                     | 10,000                   |
| NRSH681M100V18x35.5F | 680       |            | 0.08                           | 2860                                     | 0.027                     | 10,000                   |
| NRSH821M100V18x40F   | 820       |            | 0.08                           | 3510                                     | 0.026                     | 10,000                   |

## RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

| Frequency (Hz) | 120  | 1K   | 10K  | ≤100K |
|----------------|------|------|------|-------|
| 8.2 ~ 33μF     | 0.42 | 0.70 | 0.90 | 1.00  |
| 47 ~ 270μF     | 0.50 | 0.73 | 0.92 | 1.00  |
| 330 ~ 680μF    | 0.55 | 0.77 | 0.94 | 1.00  |
| 820 ~ 1800μF   | 0.60 | 0.80 | 0.96 | 1.00  |
| 2200 ~ 8200μF  | 0.70 | 0.85 | 0.98 | 1.00  |

VALUES MEETING REQUIREMENTS OF AEC-Q200



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