

# Surface Mount Aluminum Electrolytic Capacitors NASE Series

## FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- SUIT FOR HIGH TEMPERATURE REFLOW SOLDERING (UP TO 260°C)
- 2,000 HOUR LOAD LIFE @ +85°C)
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING

**SAC Alloy Compatible**  
230°C ~ 260°C

**RoHS Compliant**  
includes all homogeneous materials



## CHARACTERISTICS

|                                                    |                                    |                                                |      |      |      |      |      |
|----------------------------------------------------|------------------------------------|------------------------------------------------|------|------|------|------|------|
| Rated Voltage Rating                               | 6.3 ~ 50Vdc                        |                                                |      |      |      |      |      |
| Rated Capacitance Range                            | 1.0 ~ 1,000μF                      |                                                |      |      |      |      |      |
| Operating Temp. Range                              | -40 ~ +85°C                        |                                                |      |      |      |      |      |
| Capacitance Tolerance                              | ±20% (M)                           |                                                |      |      |      |      |      |
| Max. Leakage Current After 2 Minutes @ 20°C        | 0.01CV or 3μA whichever is greater |                                                |      |      |      |      |      |
| Tan δ @ 120Hz/20°C                                 | W.V. (Vdc)                         | 6.3                                            | 10   | 16   | 25   | 35   | 50   |
|                                                    | S.V. (Vdc)                         | 8.0                                            | 13   | 20   | 32   | 44   | 63   |
|                                                    | 4 ~ 5mm diameter & 6.3x5.5mm       | 0.26                                           | 0.22 | 0.18 | 0.16 | 0.13 | 0.12 |
|                                                    | 6.3x8mm & 8~10mm diameter          | 0.35                                           | 0.26 | 0.20 | 0.16 | 0.14 | 0.12 |
| Low Temperature Stability Impedance Ratio @ 120Hz  | W.V. (Vdc)                         | 6.3                                            | 10   | 16   | 25   | 35   | 50   |
|                                                    | Z-25°C/Z+20°C                      | 4                                              | 3    | 2    | 2    | 2    | 2    |
|                                                    | Z-40°C/Z+20°C                      | 8                                              | 8    | 4    | 4    | 3    | 3    |
| Load Life Test @ 85°C All Case Sizes = 2,000 hours | Capacitance Change                 | Within ±25% of initial measured value          |      |      |      |      |      |
|                                                    | Tan δ                              | Less than ±200% of the specified maximum value |      |      |      |      |      |
|                                                    | Leakage Current                    | Less than the specified maximum value          |      |      |      |      |      |

**LOW ESR COMPONENT**  
LIQUID ELECTROLYTE  
For Performance Data  
see [www.LowESR.com](http://www.LowESR.com)

\*See Part Number System for Details

## STANDARD VALUES AND CASE SIZES (mm)

| Cap. (μF) | Code | Working Voltage (Vdc) |                   |                   |                   |                   |                   |
|-----------|------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|           |      | 6.3                   | 10                | 16                | 25                | 35                | 50                |
| 1.0       | 1R0  | -                     | -                 | -                 | -                 | -                 | 4x5.5             |
| 2.2       | 2R2  | -                     | -                 | -                 | -                 | -                 | 4x5.5             |
| 3.3       | 3R3  | -                     | -                 | -                 | -                 | -                 | 4x5.5             |
| 4.7       | 4R7  | -                     | -                 | -                 | 4x5.5             | 4x5.5             | 4x5.5<br>5x5.5    |
| 10        | 100  | -                     | -                 | 4x5.5             | 4x5.5             | 5x5.5             | 5x5.5<br>6.3x5.5  |
| 22        | 220  | 4x5.5                 | -                 | 4x5.5<br>5x5.5    | -                 | 6.3x5.5           | 6.3x5.5           |
| 33        | 330  | -                     | 5x5.5             | 5x5.5             | 6.3x5.5           | 6.3x5.5           | 6.3x8<br>8x10.5   |
| 47        | 470  | 5x5.5                 | -                 | 5x5.5<br>6.3x5.5  | 6.3x5.5           | 6.3x8             | 8x10.5<br>10x10.5 |
| 100       | 101  | 6.3x5.5               | 6.3x5.5           | 6.3x5.5           | 6.3x8             | 8x10.5<br>10x10.5 | 8x10.5<br>10x10.5 |
| 220       | 221  | -                     | 6.3x8             | 8x10.5            | 8x10.5<br>10x10.5 | 8x10.5<br>10x10.5 | -                 |
| 330       | 331  | 6.3x8                 | 8x10.5            | 8x10.5<br>10x10.5 | 10x10.5           | -                 | -                 |
| 470       | 471  | 8x10.5                | 8x10.5<br>10x10.5 | 8x10.5<br>10x10.5 | 10x10.5           | -                 | -                 |
| 1000      | 102  | 10x10.5               | -                 | -                 | -                 | -                 | -                 |

## PART NUMBER SYSTEM

NASE 101 M 16V 6.3x5.5 N B F

Series | Capacitance Code in μF, first 2 digits are significant Third digit is no. of zeros, "R" indicates decimal for values under 10μF | Working Voltage | Tolerance Code M=20% | Size in mm | Reflow Temperature Code (see table) | Termination/Packaging Code (see table) | RoHS Compliant

## PEAK REFLOW TEMPERATURE CODES

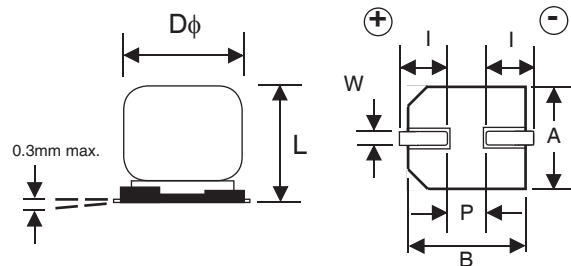
| Code | Peak Reflow Temperature |
|------|-------------------------|
| N    | 260°C                   |
| L    | 250°C                   |

## TERMINATION FINISH & PACKAGING OPTIONS CODES

| Code | Finish & Reel Size        |
|------|---------------------------|
| B    | Sn-Bi Finish & 13" Reel   |
| LB   | Sn-Bi Finish & 15" Reel   |
| S    | 100% Sn Finish & 13" Reel |
| LS   | 100% Sn Finish & 15" Reel |

## DIMENSIONS (mm) AND REEL QUANTITIES

| Case Size | φD±0.5 | L max. | A±0.2 | B±0.2 | I±0.3 | W       | P±0.3 | Qty/Reel |
|-----------|--------|--------|-------|-------|-------|---------|-------|----------|
| 4x5.5     | 4.0    | 5.5    | 4.3   | 4.3   | 1.8   | 0.5~0.8 | 1.0   | 1,500    |
| 5x5.5     | 5.0    | 5.5    | 5.3   | 5.3   | 2.2   | 0.5~0.8 | 1.4   | 1,000    |
| 6.3x5.5   | 6.3    | 5.5    | 6.6   | 6.6   | 2.7   | 0.5~0.8 | 2.2   | 1,000    |
| 6.3x8     | 6.3    | 8.0    | 6.6   | 6.6   | 2.7   | 0.5~0.8 | 2.2   | 500      |
| 8x10.5    | 8.0    | 10.5   | 8.3   | 8.3   | 2.9   | 0.7~1.1 | 3.2   | 300      |
| 10x10.5   | 10.0   | 10.5   | 10.3  | 10.3  | 3.2   | 0.8~1.4 | 4.6   | 300      |



## 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)



# Surface Mount Aluminum Electrolytic Capacitors NASE Series

## STANDARD VALUES, CASE SIZES AND SPECIFICATIONS

| NIC Part Number        | Cap.<br>( $\mu$ F) | W.V.<br>(Vdc) | Dissipation Factor<br>(Tan $\delta$ ) | Max. Ripple Current (mA)<br>+85°C/120Hz | Load Life Hours<br>@ +85°C |
|------------------------|--------------------|---------------|---------------------------------------|-----------------------------------------|----------------------------|
| NASE220M6.3V4X5.5NBF   | 22                 | 6.3           | 0.26                                  | 29                                      | 2,000                      |
| NASE470M6.3V5X5.5NBF   | 47                 |               | 0.26                                  | 46                                      | 2,000                      |
| NASE101M6.3V6.3X5.5NBF | 100                |               | 0.26                                  | 71                                      | 2,000                      |
| NASE331M6.3V6.3X8NBF   | 330                |               | 0.35                                  | 190                                     | 2,000                      |
| NASE471M6.3V8X10.5LBF  | 470                |               | 0.35                                  | 380                                     | 2,000                      |
| NASE102M6.3V10X10.5LBF | 1000               |               | 0.35                                  | 700                                     | 2,000                      |
| NASE330M10V5X5.5NBF    | 33                 | 10            | 0.22                                  | 43                                      | 2,000                      |
| NASE101M10V6.3X5.5NBF  | 100                |               | 0.22                                  | 71                                      | 2,000                      |
| NASE221M10V6.3X8NBF    | 220                |               | 0.26                                  | 175                                     | 2,000                      |
| NASE331M10V8X10.5LBF   | 330                |               | 0.26                                  | 330                                     | 2,000                      |
| NASE471M10V8X10.5LBF   | 470                |               | 0.26                                  | 380                                     | 2,000                      |
| NASE471M10V10X10.5LBF  | 470                |               | 0.26                                  | 680                                     | 2,000                      |
| NASE100M16V4X5.5NBF    | 10                 | 16            | 0.18                                  | 25                                      | 2,000                      |
| NASE220M16V4X5.5NBF    | 22                 |               | 0.18                                  | 30                                      | 2,000                      |
| NASE220M16V5X5.5NBF    | 22                 |               | 0.18                                  | 39                                      | 2,000                      |
| NASE330M16V5X5.5NBF    | 33                 |               | 0.18                                  | 43                                      | 2,000                      |
| NASE470M16V5X5.5NBF    | 47                 |               | 0.18                                  | 50                                      | 2,000                      |
| NASE470M16V6.3X5.5NBF  | 47                 |               | 0.18                                  | 60                                      | 2,000                      |
| NASE101M16V6.3X5.5NBF  | 100                |               | 0.18                                  | 86                                      | 2,000                      |
| NASE221M16V8X10.5LBF   | 220                |               | 0.20                                  | 290                                     | 2,000                      |
| NASE331M16V8X10.5LBF   | 330                |               | 0.20                                  | 330                                     | 2,000                      |
| NASE331M16V10X10.5LBF  | 330                |               | 0.20                                  | 670                                     | 2,000                      |
| NASE471M16V8X10.5LBF   | 470                |               | 0.20                                  | 385                                     | 2,000                      |
| NASE471M16V10X10.5LBF  | 470                |               | 0.20                                  | 690                                     | 2,000                      |
| NASE4R7M25V4X5.5NBF    | 4.7                | 25            | 0.16                                  | 18                                      | 2,000                      |
| NASE100M25V4X5.5NBF    | 10                 |               | 0.16                                  | 25                                      | 2,000                      |
| NASE330M25V6.3X5.5NBF  | 33                 |               | 0.16                                  | 54                                      | 2,000                      |
| NASE470M25V6.3X5.5NBF  | 47                 |               | 0.16                                  | 60                                      | 2,000                      |
| NASE101M25V6.3X8NBF    | 100                |               | 0.16                                  | 145                                     | 2,000                      |
| NASE221M25V8X10.5LBF   | 220                |               | 0.16                                  | 300                                     | 2,000                      |
| NASE221M25V10X10.5LBF  | 220                |               | 0.16                                  | 560                                     | 2,000                      |
| NASE331M25V10X10.5LBF  | 330                |               | 0.16                                  | 680                                     | 2,000                      |
| NASE471M25V10X10.5LBF  | 470                |               | 0.16                                  | 680                                     | 2,000                      |
| NASE4R7M35V4X5.5NBF    | 4.7                | 35            | 0.13                                  | 18                                      | 2,000                      |
| NASE100M35V5X5.5NBF    | 10                 |               | 0.13                                  | 30                                      | 2,000                      |
| NASE220M35V6.3X5.5NBF  | 22                 |               | 0.13                                  | 48                                      | 2,000                      |
| NASE330M35V6.3X5.5NBF  | 33                 |               | 0.13                                  | 58                                      | 2,000                      |
| NASE470M35V6.3X8NBF    | 47                 |               | 0.14                                  | 105                                     | 2,000                      |
| NASE101M35V8X10.5LBF   | 100                |               | 0.14                                  | 280                                     | 2,000                      |
| NASE101M35V10X10.5LBF  | 100                |               | 0.14                                  | 480                                     | 2,000                      |
| NASE221M35V8X10.5LBF   | 220                |               | 0.14                                  | 280                                     | 2,000                      |
| NASE221M35V10X10.5LBF  | 220                |               | 0.14                                  | 570                                     | 2,000                      |
| NASE1R0M50V4X5.5NBF    | 1.0                | 50            | 0.12                                  | 8.4                                     | 2,000                      |
| NASE2R2M50V4X5.5NBF    | 2.2                |               | 0.12                                  | 14                                      | 2,000                      |
| NASE3R3M50V4X5.5NBF    | 3.3                |               | 0.12                                  | 17                                      | 2,000                      |
| NASE4R7M50V4X5.5NBF    | 4.7                |               | 0.12                                  | 18                                      | 2,000                      |
| NASE4R7M50V5X5.5NBF    | 4.7                |               | 0.12                                  | 22                                      | 2,000                      |
| NASE100M50V5X5.5NBF    | 10                 |               | 0.12                                  | 30                                      | 2,000                      |
| NASE100M50V6.3X5.5NBF  | 10                 |               | 0.12                                  | 35                                      | 2,000                      |
| NASE220M50V6.3X5.5NBF  | 22                 |               | 0.12                                  | 48                                      | 2,000                      |
| NASE330M50V6.3X8NBF    | 33                 |               | 0.12                                  | 95                                      | 2,000                      |
| NASE330M50V8X10.5LBF   | 33                 |               | 0.12                                  | 200                                     | 2,000                      |
| NASE470M50V8X10.5LBF   | 47                 |               | 0.12                                  | 240                                     | 2,000                      |
| NASE470M50V10X10.5LBF  | 47                 |               | 0.12                                  | 280                                     | 2,000                      |
| NASE101M50V8X10.5LBF   | 100                |               | 0.12                                  | 320                                     | 2,000                      |
| NASE101M50V10X10.5LBF  | 100                |               | 0.12                                  | 500                                     | 2,000                      |



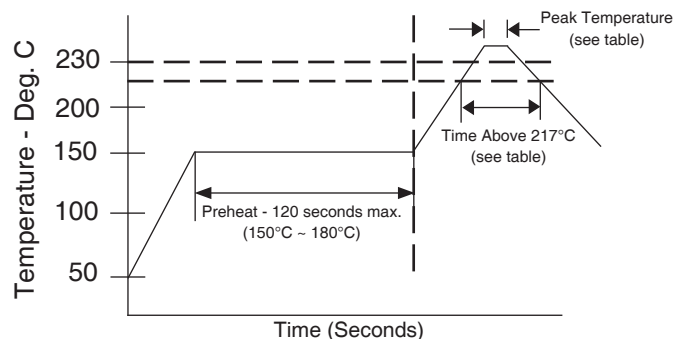
## RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

| Frequency        | 50/60Hz | 120Hz | 500Hz | 1KHz | 10KHz |
|------------------|---------|-------|-------|------|-------|
| 1 $\mu$ F        | 0.5     | 1.00  | 1.20  | 1.30 | 1.50  |
| 2.2~4.7 $\mu$ F  | 0.65    | 1.00  | 1.20  | 1.30 | 1.50  |
| 10~47 $\mu$ F    | 0.80    | 1.00  | 1.20  | 1.30 | 1.50  |
| 100~1000 $\mu$ F | 0.80    | 1.00  | 1.10  | 1.15 | 1.20  |

## PEAK REFLOW TEMPERATURE AND DURATION

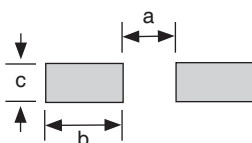
| Diameter         | Time above 217°C | Peak Temperature 5 seconds |
|------------------|------------------|----------------------------|
| 4 ~ 6.3mm $\phi$ | 60 sec. max.     | 260°C                      |
| 8 ~ 10mm $\phi$  | 60 sec. max.     | 250°C                      |

Capacitors can withstand two times reflow at the above conditions. Second reflow shall be at least one hour after natural cool to room temperature.



## RECOMMENDED LAND PATTERN DIMENSIONS (mm)

| Case Size        | a   | b   | c   |
|------------------|-----|-----|-----|
| 4x5.5            | 1.0 | 2.6 | 1.8 |
| 5x5.5            | 1.4 | 3.0 | 1.8 |
| 6x3x5.5<br>6.3x8 | 2.1 | 3.5 | 1.8 |
| 8x10.5           | 2.8 | 4.1 | 2.1 |
| 10x10.5          | 4.3 | 4.4 | 2.2 |



Review & Compare Reflow Soldering Heat Limits  
V-chip SMT Aluminum Electrolytic Capacitors  
[www.niccomp.com/RSL](http://www.niccomp.com/RSL)

# Surface Mount Aluminum Electrolytic Capacitors NASE Series

## CARRIER TAPE

| Case Size | A $\pm 0.5$ | B $\pm 0.2$ | C $\pm 0.3$ | D $\pm 0.1$ | P $\pm 0.1$ | T $\pm 0.2$ |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| 4 x 5.5   | 4.7         | 4.7         | 12.0        | 5.5         | 8.0         | 5.8         |
| 5 x 5.5   | 5.7         | 5.7         | 12.0        | 5.5         | 12.0        | 5.8         |
| 6.3 x 5.5 | 7.0         | 7.0         | 16.0        | 7.5         | 12.0        | 5.8         |
| 6.3 x 8   | 7.0         | 7.0         | 16.0        | 7.5         | 12.0        | 8.3         |
| 8 X 10.5  | 8.7         | 8.7         | 24.0        | 11.5        | 16.0        | 11.1        |
| 10 x 10.5 | 10.7        | 10.7        | 24.0        | 11.5        | 16.0        | 11.2        |

## TR13 330mm (13") REEL

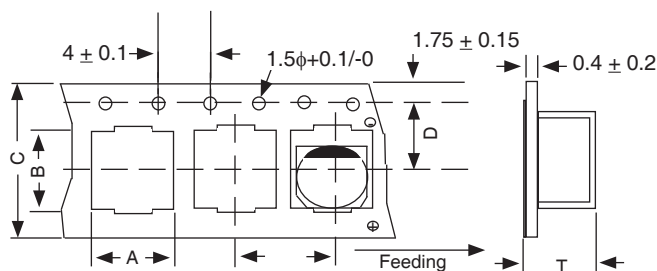
## TR15 380mm (15") REEL

| Case Size | W $\pm 1.0$ | Quantity Per Reel |           |
|-----------|-------------|-------------------|-----------|
|           |             | 13" Reel          | 15" Reel  |
| 4 x 5.5   | 14.0        | 1,500 pcs         | 2,000 pcs |
| 5 x 5.5   | 14.0        | 1,000 pcs         | -         |
| 6.3 x 5.5 | 18.0        | 1,000 pcs         | -         |
| 6.3 x 8   | 18.0        | 500 pcs           | 900 pcs   |
| 8 X 10.5  | 26.0        | 300 pcs           | 500 pcs   |
| 10 x 8    | 26.0        | 400 pcs           | 500 pcs   |

## TAPING SPECIFICATIONS (mm)

- Both Leader and Trailer tape: Minimum 40mm (1.57") empty carrier tape pockets.
- Leader tape: Approximately 20cm of cover tape at leader.
- Connection: Maximum 3 connections (slices) per reel.

## CARRIER



## REEL

