

# Surface Mount Aluminum Electrolytic Capacitors NACE Series

## FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION
- LOW COST, GENERAL PURPOSE, 2000 HOURS AT 85°C
- NEW EXPANDED CV RANGE (up to 6800µF)
- ANTI-SOLVENT (2 MINUTES)
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING



**RoHS  
Compliant**

includes all homogeneous materials

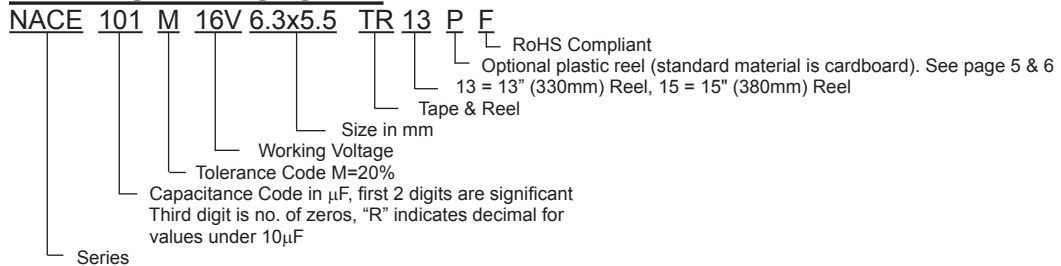
\*See Part Number System for Details

## CHARACTERISTICS

|   |                                    |
|---|------------------------------------|
| Rated Voltage Range                         | 4.0 ~ 100Vdc                       |
| Rate Capacitance Range                      | 0.47 ~ 6,800µF                     |
| Operating Temp. Range                       | -40°C ~ +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)         | 4.0                                    | 6.3  | 10   | 16   | 25   | 35   | 50   | 63   | 100  |      |
|   | 4 ~ 6.3mm Dia.     | 0.35                                   | 0.26 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.10 |      |
|   | 8x6.5mm Dia.       | -                                      | 0.35 | 0.26 | 0.20 | 0.16 | 0.14 | 0.12 | -    | 0.10 |      |
|   | 8mm Dia. ~ up      | C≤1000µF                               | 0.40 | 0.30 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | 0.10 |
|   |                    | C=1500µF                               | -    | 0.30 | -    | 0.20 | -    | 0.14 | -    | -    | -    |
|   |                    | C=2200µF                               | -    | -    | 0.26 | -    | 0.18 | -    | -    | -    | -    |
|   |                    | C=3300µF                               | -    | 0.34 | -    | 0.24 | -    | -    | -    | -    | -    |
|   | C=4700µF           | -                                      | -    | 0.30 | -    | -    | -    | -    | -    | -    |      |
|   | C=6800µF           | -                                      | 0.40 | -    | -    | -    | -    | -    | -    | -    |      |
| Low Temperature Stability Impedance Ratio @ 120Hz | W.V. (Vdc)         | 4.0                                    | 6.3  | 10   | 16   | 25   | 35   | 50   | 63   | 100  |      |
|   | Z-25°C/Z+20°C      | 7                                      | 4    | 3    | 2    | 2    | 2    | 2    | 2    | 2    |      |
|   | Z-40°C/Z+20°C      | 15                                     | 8    | 6    | 4    | 4    | 3    | 3    | 3    | 3    |      |
| Load Life Test 85°C 2,000 Hours                   | Capacitance Change | Within ± 25% of initial measured value |      |      |      |      |      |      |      |      |      |
|   | Tan δ              | Less than 200% of specified max. value |      |      |      |      |      |      |      |      |      |
|   | Leakage Current    | Less than specified max. value         |      |      |      |      |      |      |      |      |      |

## PART NUMBER SYSTEM



## PRECAUTIONS

Please review the notes on correct use, safety and precautions found on at [www.nicomp.com/precautions](http://www.nicomp.com/precautions)  
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@nicomp.com](mailto:tpmg@nicomp.com)



# Surface Mount Aluminum Electrolytic Capacitors NACE Series

## STANDARD PRODUCTS, SPECIFICATIONS AND CASE SIZE TABLE D $\phi$ xL (mm)

| NIC Part Number          | Cap. ( $\mu$ F) | W.V. (Vdc) | Dissipation Factor (Tan $\delta$ ) | Max. Ripple current (mA) @ +85°C/120Hz | Max. ESR ( $\Omega$ ) @ +20°C/120Hz | Load Life Hours @ +85°C |       |
|--------------------------|-----------------|------------|------------------------------------|--|-------------------------------------|-------------------------|-------|
| NACE330M4V4X5.5TR13F     | 33              | 4          | 0.35                               | 26                                     | 17.6                                | 2,000                   |       |
| NACE470M4V4X5.5TR13F     | 47              |            | 0.35                               | 34                                     | 12.4                                | 2,000                   |       |
| NACE101M4V5X5.5TR13F     | 100             |            | 0.35                               | 61                                     | 5.80                                | 2,000                   |       |
| NACE151M4V6.3X5.5TR13F   | 150             |            | 0.35                               | 74                                     | 3.87                                | 2,000                   |       |
| NACE221M4V6.3X5.5TR13F   | 220             |            | 0.35                               | 82                                     | 2.64                                | 2,000                   |       |
| NACE331M4V6.3X6.3TR13F   | 330             |            | 0.35                               | 102                                    | 1.76                                | 2,000                   |       |
| NACE471M4V6.3X8TR13F     | 470             |            | 0.35                               | 150                                    | 1.42                                | 2,000                   |       |
| NACE102M4V10X8TR13F      | 1000            |            | 0.40                               | 330                                    | 0.67                                | 2,000                   |       |
| NACE220M6.3V4X5.5TR13F   | 22              | 6.3        | 0.26                               | 31                                     | 19.6                                | 2,000                   |       |
| NACE330M6.3V5X5.5TR13F   | 33              |            | 0.26                               | 39                                     | 13.1                                | 2,000                   |       |
| NACE470M6.3V5X5.5TR13F   | 47              |            | 0.26                               | 47                                     | 9.17                                | 2,000                   |       |
| NACE101M6.3V6.3X5.5TR13F | 100             |            | 0.26                               | 71                                     | 4.31                                | 2,000                   |       |
| NACE151M6.3V6.3X5.5TR13F | 150             |            | 0.26                               | 78                                     | 2.88                                | 2,000                   |       |
| NACE221M6.3V6.3X6.3TR13F | 220             |            | 0.26                               | 95                                     | 1.96                                | 2,000                   |       |
| NACE331M6.3V6.3X8TR13F   | 330             |            | 0.26                               | 150                                    | 1.31                                | 2,000                   |       |
| NACE331M6.3V8X6.5TR13F   | 330             |            | 0.35                               | 300                                    | 1.76                                | 2,000                   |       |
| NACE471M6.3V8X10.5TR13F  | 470             |            | 0.30                               | 300                                    | 1.06                                | 2,000                   |       |
| NACE681M6.3V10X8TR13F    | 680             |            | 0.30                               | 300                                    | 0.73                                | 2,000                   |       |
| NACE102M6.3V8X10.5TR13F  | 1000            |            | 0.30                               | 330                                    | 0.50                                | 2,000                   |       |
| NACE152M6.3V10X10.5TR13F | 1500            |            | 0.30                               | 450                                    | 0.35                                | 2,000                   |       |
| NACE332M6.3V12.5X14TR15F | 3300            |            | 0.34                               | 750                                    | 0.17                                | 2,000                   |       |
| NACE682M6.3V16X17TR15F   | 6800            |            | 0.40                               | 1330                                   | 0.10                                | 2,000                   |       |
| NACE220M10V5X5.5TR13F    | 22              |            | 10                                 | 0.20                                   | 35                                  | 15.1                    | 2,000 |
| NACE330M10V5X5.5TR13F    | 33              |            |                                    | 0.20                                   | 43                                  | 10.1                    | 2,000 |
| NACE470M10V6.3X5.5TR13F  | 47              | 0.20       |                                    | 59                                     | 7.06                                | 2,000                   |       |
| NACE680M10V6.3X5.5TR13F  | 68              | 0.20       |                                    | 66                                     | 4.88                                | 2,000                   |       |
| NACE101M10V6.3X5.5TR13F  | 100             | 0.20       |                                    | 76                                     | 3.32                                | 2,000                   |       |
| NACE151M10V6.3X6.3TR13F  | 150             | 0.20       |                                    | 88                                     | 2.21                                | 2,000                   |       |
| NACE221M10V6.3X8TR13F    | 220             | 0.20       |                                    | 150                                    | 1.51                                | 2,000                   |       |
| NACE221M10V8X6.5TR13F    | 220             | 0.26       |                                    | 250                                    | 1.99                                | 2,000                   |       |
| NACE331M10V8X10.5TR13F   | 330             | 0.24       |                                    | 280                                    | 1.21                                | 2,000                   |       |
| NACE471M10V8X10.5TR13F   | 470             | 0.24       |                                    | 300                                    | 0.85                                | 2,000                   |       |
| NACE471M10V10X8TR13F     | 470             | 0.24       |                                    | 300                                    | 0.85                                | 2,000                   |       |
| NACE102M10V10X10.5TR13F  | 1000            | 0.24       |                                    | 450                                    | 0.40                                | 2,000                   |       |
| NACE222M10V12.5X14TR15F  | 2200            | 0.26       |                                    | 730                                    | 0.24                                | 2,000                   |       |
| NACE472M10V16X17TR15F    | 4700            | 0.30       |                                    | 1260                                   | 0.13                                | 2,000                   |       |
| NACE100M16V4X5.5TR13F    | 10              | 16         |                                    | 0.16                                   | 25                                  | 26.5                    | 2,000 |
| NACE220M16V5X5.5TR13F    | 22              |            |                                    | 0.16                                   | 39                                  | 12.1                    | 2,000 |
| NACE330M16V6.3X5.5TR13F  | 33              |            | 0.16                               | 57                                     | 8.04                                | 2,000                   |       |
| NACE470M16V6.3X5.5TR13F  | 47              |            | 0.16                               | 68                                     | 5.65                                | 2,000                   |       |
| NACE680M16V6.3X5.5TR13F  | 68              |            | 0.16                               | 75                                     | 3.91                                | 2,000                   |       |
| NACE101M16V6.3X5.5TR13F  | 100             |            | 0.16                               | 86                                     | 2.66                                | 2,000                   |       |
| NACE101M16V8X6.5TR13F    | 100             |            | 0.20                               | 200                                    | 3.32                                | 2,000                   |       |
| NACE151M16V6.3X8TR13F    | 150             |            | 0.16                               | 135                                    | 1.77                                | 2,000                   |       |
| NACE221M16V6.3X8TR13F    | 220             |            | 0.16                               | 150                                    | 1.21                                | 2,000                   |       |
| NACE331M16V8X10.5TR13F   | 330             |            | 0.20                               | 280                                    | 1.01                                | 2,000                   |       |
| NACE331M16V10X8TR13F     | 330             |            | 0.20                               | 280                                    | 1.01                                | 2,000                   |       |
| NACE471M16V8X10.5TR13F   | 470             |            | 0.20                               | 330                                    | 0.71                                | 2,000                   |       |
| NACE681M16V10X10.5TR13F  | 680             |            | 0.20                               | 450                                    | 0.49                                | 2,000                   |       |
| NACE152M16V12.5X14TR15F  | 1500            |            | 0.20                               | 710                                    | 0.24                                | 2,000                   |       |
| NACE332M16V16X17TR15F    | 3300            |            | 0.24                               | 1200                                   | 0.12                                | 2,000                   |       |

### RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

| Frequency Hz                   | 100<f $\le$ 1K | 1K<f $\le$ 10K | 10K< f $\le$ 100K | f $\ge$ 100K |
|--------------------------------|----------------|----------------|-------------------|--------------|
| C $\le$ 4.7 $\mu$ F            | 1.0            | 1.3            | 1.5               | 1.8          |
| 4.7 $\mu$ F<C $\le$ 33 $\mu$ F | 1.0            | 1.2            | 1.3               | 1.45         |
| C>33 $\mu$ F                   | 1.0            | 1.1            | 1.2               | 1.3          |



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| NIC Part Number         | Cap. ( $\mu$ F) | W.V. (Vdc) | Dissipation Factor (Tan $\delta$ ) | Max. Ripple current (mA) @ +85°C/120Hz | Max. ESR ( $\Omega$ ) @ +20°C/120Hz | Load Life Hours @ +85°C |
|-------------------------|-----------------|------------|------------------------------------|--|-------------------------------------|-------------------------|
| NACE4R7M25V4X5.5TR13F   | 4.7             | 25         | 0.14                               | 19                                     | 49.4                                | 2,000                   |
| NACE100M25V5X5.5TR13F   | 10              |            | 0.14                               | 28                                     | 23.2                                | 2,000                   |
| NACE220M25V6.3X5.5TR13F | 22              |            | 0.14                               | 52                                     | 10.6                                | 2,000                   |
| NACE330M25V6.3X5.5TR13F | 33              |            | 0.14                               | 63                                     | 7.04                                | 2,000                   |
| NACE470M25V6.3X6.3TR13F | 47              |            | 0.14                               | 68                                     | 4.94                                | 2,000                   |
| NACE680M25V6.3X6.3TR13F | 68              |            | 0.14                               | 80                                     | 3.41                                | 2,000                   |
| NACE101M25V6.3X8TR13F   | 100             |            | 0.14                               | 130                                    | 2.32                                | 2,000                   |
| NACE101M25V8X6.5TR13F   | 100             |            | 0.16                               | 91                                     | 2.65                                | 2,000                   |
| NACE151M25V8X10.5TR13F  | 150             |            | 0.16                               | 200                                    | 1.77                                | 2,000                   |
| NACE221M25V8X10.5TR13F  | 220             |            | 0.16                               | 250                                    | 1.21                                | 2,000                   |
| NACE221M25V10X8TR13F    | 220             |            | 0.16                               | 250                                    | 1.21                                | 2,000                   |
| NACE331M25V8X10.5TR13F  | 330             |            | 0.16                               | 310                                    | 0.80                                | 2,000                   |
| NACE471M25V10X10.5TR13F | 470             |            | 0.16                               | 430                                    | 0.56                                | 2,000                   |
| NACE102M25V12.5X14TR15F | 1000            |            | 0.16                               | 660                                    | 0.27                                | 2,000                   |
| NACE222M25V16X17TR15F   | 2200            |            | 0.18                               | 1150                                   | 0.14                                | 2,000                   |
| NACE4R7M35V4X5.5TR13F   | 4.7             | 35         | 0.12                               | 20                                     | 42.3                                | 2,000                   |
| NACE100M35V5X5.5TR13F   | 10              |            | 0.12                               | 30                                     | 19.9                                | 2,000                   |
| NACE220M35V6.3X5.5TR13F | 22              |            | 0.12                               | 54                                     | 9.05                                | 2,000                   |
| NACE330M35V6.3X6.3TR13F | 33              |            | 0.12                               | 60                                     | 6.04                                | 2,000                   |
| NACE330M35V8X6.5TR13F   | 33              |            | 0.14                               | 130                                    | 7.04                                | 2,000                   |
| NACE470M35V6.3X6.3TR13F | 47              |            | 0.12                               | 70                                     | 4.24                                | 2,000                   |
| NACE470M35V8X6.5TR13F   | 47              |            | 0.14                               | 165                                    | 4.95                                | 2,000                   |
| NACE680M35V6.3X8TR13F   | 68              |            | 0.12                               | 110                                    | 2.93                                | 2,000                   |
| NACE101M35V6.3X8TR13F   | 100             |            | 0.12                               | 130                                    | 1.99                                | 2,000                   |
| NACE151M35V8X10.5TR13F  | 150             |            | 0.14                               | 220                                    | 1.55                                | 2,000                   |
| NACE151M35V10X8TR13F    | 150             |            | 0.14                               | 220                                    | 1.55                                | 2,000                   |
| NACE221M35V8X10.5TR13F  | 220             |            | 0.14                               | 270                                    | 1.06                                | 2,000                   |
| NACE331M35V10X10.5TR13F | 330             |            | 0.14                               | 340                                    | 0.71                                | 2,000                   |
| NACE471M35V12.5X14TR15F | 470             |            | 0.14                               | 590                                    | 0.49                                | 2,000                   |
| NACE681M35V12.5X14TR15F | 680             |            | 0.14                               | 610                                    | 0.34                                | 2,000                   |
| NACE152M35V16X17TR15F   | 1500            | 0.14       | 1060                               | 0.17                                   | 2,000                               |                         |
| NACER47M50V4X5.5TR13F   | 0.47            | 50         | 0.10                               | 5                                      | 353                                 | 2,000                   |
| NACE1R0M50V4X5.5TR13F   | 1.0             |            | 0.10                               | 10                                     | 166                                 | 2,000                   |
| NACE2R2M50V4X5.5TR13F   | 2.2             |            | 0.10                               | 15                                     | 75.4                                | 2,000                   |
| NACE3R3M50V4X5.5TR13F   | 3.3             |            | 0.10                               | 18                                     | 50.3                                | 2,000                   |
| NACE4R7M50V5X5.5TR13F   | 4.7             |            | 0.10                               | 23                                     | 35.3                                | 2,000                   |
| NACE100M50V6.3X5.5TR13F | 10              |            | 0.10                               | 34                                     | 16.6                                | 2,000                   |
| NACE220M50V6.3X6.3TR13F | 22              |            | 0.10                               | 60                                     | 7.54                                | 2,000                   |
| NACE220M50V8X6.5TR13F   | 22              |            | 0.12                               | 120                                    | 9.05                                | 2,000                   |
| NACE330M50V6.3X8TR13F   | 33              |            | 0.10                               | 85                                     | 5.03                                | 2,000                   |
| NACE330M50V8X6.5TR13F   | 33              |            | 0.12                               | 65                                     | 6.04                                | 2,000                   |
| NACE470M50V6.3X8TR13F   | 47              |            | 0.10                               | 90                                     | 3.53                                | 2,000                   |
| NACE680M50V8X10.5TR13F  | 68              |            | 0.12                               | 120                                    | 2.93                                | 2,000                   |
| NACE820M50V10X8TR13F    | 82              |            | 0.12                               | 200                                    | 2.44                                | 2,000                   |
| NACE101M50V8X10.5TR13F  | 100             |            | 0.12                               | 200                                    | 1.99                                | 2,000                   |
| NACE221M50V10X10.5TR13F | 220             |            | 0.12                               | 320                                    | 0.91                                | 2,000                   |
| NACE331M50V12.5X14TR15F | 330             | 0.12       | 520                                | 0.60                                   | 2,000                               |                         |
| NACE391M50V12.5X14TR13F | 390             | 0.12       | 550                                | 0.51                                   | 2,000                               |                         |
| NACE471M50V16X17TR15F   | 470             | 0.12       | 925                                | 0.43                                   | 2,000                               |                         |
| NACE102M50V16X17TR15F   | 1000            | 0.12       | 940                                | 0.20                                   | 2,000                               |                         |



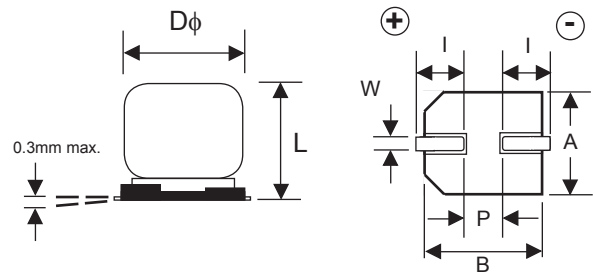
# Surface Mount Aluminum Electrolytic Capacitors NACE Series

## STANDARD PRODUCTS, SPECIFICATIONS AND CASE SIZE TABLE D $\phi$ xL (mm)

| NIC Part Number          | Cap. ( $\mu$ F) | W.V. (Vdc) | Dissipation Factor (Tan $\delta$ ) | Max. Ripple current (mA) @ +85°C/120Hz | Max. ESR ( $\Omega$ ) @ +20°C/120Hz | Load Life Hours @ +85°C |
|--------------------------|-----------------|------------|------------------------------------|--|-------------------------------------|-------------------------|
| NACER47M63V4X5.5TR13F    | 0.47            | 63         | 0.10                               | 5                                      | 353                                 | 2,000                   |
| NACE1R0M63V4X5.5TR13F    | 1.0             |            | 0.10                               | 10                                     | 166                                 | 2,000                   |
| NACE2R2M63V4X5.5TR13F    | 2.2             |            | 0.10                               | 15                                     | 75.4                                | 2,000                   |
| NACE3R3M63V5X5.5TR13F    | 3.3             |            | 0.10                               | 20                                     | 50.3                                | 2,000                   |
| NACE4R7M63V5X5.5TR13F    | 4.7             |            | 0.10                               | 23                                     | 35.3                                | 2,000                   |
| NACE100M63V6.3X5.5TR13F  | 10              |            | 0.10                               | 34                                     | 16.6                                | 2,000                   |
| NACE220M63V6.3X8TR13F    | 22              |            | 0.10                               | 70                                     | 7.54                                | 2,000                   |
| NACE330M63V8X10.5TR13F   | 33              |            | 0.12                               | 160                                    | 6.04                                | 2,000                   |
| NACE470M63V8X10.5TR13F   | 47              |            | 0.12                               | 170                                    | 4.24                                | 2,000                   |
| NACE680M63V8X10.5TR13F   | 68              |            | 0.12                               | 180                                    | 2.93                                | 2,000                   |
| NACE101M63V10X10.5TR13F  | 100             |            | 0.12                               | 280                                    | 1.99                                | 2,000                   |
| NACE221M63V12.5X14TR15F  | 220             |            | 0.12                               | 410                                    | 0.91                                | 2,000                   |
| NACE471M63V16X17TR15F    | 470             |            | 0.12                               | 700                                    | 0.43                                | 2,000                   |
| NACE1R0M100V4X6.3TR13F   | 1.0             |            | 100                                | 0.10                                   | 10                                  | 166                     |
| NACE2R2M100V6.3X6.3TR13F | 2.2             | 0.10       |                                    | 20                                     | 75.4                                | 2,000                   |
| NACE3R3M100V6.3X6.3TR13F | 3.3             | 0.10       |                                    | 28                                     | 50.3                                | 2,000                   |
| NACE3R3M100V8X6.5TR13F   | 3.3             | 0.10       |                                    | 50                                     | 50.3                                | 2,000                   |
| NACE4R7M100V6.3X6.3TR13F | 4.7             | 0.10       |                                    | 35                                     | 35.3                                | 2,000                   |
| NACE100M100V6.3X8TR13F   | 10              | 0.10       |                                    | 50                                     | 16.6                                | 2,000                   |
| NACE220M100V8X10.5TR13F  | 22              | 0.10       |                                    | 120                                    | 7.54                                | 2,000                   |
| NACE330M100V10X10.5TR13F | 33              | 0.10       |                                    | 190                                    | 5.03                                | 2,000                   |
| NACE470M100V12.5X14TR15F | 47              | 0.10       |                                    | 330                                    | 3.53                                | 2,000                   |
| NACE680M100V12.5X14TR15F | 68              | 0.10       |                                    | 350                                    | 2.44                                | 2,000                   |
| NACE101M100V16X17TR15F   | 100             | 0.10       |                                    | 550                                    | 1.66                                | 2,000                   |
| NACE151M100V16X17TR15F   | 150             | 0.10       |                                    | 560                                    | 1.11                                | 2,000                   |

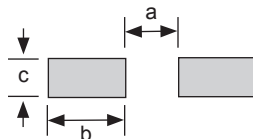
## DIMENSIONS (mm)

| Case Size | D $\phi$ $\pm$ 0.5 | L max. | A $\pm$ 0.2 | B $\pm$ 0.2 | I $\pm$ 0.3 | W         | (P) |
|-----------|--------------------|--------|-------------|-------------|-------------|-----------|-----|
| 4 x 5.5   | 4.0                | 5.5    | 4.3         | 4.3         | 2.0         | 0.5 ~ 0.8 | 1.0 |
| 4 x 6.3   | 4.0                | 6.3    | 4.3         | 4.3         | 2.0         | 0.5 ~ 0.8 | 1.0 |
| 5 x 5.5   | 5.0                | 5.5    | 5.3         | 5.3         | 2.3         | 0.5 ~ 0.8 | 1.4 |
| 6.3 x 5.5 | 6.3                | 5.5    | 6.6         | 6.6         | 2.5         | 0.5 ~ 0.8 | 2.2 |
| 6.3 x 6.3 | 6.3                | 6.3    | 6.6         | 6.6         | 2.5         | 0.5 ~ 0.8 | 2.2 |
| 6.3 x 8   | 6.3                | 8.0    | 6.6         | 6.6         | 2.5         | 0.5 ~ 0.8 | 2.2 |
| 8 x 6.5   | 8.0                | 6.5    | 8.3         | 8.3         | 3.4         | 0.5 ~ 0.8 | 2.2 |
| 8 X 10.5  | 8.0                | 10.5   | 8.3         | 8.3         | 2.9         | 0.7 ~ 1.1 | 3.2 |
| 10 x 8    | 10.0               | 8.0    | 10.3        | 10.3        | 3.2         | 0.7 ~ 1.4 | 4.6 |
| 10 x 10.5 | 10.0               | 10.5   | 10.3        | 10.3        | 3.2         | 0.7 ~ 1.4 | 4.6 |
| 12.5 x 14 | 12.5               | 14.0   | 12.8        | 12.8        | 4.5         | 1.0 ~ 1.4 | 4.6 |
| 16 x 17   | 16.0               | 17.0   | 16.3        | 16.3        | 5.0         | 1.7 ~ 2.1 | 7.0 |



## RECOMMENDED LAND PATTERN DIMENSIONS (mm)

| Case Size   | a   | b   | c   |
|-------------|-----|-----|-----|
| 4 $\phi$    | 1.0 | 2.6 | 1.8 |
| 5 $\phi$    | 1.4 | 3.0 | 1.8 |
| 6.3 $\phi$  | 1.8 | 3.6 | 1.8 |
| 8 $\phi$    | 2.8 | 4.1 | 2.1 |
| 10 $\phi$   | 4.3 | 4.4 | 2.5 |
| 12.5 $\phi$ | 4.3 | 5.8 | 2.5 |
| 16 $\phi$   | 6.6 | 6.5 | 5.0 |



# Surface Mount Aluminum Electrolytic Capacitors NACE Series

## CARRIER TAPE

| Case Size | A ±0.2 | B ±0.2 | C ±0.3 | D ±0.1 | P ±0.1 | T ±0.2 |
|-----------|--------|--------|--------|--------|--------|--------|
| 4 x 5.5   | 4.7    | 4.7    | 12.0   | 5.5    | 8.0    | 5.8    |
| 4 x 6.3   | 4.7    | 4.7    | 12.0   | 5.5    | 8.0    | 6.4    |
| 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 6.3 | 7.0    | 7.0    | 16.0   | 7.5    | 12.0   | 6.5    |
| 6.3 x 8   | 7.0    | 7.0    | 16.0   | 7.5    | 12.0   | 8.2    |
| 8 x 6.5   | 8.7    | 8.7    | 16.0   | 7.5    | 12.0   | 6.8    |
| 8 X 10.5  | 8.7    | 8.7    | 24.0   | 11.5   | 16.0   | 11.1   |
| 10 x 8    | 10.7   | 10.7   | 24.0   | 11.5   | 16.0   | 8.3    |
| 10 x 10.5 | 10.7   | 10.7   | 24.0   | 11.5   | 16.0   | 11.2   |
| 12.5 x 14 | 13.2   | 13.2   | 32.0   | 14.2   | 24.0   | 14.3   |
| 16 x 17   | 17.5   | 17.5   | 44.0   | 20.2   | 28.0   | 17.3   |

## 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.

## TR13 330mm (13") CARDBOARD REEL

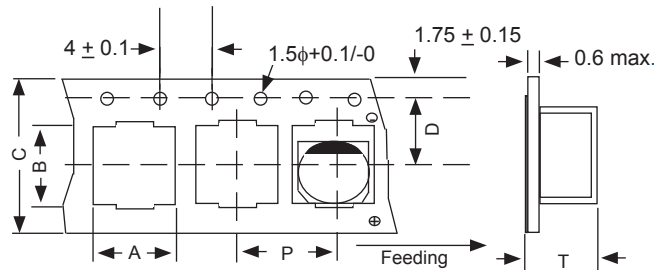
## TR15 380mm (15") CARDBOARD REEL

(See page 6 for plastic reel dimensions)

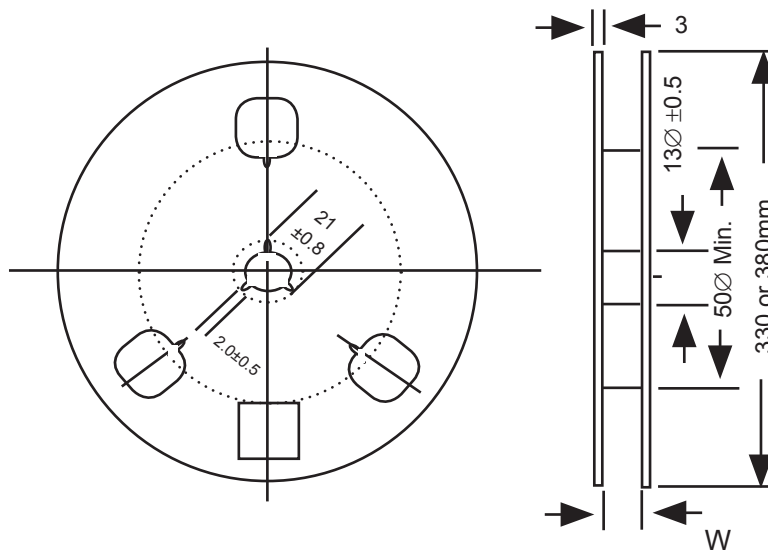
| Case Size | W ±1  | Quantity Per Reel |           |
|-----------|-------|-------------------|-----------|
|           |       | 13" Reel          | 15" Reel  |
| 4 x 5.5   | 14.0  | 1,500 pcs         | 2,000 pcs |
| 4 x 6.3   | 14.0  | 1,200 pcs         | 2,000 pcs |
| 5 x 5.5   | 14.0  | 1,000 pcs         | N/A       |
| 6.3 x 5.5 | 18.0  | 1,000 pcs         | N/A       |
| 6.3 x 6.3 | 18.0  | 800 pcs           | 1,000 pcs |
| 6.3 x 8   | 18.0  | 500 pcs           | 900 pcs   |
| 8 x 6.5   | 18.0  | 800 pcs           | 1,000 pcs |
| 8 X 10.5  | 26.0* | 300 pcs           | 500 pcs   |
| 10 x 8    | 26.0* | 400 pcs           | 500 pcs   |
| 10 x 10.5 | 26.0* | 300 pcs           | 500 pcs   |
| 12.5 x 14 | 34.0  | N/A               | 250 pcs   |
| 16 x 17   | 46.0  | N/A               | 200 pcs   |

\*W+3/-1

## CARRIER

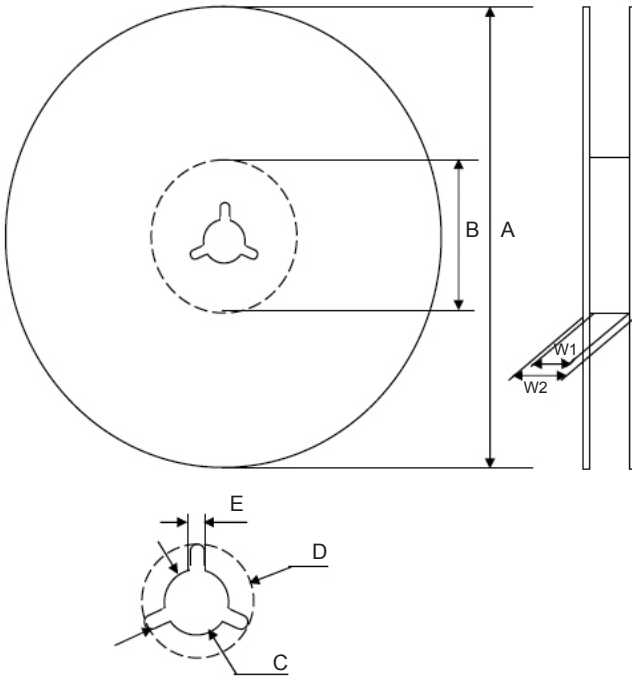


## STANDARD REEL (CARDBOARD)



# Surface Mount Aluminum Electrolytic Capacitors NACE Series

## Optional V-Chip 13" (330mm) Plastic Reels (TR13PF suffix)



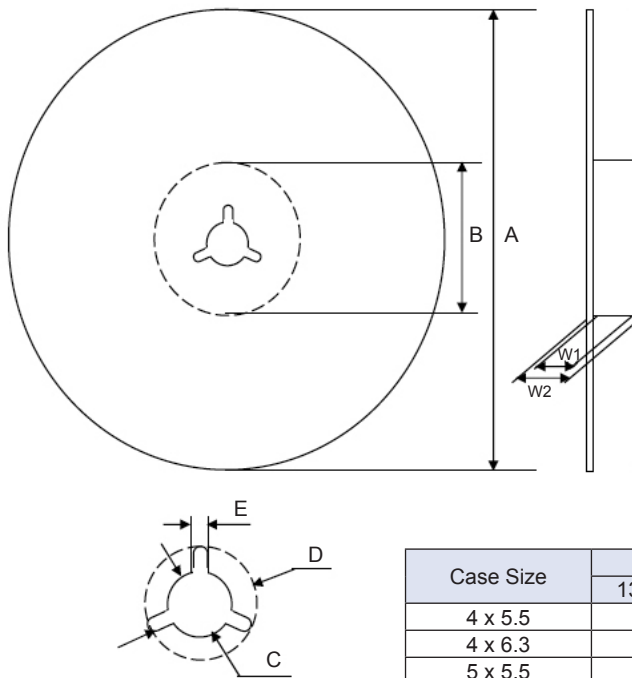
### Dimensions (mm)

| Case Size                      | Tape Width | W1          | W2          |
|--------------------------------|------------|-------------|-------------|
| 4x5.5, 4x6.3, 5x5.5            | 12.0       | 12.4 ~ 14.4 | 15.5 ~ 20.0 |
| 6.3x5.5, 6.3x6.3, 6.3x8, 8x6.5 | 16.0       | 16.4 ~ 18.4 | 19.5 ~ 24.0 |
| 8x10.5, 10x8, 10x10.5          | 24.0       | 24.4 ~ 26.4 | 27.5 ~ 32.0 |

| Case Size                      | Tape Width | A                  | B                  | C                 | D                 | E             |
|--------------------------------|------------|--------------------|--------------------|-------------------|-------------------|---------------|
| 4x5.5, 4x6.3, 5x5.5            | 12.0       | $\phi 330 \pm 2.0$ | $\phi 50 \sim 105$ | $\phi 13 \pm 0.5$ | $\phi 21 \pm 1.0$ | 2.0 $\pm 0.5$ |
| 6.3x5.5, 6.3x6.3, 6.3x8, 8x6.5 | 16.0       |                    |                    |                   |                   |               |
| 8x10.5, 10x8, 10x10.5          | 24.0       |                    |                    |                   |                   |               |

| Color         |
|---------------|
| Black or Blue |

## Optional V-Chip 15" (380mm) Plastic Reels (TR15PF suffix)



### Dimensions (mm)

| Case Size             | Tape Width | W1          | W2          |
|-----------------------|------------|-------------|-------------|
| 4x5.5, 4x6.3          | 12.0       | 12.5 ~ 14.0 | 15.5 ~ 20.0 |
| 6.3x6.3, 6.3x8, 8x6.5 | 16.0       | 16.5 ~ 18.0 | 19.5 ~ 24.0 |
| 8x10.5, 10x8, 10x10.5 | 24.0       | 24.5 ~ 26.0 | 27.5 ~ 32.0 |
| 12.5x14               | 32.0       | 33.0 ~ 34.0 | 36.5 ~ 38.5 |
| 16x17                 | 44.0       | 45.0 ~ 46.0 | 48.5 ~ 50.5 |

| Case Size             | Tape Width | A                | B                  | C                 | D                 | E             |
|-----------------------|------------|------------------|--------------------|-------------------|-------------------|---------------|
| 4x5.5, 4x6.3          | 12.0       | $\phi 380 \pm 2$ | $\phi 80 \sim 105$ | $\phi 13 \pm 0.5$ | $\phi 21 \pm 1.0$ | 2.0 $\pm 0.5$ |
| 6.3x6.3, 6.3x8, 8x6.5 | 16.0       |                  |                    |                   |                   |               |
| 8x10.5, 10x8, 10x10.5 | 24.0       |                  |                    |                   |                   |               |
| 12.5x14               | 32.0       |                  |                    |                   |                   |               |
| 16x17                 | 44.0       |                  |                    |                   |                   |               |

| Color         |
|---------------|
| Black or Blue |

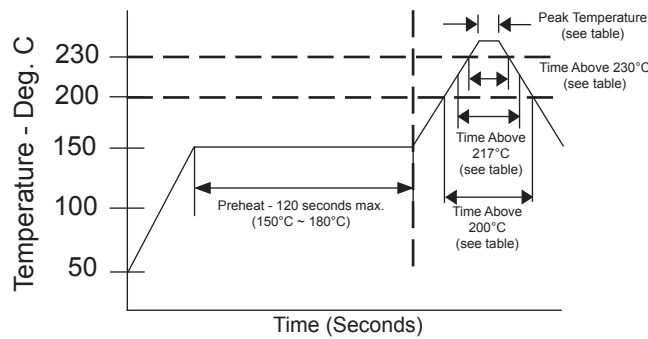
| Case Size | Quantity Per Reel |                  |
|-----------|-------------------|------------------|
|           | 13" (330mm) Reel  | 15" (380mm) Reel |
| 4 x 5.5   | 1,500 pcs         | 2,000 pcs        |
| 4 x 6.3   | 1,200 pcs         | 2,000 pcs        |
| 5 x 5.5   | 1,000 pcs         | N/A              |
| 6.3 x 5.5 | 1,000 pcs         | N/A              |
| 6.3 x 6.3 | 800 pcs           | 1,000 pcs        |
| 6.3 x 8   | 500 pcs           | 900 pcs          |
| 8 x 6.5   | 800 pcs           | 1,000 pcs        |
| 8 X 10.5  | 300 pcs           | 500 pcs          |
| 10 x 8    | 400 pcs           | 500 pcs          |
| 10 x 10.5 | 300 pcs           | 500 pcs          |
| 12.5 x 14 | N/A               | 250 pcs          |
| 16 x 17   | N/A               | 200 pcs          |



## REFLOW TEMPERATURES & DURATIONS

| Voltage Rating | Diameter  | Peak Temperature (Within 5 Sec.) | Time above 200°C | Time above 217°C | Time above 230°C |
|----------------|-----------|----------------------------------|------------------|------------------|------------------|
| 4V ~ 63V       | φ4 ~ 6.3  | +250°C                           | 70 sec. max.     | 60 sec. max.     | 40 sec. max.     |
|                | φ8        | +245°C                           | 60 sec. max.     | 50 sec. max.     | 30 sec. max.     |
|                | φ10, 12.5 | +240°C                           | 50 sec. max.     | 40 sec. max.     | 20 sec. max.     |
|                | φ16       | +235°C                           | 50 sec. max.     | 30 sec. max.     | 15 sec. max.     |
| 100V           | φ4 ~ 6.3  | +250°C                           | 60 sec. max.     | 50 sec. max.     | 40 sec. max.     |
|                | φ8        | +240°C                           | 60 sec. max.     | 40 sec. max.     | 30 sec. max.     |
|                | φ10       | +240°C                           | 50 sec. max.     | 30 sec. max.     | 20 sec. max.     |
|                | φ12.5     | +235°C                           | 50 sec. max.     | 30 sec. max.     | 20 sec. max.     |
|                | φ16       | +235°C                           | 45 sec. max.     | 20 sec. max.     | 10 sec. max.     |

1. Capacitors can withstand two (2) reflows under the above conditions.
2. The second reflow shall be at least one hour after natural cool to room temperature has occurred.



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