

# NATT Series

## Surface Mount Aluminum Electrolytic Capacitors



### FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- **AVAILABLE WITH ANTI-VIBRATION WIDE TERMINATIONS**
- EXTENDED TEMPERATURE & LOAD LIFE (1,000 ~ 2,000 HOURS @ +125°C)
- SUITABLE FOR DC-DC CONVERTER, DC-AC INVERTER, ETC.
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING
- **MEETS THE REQUIREMENTS OF AEC-Q200\***

\*Contact NIC for supporting test data

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



### CHARACTERISTICS

|                                                                                                  |                                    |                                                |      |      |      |      |      |      |      |
|--------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------|------|------|------|------|------|------|------|
| Rated Voltage Rating                                                                             | 6.3 ~ 100Vdc                       |                                                |      |      |      |      |      |      |      |
| Rated Capacitance Range                                                                          | 2.2 ~ 4,700μF                      |                                                |      |      |      |      |      |      |      |
| Operating Temp. Range                                                                            | -55 ~ +125°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   | 63   | 100  |
|                                                                                                  | S.V. (Vdc)                         | 8.0                                            | 13   | 20   | 32   | 44   | 63   | 79   | 125  |
|                                                                                                  | Tan δ                              | 0.30                                           | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | 0.12 | 0.10 |
| Low Temperature Stability Impedance Ratio @ 120Hz                                                | W.V. (Vdc)                         | 6.3                                            | 10   | 16   | 25   | 35   | 50   | 63   | 100  |
|                                                                                                  | Z-25°C/Z+20°C                      | 4                                              | 3    | 2    | 2    | 2    | 2    | 2    | 2    |
|                                                                                                  | Z-40°C/Z+20°C                      | 8                                              | 6    | 4    | 3    | 3    | 3    | 3    | 3    |
| Load Life Test @ 125°C 1,000 ~ 2,000 hours (see specifications tables for specific part numbers) | Capacitance Change                 | Within ±30% of initial measured value          |      |      |      |      |      |      |      |
|                                                                                                  | Tan δ                              | Less than ±300% 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)

### STANDARD VALUES AND CASE SIZES (mm)

| Cap (μF) | Code | Working Voltage (Vdc) |         |         |         |         |         |         |         |
|----------|------|-----------------------|---------|---------|---------|---------|---------|---------|---------|
|          |      | 6.3                   | 10      | 16      | 25      | 35      | 50      | 63      | 100     |
| 2.2      | 2R2  | -                     | -       | -       | -       | -       | 6.3x6.3 | -       | -       |
| 3.3      | 3R3  | -                     | -       | -       | -       | -       | 6.3x6.3 | -       | -       |
| 4.7      | 4R7  | -                     | -       | -       | -       | 6.3x6.3 | 6.3x6.3 | -       | -       |
| 10       | 100  | -                     | -       | -       | -       | 6.3x6.3 | 6.3x6.3 | -       | 8x10.5  |
| 22       | 220  | -                     | -       | -       | -       | 6.3x6.3 | 6.3x8   | 8x10.5  | 8x10.5  |
| 33       | 330  | -                     | -       | -       | 6.3x6.3 | 6.3x8   | 6.3x8   | 8x10.5  | 10x10.5 |
| 47       | 470  | -                     | 6.3x6.3 | 6.3x6.3 | 6.3x8   | 6.3x8   | 8x10.5  | 8x10.5  | 12.5x14 |
| 100      | 101  | 6.3x6.3               | 6.3x8   | 6.3x8   | 6.3x8   | 8x10.5  | 10x10.5 | 10x10.5 | 16x17   |
| 220      | 221  | 6.3x8                 | 6.3x8   | 8x10.5  | 8x10.5  | 10x10.5 | 12.5x14 | 12.5x14 | -       |
| 330      | 331  | 8x10.5                | 8x10.5  | 10x10.5 | 10x10.5 | 12.5x14 | 12.5x14 | 16x17   | -       |
| 470      | 471  | 8x10.5                | 10x10.5 | 12.5x14 | 12.5x14 | 12.5x14 | 16x17   | 16x17   | -       |
| 680      | 681  | 10x10.5               | 12.5x14 | 12.5x14 | 12.5x14 | 16x17   | 16x17   | -       | -       |
| 1000     | 102  | 12.5x14               | 12.5x14 | 12.5x14 | 16x17   | 16x17   | -       | -       | -       |
| 1500     | 152  | 12.5x14               | 12.5x14 | 16x17   | 16x17   | -       | -       | -       | -       |
| 2200     | 222  | 12.5x14               | 16x17   | 16x17   | -       | -       | -       | -       | -       |
| 3300     | 332  | 16x17                 | 16x17   | -       | -       | -       | -       | -       | -       |
| 4700     | 472  | 16x17                 | -       | -       | -       | -       | -       | -       | -       |

### PEAK REFLOW

#### TEMPERATURE CODES

| Code | Peak Reflow Temperature |
|------|-------------------------|
| N    | 260°C                   |
| L    | 250°C                   |
| K    | 245°C                   |
| J    | 240°C                   |
| H    | 235°C                   |

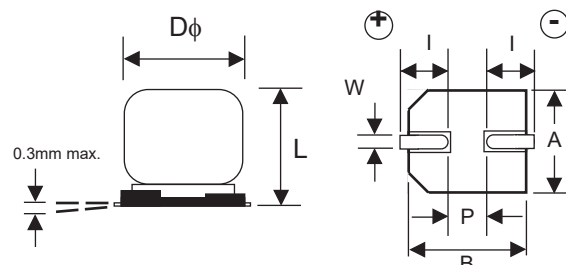
### TERMINATION FINISH & PACKAGING OPTIONS CODES

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

Note 1: 16mm diameter parts are only available with Sn finish.  
Note 2: 12.5mm & 16mm parts are only available on 15" reels.

### CASE SIZE DIMENSIONS (mm)

| Case Size | φD±0.5 | L max. | A±0.2 | B±0.2 | I±0.3 | W       | P±0.3 |
|-----------|--------|--------|-------|-------|-------|---------|-------|
| 6.3x6.3   | 6.3    | 6.3    | 6.6   | 6.6   | 2.5   | 0.5~0.8 | 2.2   |
| 6.3x8     | 6.3    | 8.0    | 6.6   | 6.6   | 2.5   | 0.5~0.8 | 2.2   |
| 8x10.5    | 8.0    | 10.5   | 8.3   | 8.3   | 2.9   | 0.7~1.1 | 3.2   |
| 10x10.5   | 10.0   | 10.5   | 10.3  | 10.3  | 3.2   | 0.7~1.4 | 4.6   |
| 12.5x14   | 12.5   | 14.0   | 12.8  | 12.8  | 4.5   | 1.0~1.4 | 4.6   |
| 16x17     | 16.0   | 17.0   | 16.3  | 16.3  | 5.5   | 1.7~2.1 | 7.0   |



# NATT Series

## Surface Mount Aluminum Electrolytic Capacitors



### STANDARD VALUES, CASE SIZES AND SPECIFICATIONS

| NIC Part Number         | Cap. (μF) | W.V. (Vdc) | Dissipation Factor (Tan δ) | Max. ESR (Ω) 100KHz, +20°C | Max. Ripple Current (mA) +125°C, 100KHz | Load Life Hours @ +125°C |
|-------------------------|-----------|------------|----------------------------|----------------------------|-----------------------------------------|--------------------------|
| NATT101M6.3V6.3X6.3NLF  | 100       | 6.3        | 0.30                       | 1.60                       | 70                                      | 1,000                    |
| NATT221M6.3V6.3X8NLF    | 220       |            | 0.30                       | 0.90                       | 110                                     | 1,000                    |
| NATT331M6.3V8X10.5NLF   | 330       |            | 0.30                       | 0.40                       | 160                                     | 2,000                    |
| NATT471M6.3V8X10.5NLF   | 470       |            | 0.30                       | 0.40                       | 160                                     | 2,000                    |
| NATT681M6.3V10X10.5LLBF | 680       |            | 0.30                       | 0.30                       | 296                                     | 2,000                    |
| NATT102M6.3V12.5X14KLB  | 1000      |            | 0.30                       | 0.12                       | 550                                     | 2,000                    |
| NATT152M6.3V12.5X14KLB  | 1500      |            | 0.30                       | 0.12                       | 550                                     | 2,000                    |
| NATT222M6.3V12.5X14KLB  | 2200      |            | 0.30                       | 0.12                       | 550                                     | 2,000                    |
| NATT332M6.3V16X17JLSF   | 3300      |            | 0.30                       | 0.08                       | 900                                     | 2,000                    |
| NATT472M6.3V16X17JLSF   | 4700      |            | 0.30                       | 0.08                       | 900                                     | 2,000                    |
| NATT470M10V6.3X6.3NLF   | 47        | 10         | 0.24                       | 1.60                       | 70                                      | 1,000                    |
| NATT101M10V6.3X8NLF     | 100       |            | 0.24                       | 0.90                       | 110                                     | 1,000                    |
| NATT221M10V6.3X8NLF     | 220       |            | 0.24                       | 0.90                       | 110                                     | 1,000                    |
| NATT221M10V8X10.5NLF    | 220       |            | 0.24                       | 0.40                       | 160                                     | 2,000                    |
| NATT331M10V8X10.5NLF    | 330       |            | 0.24                       | 0.40                       | 160                                     | 2,000                    |
| NATT471M10V10X10.5LLBF  | 470       |            | 0.24                       | 0.30                       | 296                                     | 2,000                    |
| NATT681M10V12.5X14KLB   | 680       |            | 0.24                       | 0.12                       | 550                                     | 2,000                    |
| NATT102M10V12.5X14KLB   | 1000      |            | 0.24                       | 0.12                       | 550                                     | 2,000                    |
| NATT152M10V12.5X14KLB   | 1500      |            | 0.24                       | 0.12                       | 550                                     | 2,000                    |
| NATT222M10V16X17JLSF    | 2200      |            | 0.24                       | 0.08                       | 900                                     | 2,000                    |
| NATT332M10V16X17JLSF    | 3300      |            | 0.24                       | 0.08                       | 900                                     | 2,000                    |
| NATT470M16V6.3X6.3NLF   | 47        | 16         | 0.20                       | 1.60                       | 70                                      | 1,000                    |
| NATT101M16V6.3X8NLF     | 100       |            | 0.20                       | 0.90                       | 110                                     | 1,000                    |
| NATT101M16V8X10.5NLF    | 100       |            | 0.20                       | 0.40                       | 160                                     | 2,000                    |
| NATT221M16V8X10.5NLF    | 220       |            | 0.20                       | 0.40                       | 160                                     | 2,000                    |
| NATT331M16V10X10.5LLBF  | 330       |            | 0.20                       | 0.30                       | 296                                     | 2,000                    |
| NATT471M16V12.5X14KLB   | 470       |            | 0.20                       | 0.12                       | 550                                     | 2,000                    |
| NATT681M16V12.5X14KLB   | 680       |            | 0.20                       | 0.12                       | 550                                     | 2,000                    |
| NATT102M16V12.5X14KLB   | 1000      |            | 0.20                       | 0.12                       | 550                                     | 2,000                    |
| NATT152M16V16X17JLSF    | 1500      |            | 0.20                       | 0.08                       | 900                                     | 2,000                    |
| NATT222M16V16X17JLSF    | 2200      |            | 0.20                       | 0.08                       | 900                                     | 2,000                    |
| NATT330M25V6.3X6.3NLF   | 33        | 25         | 0.16                       | 1.60                       | 70                                      | 1,000                    |
| NATT470M25V6.3X8NLF     | 47        |            | 0.16                       | 0.90                       | 110                                     | 1,000                    |
| NATT101M25V6.3X8NLF     | 100       |            | 0.16                       | 0.90                       | 110                                     | 1,000                    |
| NATT101M25V8X10.5NLF    | 100       |            | 0.16                       | 0.40                       | 160                                     | 2,000                    |
| NATT221M25V8X10.5NLF    | 220       |            | 0.16                       | 0.40                       | 160                                     | 2,000                    |
| NATT221M25V10X10.5LLBF  | 220       |            | 0.16                       | 0.30                       | 296                                     | 2,000                    |
| NATT331M25V10X10.5LLBF  | 330       |            | 0.16                       | 0.30                       | 296                                     | 2,000                    |
| NATT331M25V12.5X14KLB   | 330       |            | 0.16                       | 0.12                       | 550                                     | 2,000                    |
| NATT471M25V12.5X14KLB   | 470       |            | 0.16                       | 0.12                       | 550                                     | 2,000                    |
| NATT681M25V12.5X14KLB   | 680       |            | 0.16                       | 0.12                       | 550                                     | 2,000                    |
| NATT102M25V16X17JLSF    | 1000      |            | 0.16                       | 0.08                       | 900                                     | 2,000                    |
| NATT152M25V16X17JLSF    | 1500      |            | 0.16                       | 0.08                       | 900                                     | 2,000                    |
| NATT47R7M35V6.3X6.3NLF  | 4.7       | 35         | 0.14                       | 2.00                       | 60                                      | 1,000                    |
| NATT100M35V6.3X6.3NLF   | 10        |            | 0.14                       | 1.60                       | 70                                      | 1,000                    |
| NATT220M35V6.3X6.3NLF   | 22        |            | 0.14                       | 1.60                       | 70                                      | 1,000                    |
| NATT330M35V6.3X8NLF     | 33        |            | 0.14                       | 0.90                       | 110                                     | 1,000                    |
| NATT470M35V6.3X8NLF     | 47        |            | 0.14                       | 0.90                       | 110                                     | 1,000                    |
| NATT470M35V8X10.5NLF    | 47        |            | 0.14                       | 0.40                       | 160                                     | 2,000                    |
| NATT101M35V8X10.5NLF    | 100       |            | 0.14                       | 0.40                       | 160                                     | 2,000                    |
| NATT101M35V10X10.5LLBF  | 100       |            | 0.14                       | 0.30                       | 296                                     | 2,000                    |
| NATT221M35V10X10.5LLBF  | 220       |            | 0.14                       | 0.30                       | 296                                     | 2,000                    |
| NATT221M35V12.5X14KLB   | 220       |            | 0.14                       | 0.12                       | 550                                     | 2,000                    |
| NATT331M35V12.5X14KLB   | 330       |            | 0.14                       | 0.12                       | 550                                     | 2,000                    |
| NATT471M35V12.5X14KLB   | 470       |            | 0.14                       | 0.12                       | 550                                     | 2,000                    |
| NATT471M35V16X17JLSF    | 470       |            | 0.14                       | 0.08                       | 900                                     | 2,000                    |
| NATT681M35V16X17JLSF    | 680       |            | 0.14                       | 0.08                       | 900                                     | 2,000                    |
| NATT102M35V16X17JLSF    | 1000      |            | 0.14                       | 0.08                       | 900                                     | 2,000                    |

For Automotive Equipment, see part number system

### Performance Passives By Design

NIC Components Corp.  
1 Huntington Quadrangle, Suite 1C10. Melville, NY 11747

Last Updated 9/5/2025. Specification subject to change without notice. Please check web site for latest information.

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www.niccomp.com

# NATT Series

## Surface Mount Aluminum Electrolytic Capacitors



### STANDARD VALUES, CASE SIZES AND SPECIFICATIONS

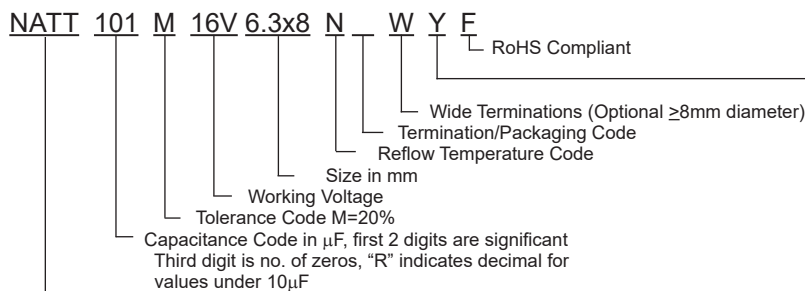
| NIC Part Number         | Cap. (μF) | W.V. (Vdc) | Dissipation Factor (Tan δ) | Max. ESR (Ω) 100KHz, +20°C | Max. Ripple Current (mA) +125°C, 100KHz | Load Life Hours @ +125°C |
|-------------------------|-----------|------------|----------------------------|----------------------------|-----------------------------------------|--------------------------|
| NATT2R2M50V6.3X6.3NLBF  | 2.2       | 50         | 0.14                       | 3.50                       | 45                                      | 1,000                    |
| NATT3R3M50V6.3X6.3NLBF  | 3.3       |            | 0.14                       | 3.50                       | 45                                      | 1,000                    |
| NATT4R7M50V6.3X6.3NLBF  | 4.7       |            | 0.14                       | 3.50                       | 45                                      | 1,000                    |
| NATT100M50V6.3X6.3NLBF  | 10        |            | 0.14                       | 2.80                       | 50                                      | 1,000                    |
| NATT220M50V6.3X8NLBF    | 22        |            | 0.14                       | 2.00                       | 80                                      | 1,000                    |
| NATT330M50V6.3X8NLBF    | 33        |            | 0.14                       | 2.00                       | 80                                      | 1,000                    |
| NATT330M50V8X10.5NLBF   | 33        |            | 0.14                       | 0.70                       | 140                                     | 2,000                    |
| NATT470M50V8X10.5NLBF   | 47        |            | 0.14                       | 0.70                       | 140                                     | 2,000                    |
| NATT470M50V10X10.5LLBF  | 47        |            | 0.14                       | 0.50                       | 247                                     | 2,000                    |
| NATT101M50V10X10.5LLBF  | 100       |            | 0.14                       | 0.50                       | 247                                     | 2,000                    |
| NATT101M50V12.5X14KLBF  | 100       |            | 0.14                       | 0.23                       | 490                                     | 2,000                    |
| NATT221M50V12.5X14KLBF  | 220       |            | 0.14                       | 0.23                       | 490                                     | 2,000                    |
| NATT331M50V12.5X14KLBF  | 330       |            | 0.14                       | 0.23                       | 490                                     | 2,000                    |
| NATT331M50V16X17JLSF    | 330       |            | 0.14                       | 0.15                       | 800                                     | 2,000                    |
| NATT471M50V16X17JLSF    | 470       |            | 0.14                       | 0.15                       | 800                                     | 2,000                    |
| NATT681M50V16X17JLSF    | 680       |            | 0.14                       | 0.15                       | 800                                     | 2,000                    |
| NATT220M63V8X10.5KLBF   | 22        | 63         | 0.12                       | 1.0                        | 100                                     | 1,500                    |
| NATT330M63V8X10.5KLBF   | 33        |            | 0.12                       | 1.0                        | 100                                     | 1,500                    |
| NATT470M63V8X10.5KLBF   | 47        |            | 0.12                       | 1.0                        | 100                                     | 1,500                    |
| NATT470M63V10X10.5JLBF  | 47        |            | 0.12                       | 0.5                        | 150                                     | 1,500                    |
| NATT101M63V10X10.5JLBF  | 100       |            | 0.12                       | 0.5                        | 150                                     | 1,500                    |
| NATT101M63V12.5X14JLBF  | 100       |            | 0.12                       | 0.25                       | 350                                     | 1,500                    |
| NATT221M63V12.5X14JLBF  | 220       |            | 0.12                       | 0.25                       | 350                                     | 1,500                    |
| NATT221M63V16X17HLSF    | 220       |            | 0.12                       | 0.18                       | 500                                     | 1,500                    |
| NATT331M63V16X17HLSF    | 330       |            | 0.12                       | 0.18                       | 500                                     | 1,500                    |
| NATT471M63V16X17HLSF    | 470       |            | 0.12                       | 0.18                       | 500                                     | 1,500                    |
| NATT100M100V8X10.5JLBF  | 10        | 100        | 0.10                       | 1.00                       | 70                                      | 1,500                    |
| NATT220M100V8X10.5JLBF  | 22        |            | 0.10                       | 1.00                       | 70                                      | 1,500                    |
| NATT330M100V10X10.5JLBF | 33        |            | 0.10                       | 0.80                       | 115                                     | 1,500                    |
| NATT470M100V12.5X14HLBF | 47        |            | 0.10                       | 0.33                       | 350                                     | 1,500                    |
| NATT101M100V16X17HLSF   | 100       |            | 0.10                       | 0.24                       | 500                                     | 1,500                    |

For Automotive Equipment, see part number system

### RIPPLE CURRENT FREQUENCY MULTIPLIER

| Capacitance (μF) | Frequency (Hz) |      |      |      |
|------------------|----------------|------|------|------|
|                  | 100            | 1K   | 10K  | 100K |
| ≤22              | 0.50           | 0.80 | 0.90 | 1.0  |
| ≤150             | 0.65           | 0.85 | 0.92 | 1.0  |
| >150             | 0.70           | 0.85 | 0.95 | 1.0  |

### PART NUMBER SYSTEM



Optional: Suitable for automotive equipment, sourced to special production and inspection at IATF-16949 certified production site.

### PRECAUTIONS

Please review the notes on correct use, safety and precautions found at <https://www.niccomp.com/wp-content/uploads/files/aluminum/AlumApplInfoCautions.pdf>. If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

# NATT Series

## Surface Mount Aluminum Electrolytic Capacitors



### PEAK REFLOW TEMPERATURE & DURATION (6.3 ~ 50V)

| Diameter           | Time above 200°C | Time above 217°C | Time above 230°C | Peak Temperature 5 seconds | Reflow Code |
|--------------------|------------------|------------------|------------------|----------------------------|-------------|
| 6.3mm ~ 8mm $\phi$ | 80 sec. max.     | 70 sec. max.     | 40 sec. max.     | 260°C                      | N           |
| 10mm $\phi$        | 70 sec. max.     | 60 sec. max.     | 40 sec. max.     | 250°C                      | L           |
| 12.5mm $\phi$      | 60 sec. max.     | 50 sec. max.     | 30 sec. max.     | 245°C                      | K           |
| 16mm $\phi$        | 50 sec. max.     | 40 sec. max.     | 20 sec. max.     | 240°C                      | J           |

### PEAK REFLOW TEMPERATURE & DURATION (63V)

| Diameter      | Time above 200°C | Time above 217°C | Time above 230°C | Peak Temperature 5 seconds | Reflow Code |
|---------------|------------------|------------------|------------------|----------------------------|-------------|
| 8mm $\phi$    | 60 sec. max.     | 50 sec. max.     | 30 sec. max.     | 245°C                      | K           |
| 10mm $\phi$   | 50 sec. max.     | 40 sec. max.     | 20 sec. max.     | 240°C                      | J           |
| 12.5mm $\phi$ | 50 sec. max.     | 40 sec. max.     | 20 sec. max.     | 240°C                      | J           |
| 16mm $\phi$   | 50 sec. max.     | 40 sec. max.     | 15 sec. max.     | 235°C                      | H           |

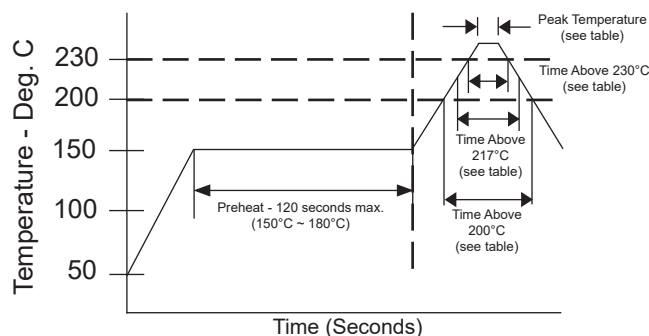
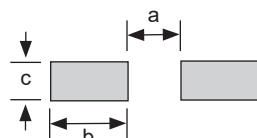
### PEAK REFLOW TEMPERATURE & DURATION (100V)

| Diameter      | Time above 200°C | Time above 217°C | Time above 230°C | Peak Temperature 5 seconds | Reflow Code |
|---------------|------------------|------------------|------------------|----------------------------|-------------|
| 8mm $\phi$    | 60 sec. max.     | 50 sec. max.     | 30 sec. max.     | 240°C                      | J           |
| 10mm $\phi$   | 50 sec. max.     | 40 sec. max.     | 20 sec. max.     | 240°C                      | J           |
| 12.5mm $\phi$ | 50 sec. max.     | 40 sec. max.     | 20 sec. max.     | 235°C                      | H           |
| 16mm $\phi$   | 45 sec. max.     | 30 sec. max.     | 10 sec. max.     | 235°C                      | H           |

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   |
|------------------|-----|-----|-----|
| 6x3x6.3<br>6.3x8 | 2.1 | 3.5 | 1.8 |
| 8x10.5           | 2.8 | 4.1 | 2.1 |
| 10x10.5          | 4.3 | 4.4 | 2.5 |
| 12.5x14          | 4.3 | 5.8 | 2.5 |
| 16x17            | 6.6 | 6.5 | 5.0 |

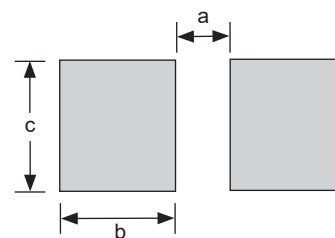
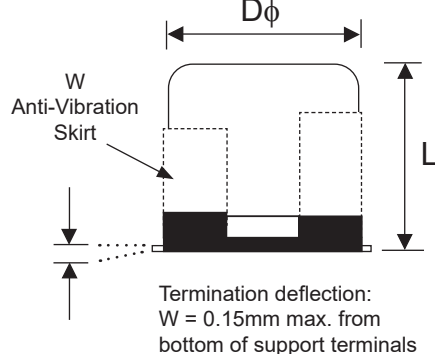
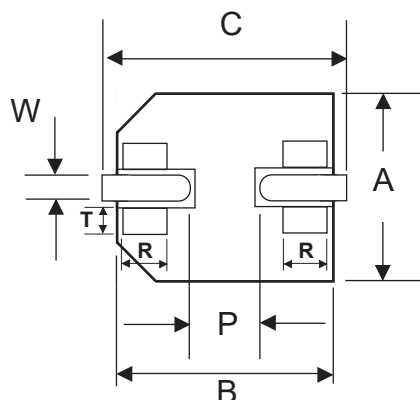


### WIDE TERMINATION (W) DIM. (mm)

| Case Size  | D $\phi$ $\pm$ 0.5 | L $\pm$ 0.5 | A, B           | C $\pm$ 0.2 | P $\pm$ 0.2 | W         | R     | T     |
|------------|--------------------|-------------|----------------|-------------|-------------|-----------|-------|-------|
| 8 x 10.5W  | 8.0                | 10.5        | 8.3 $\pm$ 0.2  | 9.0         | 3.2         | 0.7 ~ 1.0 | (0.7) | (1.3) |
| 10 x 10.5W | 10.0               | 10.5        | 10.3 $\pm$ 0.2 | 11.0        | 4.6         | 1.0 ~ 1.4 | (0.7) | (1.3) |
| 12.5 x 14W | 12.5               | 14.0        | 13.5 $\pm$ 0.2 | 14.2        | 4.6         | 1.0 ~ 1.4 | (2.2) | (2.4) |
| 16 x 17W   | 16.0               | 17.0        | 17.0 $\pm$ 0.2 | 18.0        | 7.0         | 1.8 ~ 2.1 | (3.0) | (2.0) |

### W LAND PATTERN DIM. (mm)

| Case Size | a   | b   | c   |
|-----------|-----|-----|-----|
| 8x10.5    | 2.5 | 4.5 | 4.7 |
| 10x10.5   | 3.8 | 4.8 | 4.7 |
| 12.5x14   | 3.8 | 6.1 | 6.9 |
| 16x17     | 5.0 | 8.0 | 9.5 |



# NATT Series

## Surface Mount Aluminum Electrolytic Capacitors



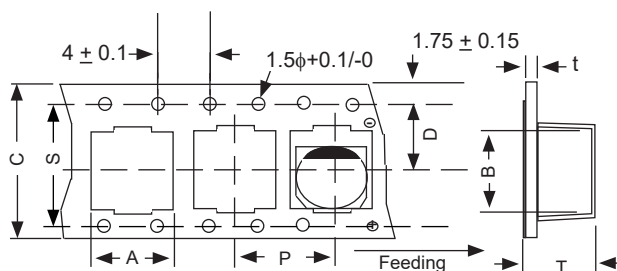
| W (Wide Terminations) Anti-Vibration Test |                                                                                                                                                                                               |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Method                               | Direction: X, Y, Z axis<br>Frequency & Duration: 5 to 2000Hz reciprocation for 20 minutes, 2 hours each direction<br>Peak to Peak Amplitude: 5mm<br>Peak Acceleration: 30G<br>Sweep Type: Log |
| Δ Capacitance                             | Within ± 10% of initial value                                                                                                                                                                 |
| Tangent of Loss                           | ≤ Specified value                                                                                                                                                                             |
| Leakage Current                           | ≤ Specified value                                                                                                                                                                             |

### CARRIER TAPE DIMENSIONS (mm)

| Case Size | A<br>±0.2 | B<br>±0.2 | C<br>±0.3 | D<br>±0.1 | P<br>±0.1 | T<br>±0.2 | t<br>max. | S<br>±0.1 |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 6.3 x 6.3 | 7.0       | 7.0       | 16.0      | 7.5       | 12.0      | 6.5       | 0.6       | -         |
| 6.3 x 8   | 7.0       | 7.0       | 16.0      | 7.5       | 12.0      | 8.2       | 0.6       | -         |
| 8 x 10.5  | 8.7       | 8.7       | 24.0      | 11.5      | 16.0      | 11.1      | 0.6       | -         |
| 10 x 10.5 | 10.7      | 10.7      | 24.0      | 11.5      | 16.0      | 11.2      | 0.6       | -         |
| 12.5 x 14 | 13.2      | 13.2      | 32.0      | 14.2      | 24.0      | 14.3      | 0.6       | 28.4      |
| 16 x 17   | 17.5      | 17.5      | 44.0      | 20.2      | 28.0      | 17.3      | 0.6       | 40.4      |

### 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.

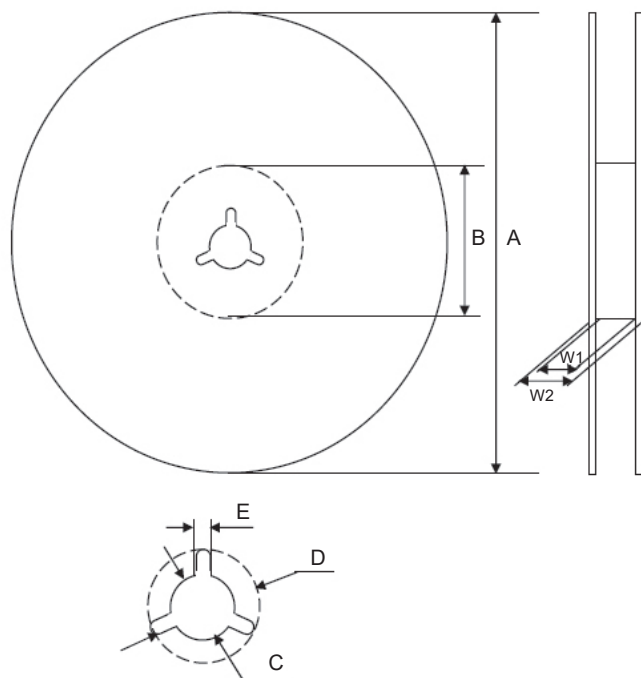


# NATT Series

## Surface Mount Aluminum Electrolytic Capacitors



V-Chip 15" (380mm) Reel (LBF or LSF suffix)



### Dimensions (mm)

| Case Size       | Tape Width | W1          | W2          |
|-----------------|------------|-------------|-------------|
| 6.3x6.3, 6.3x8  | 16.0       | 16.5 ~ 18.0 | 19.5 ~ 24.0 |
| 8x10.5, 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             |
|-----------------|------------|------------------|--------------------|-------------------|-------------------|---------------|
| 6.3x6.3, 6.3x8  | 16.0       | $\phi 380 \pm 2$ | $\phi 80 \sim 105$ | $\phi 13 \pm 0.5$ | $\phi 21 \pm 1.0$ | 2.0 $\pm 0.5$ |
| 8x10.5, 10x10.5 | 24.0       |                  |                    |                   |                   |               |
| 12.5x14         | 32.0       |                  |                    |                   |                   |               |
| 16x17           | 44.0       |                  |                    |                   |                   |               |

| Case Size | Quantity Per Reel |
|-----------|-------------------|
|           | 15" (380mm)       |
| 6.3x6.3   | 1,000             |
| 6.3x8     | 900               |
| 8x10.5    | 500               |
| 10x10.5   | 500               |
| 12.5x14   | 250               |
| 16x17     | 200               |