# Surface Mount Aluminum Electrolytic Capacitors NACY Series

## FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- LOW IMPEDANCE AT 100KHz (Up to 20% lower than NACZ)
- WIDE TEMPERATURE RANGE (-55 +105°C)
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING

**RoHS Compliant**
includes all homogeneous materials

*See Part Number System for Details

## CHARACTERISTICS

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated Capacitance Range | | | | 4.7 ~ 6800 µF | | | | | | | |
| Operating Temperature Range | | | | - 55°C + 105°C | | | | | | | |
| Capacitance Tolerance | | | | ±20% (120Hz/+20°C) | | | | | | | |
| Max. Leakage Current after 2 minutes at 20°C | | | | 0.01CV or 3 µA | | | | | | | |
| Max. Tan δ at 120Hz & 20°C | W.V.(Vdc) | | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
| | S.V.(Vdc) | | | 8 | 13 | 20 | 32 | 44 | 63 | 80 | 100 | 125 |
| | Tan δ | φ4 to φ6.3 | | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | 0.10 | 0.08 | 0.07 |
| | | φ8 ~ φ16 | C≤1500µF | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | 0.12 | 0.10 | 0.08 |
| | | | C=2200µF | - | 0.26 | - | 0.18 | - | - | - | - | - |
| | | | C=3300µF | 0.32 | - | 0.24 | - | - | - | - | - | - |
| | | | C=4700µF | - | 0.30 | - | - | - | - | - | - | - |
| | | | C=6800µF | 0.36 | - | - | - | - | - | - | - | - |
| Low Temperature Stability (Impedance Ratio at 120 Hz) | Z -40°C/Z +20°C | | | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Z -55°C/Z +20°C | | | 5 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 |
| Load Life Test AT 105°C 4 ~ 6.3mm Dia 1,000 Hours 8 ~ 12.5mm Dia 2,000 Hours | Capacitance Change | | | Within ±25% of initial measured value | | | | | | | | |
| | Tan δ | | | Less than 200% of the specified value | | | | | | | | |
| | Leakage Current | | | Less than the specified maximum value | | | | | | | | |

## MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA rms AT 100KHz AND 105°C)

| Cap. (µF) | Working Voltage (Vdc) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
| 4.7 | - | - | - | - | 90 | 64 | 55 | 45 | - |
| 10 | - | - | - | 90 | 170 | 215 | 90 | 65 | - |
| 15 | - | - | 90 | 170 | 170 | - | - | - | - |
| 22 | - | 90 | 170 | 170 | 170 | 215 | 135 | 140 | 140 |
| 27 | 90 | - | - | - | - | - | - | - | - |
| 33 | - | 170 | - | 250 | 250 | 243 | 280 | 140 | 220 |
| 47 | 170 | - | 250 | 250 | 250 | 243 | 280 | 220 | 500 |
| 56 | 170 | - | - | 250 | - | - | - | - | - |
| 68 | - | 250 | 250 | 250 | 300 | - | - | - | - |
| 100 | 250 | - | 250 | 300 | 600 | 400 | 480 | 500 | 800 |
| 150 | 250 | 250 | 300 | 600 | 600 | - | - | 500 | 800 |
| 220 | 250 | 300 | 300 | 600 | 600 | 585 | 800 | - | - |
| 330 | 300 | 600 | 600 | 600 | 850 | 800 | - | 800 | - |
| 470 | 600 | 600 | 600 | 850 | 1150 | - | 1410 | - | - |
| 680 | 600 | - | 850 | - | 1150 | - | - | - | - |
| 1000 | 600 | 850 | - | 1150 | - | 1610 | - | - | - |
| 1500 | 850 | - | 1150 | - | 1800 | - | - | - | - |
| 2200 | - | 1150 | - | 1800 | - | - | - | - | - |
| 3300 | 1150 | - | 1800 | - | - | - | - | - | - |
| 4700 | - | 1800 | - | - | - | - | - | - | - |
| 6800 | 1800 | - | - | - | - | - | - | - | - |

Denotes New Values

## MAXIMUM IMPEDANCE (Ω AT 100KHz AND 20°C)

| Cap. (µF) | Working Voltage (Vdc) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
| 4.7 | - | - | - | - | 1.45 | 2.55 | 2.00 | 2.40 | - |
| 10 | - | - | - | 1.45 | 0.7 | 0.52 | 1.00 | 2.00 | - |
| 15 | - | - | 1.45 | 0.7 | 0.7 | - | - | - | - |
| 22 | | 1.45 | 0.7 | 0.7 | 0.7 | 0.52 | 0.80 | 0.90 | 0.90 |
| 27 | 1.45 | - | - | - | - | - | - | - | - |
| 33 | - | 0.7 | - | 0.39 | 0.39 | 0.44 | 0.35 | 0.90 | 0.50 |
| 47 | 0.7 | - | 0.39 | 0.39 | 0.39 | 0.44 | 0.35 | 0.50 | 0.24 |
| 56 | 0.7 | - | - | 0.39 | - | - | - | - | - |
| 68 | - | 0.39 | 0.39 | 0.39 | 0.30 | - | - | - | - |
| 100 | 0.39 | - | 0.39 | 0.3 | 0.15 | 0.22 | 0.20 | 0.24 | 0.14 |
| 150 | 0.39 | 0.39 | 0.3 | 0.15 | 0.15 | - | - | 0.24 | 0.14 |
| 220 | 0.39 | 0.3 | 0.3 | 0.15 | 0.15 | 0.13 | 0.14 | - | - |
| 330 | 0.3 | 0.15 | 0.15 | 0.15 | 0.08 | 0.10 | - | 0.14 | - |
| 470 | 0.15 | 0.15 | 0.15 | 0.08 | 0.058 | - | 0.065 | - | - |
| 680 | 0.15 | - | 0.08 | - | 0.058 | - | - | - | - |
| 1000 | 0.15 | 0.08 | - | 0.058 | - | 0.065 | - | - | - |
| 1500 | 0.08 | - | 0.058 | - | 0.035 | - | - | - | - |
| 2200 | - | 0.058 | - | 0.035 | - | - | - | - | - |
| 3300 | 0.058 | - | 0.035 | - | - | | | | |
| 4700 | - | 0.035 | - | - | - | - | - | - | - |
| 6800 | 0.035 | - | - | - | - | - | - | - | - |

## PRECAUTIONS

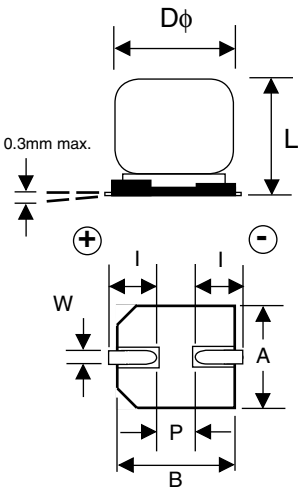
Please review the notes on correct use, safety and precautions found on **pages T10 & T11** of NIC's **Electrolytic Capacitor catalog**.
Also found at **www.niccomp.com/precautions**
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: **tpmg@niccomp.com**

## RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

| Frequency | ≤ 120Hz | ≤ 1KHz | ≤ 10KHz | ≤ 100KHz |
|---|---|---|---|---|
| Correction Factor | 0.75 | 0.85 | 0.95 | 1.00 |

## STANDARD PRODUCT AND CASE SIZE Dϕ xL (mm)

| Cap (µF) | Code | Working Voltage (Vdc) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
| 4.7 | 4R7 | - | - | - | - | 4x6.3 | 4x6.3 | 5x6.3 | 6.3x6.3 | - |
| 10 | 100 | - | - | - | 4x6.3 | 5x6.3 | 6.3x6.3 | 6.3x6.3 | 6.3x8 | - |
| 15 | 150 | - | - | 4x6.3 | 5x6.3 | 5x6.3 | - | - | - | - |
| 22 | 220 | - | 4x6.3 | 5x6.3 | 5x6.3 | 5x6.3 | 6.3x6.3 | 6.3x8 | 8x10.5 | 8x10.5 |
| 27 | 270 | 4x6.3 | - | - | - | - | - | - | - | - |
| 33 | 330 | - | 5x6.3 | - | 6.3x6.3 | 6.3x6.3 | 6.3x8 | 8x10.5 | 8x10.5 | 10x10.5 |
| 47 | 470 | 5x6.3 | - | 6.3x6.3 | 6.3x6.3 | 6.3x6.3 | 6.3x8 | 8x10.5 | 10x10.5 | 12.5x14 |
| 56 | 560 | 5x6.3 | - | - | 6.3x6.3 | - | - | - | - | - |
| 68 | 680 | - | 6.3x6.3 | 6.3x6.3 | 6.3x6.3 | 6.3x8 | - | - | - | - |
| 100 | 101 | 6.3x6.3 | - | 6.3x6.3 | 6.3x8 | 8x10.5 | 8x10.5 | 10x10.5 | 12.5x14 | 16x17 |
| 150 | 151 | 6.3x6.3 | 6.3x6.3 | 6.3x8 | 8x10.5 | 8x10.5 | - | - | 12.5x14 | 16x17 |
| 220 | 221 | 6.3x6.3 | 6.3x8 | 6.3x8 | 8x10.5 | 8x10.5 | 10x10.5 | 12.5x14 | - | - |
| 330 | 331 | 6.3x8 | 8x10.5 | 8x10.5 | 8x10.5 | 10x10.5 | 12.5x14 | - | 16x17 | - |
| 470 | 471 | 8x10.5 | 8x10.5 | 8x10.5 | 10x10.5 | 12.5x14 | - | 16x17 | - | - |
| 680 | 681 | 8x10.5 | - | 10x10.5 | - | 12.5x14 | - | - | - | - |
| 1000 | 102 | 8x10.5 | 10x10.5 | - | 12.5x14 | - | 16x17 | - | - | - |
| 1500 | 152 | 10x10.5 | - | 12.5x14 | - | 16x17 | - | - | - | - |
| 2200 | 222 | - | 12.5x14 | - | 16x17 | - | - | - | - | - |
| 3300 | 332 | 12.5x14 | - | 16x17 | - | - | - | - | - | - |
| 4700 | 472 | - | 16x17 | - | - | - | - | - | - | - |
| 6800 | 682 | 16x17 | - | - | - | - | - | - | - | - |




## DIMENSIONS (mm)

| Case Size | Dϕ ±0.5 | L max. | A ±0.2 | B ±0.2 | I ±0.2 | W | P ±0.2 |
|---|---|---|---|---|---|---|---|
| 4 x 6.3 | 4.0 | 6.3 | 4.3 | 4.3 | 1.8 | 0.5 ~ 0.8 | 1.0 |
| 5 x 6.3 | 5.0 | 6.3 | 5.3 | 5.3 | 2.2 | 0.5 ~ 0.8 | 1.5 |
| 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 10.5 | 8.0 | 10.5 | 8.3 | 8.3 | 2.9 | 0.7 ~ 1.0 | 3.2 |
| 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 | 0.6 ~ 1.4 | 4.6 |
| 16x17 | 16.0 | 17 | 16.3 | 16.3 | 5.0 | 1.8 ~ 2.1 | 7.0 |

## PART NUMBER SYSTEM

NACY 100 M 25V 5x6.3 TR 13 F

- F — RoHS Compliant 97% Sn (min.), 3% Bi (max.)
- 13 — 330mm (13") Reel
- TR — Tape & Reel
- 5x6.3 — Size in mm
- 25V — Working Voltage
- M — Tolerance Code M=20%, K=10%
- 100 — Capacitance Code in µF, first 2 digits are significant. Third digit is no. of zeros, "R" indicates decimal for values under 10µF
- NACY — Series