

### FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION
- LOW PROFILE, 5.5mm MAXIMUM HEIGHT
- SPACE AND COST SAVINGS
- DESIGNED FOR REFLOW SOLDERING

## RoHS Compliant

includes all homogeneous materials

\*See Part Number System for Details



### CHARACTERISTICS

|                                                        |                                     |                                       |      |      |      |      |      |
|--------------------------------------------------------|-------------------------------------|---------------------------------------|------|------|------|------|------|
| Rated Voltage Rating                                   | 6.3 ~ 50Vdc**                       |                                       |      |      |      |      |      |
| Rated Capacitance Range                                | 4.7 ~ 220μF                         |                                       |      |      |      |      |      |
| Operating Temperature Range                            | -40° ~ +85°C                        |                                       |      |      |      |      |      |
| Capacitance Tolerance                                  | ±20%(M), ±10%(K)*                   |                                       |      |      |      |      |      |
| Max. Leakage Current After 2 Minutes at 20°C           | 0.01CV or 3μA, whichever is greater |                                       |      |      |      |      |      |
| Surge Voltage & Max. Tanδ                              | W.V. (Vdc)                          | 6.3                                   | 10   | 16   | 25   | 35   | 50   |
|                                                        | S.V. (Vdc)                          | 8.0                                   | 13   | 20   | 32   | 44   | 63   |
|                                                        | Tanδ @ 120Hz/20°C                   | 0.28                                  | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 |
| Low Temperature Stability<br>(Impedance Ratio @ 120Hz) | W.V. (Vdc)                          | 6.3                                   | 10   | 16   | 25   | 35   | 50   |
|                                                        | Z-40°C/Z +20°C                      | 4                                     | 3    | 2    | 2    | 2    | 2    |
|                                                        | Z-55°C/Z +20°C                      | 10                                    | 8    | 6    | 4    | 4    | 4    |
| Load Life Test<br>at Rated W.V.<br>85°C 2,000 Hours    | Capacitance Change                  | Within ±25% of initial measured value |      |      |      |      |      |
|                                                        | Tanδ                                | Less than 200% of specified value     |      |      |      |      |      |
|                                                        | Leakage Current                     | Less than specified value             |      |      |      |      |      |

\*Optional ± 10% (K) Tolerance available on most values. Contact factory for availability.

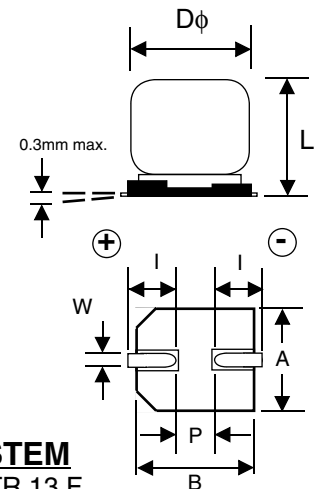
\*\* For higher voltages, 200V and 400V, see NACV series.

### MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA rms AT 120Hz AND 85°C)

| Cap. (μF) | Working Voltage (Vdc) |    |    |    |    |    |    |
|-----------|-----------------------|----|----|----|----|----|----|
|           | 6.3                   | 10 | 16 | 25 | 35 | 50 |    |
| 4.7       | -                     | -  | -  | -  | -  | -  | 18 |
| 10        | -                     | -  | -  | 20 | 20 | 27 |    |
| 22        | -                     | 28 | 28 | 35 | 36 | 40 |    |
| 33        | 31                    | 32 | 40 | 42 | 65 | -  |    |
| 47        | 36                    | 43 | 44 | 65 | -  | -  |    |
| 56        | 46                    | 46 | 48 | 68 | -  | -  |    |
| 100       | 47                    | 50 | -  | -  | -  | -  |    |
| 150       | 71                    | 76 | -  | -  | -  | -  |    |
| 220       | 74                    | -  | -  | -  | -  | -  |    |

### MAXIMUM ESR (Ω AT 120Hz AND 20°C)

| Cap. (μF) | Working Voltage (Vdc) |      |      |      |      |      |      |
|-----------|-----------------------|------|------|------|------|------|------|
|           | 6.3                   | 10   | 16   | 25   | 35   | 50   |      |
| 4.7       | -                     | -    | -    | -    | -    | -    | 42.3 |
| 10        | -                     | -    | -    | 26.5 | 23.2 | 19.9 |      |
| 22        | -                     | 18.1 | 15.1 | 12.1 | 10.6 | 9.05 |      |
| 33        | 14.1                  | 12.6 | 10.1 | 8.04 | 7.04 | -    |      |
| 47        | 9.88                  | 8.47 | 7.06 | 5.65 | -    | -    |      |
| 56        | 8.29                  | 7.11 | 5.92 | 4.74 | -    | -    |      |
| 100       | 4.64                  | 3.98 | -    | -    | -    | -    |      |
| 150       | 3.10                  | 2.66 | -    | -    | -    | -    |      |
| 220       | 2.11                  | -    | -    | -    | -    | -    |      |



### RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

| Frequency Hz      | 50 ≤ f < 100 | 100 ≤ f < 1K | 1K ≤ f < 10K | f ≥ 10K |
|-------------------|--------------|--------------|--------------|---------|
| Correction Factor | 0.8          | 1.0          | 1.3          | 1.5     |

### STANDARD PRODUCT AND CASE SIZE Dφ x L (mm)

| Cap. (μF) | Code | Working Voltage (Vdc) |         |       |         |         |         |
|-----------|------|-----------------------|---------|-------|---------|---------|---------|
|           |      | 6.3                   | 10      | 16    | 25      | 35      | 50      |
| 4.7       | 4R7  | -                     | -       | -     | -       | -       | 4x5.5   |
| 10        | 100  | -                     | -       | -     | 4x5.5   | 4x5.5   | 5x5.5   |
| 22        | 220  | -                     | 4x5.5   | 4x5.5 | 5x5.5   | 5x5.5   | 6.3x5.5 |
| 33        | 330  | 4x5.5                 | 4x5.5   | 5x5.5 | 5x5.5   | 6.3x5.5 | -       |
| 47        | 470  | 4x5.5                 | 5x5.5   | 5x5.5 | 6.3x5.5 | -       | -       |
| 56        | 560  | 5x5.5                 | 5x5.5   | 5x5.5 | 6.3x5.5 | -       | -       |
| 100       | 101  | 5x5.5                 | 5x5.5   | -     | -       | -       | -       |
| 150       | 151  | 6.3x5.5               | 6.3x5.5 | -     | -       | -       | -       |
| 220       | 221  | 6.3x5.5               | -       | -     | -       | -       | -       |

### PART NUMBER SYSTEM

NACS 100 M 35V 4x5.5 TR 13 E

Series | NACS | 100 (Capacitance Code) | M (Tolerance Code M=20%, K=10%) | 35V (Working Voltage) | 4x5.5 (Case Size in mm) | TR (Tape & Reel) | 13 (Capacitance Code in μF, first 2 digits are significant, third digit is no. of zeros, "R" indicates decimal for values under 10μF) | E (RoHS Compliant 97% Sn (min.), 3% Bi (max.), 330mm (13") Reel)

### DIMENSIONS (mm)

| Case Size | Dφ±0.5 | L max. | A/B±0.2 | I ± 0.2 | W         | P±0.2 |
|-----------|--------|--------|---------|---------|-----------|-------|
| 4x5.5     | 4.0    | 5.5    | 4.3     | 1.8     | 0.5 ~ 0.8 | 1.0   |
| 5x5.5     | 5.0    | 5.5    | 5.3     | 2.1     | 0.5 ~ 0.8 | 1.4   |
| 6.3x5.5   | 6.3    | 5.5    | 6.6     | 2.5     | 0.5 ~ 0.8 | 2.2   |

### 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)

