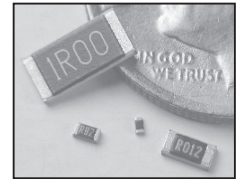


### FEATURES

- SURFACE MOUNTABLE 0201 ~ 7520 CASE SIZE
- PRECISION TOLERANCE ( $\pm 1\%$ )
- POWER RATINGS UP TO 3 WATTS
- **HIGH & ULTRA HIGH POWER OPTIONS AVAILABLE (SEE PAGE 7)**
- Pb-FREE REFLOW COMPATIBLE

**RoHS  
Compliant**  
includes all homogeneous materials

\*See Part Number System for Details



### CHARACTERISTICS FOR STANDARD POWER RATINGS

| Type    | EIA Size | Power Rating at 70°C | Resistance Tolerance       | Temperature Coefficient (°C) | Resistance Range              | Resistance Range (Codes) | Operating Temp. Range (°C) |
|---------|----------|----------------------|----------------------------|------------------------------|-------------------------------|--------------------------|----------------------------|
| NCST02  | 0201     | 1/20W                | 1% (F)<br>2% (G)<br>5% (J) | $\pm 300\text{ppm}$ (G)      | 501m $\Omega$ ~ 1 $\Omega$    | R501 ~ 1R00              | -55°C ~ +155°C             |
|         |          |                      |                            | $\pm 600\text{ppm}$ (J)      | 150m $\Omega$ ~ 500m $\Omega$ | R150 ~ R500              |                            |
|         |          |                      |                            | $\pm 1000\text{ppm}$ (R)     | 100m $\Omega$ ~ 149m $\Omega$ | R100 ~ R149              |                            |
| NCST04  | 0402     | 1/16W                | 1% (F)<br>2% (G)<br>5% (J) | $\pm 200\text{ppm}$ (F)      | 501m $\Omega$ ~ 1 $\Omega$    | R501 ~ 1R00              |                            |
|         |          |                      |                            | $\pm 300\text{ppm}$ (G)      | 101m $\Omega$ ~ 500m $\Omega$ | R101 ~ R500              |                            |
|         |          |                      |                            | $\pm 400\text{ppm}$ (H)      | 50m $\Omega$ ~ 100m $\Omega$  | R050 ~ R100              |                            |
| NCST06  | 0603     | 1/10W                | 1% (F)<br>2% (G)<br>5% (J) | $\pm 200\text{ppm}$ (F)      | 501m $\Omega$ ~ 1 $\Omega$    | R501 ~ 1R00              |                            |
|         |          |                      |                            | $\pm 300\text{ppm}$ (G)      | 101m $\Omega$ ~ 500m $\Omega$ | R101 ~ R500              |                            |
|         |          |                      |                            | $\pm 400\text{ppm}$ (H)      | 51m $\Omega$ ~ 100m $\Omega$  | R051 ~ R100              |                            |
|         |          |                      |                            | $\pm 600\text{ppm}$ (J)      | 20m $\Omega$ ~ 50m $\Omega$   | R020 ~ R050              |                            |
| NCST10  | 0805     | 1/8W                 | 1% (F)<br>2% (G)<br>5% (J) | $\pm 200\text{ppm}$ (F)      | 200m $\Omega$ ~ 1 $\Omega$    | R200 ~ 1R00              |                            |
|         |          |                      |                            | $\pm 300\text{ppm}$ (G)      | 101m $\Omega$ ~ 199m $\Omega$ | R101 ~ R199              |                            |
|         |          |                      |                            | $\pm 400\text{ppm}$ (H)      | 51m $\Omega$ ~ 100m $\Omega$  | R051 ~ R100              |                            |
|         |          |                      |                            | $\pm 600\text{ppm}$ (J)      | 20m $\Omega$ ~ 50m $\Omega$   | R020 ~ R050              |                            |
| NCST12  | 1206     | 1/4W                 | 1% (F)<br>2% (G)<br>5% (J) | $\pm 200\text{ppm}$ (F)      | 100m $\Omega$ ~ 1 $\Omega$    | R100 ~ 1R00              |                            |
|         |          |                      |                            | $\pm 300\text{ppm}$ (G)      | 51m $\Omega$ ~ 99m $\Omega$   | R051 ~ R099              |                            |
|         |          |                      |                            | $\pm 400\text{ppm}$ (H)      | 21m $\Omega$ ~ 50m $\Omega$   | R021 ~ R050              |                            |
|         |          |                      |                            | $\pm 600\text{ppm}$ (J)      | 10m $\Omega$ ~ 20m $\Omega$   | R010 ~ R020              |                            |
| NCST25* | 1210     | 1/2W                 | 1% (F)<br>2% (G)<br>5% (J) | $\pm 200\text{ppm}$ (F)      | 100m $\Omega$ ~ 1 $\Omega$    | R100 ~ 1R00              |                            |
|         |          |                      |                            | $\pm 300\text{ppm}$ (G)      | 51m $\Omega$ ~ 99m $\Omega$   | R051 ~ R099              |                            |
|         |          |                      |                            | $\pm 400\text{ppm}$ (H)      | 21m $\Omega$ ~ 50m $\Omega$   | R021 ~ R050              |                            |
|         |          |                      |                            | $\pm 600\text{ppm}$ (J)      | 10m $\Omega$ ~ 20m $\Omega$   | R010 ~ R020              |                            |
| NCST50* | 2010     | 3/4W                 | 1% (F)<br>2% (G)<br>5% (J) | $\pm 200\text{ppm}$ (F)      | 100m $\Omega$ ~ 1 $\Omega$    | R100 ~ 1R00              |                            |
|         |          |                      |                            | $\pm 300\text{ppm}$ (G)      | 51m $\Omega$ ~ 99m $\Omega$   | R051 ~ R099              |                            |
|         |          |                      |                            | $\pm 400\text{ppm}$ (H)      | 21m $\Omega$ ~ 50m $\Omega$   | R021 ~ R050              |                            |
|         |          |                      |                            | $\pm 600\text{ppm}$ (J)      | 10m $\Omega$ ~ 20m $\Omega$   | R010 ~ R020              |                            |

\*Tolerance Codes: 1% (F), 2% (G) or 5% (J)

Sizes and Values Table Continues on Next Page

#### PART NUMBER SYSTEM

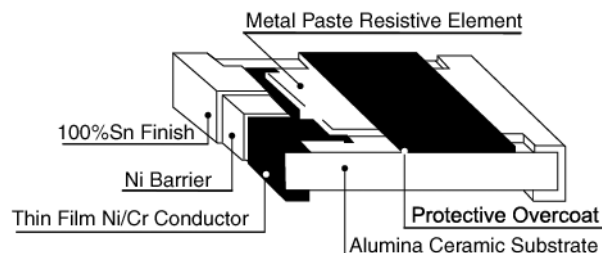
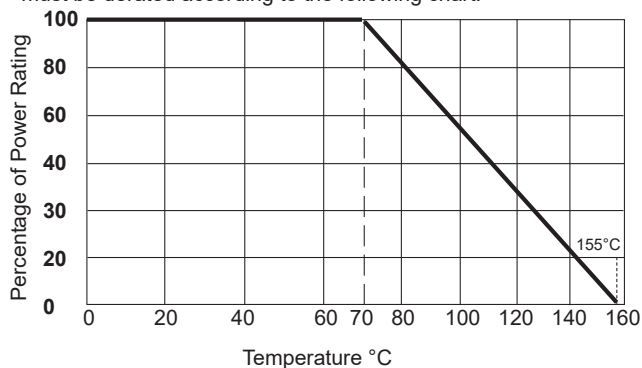
NCST10 H F R501 F TR E

RoHS compliant  
 Packaging: TR = Tape & Reel  
 TCR Code: E=100ppm, X=150ppm, F=200ppm,  
 G=300ppm, H=400ppm, J=600ppm, R=1000ppm  
 Resistance Code: See examples  
 Tolerance Code: J=5%, G=2%, F=1%  
 Optional Power Code: H = High Power, U = Ultra High Power (see page 7)  
 Series and Size Code

### CHARACTERISTICS FOR STANDARD POWER RATINGS

| Type      | EIA Size       | Power Rating at 70°C | Resistance Tolerance       | Temperature Coefficient (°C) | Resistance Range | Resistance Range (Codes) | Operating Temp. Range (°C) |
|-----------|----------------|----------------------|----------------------------|------------------------------|------------------|--------------------------|----------------------------|
| NCST100*  | 2512           | 1W                   | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 100mΩ ~ 1Ω       | R100 ~ 1R00              | -55°C ~ +155°C             |
|           |                |                      |                            | ±300ppm (G)                  | 51mΩ ~ 99mΩ      | R051 ~ R099              |                            |
|           |                |                      |                            | ±400ppm (H)                  | 21mΩ ~ 50mΩ      | R021 ~ R050              |                            |
|           |                |                      |                            | ±600ppm (J)                  | 10mΩ ~ 20mΩ      | R010 ~ R020              |                            |
| NCST100L  | 3720<br>(0815) | 1W                   | 1% (F)<br>2% (G)<br>5% (J) | ±150ppm (X)                  | 20mΩ ~ 500mΩ     | R020 ~ R500              |                            |
|           |                |                      |                            | ±300ppm (G)                  | 10mΩ ~ 18mΩ      | R010 ~ R018              |                            |
| NCST100LR | 0612           | 1W                   | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 100mΩ ~ 1Ω       | R100 ~ 1R00              |                            |
|           |                |                      |                            | ±300ppm (G)                  | 30mΩ ~ 91Ω       | R030 ~ R091              |                            |
|           |                |                      |                            | ±600ppm (J)                  | 10mΩ ~ 27mΩ      | R010 ~ R027              |                            |
| NCST200   | 7520<br>(0830) | 2W                   | 2% (G)<br>5% (J)           | ±300ppm (G)                  | 1mΩ ~ 4mΩ        | R001 ~ R004              |                            |
|           |                |                      |                            | ±150ppm (X)                  | 11mΩ ~ 350mΩ     | R011 ~ R350              |                            |
|           |                |                      | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 5mΩ ~ 10mΩ       | R005 ~ R010              |                            |
|           |                |                      |                            | ±100ppm (E)                  | 31mΩ ~ 3.0Ω      | R031 ~ 1R00              |                            |
| NCST300   | 1225           | 3W                   | 1% (F)<br>2% (G)<br>5% (J) | ±150ppm (X)                  | 21mΩ ~ 30mΩ      | R021 ~ R030              |                            |
|           |                |                      |                            | ±200ppm (F)                  | 6mΩ ~ 20mΩ       | R006 ~ R020              |                            |
|           |                |                      |                            | ±300ppm (G)                  | 3mΩ ~ 5mΩ        | R003 ~ R005              |                            |
|           |                |                      |                            |                              |                  |                          |                            |

**Power Derating Curve:** For operation above 70°C, power rating must be derated according to the following chart:



**Operating Voltage:**  $\sqrt{\text{Power rating (Watts)} \times \text{Resistance (Ohms)}}$

**Short Time Overload Voltage:**  $2.5 \times \sqrt{\text{Power rating (Watts)} \times \text{Resistance (Ohms)}}$

**Operating Current:**  $\sqrt{\text{Power rating (Watts)} / \text{Resistance (Ohms)}}$

\*5x for NCST12U 1W

## AVAILABLE STANDARD POWER VALUES AND PART NUMBERS

|                       | Available Value Range | Part Number       | Resistance Value (mΩ) | Available TCR |
|-----------------------|-----------------------|-------------------|-----------------------|---------------|
| 0201<br>Size<br>1/20W | 100mΩ ~ 149mΩ         | NCST02 _ R100RTRF | 100                   | ±1000ppm (R)  |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST02 _ R149RTRF | 149                   |               |
|                       | 150mΩ ~ 500mΩ         | NCST02 _ R150JTRF | 150                   | ±600ppm (J)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST02 _ R500JTRF | 500                   |               |
|                       | 501mΩ ~ 1.0Ω          | NCST02 _ R501GTRF | 501                   | ±300ppm (G)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST02 _ 1R00GTRF | 1,000                 |               |
|                       | Available Value Range | Part Number       | Resistance Value (mΩ) | Available TCR |
| 0402<br>Size<br>1/16W | 50mΩ ~ 100mΩ          | NCST04 _ R050HTRF | 50                    | ±400ppm (H)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST04 _ R100HTRF | 100                   |               |
|                       | 101mΩ ~ 500mΩ         | NCST04 _ R101GTRF | 101                   | ±300ppm (G)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST04 _ R500GTRF | 500                   |               |
|                       | 501mΩ ~ 1.0Ω          | NCST04 _ R501FTRF | 501                   | ±200ppm (F)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST04 _ 1R00FTRF | 1,000                 |               |
|                       | Available Value Range | Part Number       | Resistance Value (mΩ) | Available TCR |
| 0603<br>Size<br>1/10W | 20mΩ ~ 50mΩ           | NCST06 _ R020JTRF | 20                    | ±600ppm (J)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST06 _ R050JTRF | 50                    |               |
|                       | 51mΩ ~ 100mΩ          | NCST06 _ R051HTRF | 51                    | ±400ppm (H)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST06 _ R100HTRF | 100                   |               |
|                       | 101mΩ ~ 500mΩ         | NCST06 _ R101GTRF | 101                   | ±300ppm (G)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST06 _ R500GTRF | 500                   |               |
|                       | 501mΩ ~ 1.0Ω          | NCST06 _ R501FTRF | 501                   | ±200ppm (F)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST06 _ 1R00FTRF | 1,000                 |               |
|                       | Available Value Range | Part Number       | Resistance Value (mΩ) | Available TCR |
| 0805<br>Size<br>1/8W  | 20mΩ ~ 50mΩ           | NCST10 _ R020JTRF | 20                    | ±600ppm (J)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST10 _ R050JTRF | 50                    |               |
|                       | 51mΩ ~ 100mΩ          | NCST10 _ R051HTRF | 51                    | ±400ppm (H)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST10 _ R100HTRF | 100                   |               |
|                       | 101mΩ ~ 199mΩ         | NCST10 _ R101GTRF | 101                   | ±300ppm (G)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST10 _ R199GTRF | 199                   |               |
|                       | 200mΩ ~ 1.0Ω          | NCST10 _ R200FTRF | 200                   | ±200ppm (F)   |
|                       |                       | ↓                 | ↓                     |               |
|                       |                       | NCST10 _ 1R00FTRF | 1,000                 |               |

## AVAILABLE STANDARD POWER VALUES AND PART NUMBERS

|                      | Available Value Range | Part Number       | Resistance Value (mΩ) | Available TCR |
|----------------------|-----------------------|-------------------|-----------------------|---------------|
| 1206<br>Size<br>1/4W | 10mΩ ~ 20mΩ           | NCST12 * R010JTRF | 10                    | ±600ppm (J)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST12 * R020JTRF | 20                    |               |
|                      | 21mΩ ~ 50mΩ           | NCST12 * R021HTRF | 21                    | ±400ppm (H)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST12 * R050HTRF | 50                    |               |
|                      | 51mΩ ~ 100mΩ          | NCST12 * R051GTRF | 51                    | ±300ppm (G)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST12 * R100GTRF | 100                   |               |
|                      | 101mΩ ~ 1.0Ω          | NCST12 * R101FTRF | 101                   | ±200ppm (F)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST12 * 1R00FTRF | 1,000                 |               |
|                      | Available Value Range | Part Number       | Resistance Value (mΩ) | Available TCR |
| 1210<br>Size<br>1/2W | 10mΩ ~ 20mΩ           | NCST25 * R010JTRF | 10                    | ±600ppm (J)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST25 * R020JTRF | 20                    |               |
|                      | 21mΩ ~ 50mΩ           | NCST25 * R021HTRF | 21                    | ±400ppm (H)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST25 * R050HTRF | 50                    |               |
|                      | 51mΩ ~ 500mΩ          | NCST25 * R051GTRF | 51                    | ±300ppm (G)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST25 * R100GTRF | 100                   |               |
|                      | 501mΩ ~ 1.0Ω          | NCST25 * R101FTRF | 101                   | ±200ppm (F)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST25 * 1R00FTRF | 1,000                 |               |
|                      | Available Value Range | Part Number       | Resistance Value (mΩ) | Available TCR |
| 2010<br>Size<br>3/4W | 10mΩ ~ 20mΩ           | NCST50 * R010JTRF | 10                    | ±600ppm (J)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST50 * R020JTRF | 20                    |               |
|                      | 21mΩ ~ 50mΩ           | NCST50 * R021HTRF | 21                    | ±400ppm (H)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST50 * R050HTRF | 50                    |               |
|                      | 51mΩ ~ 100mΩ          | NCST50 * R051GTRF | 51                    | ±300ppm (G)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST50 * R100GTRF | 100                   |               |
|                      | 101mΩ ~ 1.0Ω          | NCST50 * R101FTRF | 101                   | ±200ppm (F)   |
|                      |                       | ↓                 | ↓                     |               |
|                      |                       | NCST50 * 1R00FTRF | 1,000                 |               |

\*Tolerance Codes: 1% (F), 2% (G) or 5% (J)

TABLE CONTINUES ON NEXT PAGE

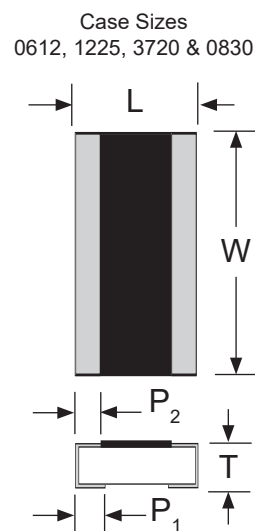
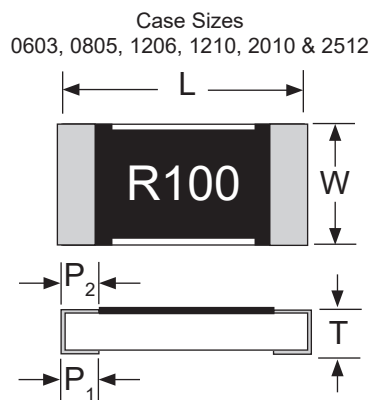
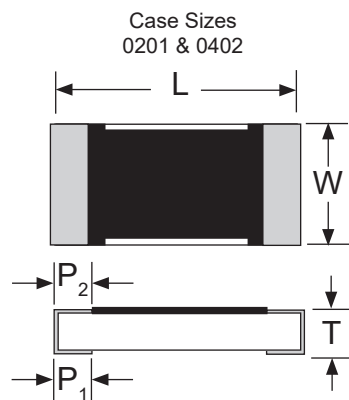
## AVAILABLE STANDARD POWER VALUES AND PART NUMBERS

|                              | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
|------------------------------|-----------------------|----------------------|-----------------------|---------------|
| 2512<br>Size<br>1W           | 10mΩ ~ 20mΩ           | NCST100 * R010JTRF   | 10                    | ±600ppm (J)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100 * R020JTRF   | 20                    |               |
|                              | 21mΩ ~ 50mΩ           | NCST100 * R021HTRF   | 21                    | ±400ppm (H)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100 * R050HTRF   | 50                    |               |
|                              | 51mΩ ~ 100mΩ          | NCST100 * R051GTRF   | 51                    | ±300ppm (G)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100 * R100GTRF   | 100                   |               |
|                              | 101mΩ ~ 1.0Ω          | NCST100 * R101FTRF   | 501                   | ±200ppm (F)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100 * 1R00FTRF   | 1,000                 |               |
|                              | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
| 3720<br>(0815)<br>Size<br>1W | 10mΩ ~ 18mΩ           | NCST100L * R010GTRF  | 10                    | ±300ppm (G)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100L * R018GTRF  | 18                    |               |
|                              | 20mΩ ~ 500Ω           | NCST100L * R020XTRF  | 20                    | ±150ppm (X)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100L * R500XTRF  | 500                   |               |
|                              | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
| 0612<br>Size<br>1W           | 10mΩ ~ 27mΩ           | NCST100LR * R010JTRF | 10                    | ±600ppm (J)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100LR * R027JTRF | 27                    |               |
|                              | 30mΩ ~ 91Ω            | NCST100LR * R030GTRF | 30                    | ±300ppm (G)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100LR * R091GTRF | 91                    |               |
|                              |                       | ↓                    | ↓                     |               |
|                              | 100mΩ ~ 1.0Ω          | NCST100LR * R100FTRF | 51                    | ±200ppm (F)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST100LR * 1R00FTRF | 1,000                 |               |
|                              | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
| 7520<br>(0830)<br>Size<br>2W | 1mΩ ~ 4mΩ             | NCST200 * R001GTRF   | 1                     | ±300ppm (G)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST200 * R004GTRF   | 4                     |               |
|                              | 5mΩ ~ 10mΩ            | NCST200 * R005FTRF   | 5                     | ±200ppm (F)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST200 * R010FTRF   | 10                    |               |
|                              | 11mΩ ~ 350mΩ          | NCST200 * R011XTRF   | 11                    | ±150ppm (X)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST200 * R350XTRF   | 350                   |               |
|                              | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
| 1225<br>Size<br>3W           | 3mΩ ~ 5mΩ             | NCST300 * R003GTRF   | 3                     | ±300ppm (G)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST300 * R005GTRF   | 5                     |               |
|                              | 6mΩ ~ 20mΩ            | NCST300 * R006FTRF   | 6                     | ±200ppm (F)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST300 * R020FTRF   | 20                    |               |
|                              | 21mΩ ~ 30mΩ           | NCST300 * R021XTRF   | 21                    | ±150ppm (X)   |
|                              |                       | ↓                    | ↓                     |               |
|                              |                       | NCST300 * R030XTRF   | 30                    |               |

\*Tolerance Codes: 1% (F), 2% (G) or 5% (J)

## DIMENSIONS (mm)

| Type      | Case Size | Length (L)  | Width (W)   | Thickness (T) | Termination Width (P <sub>1</sub> ) | Termination Width (P <sub>2</sub> ) |
|-----------|-----------|-------------|-------------|---------------|-------------------------------------|-------------------------------------|
| NCST02    | 0201      | 0.60 ± 0.03 | 0.30 ± 0.03 | 0.23 ± 0.05   | 0.12 ± 0.05                         | 0.15 ± 0.05                         |
| NCST04    | 0402      | 1.00 ± 0.05 | 0.50 ± 0.05 | 0.32 ± 0.05   | 0.25 ± 0.10                         | 0.20 ± 0.10                         |
| NCST06    | 0603      | 1.60 ± 0.10 | 0.80 ± 0.10 | 0.45 ± 0.10   | 0.30 ± 0.20                         | 0.30 ± 0.20                         |
| NCST10    | 0805      | 2.00 ± 0.10 | 1.25 ± 0.10 | 0.50 ± 0.10   | 0.30 ± 0.20                         | 0.30 ± 0.20                         |
| NCST12    | 1206      | 3.05 ± 0.15 | 1.55 ± 0.15 | 0.60 ± 0.10   | 0.50 ± 0.20                         | 0.40 ± 0.20                         |
| NCST25    | 1210      | 3.10 ± 0.10 | 2.60 ± 0.15 | 0.55 ± 0.10   | 0.50 ± 0.30                         | 0.50 ± 0.25                         |
| NCST50    | 2010      | 5.00 ± 0.20 | 2.45 ± 0.15 | 0.60 ± 0.10   | 0.60 ± 0.30                         | 0.50 ± 0.25                         |
| NCST100   | 2512      | 6.35 ± 0.20 | 3.15 ± 0.15 | 0.60 ± 0.10   | 0.60 ± 0.30                         | 0.50 ± 0.25                         |
| NCST100L  | 3720      | 2.00 ± 0.20 | 3.75 ± 0.20 | 0.60 ± 0.10   | 0.40 ± 0.20                         | 0.40 ± 0.20                         |
| NCST100LR | 0612      | 1.55 ± 0.10 | 3.10 ± 0.15 | 0.55 ± 0.10   | 0.30 ± 0.15                         | 0.45 ± 0.15                         |
| NCST200   | 0830      | 2.00 ± 0.20 | 7.50 ± 0.30 | 0.60 ± 0.10   | 0.40 ± 0.20                         | 0.40 ± 0.20                         |
| NCST300   | 1225      | 3.10 ± 0.15 | 6.30 ± 0.15 | 0.90 ± 0.15   | 0.60 ± 0.30                         | 0.55 ± 0.25                         |

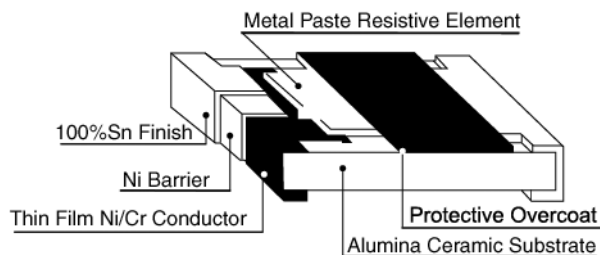
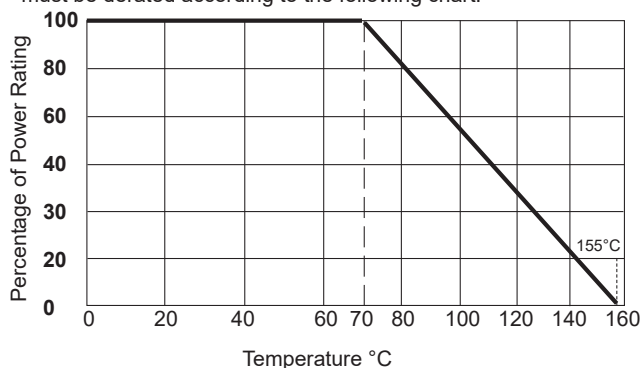


### CHARACTERISTICS FOR HIGH AND ULTRA HIGH POWER RATINGS

| Type                 | EIA Size | Power Rating at 70°C | Resistance Tolerance       | Temperature Coefficient (°C) | Resistance Range | Resistance Range (Codes) | Operating Temp. Range (°C) |
|----------------------|----------|----------------------|----------------------------|------------------------------|------------------|--------------------------|----------------------------|
| NCST04H              | 0402     | 1/8W                 | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 510mΩ ~ 1Ω       | R510 ~ 1R00              | -55°C ~ +155°C             |
|                      |          |                      |                            | ±300ppm (G)                  | 102mΩ ~ 500mΩ    | R102 ~ R500              |                            |
|                      |          |                      |                            | ±400ppm (H)                  | 51mΩ ~ 100mΩ     | R051 ~ R100              |                            |
| NCST06H<br>NCST06U   | 0603     | 1/8W<br>1/5W         | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 510mΩ ~ 1Ω       | R510 ~ 1R00              |                            |
|                      |          |                      |                            | ±300ppm (G)                  | 102mΩ ~ 500mΩ    | R102 ~ R500              |                            |
|                      |          |                      |                            | ±400ppm (H)                  | 51mΩ ~ 100mΩ     | R051 ~ R100              |                            |
| NCST10H              | 0805     | 1/4W                 | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 510mΩ ~ 1Ω       | R510 ~ 1R00              |                            |
|                      |          |                      |                            | ±300ppm (G)                  | 102mΩ ~ 500mΩ    | R102 ~ R500              |                            |
|                      |          |                      |                            | ±400ppm (H)                  | 51mΩ ~ 100mΩ     | R051 ~ R100              |                            |
| NCST12H              | 1206     | 1/2W                 | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 100mΩ ~ 1Ω       | R100 ~ 1R00              |                            |
|                      |          |                      |                            | ±300ppm (G)                  | 51mΩ ~ 91mΩ      | R051 ~ R099              |                            |
|                      |          |                      |                            | ±400ppm (H)                  | 21mΩ ~ 50mΩ      | R021 ~ R050              |                            |
|                      |          |                      |                            | ±600ppm (J)                  | 10mΩ ~ 20mΩ      | R010 ~ R020              |                            |
| NCST12U*             | 1206     | 1W                   | 1% (F)<br>2% (G)<br>5% (J) | ±100ppm (E)                  | 102mΩ ~ 1Ω       | R102 ~ 1R00              |                            |
| NCST25H              | 1210     | 3/4W                 | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 100mΩ ~ 1Ω       | R100 ~ 1R00              |                            |
|                      |          |                      |                            | ±300ppm (G)                  | 51mΩ ~ 91mΩ      | R051 ~ R099              |                            |
|                      |          |                      |                            | ±400ppm (H)                  | 21mΩ ~ 50mΩ      | R021 ~ R050              |                            |
|                      |          |                      |                            | ±600ppm (J)                  | 10mΩ ~ 20mΩ      | R010 ~ R020              |                            |
| NCST50H              | 2010     | 1W                   | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 100mΩ ~ 1Ω       | R100 ~ 1R00              |                            |
|                      |          |                      |                            | ±300ppm (G)                  | 51mΩ ~ 91mΩ      | R051 ~ R099              |                            |
|                      |          |                      |                            | ±400ppm (H)                  | 21mΩ ~ 50mΩ      | R021 ~ R050              |                            |
|                      |          |                      |                            | ±600ppm (J)                  | 10mΩ ~ 20mΩ      | R010 ~ R020              |                            |
| NCST100H<br>NCST100U | 2512     | 1.5W<br>2W           | 1% (F)<br>2% (G)<br>5% (J) | ±200ppm (F)                  | 100mΩ ~ 1Ω       | R100 ~ 1R00              |                            |
|                      |          |                      |                            | ±300ppm (G)                  | 51mΩ ~ 91mΩ      | R051 ~ R099              |                            |
|                      |          |                      |                            | ±400ppm (H)                  | 21mΩ ~ 50mΩ      | R021 ~ R050              |                            |
|                      |          |                      |                            | ±600ppm (J)                  | 10mΩ ~ 20mΩ      | R010 ~ R020              |                            |

\*NCST12U 1W PART HAS DOUBLE SIDE PRINTED RESISTOR ELEMENT AND NO MARKING

**Power Derating Curve:** For operation above 70°C, power rating must be derated according to the following chart:



## AVAILABLE HIGHER POWER VALUES AND PART NUMBERS

|                                         | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
|-----------------------------------------|-----------------------|----------------------|-----------------------|---------------|
| 0402<br>Size<br>1/8W                    | 50mΩ ~ 100mΩ          | NCST04H * R051HTRF   | 51                    | ±400ppm (H)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST04H * R100HTRF   | 100                   |               |
|                                         | 101mΩ ~ 500mΩ         | NCST04H * R102GTRF   | 102                   | ±300ppm (G)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST04H * R500GTRF   | 500                   |               |
|                                         | 501mΩ ~ 1.0Ω          | NCST04H * R510FTRF   | 510                   | ±200ppm (F)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST04H * 1R00FTRF   | 1,000                 |               |
|                                         | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
| 0603<br>Size<br>1/8W(H)<br>&<br>1/5W(U) | 51mΩ ~ 100mΩ          | NCST06H/U * R051HTRF | 51                    | ±400ppm (H)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST06H/U * R100HTRF | 100                   |               |
|                                         | 101mΩ ~ 500mΩ         | NCST06H/U * R102GTRF | 102                   | ±300ppm (G)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST06H/U * R500GTRF | 500                   |               |
|                                         | 501mΩ ~ 1.0Ω          | NCST06H/U * R510FTRF | 510                   | ±200ppm (F)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST06H/U * 1R00FTRF | 1,000                 |               |
|                                         | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
| 0805<br>Size<br>1/4W                    | 51mΩ ~ 100mΩ          | NCST10H * R051HTRF   | 51                    | ±400ppm (H)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST10H * R100HTRF   | 100                   |               |
|                                         | 101mΩ ~ 500mΩ         | NCST10H * R102GTRF   | 102                   | ±300ppm (G)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST10H * R500GTRF   | 500                   |               |
|                                         | 501mΩ ~ 1.0Ω          | NCST10H * R510FTRF   | 510                   | ±200ppm (F)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST10H * 1R00FTRF   | 1,000                 |               |
|                                         | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
| 1206<br>Size<br>1/2W                    | 10mΩ ~ 20mΩ           | NCST12H * R010JTRF   | 10                    | ±600ppm (J)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST12H * R020JTRF   | 20                    |               |
|                                         | 21mΩ ~ 50mΩ           | NCST12H * R021HTRF   | 21                    | ±400ppm (H)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST12H * R050HTRF   | 50                    |               |
|                                         | 51mΩ ~ 91mΩ           | NCST12H * R051GTRF   | 51                    | ±300ppm (G)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST12H * R091GTRF   | 91                    |               |
|                                         | 100mΩ ~ 1.0Ω          | NCST12H * R100FTRF   | 100                   | ±200ppm (F)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST12H * 1R00FTRF   | 1,000                 |               |
| 1206<br>Size<br>1W                      | 100mΩ ~ 1.0Ω          | NCST12U * R100FTRF   | 100                   | ±100ppm (E)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST12U * 1R00FTRF   | 1,000                 |               |
|                                         | Available Value Range | Part Number          | Resistance Value (mΩ) | Available TCR |
| 1210<br>Size<br>3/4W                    | 10mΩ ~ 20mΩ           | NCST25H * R010JTRF   | 10                    | ±600ppm (J)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST25H * R020JTRF   | 20                    |               |
|                                         | 21mΩ ~ 50mΩ           | NCST25H * R021HTRF   | 21                    | ±400ppm (H)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST25H * R050HTRF   | 50                    |               |
|                                         | 51mΩ ~ 91mΩ           | NCST25H * R051GTRF   | 51                    | ±300ppm (G)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST25H * R091GTRF   | 91                    |               |
|                                         | 100mΩ ~ 1.0Ω          | NCST25H * R100FTRF   | 100                   | ±200ppm (F)   |
|                                         |                       | ↓                    | ↓                     |               |
|                                         |                       | NCST25H * 1R00FTRF   | 1,000                 |               |

TABLE CONTINUES ON NEXT PAGE



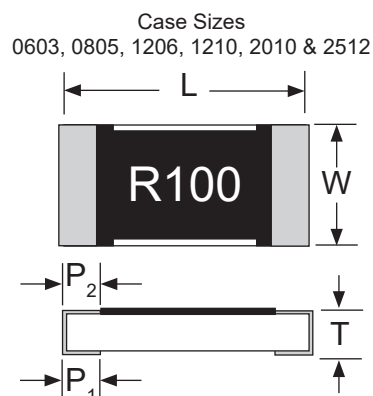
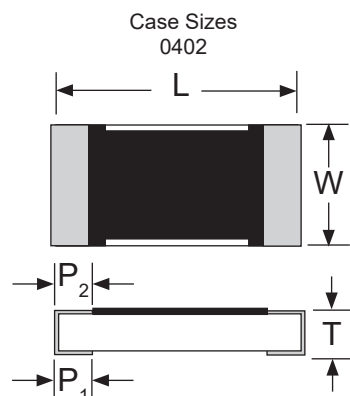


## AVAILABLE HIGHER POWER VALUES AND PART NUMBERS

|                                    | Available Value Range | Part Number           | Resistance Value (mΩ) | Available TCR |
|------------------------------------|-----------------------|-----------------------|-----------------------|---------------|
| 2010<br>Size<br>1W                 | 10mΩ ~ 20mΩ           | NCST50H _ R010JTRF    | 10                    | ±600ppm (J)   |
|                                    |                       | ↓                     | ↓                     |               |
|                                    |                       | NCST50H _ R020JTRF    | 20                    |               |
|                                    | 21mΩ ~ 50mΩ           | NCST50H * R021HTRF    | 21                    | ±400ppm (H)   |
|                                    |                       | ↓                     | ↓                     |               |
|                                    |                       | NCST50H * R050HTRF    | 50                    |               |
|                                    | 51mΩ ~ 91mΩ           | NCST50H * R051GTRF    | 51                    | ±300ppm (G)   |
|                                    |                       | ↓                     | ↓                     |               |
|                                    |                       | NCST50H * R091GTRF    | 91                    |               |
|                                    | 100mΩ ~ 1.0Ω          | NCST50H * R100FTRF    | 100                   | ±200ppm (F)   |
|                                    |                       | ↓                     | ↓                     |               |
|                                    |                       | NCST50H _ 1R00FTRF    | 1,000                 |               |
|                                    | Available Value Range | Part Number           | Resistance Value (mΩ) | Available TCR |
| 2512<br>Size<br>1.5W (H)<br>2W (U) | 10mΩ ~ 20mΩ           | NCST100H/U _ R010JTRF | 10                    | ±600ppm (J)   |
|                                    |                       | ↓                     | ↓                     |               |
|                                    |                       | NCST100H/U * R020JTRF | 20                    |               |
|                                    | 21mΩ ~ 50mΩ           | NCST100H/U _ R021HTRF | 21                    | ±400ppm (H)   |
|                                    |                       | ↓                     | ↓                     |               |
|                                    |                       | NCST100H/U * R050HTRF | 50                    |               |
|                                    | 51mΩ ~ 91mΩ           | NCST100H/U * R051GTRF | 51                    | ±300ppm (G)   |
|                                    |                       | ↓                     | ↓                     |               |
|                                    |                       | NCST100H/U * R091GTRF | 91                    |               |
|                                    | 100mΩ ~ 1.0Ω          | NCST100H/U _ R100FTRF | 100                   | ±200ppm (F)   |
|                                    |                       | ↓                     | ↓                     |               |
|                                    |                       | NCST100H/U _ 1R00FTRF | 1,000                 |               |

## DIMENSIONS (mm)

| Type     | Case Size           | Length (L)  | Width (W)   | Thickness (T) | Termination Width (P <sub>1</sub> ) | Termination Width (P <sub>2</sub> ) |
|----------|---------------------|-------------|-------------|---------------|-------------------------------------|-------------------------------------|
| NCST04H  | 0402                | 1.00 ± 0.05 | 0.50 ± 0.05 | 0.32 ± 0.05   | 0.25 ± 0.10                         | 0.20 ± 0.10                         |
| NCST06H  | 0603                | 1.60 ± 0.10 | 0.80 ± 0.10 | 0.45 ± 0.10   | 0.30 ± 0.20                         | 0.30 ± 0.20                         |
| NCST06U  | 0603                | 1.60 ± 0.10 | 0.80 ± 0.10 | 0.45 ± 0.10   | 0.30 ± 0.20                         | 0.30 ± 0.20                         |
| NCST10H  | 0805                | 2.00 ± 0.10 | 1.25 ± 0.10 | 0.55 ± 0.10   | 0.30 ± 0.20                         | 0.40 ± 0.25                         |
| NCST12H  | 1206                | 3.10 ± 0.10 | 1.55 ± 0.10 | 0.55 ± 0.10   | 0.50 ± 0.30                         | 0.40 ± 0.25                         |
| NCST12U  |                     | 3.15 ± 0.10 | 1.60 ± 0.15 | 0.65 ± 0.10   | 0.80 ± 0.20                         | 0.80 ± 0.20                         |
| NCST25H  | 1210                | 3.10 ± 0.10 | 2.60 ± 0.15 | 0.55 ± 0.10   | 0.50 ± 0.30                         | 0.50 ± 0.25                         |
| NCST50H  | 2010                | 5.00 ± 0.20 | 2.50 ± 0.15 | 0.60 ± 0.10   | 0.60 ± 0.30                         | 0.50 ± 0.25                         |
| NCST100H | 2512                | 6.35 ± 0.20 | 3.15 ± 0.15 | 0.60 ± 0.10   | 0.60 ± 0.30                         | 0.55 ± 0.25                         |
| NCST100U | 2512<br>10 ~99mΩ    | 6.35 ± 0.20 | 3.15 ± 0.15 | 0.74 ± 0.10   | 0.60 ± 0.30                         | 0.55 ± 0.25                         |
|          | 2512<br>100 ~1000mΩ |             |             |               |                                     | 2.10 ± 0.10                         |



## ENVIRONMENTAL CHARACTERISTICS

| Item                                  | Specification                                                          | Test Method                                                                                                                                               |
|---------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature Coefficient of Resistance | As Specified                                                           | JIS-C-5201-1 4.8<br>IEC-60115-1 4.8<br>-55°C ~ +125°C, 25°C reference                                                                                     |
| Short Time Overload                   | $\pm 0.5\% + 0.05\Omega$<br>High power $\pm 1\% + 0.05\Omega$          | JIS-C-5201-1 4.13<br>IEC-60115-1 4.13<br>RCWV * 2.5 or max. overload voltage whichever is less for 5 seconds<br>NCST12U 1W = 5x rated power for 5 seconds |
| Dielectric Withstanding Voltage       | No breakdown or flashover                                              | JIS-C-5201-1 4.7<br>IEC-60115-1 4.7<br>1.42 times max operating voltage for 1 minute                                                                      |
| Insulation Resistance                 | >10000M $\Omega$                                                       | JIS-C-5201-1 4.6<br>IEC-60115-1 4.6<br>Maximum overload voltage for 1 minute                                                                              |
| Resistance to dry heat                | $\pm 0.5\% + 0.05\Omega$                                               | JIS-C-5201-1 4.23<br>IEC-60115-1 4.23.2<br>+155°C for 1,000 hours                                                                                         |
| Load Life                             | $\pm 1\% + 0.05\Omega$                                                 | JIS-C-5201-1 4.25<br>IEC-60115-1 4.25.1<br>RCWV @ 70°C, cycles of 1.5 hours ON, 0.5 hrs OFF for 1,000 hours                                               |
| Resistance to Soldering Heat          | $\pm 0.5\% + 0.05\Omega$                                               | JIS-C-5201-1 4.18<br>IEC-60115-1 4.18<br>+260°C $\pm 5^\circ\text{C}$ for 10 sec.                                                                         |
| Humidity (Steady State)               | $\pm 0.5\% + 0.05\Omega$                                               | JIS-C-5201-1 4.24<br>IEC-60115-1 4.24<br>+40°C, 90 ~ 95% RH, RCWV 1.5 hours ON, 0.5 hours OFF, total 1000 hours                                           |
| Solderability                         | 95% min. coverage                                                      | JIS-C-5201-1 4.17<br>IEC-60115-1 4.17<br>+245°C $\pm 5^\circ\text{C}$ for 3 sec.                                                                          |
| Leaching                              | Individual leaching area $\leq 5\%$<br>Total leaching area $\leq 10\%$ | JIS-C-5201-1 4.18<br>IEC-60068-2-58 8.2.1<br>+260°C $\pm 5^\circ\text{C}$ for 30 sec.                                                                     |
| Bending Strength                      | $\pm 1\% + 0.05\Omega$                                                 | JIS-C-5201-1 4.33<br>IEC-60115-1 4.33<br>3mm for 5 seconds (2mm for 2010 & 2512)                                                                          |



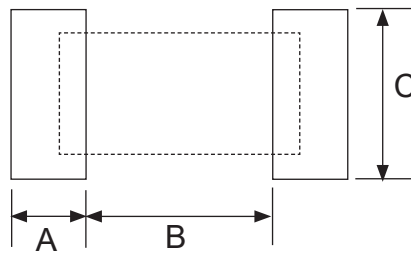
### Reflow Soldering Heat Profile and Limits

→ [www.niccomp.com/resource/files/resistive/NIC-ChipR-Reflow-Sept2020-Rev2.pdf](http://www.niccomp.com/resource/files/resistive/NIC-ChipR-Reflow-Sept2020-Rev2.pdf)

Wave soldering? – Please review your wave soldering process profile with NIC: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

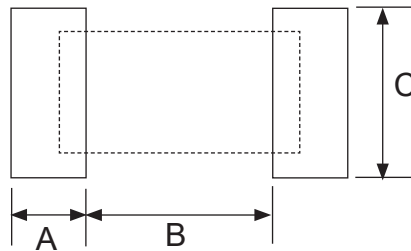
## STANDARD POWER LAND PATTERN DIM. (mm)

| Type      | A    | B    | C          |
|-----------|------|------|------------|
| NCST02    | 0.30 | 0.25 | 0.40 ± 0.2 |
| NCST04    | 0.50 | 0.50 | 0.60 ± 0.2 |
| NCST06    | 1.00 | 0.80 | 0.90 ± 0.2 |
| NCST10    | 1.00 | 1.00 | 1.35 ± 0.2 |
| NCST12    | 1.15 | 2.00 | 1.70 ± 0.2 |
| NCST25    | 1.15 | 2.00 | 2.50 ± 0.2 |
| NCST50    | 1.40 | 3.60 | 2.50 ± 0.2 |
| NCST100   | 1.60 | 4.90 | 3.20 ± 0.2 |
| NCST100L  | 1.80 | 1.00 | 3.90 ± 0.2 |
| NCST100LR | 1.00 | 0.60 | 3.20 ± 0.2 |
| NCST200   | 1.80 | 1.00 | 7.60 ± 0.2 |
| NCST300   | 2.00 | 1.20 | 7.00 ± 0.2 |



## HIGH POWER LAND PATTERN DIM. (mm)

| Type                   | A    | B    | C          |
|------------------------|------|------|------------|
| NCST04H                | 0.50 | 0.50 | 0.60 ± 0.2 |
| NCST06H/U              | 1.00 | 0.80 | 0.90 ± 0.2 |
| NCST10H                | 1.00 | 1.00 | 1.35 ± 0.2 |
| NCST12H                | 1.15 | 2.00 | 1.70 ± 0.2 |
| NCST12U                | 0.90 | 1.70 | 1.70 ± 0.2 |
| NCST25H                | 1.15 | 2.00 | 2.50 ± 0.2 |
| NCST50H                | 1.40 | 3.60 | 2.50 ± 0.2 |
| NCST100H               | 1.60 | 4.90 | 3.20 ± 0.2 |
| NCST100U<br>10~99mΩ    | 1.60 | 4.90 | 3.20 ± 0.2 |
| NCST100U<br>100~1000mΩ | 3.55 | 1.00 | 3.20 ± 0.2 |

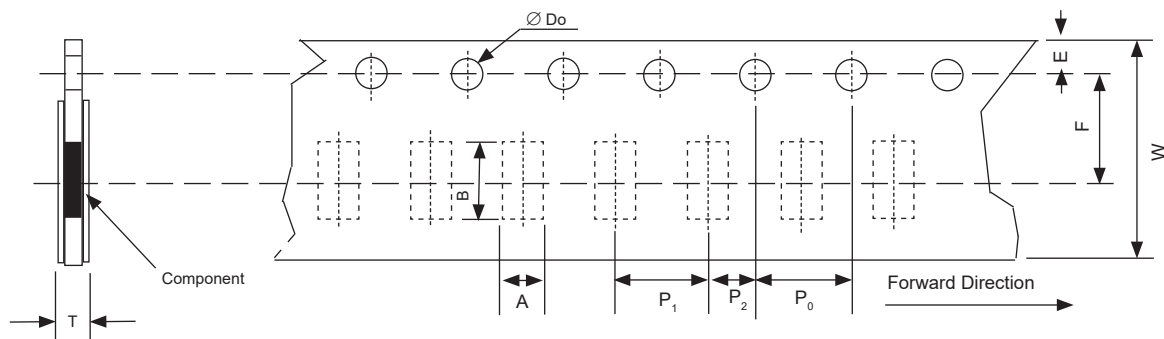


### Reflow Soldering Heat Profile and Limits

→ [www.nicomp.com/resource/files/resistive/NIC-ChipR-Reflow-Sept2020-Rev2.pdf](http://www.nicomp.com/resource/files/resistive/NIC-ChipR-Reflow-Sept2020-Rev2.pdf)  
Wave soldering? – Please review your wave soldering process profile with NIC: [tpmg@nicomp.com](mailto:tpmg@nicomp.com)

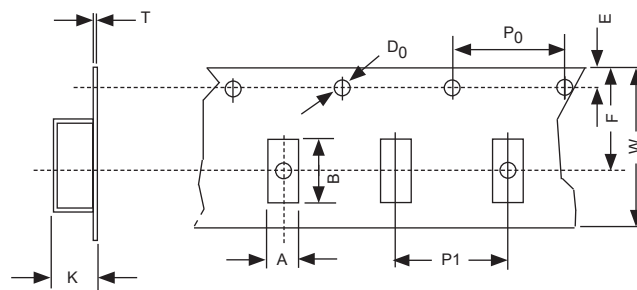
## PAPER CARRIER TAPE DIMENSIONS (mm)

| Type      | A           | B           | W             | F             | E             | P <sub>1</sub> | P <sub>2</sub> | P <sub>0</sub> | ϕD              | T           |
|-----------|-------------|-------------|---------------|---------------|---------------|----------------|----------------|----------------|-----------------|-------------|
| NCST02    | 0.38 ± 0.05 | 0.68 ± 0.05 | 8.00<br>±0.20 | 3.50<br>±0.05 | 1.75<br>±0.10 | 2.00 ± 0.05    | 2.00<br>±0.05  | 4.00<br>±0.10  | 1.50<br>+0.1/-0 | 0.42 ± 0.20 |
| NCST04    | 0.65 ± 0.10 | 1.15 ± 0.10 |               |               |               | 0.45 ± 0.10    |                |                |                 |             |
| NCST06    | 1.10 ± 0.10 | 1.90 ± 0.10 |               |               |               | 0.70 ± 0.10    |                |                |                 |             |
| NCST10    | 1.60 ± 0.10 | 2.40 ± 0.20 |               |               |               | 0.85 ± 0.10    |                |                |                 |             |
| NCST12    | 1.90 ± 0.10 | 3.50 ± 0.20 |               |               |               |                |                |                |                 |             |
| NCST25    | 2.90 ± 0.10 | 3.50 ± 0.20 |               |               |               |                |                |                |                 |             |
| NCST100LR | 1.90 ± 0.10 | 3.50 ± 0.20 |               |               |               |                |                |                |                 |             |



## EMBOSSED PLASTIC CARRIER DIMENSIONS (mm)

| Type     | A          | B          | W             | F             | K             | E             | P <sub>1</sub> | P <sub>2</sub> | P <sub>0</sub> | φD <sub>o</sub> | T             |
|----------|------------|------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|-----------------|---------------|
| NCST50   | 2.80 ±0.10 | 5.50 ±0.10 | 12.0<br>±0.30 | 5.50<br>±0.05 | 1.00<br>±0.20 | 1.75<br>±0.10 | 4.00<br>±0.10  | 2.00<br>±0.05  | 4.00<br>±0.05  | 1.50<br>±0.05   | 0.80<br>±0.10 |
| NCST100  | 3.50 ±0.10 | 6.70 ±0.10 |               |               | 1.45<br>±0.20 |               |                |                |                |                 |               |
| NCST100H |            |            |               |               |               |               |                |                |                |                 |               |
| NCST100U | 3.38 ±0.10 | 6.68 ±0.10 |               |               | 1.20<br>±0.20 |               |                |                |                |                 |               |
| NCST100L | 2.50 ±0.10 | 4.45 ±0.20 |               |               | 1.20<br>±0.20 |               |                |                |                |                 |               |
| NCST200  | 2.50 ±0.20 | 8.30 ±0.20 | 16.0<br>±0.30 | 7.80<br>±0.05 | 1.20<br>±0.20 | 1.75<br>±0.10 | 4.00<br>±0.10  | 2.00<br>±0.05  | 4.00<br>±0.05  | 1.50<br>±0.05   | 0.80<br>±0.10 |
| NCST300  | 3.38 ±0.10 | 6.68 ±0.10 | 12.0<br>±0.30 | 5.50<br>±0.10 | 1.45<br>±0.20 |               |                |                |                |                 |               |



### REEL DIMENSIONS (mm) AND QUANTITY

| Type      | A            | B          | C            | W            | Quantity |
|-----------|--------------|------------|--------------|--------------|----------|
| NCST02    | 178<br>±1.0  | 60<br>+1.0 | 13.5<br>±0.7 | 9.5<br>±0.1  | 10,000   |
| NCST04    |              |            |              |              | 5,000    |
| NCST06    |              |            |              |              |          |
| NCST10    |              |            |              |              |          |
| NCST12    |              |            |              |              |          |
| NCST25    |              |            |              |              |          |
| NCST50    |              |            |              | 13.5<br>±1.0 | 4,000    |
| NCST100   |              |            |              |              |          |
| NCST100H  |              |            |              |              |          |
| NCST100U  |              |            |              |              | 2,000    |
| NCST100L  |              |            |              |              |          |
| NCST100LR |              |            |              | 9.5<br>±1.0  | 5,000    |
| NCST200   |              |            |              | 17.5<br>±1.0 | 2,000    |
| NCST300   | 13.5<br>±1.0 | 2,000      |              |              |          |

