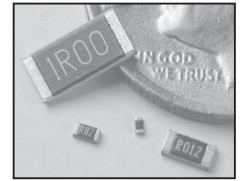


FEATURES

- 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



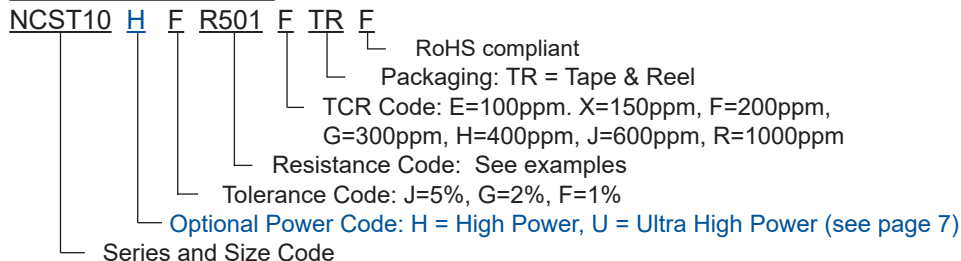
CHARACTERISTICS FOR STANDARD POWER RATINGS

| 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) 2% (G) 5% (J) | ± 300 ppm (G) | 501m Ω ~ 1 Ω | R501 ~ 1R00 | -55°C ~ +155°C |
| | | | | ± 600 ppm (J) | 150m Ω ~ 500m Ω | R150 ~ R500 | |
| | | | | ± 1000 ppm (R) | 100m Ω ~ 149m Ω | R100 ~ R149 | |
| NCST04 | 0402 | 1/16W | 1% (F) 2% (G) 5% (J) | ± 200 ppm (F) | 501m Ω ~ 1 Ω | R501 ~ 1R00 | |
| | | | | ± 300 ppm (G) | 101m Ω ~ 500m Ω | R101 ~ R500 | |
| | | | | ± 400 ppm (H) | 50m Ω ~ 100m Ω | R050 ~ R100 | |
| NCST06 | 0603 | 1/10W | 1% (F) 2% (G) 5% (J) | ± 200 ppm (F) | 501m Ω ~ 1 Ω | R501 ~ 1R00 | |
| | | | | ± 300 ppm (G) | 101m Ω ~ 500m Ω | R101 ~ R500 | |
| | | | | ± 400 ppm (H) | 51m Ω ~ 100m Ω | R051 ~ R100 | |
| | | | | ± 600 ppm (J) | 20m Ω ~ 50m Ω | R020 ~ R050 | |
| NCST10 | 0805 | 1/8W | 1% (F) 2% (G) 5% (J) | ± 200 ppm (F) | 200m Ω ~ 1 Ω | R200 ~ 1R00 | |
| | | | | ± 300 ppm (G) | 101m Ω ~ 199m Ω | R101 ~ R199 | |
| | | | | ± 400 ppm (H) | 51m Ω ~ 100m Ω | R051 ~ R100 | |
| NCST12 | 1206 | 1/4W | 1% (F) 2% (G) 5% (J) | ± 600 ppm (J) | 20m Ω ~ 50m Ω | R020 ~ R050 | |
| | | | | ± 200 ppm (F) | 100m Ω ~ 1 Ω | R100 ~ 1R00 | |
| | | | | ± 300 ppm (G) | 51m Ω ~ 99m Ω | R051 ~ R099 | |
| | | | | ± 400 ppm (H) | 21m Ω ~ 50m Ω | R021 ~ R050 | |
| NCST25* | 1210 | 1/2W | 1% (F) 2% (G) 5% (J) | ± 600 ppm (J) | 10m Ω ~ 20m Ω | R010 ~ R020 | |
| | | | | ± 200 ppm (F) | 100m Ω ~ 1 Ω | R100 ~ 1R00 | |
| | | | | ± 300 ppm (G) | 51m Ω ~ 99m Ω | R051 ~ R099 | |
| | | | | ± 400 ppm (H) | 21m Ω ~ 50m Ω | R021 ~ R050 | |
| NCST50* | 2010 | 3/4W | 1% (F) 2% (G) 5% (J) | ± 600 ppm (J) | 10m Ω ~ 20m Ω | R010 ~ R020 | |
| | | | | ± 200 ppm (F) | 100m Ω ~ 1 Ω | R100 ~ 1R00 | |
| | | | | ± 300 ppm (G) | 51m Ω ~ 99m Ω | R051 ~ R099 | |
| | | | | ± 400 ppm (H) | 21m Ω ~ 50m Ω | R021 ~ R050 | |

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

Sizes and Values Table Continues on Next Page

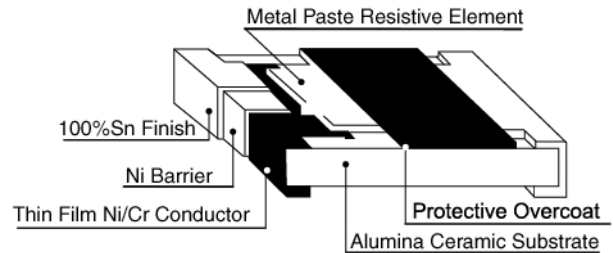
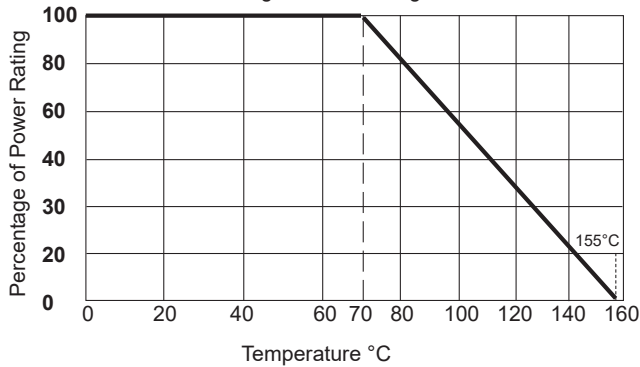
PART NUMBER SYSTEM



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) 2% (G) 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 (0815) | 1W | 1% (F) 2% (G) 5% (J) | ±150ppm (X) | 20mΩ ~ 500mΩ | R020 ~ R500 | | |
| | | | | ±300ppm (G) | 10mΩ ~ 18mΩ | R010 ~ R018 | | |
| NCST100LR | 0612 | 1W | 1% (F) 2% (G) 5% (J) | ±200ppm (F) | 100mΩ ~ 1Ω | R100 ~ 1R00 | | |
| | | | | ±300ppm (G) | 30mΩ ~ 91Ω | R030 ~ R091 | | |
| | | | | ±600ppm (J) | 10mΩ ~ 27mΩ | R010 ~ R027 | | |
| NCST200 | 7520 (0830) | 2W | 2% (G) 5% (J) | ±300ppm (G) | 1mΩ ~ 4mΩ | R001 ~ R004 | | |
| | | | | 1% (F) 2% (G) 5% (J) | ±150ppm (X) | 11mΩ ~ 350mΩ | | R011 ~ R350 |
| | | | | ±200ppm (F) | 5mΩ ~ 10mΩ | R005 ~ R010 | | |
| NCST300 | 1225 | 3W | 1% (F) 2% (G) 5% (J) | ±100ppm (E) | 31mΩ ~ 3.0Ω | R031 ~ 1R00 | | |
| | | | | ±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 Size 1/20W | 100mΩ ~ 149mΩ | NCST02 * R100RTRF | 100 | ±1000ppm (R) |
| | | ↓ | ↓ | |
| | 150mΩ ~ 500mΩ | NCST02 * R149RTRF | 149 | ±600ppm (J) |
| | | NCST02 * R150JTRF | 150 | |
| | | ↓ | ↓ | |
| | 501mΩ ~ 1.0Ω | NCST02 * R500JTRF | 500 | ±300ppm (G) |
| NCST02 * R501GTRF | | 501 | | |
| ↓ | | ↓ | | |
| | | NCST02 * 1R00GTRF | 1,000 | |
| | Available Value Range | Part Number | Resistance Value (mΩ) | Available TCR |
| 0402 Size 1/16W | 50mΩ ~ 100mΩ | NCST04 * R050HTRF | 50 | ±400ppm (H) |
| | | ↓ | ↓ | |
| | 101mΩ ~ 500mΩ | NCST04 * R100HTRF | 100 | ±300ppm (G) |
| | | NCST04 * R101GTRF | 101 | |
| | | ↓ | ↓ | |
| | 501mΩ ~ 1.0Ω | NCST04 * R500GTRF | 500 | ±200ppm (F) |
| NCST04 * R501FTRF | | 501 | | |
| ↓ | | ↓ | | |
| | | NCST04 * 1R00FTRF | 1,000 | |
| | Available Value Range | Part Number | Resistance Value (mΩ) | Available TCR |
| 0603 Size 1/10W | 20mΩ ~ 50mΩ | NCST06 * R020JTRF | 20 | ±600ppm (J) |
| | | ↓ | ↓ | |
| | 51mΩ ~ 100mΩ | NCST06 * R050JTRF | 50 | ±400ppm (H) |
| | | NCST06 * R051HTRF | 51 | |
| | | ↓ | ↓ | |
| | 101mΩ ~ 500mΩ | NCST06 * R100HTRF | 100 | ±300ppm (G) |
| NCST06 * R101GTRF | | 101 | | |
| ↓ | | ↓ | | |
| 501mΩ ~ 1.0Ω | NCST06 * R500GTRF | 500 | ±200ppm (F) | |
| | NCST06 * R501FTRF | 501 | | |
| | ↓ | ↓ | | |
| | | NCST06 * 1R00FTRF | 1,000 | |
| | Available Value Range | Part Number | Resistance Value (mΩ) | Available TCR |
| 0805 Size 1/8W | 20mΩ ~ 50mΩ | NCST10 * R020JTRF | 20 | ±600ppm (J) |
| | | ↓ | ↓ | |
| | 51mΩ ~ 100mΩ | NCST10 * R050JTRF | 50 | ±400ppm (H) |
| | | NCST10 * R051HTRF | 51 | |
| | | ↓ | ↓ | |
| | 101mΩ ~ 199mΩ | NCST10 * R100HTRF | 100 | ±300ppm (G) |
| NCST10 * R101GTRF | | 101 | | |
| ↓ | | ↓ | | |
| 200mΩ ~ 1.0Ω | NCST10 * R199GTRF | 199 | ±200ppm (F) | |
| | NCST10 * R200FTRF | 200 | | |
| | ↓ | ↓ | | |
| | | NCST10 * 1R00FTRF | 1,000 | |

AVAILABLE STANDARD POWER VALUES AND PART NUMBERS

| | Available Value Range | Part Number | Resistance Value (mΩ) | Available TCR |
|----------------------|-----------------------|-------------------|-----------------------|---------------|
| 1206 Size 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 Size 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 Size 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

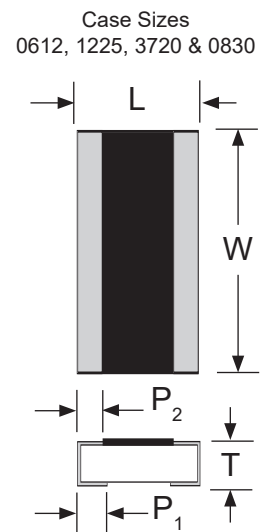
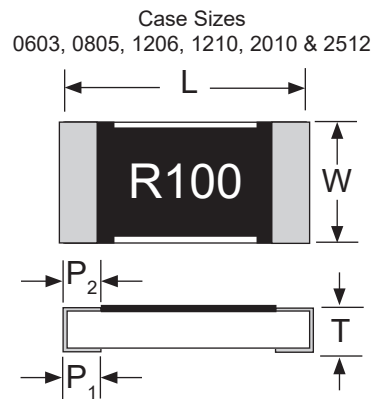
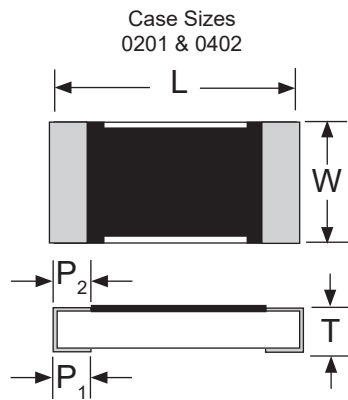
AVAILABLE STANDARD POWER VALUES AND PART NUMBERS

| | Available Value Range | Part Number | Resistance Value (mΩ) | Available TCR |
|------------------------------|-----------------------|----------------------|-----------------------|---------------|
| 2512 Size 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 (0815) Size 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 Size 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 (0830) Size 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 Size 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 ₁) | Termination Width (P ₂) |
|-----------|-----------|-------------|-------------|---------------|-------------------------------------|-------------------------------------|
| 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 |

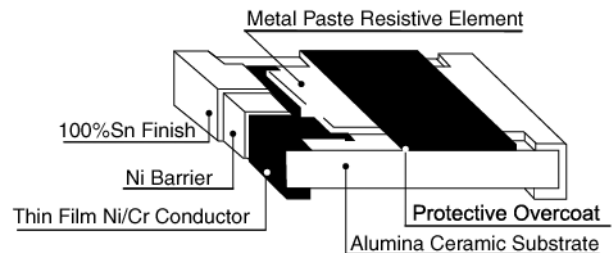
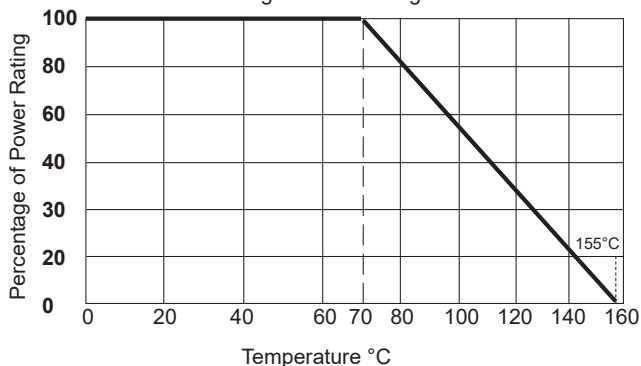


CHARACTERISTICS FOR HIGH AND ULTRA HIGH POWER RATINGS

| 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) 2% (G) 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 NCST06U | 0603 | 1/8W 1/5W | 1% (F) 2% (G) 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) 2% (G) 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) 2% (G) 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) 2% (G) 5% (J) | ±100ppm (E) | 102mΩ ~ 1Ω | R102 ~ 1R00 | |
| NCST25H | 1210 | 3/4W | 1% (F) 2% (G) 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) 2% (G) 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 NCST100U | 2512 | 1.5W 2W | 1% (F) 2% (G) 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 Size 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 Size 1/8W(H) & 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 Size 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 Size 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 Size 1W | 100mΩ ~ 1.0Ω | NCST12U * R100FTRF | 100 | ±100ppm (E) |
| | | ↓ | ↓ | |
| | | NCST12U * 1R00FTRF | 1,000 | |
| | Available Value Range | Part Number | Resistance Value (mΩ) | Available TCR |
| 1210 Size 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 | | |

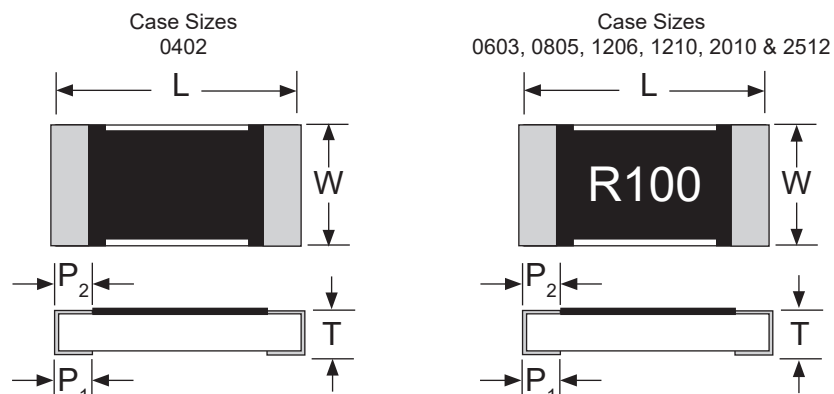
TABLE CONTINUES ON NEXT PAGE

AVAILABLE HIGHER POWER VALUES AND PART NUMBERS

| | Available Value Range | Part Number | Resistance Value (mΩ) | Available TCR |
|---------------------------------|-----------------------|-----------------------|-----------------------|---------------|
| 2010 Size 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 Size 1.5W (H) 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 ₁) | Termination Width (P ₂) |
|----------|---------------------|-------------|-------------|---------------|-------------------------------------|-------------------------------------|
| 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 10 ~99mΩ | 6.35 ± 0.20 | 3.15 ± 0.15 | 0.74 ± 0.10 | 0.60 ± 0.30 | 0.55 ± 0.25 |
| | 2512 100 ~1000mΩ | | | | | 2.10 ± 0.10 |



ENVIRONMENTAL CHARACTERISTICS

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



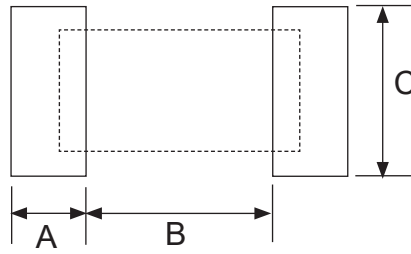
Reflow Soldering Heat Profile and Limits

→ www.niccomp.com/resource/files/resistive/NIC-ChipR-Reflow-Sept2020-Rev2.pdf

Wave soldering? – Please review your wave soldering process profile with NIC: tpmg@niccomp.com

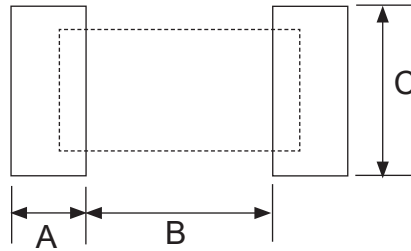
STANDARD POWER LAND PATTERN DIM. (mm)

| 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 10~99mΩ | 1.60 | 4.90 | 3.20 ± 0.2 |
| NCST100U 100~1000mΩ | 3.55 | 1.00 | 3.20 ± 0.2 |

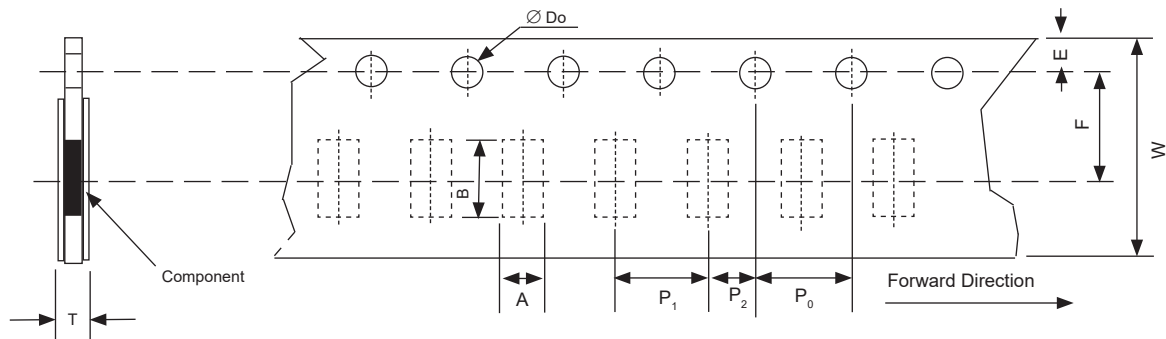


Reflow Soldering Heat Profile and Limits

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

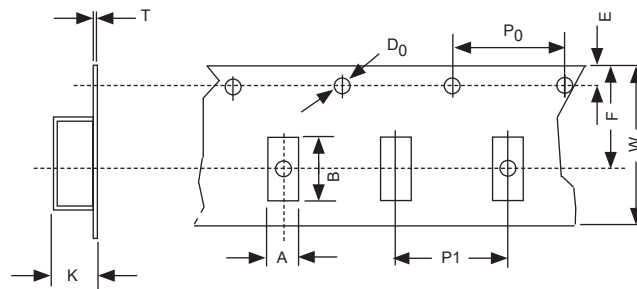
PAPER CARRIER TAPE DIMENSIONS (mm)

| Type | A | B | W | F | E | P ₁ | P ₂ | P ₀ | φD | T | |
|-----------|-------------|-------------|---------------|---------------|---------------|----------------|----------------|----------------|---------------|-----------------|-------------|
| NCST02 | 0.38 ± 0.05 | 0.68 ± 0.05 | 8.00 ±0.20 | 3.50 ±0.05 | 1.75 ±0.10 | 2.00 ± 0.05 | | 2.00 ±0.05 | 4.00 ±0.10 | 1.50 +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 | | | | 4.00 ± 0.05 | 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 | | | | | | | | | |



EMBOSED PLASTIC CARRIER DIMENSIONS (mm)

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



REEL DIMENSIONS (mm) AND QUANTITY

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

