

FEATURES

- SURFACE MOUNTABLE 0402 ~ 2512 CASE SIZE
- PRECISION TOLERANCE ($\pm 1\%$)
- Pb-FREE REFLOW COMPATIBLE

**RoHS
Compliant**

includes all homogeneous materials

*See Part Number System for Details



CHARACTERISTICS

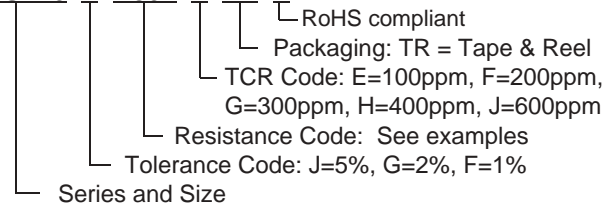
Type	EIA Size	Power Rating at 70°C	Resistance Tolerance	Temperature Coefficient (°C)	Resistance Range	Resistance Range (Codes)	Operating Temp. Range (°C)
NCST04	0402	1/16W	1% (F) 2% (G) 5% (J)	± 200 ppm (F)	501m Ω ~ 1 Ω	R501 ~ 1R00	-55°C ~ +155°C
				± 300 ppm (G)	101m Ω ~ 500m Ω	R101 ~ R500	
				± 400 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	
NCST10	0805	1/8W	1% (F) 2% (G) 5% (J)	± 600 ppm (J)	20m Ω ~ 50m Ω	R020 ~ R050	
NCST12*	1206	1/4W	1% (F) 2% (G) 5% (J)	± 200 ppm (F)	501m Ω ~ 1 Ω	R501 ~ 1R00	
NCST50*	2010	3/4W		± 300 ppm (G)	51m Ω ~ 500m Ω	R051 ~ R500	
NCST100*	2512	1W		± 400 ppm (H)	21m Ω ~ 50m Ω	R021 ~ R050	
				± 600 ppm (J)	10m Ω ~ 20m Ω	R010 ~ R020	

*Available with a ± 100 ppm (E) TCR (100m Ω ~ 1 Ω)

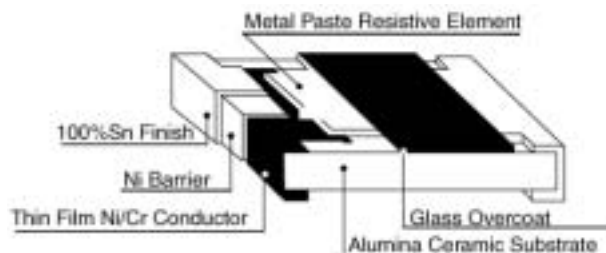
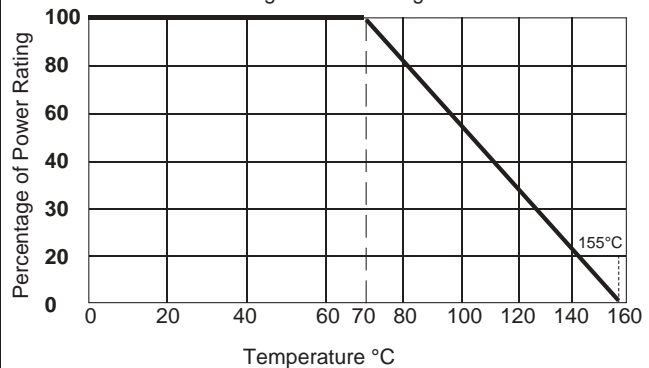
Item	Specification	Test Method
Temperature Coefficient of Resistance	As Specified	MIL-STD-202, Method 304 +25/-55/+25/+125/+25°C
Thermal Shock	$\pm(0.5\% + 0.05\Omega)$	MIL-STD-202, Method 107G -55°C ~ +125°C, 100 cycles
Short Time Overload	$\pm(0.5\% + 0.05\Omega)$	JIS-C-5202-5.5 RCWV x 2.5 or Max. Overloading Voltage for 5 sec.
Dielectric Withstanding Voltage	by Type	MIL-STD-202F Method 301 Apply Max. Overload Voltage for 1 minute
Insulation Resistance	>1000M Ω	MIL-STD-202F Method 302 Apply 100Vdc for 1 minute
Resistance to dry heat	$\pm(0.5\% + 0.05\Omega)$	JIS-C-5202-7.2 96 hrs @ 125°C without load
Load Life	$\pm(1\% + 0.05\Omega)$	MIL-STD-202 Method 108 RCWV @ 70°C, cycles of 1.5 hours ON, 0.5 hrs OFF for 1,000 ~ 1,048 hrs
Resistance to Soldering Heat	$\pm(0.5\% + 0.05\Omega)$	MIL-STD-202F Method 210E 260°C $\pm 5^\circ$ C for 10 sec. ± 1 sec.
Humidity (Steady State)	$\pm(1\% + 0.05\Omega)$	MIL-STD-202 Method 103B 40°C, 90 ~ 95% RH, RCWV 1.5 hours ON, 0.5 hours OFF, total 1000 ~ 1048 hours
Low Temperature Operation	$\pm(0.5\% + 0.05\Omega)$	JIS-C-5202-7.1 1 hour -65°C followed by 45 minutes of RCWV
Solderability	95% min. coverage	MIL-STD-202F Method 208H 235°C $\pm 5^\circ$ C for 2 sec. ± 0.5 sec.
Bending Strength	$\pm(0.5\% + 0.05\Omega)$	JIS-C-5202-6.1.4 Bending Amplitude 3mm for 10 seconds

PART NUMBER SYSTEM

NCST10 E R501 F TR E



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



AVAILABLE VALUES AND PART NUMBERS

	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
0402 Size 1/16W	50mΩ ~ 100mΩ	NCST04 * R050HTRF	50	±400ppm (H)
		↓	↓	
		NCST04 * R050HTRF	100	
	101mΩ ~ 500mΩ	NCST04 * R101GTRF	101	±300ppm (G)
		↓	↓	
		NCST04 * R501FTRF	500	
	501mΩ ~ 1.0Ω	NCST04 * R501FTRF	501	±200ppm (F)
		↓	↓	
		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)
		↓	↓	
		NCST06 * R050JTRF	50	
	51mΩ ~ 100mΩ	NCST06 * R051HTRF	51	±400ppm (H)
		↓	↓	
		NCST06 * R100HTRF	100	
	101mΩ ~ 500mΩ	NCST06 * R101GTRF	101	±300ppm (J)
		↓	↓	
		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 Size 1/8W	20mΩ ~ 50mΩ	NCST10 * R020JTRF	20	±600ppm (J)
		↓	↓	
		NCST10 * R050JTRF	50	
	51mΩ ~ 100mΩ	NCST10 * R051HTRF	51	±400ppm (H)
		↓	↓	
		NCST10 * R100HTRF	100	
	101mΩ ~ 500mΩ	NCST10 * R101GTRF	101	±300ppm (J)
		↓	↓	
		NCST10 * R500GTRF	500	
501mΩ ~ 1.0Ω	NCST10 * R501FTRF	501	±200ppm (F)	
	↓	↓		
	NCST10 * 1R00FTRF	1,000		
	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 ~ 500mΩ	NCST12 * R051JTRF	51	±300ppm (G)
		↓	↓	
		NCST12 * R051JTRF	51	
501mΩ ~ 1.0Ω	NCST12 * R501FTRF	501	±200ppm (F)	
	↓	↓		
	NCST12 * 1R00FTRF	1,000		
100mΩ ~ 1.0Ω	NCST12 * R100ETRF	100	±100ppm (E)	
	↓	↓		
	NCST12 * 1R00ETRF	1,000		

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

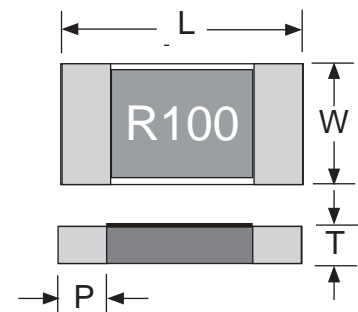
AVAILABLE VALUES AND PART NUMBERS

	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 ~ 500mΩ	NCST50 * R051JTRF	51	±300ppm (G)
		↓	↓	
		NCST50 * R500JTRF	500	
	501mΩ ~ 1.0Ω	NCST50 * R501FTRF	501	±200ppm (F)
		↓	↓	
		NCST50 * 1R00FTRF	1,000	
100mΩ ~ 1.0Ω	NCST50 * R100ETRF	100	±100ppm (E)	
	↓	↓		
	NCST50 * 1R00ETRF	1,000		
	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 ~ 500mΩ	NCST100 * R051JTRF	51	±300ppm (G)
		↓	↓	
		NCST100 * R500JTRF	500	
	501mΩ ~ 1.0Ω	NCST100 * R501FTRF	501	±200ppm (F)
		↓	↓	
		NCST100 * 1R00FTRF	1,000	
100mΩ ~ 1.0Ω	NCST100 * R100ETRF	100	±100ppm (E)	
	↓	↓		
	NCST100 * 1R00ETRF	1,000		

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

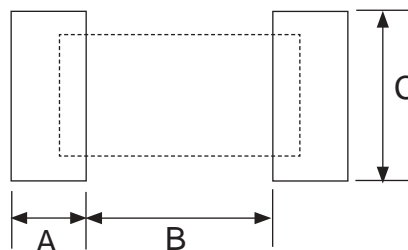
DIMENSIONS (mm)

Type	Length (L)	Width (W)	Thickness (T)	Termination Width (P ₁)	Termination Width (P ₂)
NCST04	1.00 ±0.05	0.50 ±0.05	0.32 ±0.05	0.25 ±0.10	0.20 ±0.10
NCST06	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.30 ±0.20	0.30 ±0.20
NCST10	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.30 ±0.20	0.30 ±0.20
NCST12	3.10 ±0.15	1.55 ±0.15	0.60 ±0.10	0.50 ±0.20	0.40 ±0.20
NCST50	5.00 ±0.15	2.50 ±0.15	0.60 ±0.10	0.60 ±0.30	0.50 ±0.25
NCST100	6.30 ±0.15	3.10 ±0.15	0.60 ±0.10	0.60 ±0.30	0.50 ±0.25



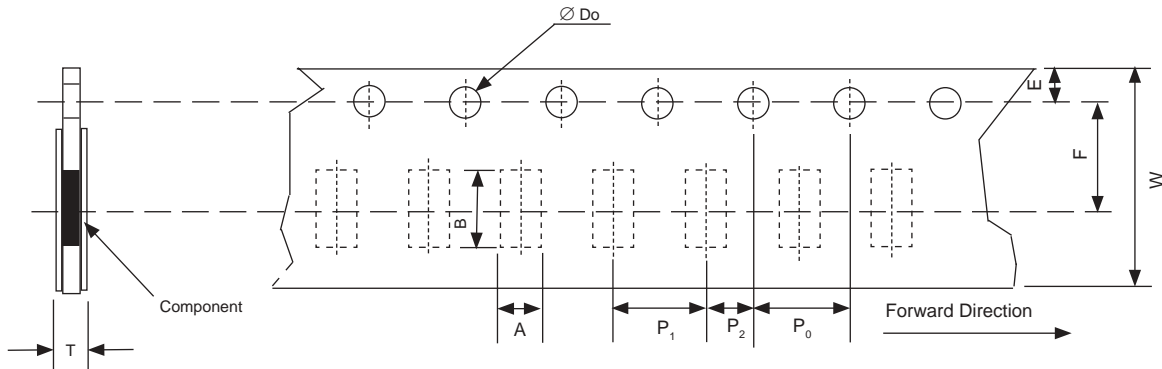
LAND PATTERN DIM. (mm)

	A	B	C
NCST04	0.50	0.50	0.60 ±0.2
NCST06	0.70	0.80	0.90 ±0.2
NCST10	1.00	1.00	1.35 ±0.2
NCST12	1.15	2.00	1.70 ±0.2
NCST50	1.40	3.60	2.40 ±0.2
NCST100	1.60	4.9	3.00 ±0.2



PAPER CARRIER TAPE DIMENSIONS (mm)

Type	A	B	W	F	E	P ₁	P ₂	P ₀	φD	T
NCST04	0.67 ±0.03	1.15 ±0.03	8.00 ±0.10	3.50 ±0.05	1.75 ±0.05	2.00 ±0.05	2.00 ±0.05	4.00 ±0.10	1.55 ±0.05	0.40 ±0.03
NCST06	1.10 ±0.05	1.90 ±0.05				0.60 ±0.03				
NCST10	1.60 ±0.05	2.37 ±0.05				0.75 ±0.05				
NCST12	2.00 ±0.05	3.55 ±0.05								



EMBOSSED PLASTIC CARRIER DIMENSIONS (mm)

Type	A	B	W	F	E	P ₁	P ₂	P ₀	φD _o	T
NCST50	2.85 ±0.10	5.45 ±0.10	12.00 ±0.10	5.50 ±0.05	1.75 ±0.10	4.00 ±0.05	2.00 ±0.05	4.00 ±0.05	1.50 ±0.05	0.80 ±0.10
NCST100	3.40 ±0.20	6.65 ±0.10								

REEL DIMENSIONS (mm) AND QUANTITY

Type	A	B	C	W	Quantity
NCST04	178 ±1.0	60 ±0.5	13 ±0.20	9.0 ±0.50	10,000
NCST06					5,000
NCST10					
NCST12				3.2 ±1.50	4,000
NCST50					
NCST100					

