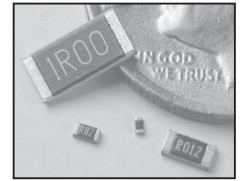


FEATURES

- SURFACE MOUNTABLE 0402 ~ 7520 CASE SIZE
- AEC-Q200 QUALIFIED
- ANTI-SULFUR CONSTRUCTION; MEETS ASTM-B-809-95 H2S, +50°C, 1,000 HOURS
- MEETS +85°C/85%RH BIASED HUMIDITY, 1,000 HOURS
- PRECISION TOLERANCE (±1%)
- POWER RATINGS UP TO 3 WATTS
- Pb-FREE REFLOW COMPATIBLE

RoHS Compliant
includes all homogeneous materials

*See Part Number System for Details



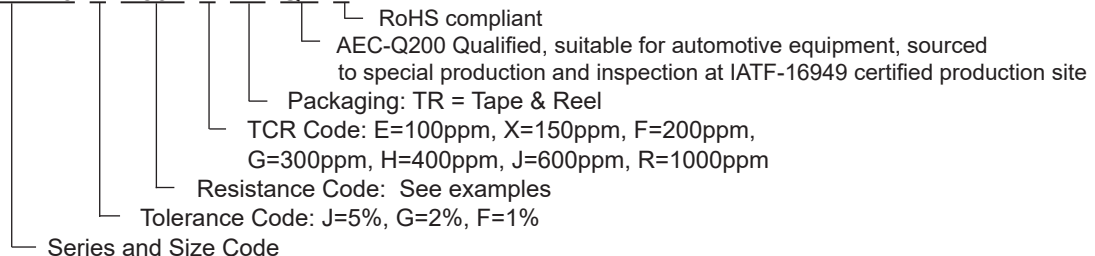
CHARACTERISTICS

Type	EIA Size	Power Rating at 70°C	Resistance Tolerance	Temperature Coefficient (°C)	Resistance Range	Resistance Range (Codes)	Operating Temp. Range (°C)
NCST-A04	0402	1/16W	1% (F) 2% (G) 5% (J)	±200ppm (F)	510mΩ ~ 1Ω	R510 ~ 1R00	-55°C ~ +155°C
				±300ppm (G)	102mΩ ~ 500mΩ	R102 ~ R500	
				±400ppm (H)	50mΩ ~ 100mΩ	R050 ~ R100	
NCST-A06	0603	1/10W	1% (F) 2% (G) 5% (J)	±200ppm (F)	301mΩ ~ 1Ω	R301 ~ 1R00	
				±300ppm (G)	102mΩ ~ 300mΩ	R102 ~ R300	
				±400ppm (H)	51mΩ ~ 100mΩ	R051 ~ R100	
				±600ppm (J)	20mΩ ~ 50mΩ	R020 ~ R050	
NCST-A10	0805	1/8W	1% (F) 2% (G) 5% (J)	±200ppm (F)	200mΩ ~ 1Ω	R200 ~ 1R00	
				±300ppm (G)	102mΩ ~ 196mΩ	R102 ~ R196	
				±400ppm (H)	51mΩ ~ 100mΩ	R051 ~ R100	
				±600ppm (J)	20mΩ ~ 50mΩ	R020 ~ R050	
NCST-A12	1206	1/4W	1% (F) 2% (G) 5% (J)	±200ppm (F)	100mΩ ~ 1Ω	R100 ~ 1R00	
				±300ppm (G)	51mΩ ~ 91mΩ	R051 ~ R091	
				±400ppm (H)	21mΩ ~ 50mΩ	R021 ~ R050	
				±600ppm (J)	10mΩ ~ 20mΩ	R010 ~ R020	
NCST-A25	1210	1/2W	1% (F) 2% (G) 5% (J)	±200ppm (F)	100mΩ ~ 1Ω	R100 ~ 1R00	
				±300ppm (G)	51mΩ ~ 91mΩ	R051 ~ R091	
				±400ppm (H)	21mΩ ~ 50mΩ	R021 ~ R050	
				±600ppm (J)	10mΩ ~ 20mΩ	R010 ~ R020	
NCST-A50	2010	3/4W	1% (F) 2% (G) 5% (J)	±200ppm (F)	100mΩ ~ 1Ω	R100 ~ 1R00	
				±300ppm (G)	51mΩ ~ 91mΩ	R051 ~ R091	
				±400ppm (H)	21mΩ ~ 50mΩ	R021 ~ R050	
				±600ppm (J)	10mΩ ~ 20mΩ	R010 ~ R020	

Sizes and Values Table Continues on Next Page

PART NUMBER SYSTEM

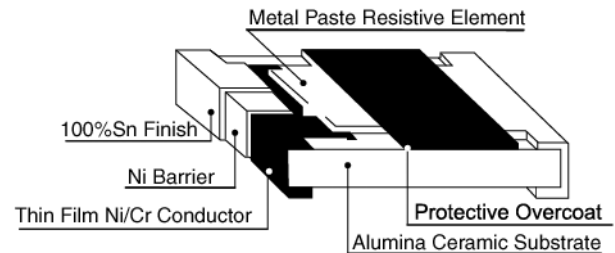
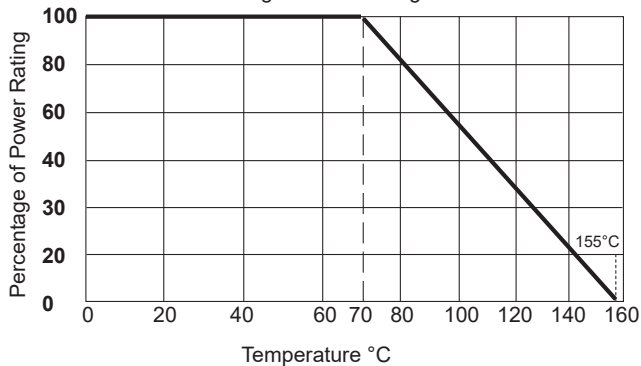
NCST-A10 F R501 F TR QY E



CHARACTERISTICS

Type	EIA Size	Power Rating at 70°C	Resistance Tolerance	Temperature Coefficient (°C)	Resistance Range	Resistance Range (Codes)	Operating Temp. Range (°C)
NCST-A100	2512	1W	1% (F) 2% (G) 5% (J)	±200ppm (F)	100mΩ ~ 1Ω	R100 ~ 1R00	-55°C ~ +155°C
				±300ppm (G)	51mΩ ~ 91mΩ	R051 ~ R091	
				±400ppm (H)	21mΩ ~ 50mΩ	R021 ~ R050	
				±600ppm (J)	10mΩ ~ 20mΩ	R010 ~ R020	
NCST-A100L	3720 (0815)	1W	1% (F) 2% (G) 5% (J)	±150ppm (X)	20mΩ ~ 500mΩ	R020 ~ R500	
				±300ppm (G)	10mΩ ~ 18mΩ	R010 ~ R018	
NCST-A200	7520 (0830)	2W	2% (G) 5% (J)	±300ppm (G)	1mΩ ~ 4mΩ	R001 ~ R004	
				1% (F) 2% (G) 5% (J)	±150ppm (X)	11mΩ ~ 350mΩ	
NCST-A300	1225	3W	1% (F) 2% (G) 5% (J)	±200ppm (F)	5mΩ ~ 10mΩ	R005 ~ R010	
				±100ppm (E)	33mΩ ~ 8.0Ω	R033 ~ 8R00	
				±150ppm (X)	21mΩ ~ 30mΩ	R021 ~ R030	
				±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: $\sqrt{\text{Power rating (Watts)} / \text{Resistance (Ohms)}}$

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	±0.5% + 0.05Ω	JIS-C-5201-1 4.13, IEC-60115-1 4.13 RCWV * 2.5 or max. overload voltage whichever is less for 5 seconds
	For higher power parts ±1.0% + 0.05Ω	
Insulation Resistance	>10000MΩ	JIS-C-5201-1 4.6, IEC-60115-1 4.6 Maximum overload voltage for 1 minute
Load Life	±1% + 0.05Ω	MIL-STD-202 Method 108 Condition D Steady State TA=+125°C at derated power. Measurement 24±4 hours after test
Voltage Proof	No breakdown or flashover	JIS-C-5201-1 4.7, IEC-60115-1 4.7 1.42 times maximum operating voltage for 1 minute
Biased Humidity	±1.0% + 0.05Ω	MIL-STD-202 Method 103 1000 hours +85°C/85% RH at 10% of operating power
High Temperature Exposure	±0.5% + 0.05Ω	MIL-STD-202 Method 108 1000 hours +155°C
Solderability	95% min. coverage	JIS-C-5201-1 4.17, IEC-60115-1 4.17 J-STD-002 +245°C ±5°C for 3 sec.
Resistance to Soldering Heat	±0.5% + 0.05Ω	MIL-STD-202 Method 210 +260°C ±5°C for 10 sec.
Leaching	Individual leaching area ≤5% Total leaching area ≤10%	JIS-C-5201-1 4.18, IEC-60068-2-58 8.2.1 +260°C ±5°C for 30 sec.
Board Flexing	±1% + 0.05Ω	AEC-Q200-005 Bend once for 60 seconds 2mm for 2010 & 2512, Other sizes 3mm
Terminal Strength	None broken	AEC-Q200-006 Force of 1.8kg for 60 seconds
Temperature Cycling	±0.5% + 0.05Ω	JESD22 Method JA-104 -55°C ~ +125°C, 1000 cycles
Mechanic Shock	±0.25% + 0.05Ω	MIL-STD-202 Method 213 Wave Form: Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration (D) is 6.
Vibration	±0.5% + 0.05Ω	MIL-STD-202 Method 204 5g's for 20 min., 12 cycles each of 3 orientations 10 ~ 2000Hz
ESD	±1.0% + 0.05Ω	AEC-Q200-002 Human Body Method, 2KV
Resistance to Solvents	No visible damage on appearance or marking	MIL-STD-202 Method 215 Add Aqueous wash chemical - OKEM Clean or equivalent. Do not use banned solvents.
Flammability	No ignition of the tissue paper or scorching of the pinewood board	UL-94 V-0 or V-1 are acceptable. Electrical test not required
Sulfur Test	±0.5% + 0.05Ω	ASTM-B-809-95 H2S, 50±2°C, 91 ~ 93% RH, no power for 1,000 hours

AVAILABLE VALUES AND PART NUMBERS

	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
0402 Size 1/16W	50mΩ ~ 100mΩ	NCST-A04 _ R050HTRQYF	50	±400ppm (H)
		↓	↓	
	101mΩ ~ 500mΩ	NCST-A04 _ R100HTRQYF	100	±300ppm (G)
		NCST-A04 _ R102GTRQYF	102	
	501mΩ ~ 1.0Ω	NCST-A04 _ R500FTRQYF	500	±200ppm (F)
		NCST-A04 _ R510FTRQYF	510	
		NCST-A04 _ 1R00FTRQYF	1,000	
	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
0603 Size 1/10W	20mΩ ~ 50mΩ	NCST-A06 _ R020JTRQYF	20	±600ppm (J)
		↓	↓	
	51mΩ ~ 100mΩ	NCST-A06 _ R050JTRQYF	50	±400ppm (H)
		NCST-A06 _ R051HTRQYF	51	
	102mΩ ~ 500mΩ	NCST-A06 _ R100HTRQYF	100	±300ppm (G)
		NCST-A06 _ R102GTRQYF	102	
	301mΩ ~ 1.0Ω	NCST-A06 _ R300GTRQYF	300	±200ppm (F)
		NCST-A06 _ R301FTRQYF	301	
		NCST-A06 _ 1R00FTRQYF	1,000	
	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
0805 Size 1/8W	20mΩ ~ 50mΩ	NCST-A10 _ R020JTRQYF	20	±600ppm (J)
		↓	↓	
	51mΩ ~ 100mΩ	NCST-A10 _ R050JTRQYF	50	±400ppm (H)
		NCST-A10 _ R051HTRQYF	51	
	102mΩ ~ 196mΩ	NCST-A10 _ R100HTRQYF	100	±300ppm (G)
		NCST-A10 _ R102GTRQYF	102	
	200mΩ ~ 1.0Ω	NCST-A10 _ R196GTRQYF	196	±200ppm (F)
		NCST-A10 _ R200FTRQYF	200	
		NCST-A10 _ 1R00FTRQYF	1,000	

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

TABLE CONTINUES ON NEXT PAGE

AVAILABLE VALUES AND PART NUMBERS

	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
1206 Size 1/4W	10mΩ ~ 20mΩ	NCST-A12 * R010JTRQYF	10	±600ppm (J)
		↓	↓	
		NCST-A12 * R020JTRQYF	20	
	21mΩ ~ 50mΩ	NCST-A12 * R021HTRQYF	21	±400ppm (H)
		↓	↓	
		NCST-A12 * R050HTRQYF	50	
	51mΩ ~ 91mΩ	NCST-A12 * R051GTRQYF	51	±300ppm (G)
		↓	↓	
		NCST-A12 * R091GTRQYF	91	
	100mΩ ~ 1.0Ω	NCST-A12 * R100FTRQYF	100	±200ppm (F)
↓		↓		
NCST-A12 * 1R00FTRQYF		1,000		
	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
1210 Size 1/2W	10mΩ ~ 20mΩ	NCST-A25 * R010JTRQYF	10	±600ppm (J)
		↓	↓	
		NCST-A25 * R020JTRQYF	20	
	21mΩ ~ 50mΩ	NCST-A25 * R021HTRQYF	21	±400ppm (H)
		↓	↓	
		NCST-A25 * R050HTRQYF	50	
	51mΩ ~ 91mΩ	NCST-A25 * R051GTRQYF	51	±300ppm (G)
		↓	↓	
		NCST-A25 * R091GTRQYF	91	
	100mΩ ~ 1.0Ω	NCST-A25 * R100FTRQYF	100	±200ppm (F)
↓		↓		
NCST-A25 * 1R00FTRQYF		1,000		
	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
2010 Size 3/4W	10mΩ ~ 20mΩ	NCST-A50 * R010JTRQYF	10	±600ppm (J)
		↓	↓	
		NCST-A50 * R020JTRQYF	20	
	21mΩ ~ 50mΩ	NCST-A50 * R021HTRQYF	21	±400ppm (H)
		↓	↓	
		NCST-A50 * R050HTRQYF	50	
	51mΩ ~ 91mΩ	NCST-A50 * R051GTRQYF	51	±300ppm (G)
		↓	↓	
		NCST-A50 * R091GTRQYF	91	
	100mΩ ~ 1.0Ω	NCST-A50 * R100FTRQYF	100	±200ppm (F)
↓		↓		
NCST-A50 * 1R00FTRQYF		1,000		

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

TABLE CONTINUES ON NEXT PAGE

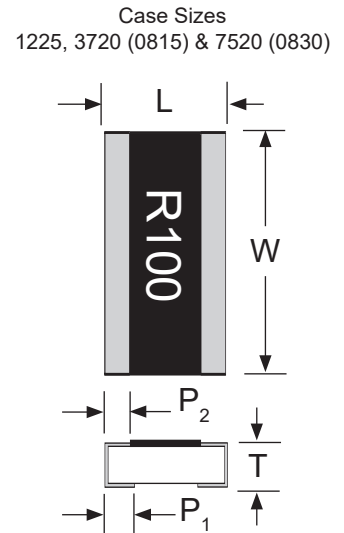
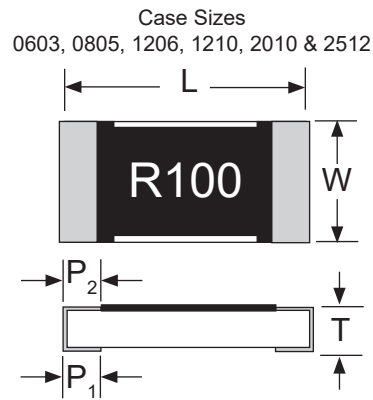
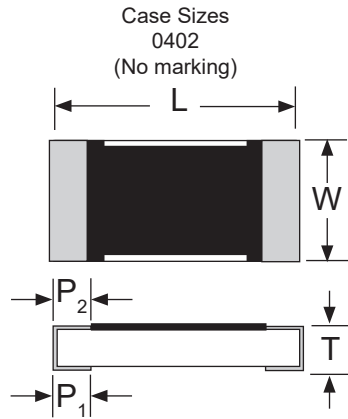
AVAILABLE VALUES AND PART NUMBERS

	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
2512 Size 1W	10mΩ ~ 20mΩ	NCST-A100_*_R010JTRQYF	10	±600ppm (J)
		↓	↓	
		NCST-A100_*_R020JTRQYF	20	
	21mΩ ~ 50mΩ	NCST-A100_*_R021HTRQYF	21	±400ppm (H)
		↓	↓	
		NCST-A100_*_R050HTRQYF	50	
	51mΩ ~ 91mΩ	NCST-A100_*_R051GTRQYF	51	±300ppm (G)
		↓	↓	
		NCST-A100_*_R91GTRQYF	91	
	100mΩ ~ 1.0Ω	NCST-A100_*_R100FTRQYF	100	±200ppm (F)
↓		↓		
NCST-A100_*_R1000FTRQYF		1,000		
	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
3720 (0815) Size 1W	10mΩ ~ 18mΩ	NCST-A100L_*_R010GTRQYF	10	±300ppm (G)
		↓	↓	
		NCST-A100L_*_R018GTRQYF	18	
	20mΩ ~ 500Ω	NCST-A100L_*_R020XTRQYF	20	±150ppm (X)
		↓	↓	
NCST-A100L_*_R500XTRQYF	500			
	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
7520 (0830) Size 2W	1mΩ ~ 4mΩ	NCST-A200_*_R001GTRQYF	1	±300ppm (G)
		↓	↓	
		NCST-A200_*_R004GTRQYF	4	
	5mΩ ~ 10mΩ	NCST-A200_*_R005FTRQYF	5	±200ppm (F)
		↓	↓	
		NCST-A200_*_R010FTRQYF	10	
	11mΩ ~ 350mΩ	NCST-A200_*_R011XTRQYF	11	±150ppm (X)
		↓	↓	
NCST-A200_*_R350XTRQYF	350			
	Available Value Range	Part Number	Resistance Value (mΩ)	Available TCR
1225 Size 3W	1mΩ ~ 4mΩ	NCST-A300_*_R003GTRQYF	3	±300ppm (G)
		↓	↓	
		NCST-A300_*_R005GTRQYF	5	
	5mΩ ~ 10mΩ	NCST-A300_*_R006FTRQYF	6	±200ppm (F)
		↓	↓	
		NCST-A300_*_R020FTRQYF	20	
	11mΩ ~ 350mΩ	NCST-A300_*_R021XTRQYF	21	±150ppm (X)
		↓	↓	
		NCST-A300_*_R030XTRQYF	30	
	33mΩ ~ 8000mΩ	NCST-A300_*_R033ETRQYF	33	±100ppm (E)
↓		↓		
NCST-A300_*_R8000ETRQYF	8,000			

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

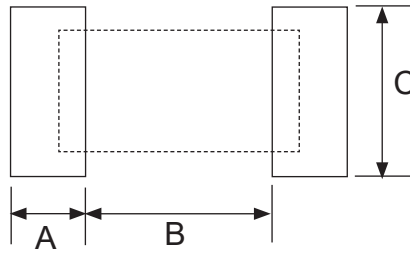
DIMENSIONS (mm)

Type	Case Size	Length (L)	Width (W)	Thickness (T)	Termination Width (P ₁)	Termination Width (P ₂)
NCST-A04	0402	1.00 ± 0.05	0.50 ± 0.05	0.32 ± 0.05	0.25 ± 0.10	0.20 ± 0.10
NCST-A06	0603	1.60 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20
NCST-A10	0805	2.00 ± 0.10	1.25 ± 0.10	0.55 ± 0.10	0.30 ± 0.20	0.40 ± 0.25
NCST-A12	1206	3.10 ± 0.10	1.55 ± 0.10	0.55 ± 0.10	0.50 ± 0.30	0.40 ± 0.25
NCST-A25	1210	3.10 ± 0.10	2.60 ± 0.15	0.55 ± 0.10	0.50 ± 0.30	0.50 ± 0.25
NCST-A50	2010	5.00 ± 0.20	2.50 ± 0.15	0.60 ± 0.15	0.60 ± 0.30	0.50 ± 0.25
NCST-A100	2512	6.35 ± 0.20	3.10 ± 0.15	0.60 ± 0.10	0.60 ± 0.30	0.55 ± 0.25
NCST-A100L	3720 (0815)	2.00 ± 0.20	3.75 ± 0.20	0.60 ± 0.10	0.40 ± 0.20	0.40 ± 0.20
NCST-A200	7520 (0830)	2.00 ± 0.20	7.50 ± 0.30	0.60 ± 0.10	0.40 ± 0.20	0.40 ± 0.20
NCST-A300	1225	3.20 ± 0.15	6.45 ± 0.15	0.90 ± 0.15	0.60 ± 0.30	0.80 ± 0.25



LAND PATTERN DIM. (mm)

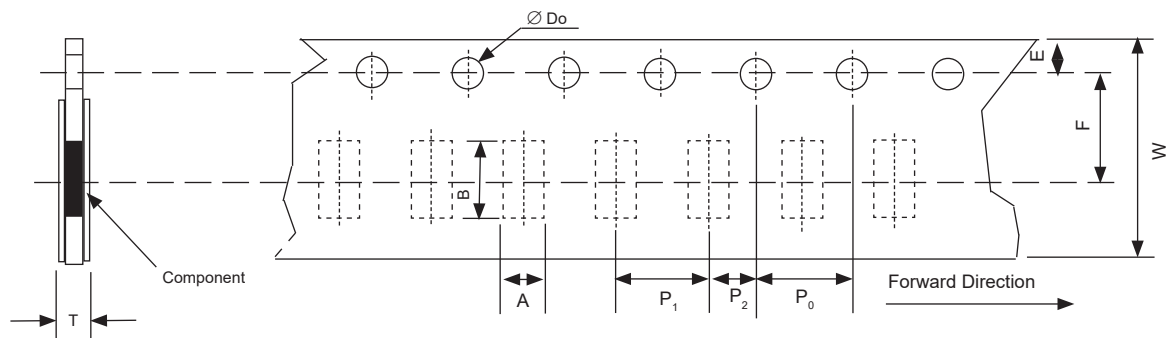
Size	A	B	C
NCST-A04	0.50	0.50	0.60 ± 0.2
NCST-A06	1.00	0.80	0.90 ± 0.2
NCST-A10	1.00	1.00	1.35 ± 0.2
NCST-A12	1.15	2.00	1.70 ± 0.2
NCST-A25	1.15	2.00	2.50 ± 0.2
NCST-A50	1.40	3.60	2.50 ± 0.2
NCST-A100	1.60	4.90	3.20 ± 0.2
NCST-A100L	1.80	1.00	3.90 ± 0.2
NCST-A200	1.80	1.00	7.60 ± 0.2
NCST-A300	2.00	1.20	7.00 ± 0.2



 **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

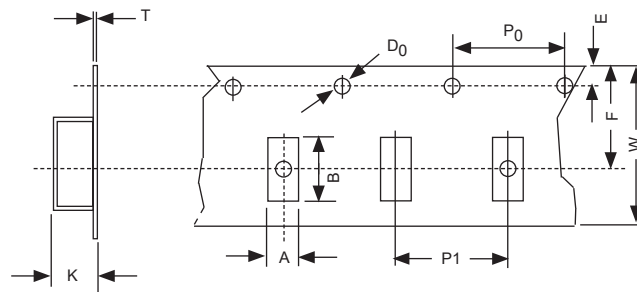
PAPER CARRIER TAPE DIMENSIONS (mm)

Type	A	B	W	F	E	P ₁	P ₂	P ₀	φD	T
NCST-A04	0.65 ± 0.10	1.15 ± 0.10	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	0.45 ± 0.10
NCST-A06	1.10 ± 0.10	1.90 ± 0.10				0.70 ± 0.10				
NCST-A10	1.60 ± 0.10	2.40 ± 0.20				0.85 ± 0.10				
NCST-A12	1.90 ± 0.10	3.50 ± 0.20								
NCST-A25	2.90 ± 0.10	3.50 ± 0.20								



EMBOSSED PLASTIC CARRIER DIMENSIONS (mm)

Type	A	B	W	F	K	E	P ₁	P ₂	P ₀	φD ₀	T
NCST-A50	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 ±0.10	0.80 ±0.10
NCST-A100	3.50 ±0.10	6.70 ±0.10									
NCST-A100L	2.50 ±0.20	4.50 ±0.20									
NCST-A200	2.50 ±0.20	8.30 ±0.20	12.0 ±0.30	7.80 ±0.05	1.20 ±0.20						
NCST-A300	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
NCST-A04	178 ±1.0	60 +1.0	13.5 ±0.7	9.5 ±0.1	10,000
NCST-A06					5,000
NCST-A10					
NCST-A12					
NCST-A25					
NCST-A50	13.5 ±1.0				
NCST-A100	13.5 ±1.0				
NCST-A100L	13.5 ±1.0	2,000			
NCST-A200	17.5 ±1.0	2,000			
NCST-A300	13.5 ±1.0	2,000			

