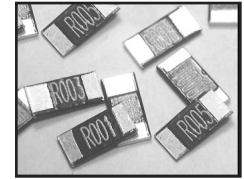


FEATURES

- SURFACE MOUNTABLE 1206, 2010 AND 2512 CASE SIZE
- LOW RESISTANCE & LOW INDUCTANCE METAL STRIP CONSTRUCTION
- PRECISION TOLERANCE ($\pm 1\%$) AND TCR ($\pm 50\text{PPM}$) TO $+170^\circ\text{C}$
- TAPED & REEL PACKAGING FOR EASY PICK AND PLACE
- REFLOW COMPATIBLE

RoHS Compliant
includes all homogeneous materials



SPECIFICATIONS

See Part Number System for Details

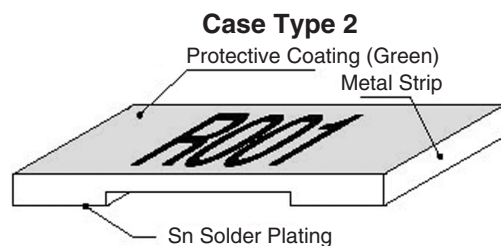
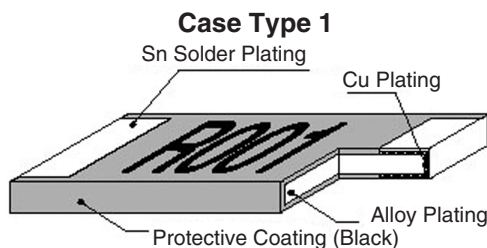
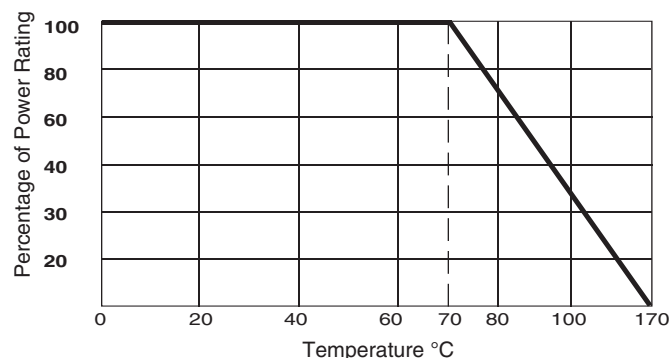
Type	EIA Size	Power Rating at 80°C	Case Type**	Resistance Tolerance (Code)	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature Range (°C)
NCSR100S	1206	1 Watt	1	$\pm 1\%$ (F), $\pm 2\%$ (G) $\pm 5\%$ (J)	± 50 (D)	5.0m Ω ~ 20m Ω	-55°C ~ +170°C
NCSR150	2010	1.5 Watt	2	$\pm 1\%$ (F) $\pm 3\%$ (H) $\pm 5\%$ (J)	± 50 (D)	1.0m Ω ~ 10m Ω	
NCSR100	2512	1 Watt	1 & 2		± 50 (D)*	0.50m Ω ~ 22m Ω	
NCSR200		2 Watt	1 & 2		± 75 (W)*	0.50m Ω ~ 10m Ω	
NCSR250		2.5 Watt	2		± 100 (E)*	4.0m Ω ~ 6.0m Ω	
NCSR300		3 Watt	2		± 150 (K)*	0.50m Ω ~ 2.5m Ω	

*See Part Number Tables for Available Value/ TCR, ** See Part Number Tables for Case Type

ENVIRONMENTAL CHARACTERISTICS

Item	Specification		Test Method
	Type 1	Type 2	
Temperature Coefficient of Resistance	As Specified		MIL-STD-202, Method 304 $+25/-55/+25/+125/+25^\circ\text{C}$
Thermal Shock	$\pm 0.5\%$	$\pm 1\%$	MIL-STD-202, Method 107G $-55^\circ\text{C} \sim +150^\circ\text{C}$, 100 cycles
Short Time Overload	$\pm 0.5\%$	$\pm 1\%$	JIS-C-5202-5.5 5x rated power for 5 seconds
Resistance to dry heat	$\pm 1\%$	$\pm 1\%$	JIS-C-5202-7.2 96 hrs @ 155°C without load
Load Life	$\pm 1\%$	$\pm 1\%$	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	$\pm 0.5\%$	$\pm 1\%$	MIL-STD-202F Method 210E $260^\circ\text{C} \pm 5^\circ\text{C}$ for 10 sec. ± 1 sec.
Solderability	95% min. coverage		MIL-STD-202F Method 208H $245^\circ\text{C} \pm 5^\circ\text{C}$ for 5 sec. ± 0.5 sec.

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



PART NUMBER SYSTEM

NCSR 100 S E R015 K TR G E

- Series
- Power Rating (100 = 1W, 150 = 1.5W, 200 = 2W, 250 = 2.5W and 300 = 3W)
- Case Code (S = Reduced Size, Blank = Standard)
- Tolerance Code: J=5%, H=3%, F=1%
- Resistance Code: See Values Tables
- TCR Code: D=50ppm, W=75ppm, E=100ppm, K=150ppm
- Packaging: TR = Tape & Reel
- Case Type (Blank = Case 1, G = Case 2)
- RoHS compliant

NCSR100S (1 WATT, 1206 CASE SIZE) AVAILABLE VALUES

Part Number	Resistance Value (mΩ)	Available Tolerance	Available TCR	Length (L)	Width (W)	Thickness (T)	Termination Width (P)	Case Type
NCSR100S*R005DTRGF	5.0	±1% (F) ±3% (H) ±5% (J)	±50ppm (D)	3.20 ±0.20	1.60 ±0.20	0.50 ± 0.30	0.60 ±0.20	1
NCSR100S*R010DTRGF	10							
NCSR100S*R020DTRGF	20							

* Insert appropriate tolerance code, Contact NIC regarding availability of other values

NCSR100 (1 WATT, 2512 CASE SIZE) AVAILABLE VALUES

Part Number	Resistance Value (mΩ)	Available Tolerance	Available TCR	Length (L)	Width (W)	Thickness (T)	Termination Width (P)	Case Type
NCSR100*M50DTRF	0.50	±1% (F) ±3% (H) ±5% (J)	±50ppm (D)	6.35 ±0.25	3.18 ±0.25	1.40 ± 0.20	1.30 ±0.30	1
NCSR100*M75DTRF	0.75					1.00 ± 0.20		
NCSR100*R001DTRF	1.0					0.80 ± 0.20		
NCSR100*1M50DTRF	1.5					0.65 ± 0.20		
NCSR100*R002DTRF	2.0		0.50 ± 0.20					
NCSR100*2M50KTRF	2.5		1.00 ± 0.20					
NCSR100*R003KTRF	3.0		0.70 ± 0.20					
NCSR100*3M50KTRF	3.5		0.71 ± 0.20					
NCSR100*R004ETRF	4.0	±1% (F) ±3% (H) ±5% (J)	±100ppm (E)	6.35 ±0.25	3.18 ±0.25	0.60 ± 0.20	1.30 ±0.30	1
NCSR100*4M50ETRF	4.5					0.58 ± 0.20		
NCSR100*R005ETRF	5.0					0.50 ± 0.20		
NCSR100*5M50ETRF	5.5					0.47 ± 0.20		
NCSR100*R006WTRF	6.0		0.50 ± 0.20					
NCSR100*6M50WTRF	6.5		0.47 ± 0.20					
NCSR100*R007WTRF	7.0		0.45 ± 0.20					
NCSR100*R011DTRGF	11		±1% (F) ±3% (H) ±5% (J)			±50ppm (D)		
NCSR100*R012DTRGF	12							
NCSR100*R013DTRGF	13							
NCSR100*R014DTRGF	14							
NCSR100*R015DTRGF	15							
NCSR100*R016DTRGF	16							
NCSR100*R017DTRGF	17							
NCSR100*R018DTRGF	18							
NCSR100*R019DTRGF	19							
NCSR100*R020DTRGF	20							

* Insert appropriate tolerance code

NCSR150 (1.5 WATT, 2010 CASE SIZE) AVAILABLE VALUES

Part Number	Resistance Value (mΩ)	Available Tolerance	Available TCR	Length (L)	Width (W)	Thickness (T)	Termination Width (P)	Case Type
NCSR150*R001DTRGF	1.0	±1% (F) ±3% (H) ±5% (J)	±50ppm (D)	5.08 ±0.25	2.54 ±0.35	0.6 ±0.20	1.67 ± 0.63	2
NCSR150*1M50DTRGF	1.5							
NCSR150*R002DTRGF	2.0							
NCSR150*2M50DTRGF	2.5							
NCSR150*R003DTRGF	3.0							
NCSR150*3M50DTRGF	3.5							
NCSR150*R004DTRGF	4.0							
NCSR150*4M50DTRGF	4.5							
NCSR150*R005DTRGF	5.0							
NCSR150*5M50DTRGF	5.5							
NCSR150*R006DTRGF	6.0							
NCSR150*6M50DTRGF	6.5							
NCSR150*R007DTRGF	7.0							
NCSR150*R008DTRGF	8.0							
NCSR150*R010DTRGF	10							

NCSR200 (2 WATT, 2512 CASE SIZE) AVAILABLE VALUES

Part Number	Resistance Value (mΩ)	Available Tolerance	Available TCR	Length (L)	Width (W)	Thickness (T)	Termination Width (P)	Case Type
NCSR200*M50DTRF	0.50	±1% (F) ±3% (H) ±5% (J)	±50ppm (D)	6.35 ±0.25	3.18 ±0.35	1.4 ±0.20	1.30 ± 0.30	1
NCSR200*M75DTRF	0.75					1.0 ± 0.20		
NCSR200*R001DTRF	1.0					0.8 ± 0.20		
NCSR200*1M50DTRF	1.5					0.65 ± 0.20		
NCSR200*R002DTRF	2.0					0.5 ± 0.20		
NCSR200*R007DTRGF	7.0					0.6 ± 0.20	1.93 ±0.75	2
NCSR200*7M50DTRGF	7.5							
NCSR200*R008DTRGF	8.0							
NCSR200*8M50DTRGF	8.5							
NCSR200*R009DTRGF	9.0							
NCSR200*9M50DTRGF	9.5							
NCSR200*R010DTRGF	10							

NCSR250 (2.5 WATT, 2512 CASE SIZE) AVAILABLE VALUES

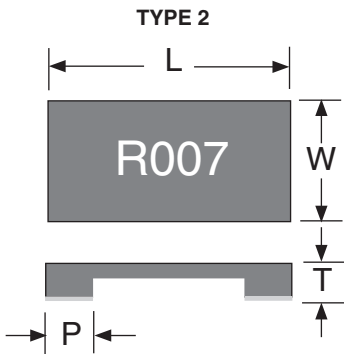
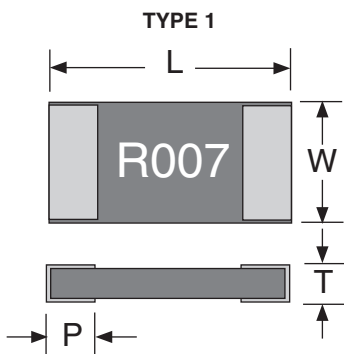
Part Number	Resistance Value (mΩ)	Available Tolerance	Available TCR	Length (L)	Width (W)	Thickness (T)	Termination Width (P)	Case Type
NCSR250*R004DTRGF	4.0	±1% (F) ±3% (H) ±5% (J)	±50ppm (D)	6.35 ±0.25	3.18 ±0.35	0.60 ±0.20	1.93 ±0.75	2
NCSR250*4M50DTRGF	4.5							
NCSR250*R005DTRGF	5.0							
NCSR250*5M50DTRGF	5.5							
NCSR250*R006DTRGF	6.0							

* Insert appropriate tolerance code

NCSR300 (3 WATT, 2512 CASE SIZE) AVAILABLE VALUES

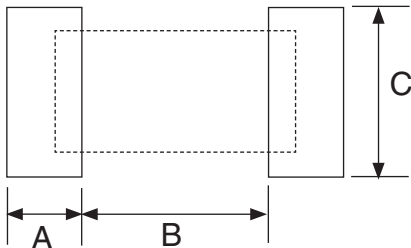
Part Number	Resistance Value (mΩ)	Available Tolerance	Available TCR	Length (L)	Width (W)	Thickness (T)	Termination Width (P)	Case Type
NCSR300*M50ETRGF	0.50	±1% (F) ±3% (H) ±5% (J)	±100ppm (E)	6.35 ±0.25	3.18 ±0.35	0.60 ±0.20	1.93 ±0.75	2
NCSR300*M75ETRGF	0.75		±50ppm (D)			0.60 ±0.20		
NCSR300*R001DTRGF	1.0							
NCSR300*1M50DTRGF	1.5							
NCSR300*R002DTRGF	2.0							
NCSR300*R003WTRGF	3.0							
NCSR300*3M50WTRGF	3.5		±75ppm (W)					

* Insert appropriate tolerance code



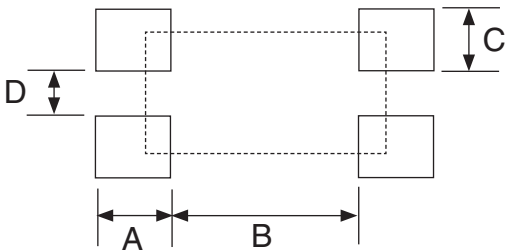
2-WIRE LAND PATTERN DIM. (mm)
(no traces between pads to avoid short circuit)

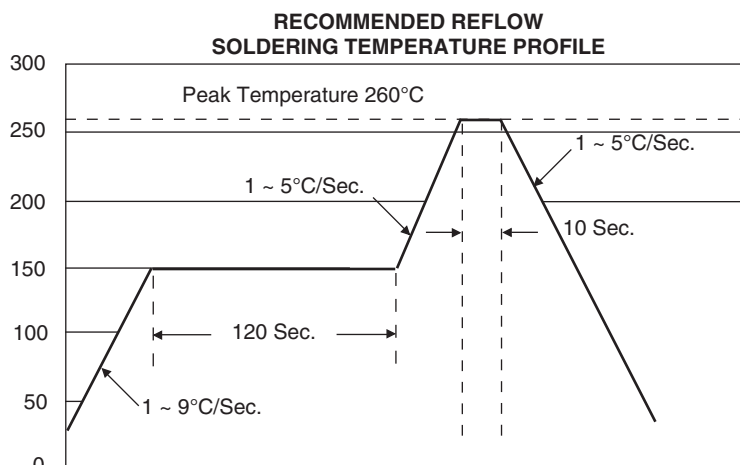
Case Size	A	B	C
1206	1.90	1.40	1.80
2010	1.44	3.80	3.12
2512	1.80	4.75	3.6



4-WIRE LAND PATTERN DIM. (mm)
Recommended for precision current sensing
(no traces between pads to avoid short circuit)

Case Size	A	B	C	D
2010	1.44	3.80	1.16	0.80
2512	1.80	4.75	1.45	1.00

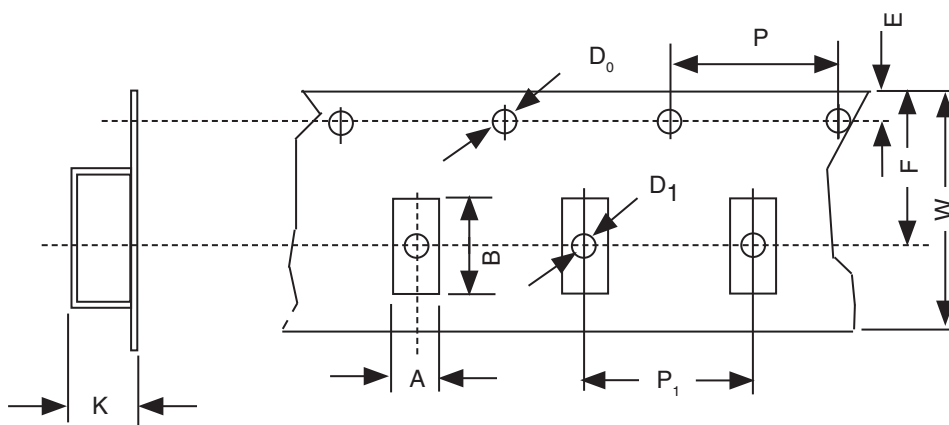




TAPE DIMENSIONS (mm)

Case Size	Resistance Values	A	B	K		P	P ₁	E	F	D ₀	W	Quantity per Reel
				Case 1	Case 2							
1206	All	2.0 ±0.15	3.60 ±0.2	0.84 ±0.1	n/a	4.0 ±0.1	4.0 ±0.1	1.75 ±0.1	3.50 ±0.05	1.55 ^{+1/-0}	8.0 ±0.2	2,000
2010	All	2.85 ±0.1	5.55 ±0.1	n/a	0.80 ±0.2	4.0 ±0.1	4.0 ±0.1	1.75 ±0.1	5.50 ±0.05	1.55 ±0.05	12.0 ±0.3	
2512	0.50	3.40 ±0.1	6.70 ±0.1	1.40 ±0.2	0.80 ±0.2	4.0 ±0.1	4.0 ±0.1	1.75 ±0.1	5.50 ±0.05	1.55 ±0.05	12.0 ±0.3	
	0.75	3.50 ±0.1	6.80 ±0.1	0.80 ±0.2		4.0 ±0.1	4.0 ±0.1	1.75 ±0.1	5.50 ±0.05	1.55 ±0.05	12.0 ±0.3	
	1 ~ 22	3.40 ±0.1	6.70 ±0.1	0.80 ±0.2		4.0 ±0.1	4.0 ±0.1	1.75 ±0.1	5.50 ±0.05	1.55 ±0.05	12.0 ±0.3	

EMBOSSED PLASTIC CARRIER



Notice:

1. The cumulative tolerance of 10 sprocket hole pitch is ±0.2mm.
2. Carrier camber shall be not more than 1mm per 100mm through a length of 250mm.
3. A & B measured 0.3mm from the bottom of the packet
4. K measured at a point on the inside bottom of the packet to the top surface of the carrier.
5. Pocket position relative to sprocket hole is measured as the true position of the pocket and not the pocket hole.