

FEATURES

- SURFACE MOUNTABLE 0805, 1206, 2010 AND 2512 CASE SIZE
- LOW RESISTANCE METAL STRIP CONSTRUCTION
- PRECISION TOLERANCE ($\pm 1\%$)
- TAPED & REEL PACKAGING FOR EASY PICK AND PLACE
- REFLOW COMPATIBLE

**RoHS
Compliant**
includes all homogeneous materials



See Part Number System for Details

SPECIFICATIONS

Type	EIA Size	Power Rating at 70°C	Resistance Tolerance (Code)	Temperature Coefficient (ppm/°C, +25°C ~ +125°C)	Resistance Range*	Operating Temperature Range (°C)
NCSS10	0805	1/8W (B)	$\pm 1\%$ (F) $\pm 2\%$ (G) $\pm 5\%$ (J)	± 100 ppm	5m Ω ~ 20m Ω	-55°C ~ +170°C
		1/4W (A)				
		1/2W (S)				
NCSS12	1206	1/4W (A)		1m Ω = ± 200 ppm 2m Ω ~ 10m Ω = ± 100 ppm >10m Ω = ± 75 ppm	1m Ω ~ 30m Ω	
		1/2W (S)				
		1W (C)				
NCSS20	2010	1/2W (S)		5m Ω ~ 10m Ω = ± 100 ppm >10m Ω = ± 75 ppm	5m Ω ~ 20m Ω	
		3/4W (I)				
		1W (C)				
		1.5W (D)				
NCSS25	2512	1W (C)		1m Ω = ± 275 ppm 2m Ω ~ 10m Ω = ± 100 ppm >10m Ω = ± 75 ppm	1m Ω ~ 50m Ω	
		1.5W (D)			1m Ω ~ 15m Ω	
		2W (E)	1m Ω ~ 10m Ω			

*Contact NIC regarding availability of values not shown

ENVIRONMENTAL CHARACTERISTICS

Item	Specification				Test Method	Reference Standard
	0805	1206	2010	2512		
Temperature Coefficient of Resistance	Within specified value				+25°C ~ +125°C	IEC60115-1 4.8 JIS-C5201 4.8
Load Life	< $\pm 1\%$	< $\pm 1\%$	< $\pm 1\%$	< $\pm 1\%$	1,000 hours at rated power, +70°C, 1.5 hours ON, 0.5 hours OFF	IEC60115-1 4.25.1 JIS-C5201 4.25.1
Short Time Overload	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	5 x rated power for 5 seconds	IEC60115-1 4.13 JIS-C5201 4.13
Moisture Resistance (no load)	< $\pm 1\%$	< $\pm 1.0\%$	< $\pm 1\%$	< $\pm 1\%$	+85°C, 85% RH, 1000 hours	IEC60115-1 4.24.2 1a JIS-C5201 4.24.2 1a
Temperature Cycling	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	-55°C & +155°C, 300 cycles, 15 minutes at each temperature	IEC60115-1 4.19 JIS-C5201 4.19
Resistance to Soldering Heat	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	+260°C $\pm 5^\circ\text{C}$ for 10 sec. ± 1 sec., Two cycles (20 sec. ± 1 sec. for 2512 size)	IEC60115-1 4.18 JIS-C5201 4.18
Solderability	At least 95% coverage of electrode surface				+245°C $\pm 5^\circ\text{C}$, 2 sec. ± 0.5 sec.	IEC60115-1 4.17 JIS-C5201 4.17
High Temperature Exposure	< $\pm 1\%$	< $\pm 1\%$	< $\pm 1\%$	< $\pm 1\%$	+170°C for 1,000 hours	IEC60115-1 4.23.2 JIS-C5201 4.23.2
Low Temperature Storage	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	-55°C for 1,000 hours	IEC60115-1 4.23.4 JIS-C5201 4.23.4
Substrate Bending	< $\pm 1\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$	Bending within 2mm	IEC60115-1 4.33 JIS-C5201 4.33
Insulation Resistance	>100M Ω				100VDC for 1 minute	IEC60115-1 4.6 JIS-C5201 4.6



NCSS10 (0805 CASE SIZE 1/8W, 1/4W and 1/2W) AVAILABLE VALUES

Part Number	Resistance Value (mΩ)	Available Power Ratings	Available Tolerance	Available TCR
NCSS10_ R005TRF	5.0	1/8W (B), 1/4W (A), 1/2W (S)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS10_ R006TRF	6.0	1/8W (B), 1/4W (A), 1/2W (S)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS10_ R008TRF	8.0	1/8W (B), 1/4W (A), 1/2W (S)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS10_ R009TRF	9.0	1/8W (B), 1/4W (A), 1/2W (S)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS10_ R010TRF	10	1/8W (B), 1/4W (A), 1/2W (S)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS10_ R020TRF	20	1/8W (B), 1/4W (A), 1/2W (S)	±1% (F), ±2% (G), ±5% (J)	±100ppm

NCSS12 (1206 CASE SIZE 1/4W, 1/2W AND 1W) AVAILABLE VALUES

Part Number	Resistance Value (mΩ)	Available Power Ratings	Available Tolerance	Available TCR
NCSS12_ R001TRF	1.0	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±200ppm
NCSS12_ R002TRF	2.0	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS12_ R004TRF	4.0	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS12_ R005TRF	5.0	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS12_ R006TRF	6.0	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS12_ R007TRF	7.0	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS12_ R008TRF	8.0	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS12_ R009TRF	9.0	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS12_ R010TRF	10	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS12_ R012TRF	12	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS12_ R014TRF	14	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS12_ R015TRF	15	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS12_ R020TRF	20	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS12_ R022TRF	22	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS12_ R025TRF	25	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS12_ R030TRF	30	1/4W (A), 1/2W (S), 1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm

NCSS20 (2010 CASE SIZE 1/2W, 3/4W, 1W and 1.5W) AVAILABLE VALUES

Part Number	Resistance Value (mΩ)	Available Power Ratings	Available Tolerance	Available TCR
NCSS20_ R005TRF	5.0	1/2W (S), 3/4W (I), 1W (C), 1.5W (D)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS20_ R006TRF	6.0	1/2W (S), 3/4W (I), 1W (C), 1.5W (D)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS20_ R010TRF	10	1/2W (S), 3/4W (I), 1W (C), 1.5W (D)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS20_ R015TRF	15	1/2W (S), 3/4W (I), 1W (C), 1.5W (D)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS20_ R020TRF	20	1/2W (S), 3/4W (I), 1W (C), 1.5W (D)	±1% (F), ±2% (G), ±5% (J)	±75ppm

NCSS25 (2512 CASE SIZE 1W, 1.5W and 2W) AVAILABLE VALUES

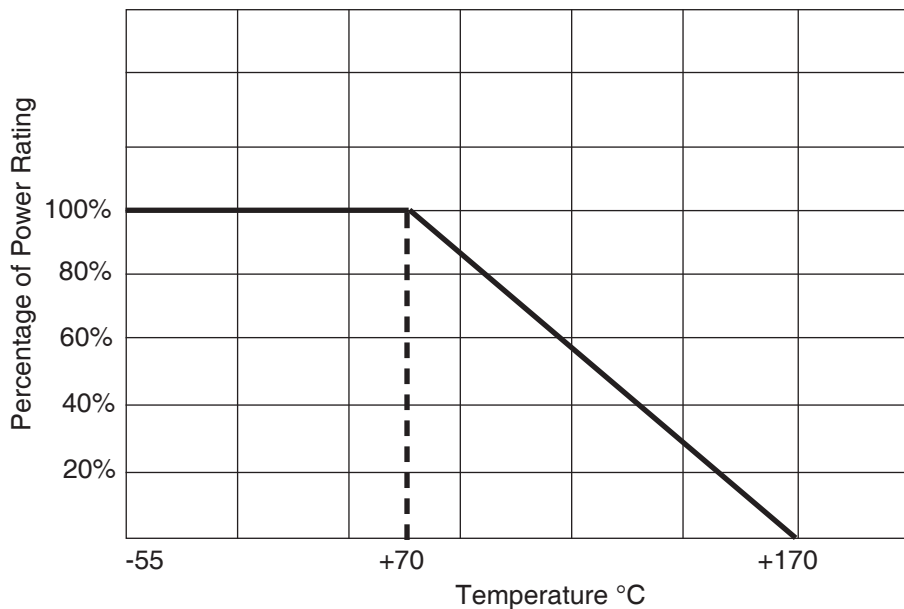
Part Number	Resistance Value (mΩ)	Available Power Ratings	Available Tolerance	Available TCR
NCSS25_ R001TRF	1.0	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±275ppm
NCSS25_ R002TRF	2.0	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS25_ R003TRF	3.0	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS25_ R004TRF	4.0	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS25_ R005TRF	5.0	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS25_ R006TRF	6.0	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS25_ R007TRF	7.0	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS25_ R008TRF	8.0	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS25_ R010TRF	10	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±100ppm
NCSS25C_ R011TRF	11	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_ R012TRF	12	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_ R015TRF	15	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_ R018TRF	18	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_ R020TRF	20	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm



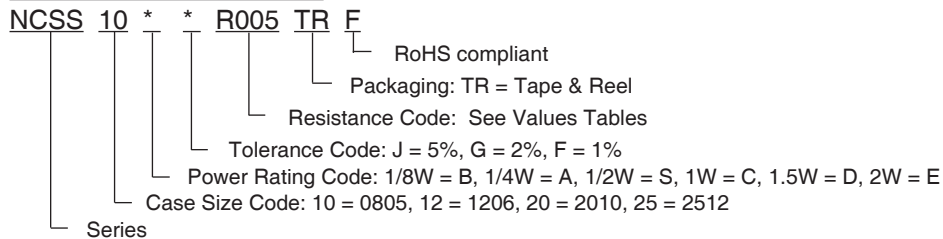
NCSS25 (1W and 2W, 2512 CASE SIZE) AVAILABLE VALUES

Part Number	Resistance Value (mΩ)	Available Power Ratings	Available Tolerance	Available TCR
NCSS25C_R025TRF	25	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_R030TRF	30	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_R033TRF	33	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_R035TRF	35	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_R040TRF	40	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCSS25C_R050TRF	50	1W (C)	±1% (F), ±2% (G), ±5% (J)	±75ppm

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



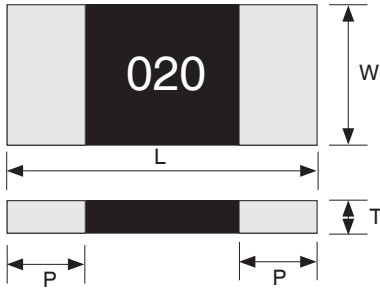
PART NUMBER SYSTEM



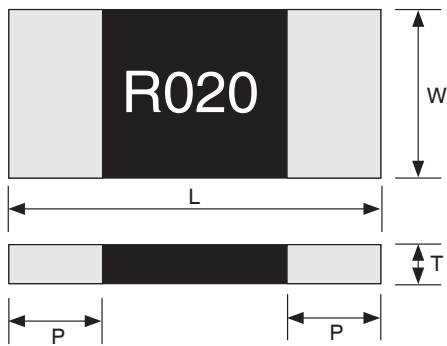
*Insert appropriate power rating and tolerance codes,
Contact NIC regarding availability of other values



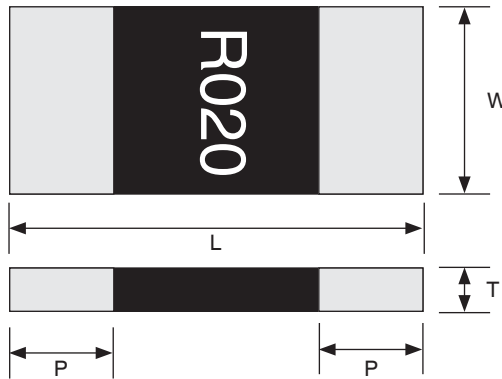
DIMENSIONS AND PART MARKING



Case Size	L	W	T	P
0805	2.0 ± 0.1	1.25 ± 0.1	0.6 ± 0.2	0.4 ± 0.2



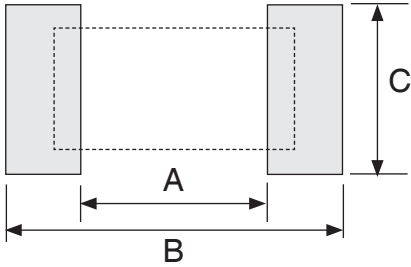
Case Size	L	W	T	P
1206	3.2 ± 0.2	1.6 ± 0.2	1mΩ = 0.75 ± 0.2 2mΩ ~ 30mΩ 0.6 ± 0.2	1mΩ 1.1 ± 0.3 2mΩ ~ 30mΩ 0.5 ± 0.3
2010	5.0 ± 0.2	2.5 ± 0.2	0.6 ± 0.2	0.6 ± 0.3



Case Size	L	W	T	P	
2512	R ≤ 3mΩ	6.4 ± 0.2	3.2 ± 0.2	0.6 ± 0.2	2.0 ± 0.2
	R > 3mΩ				0.9 ± 0.2

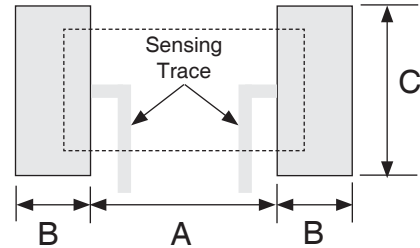
RECOMMENDED LAND PATTERN DIM. (mm)

Case Size	A	B	C
0805	1.2	3.5	1.15

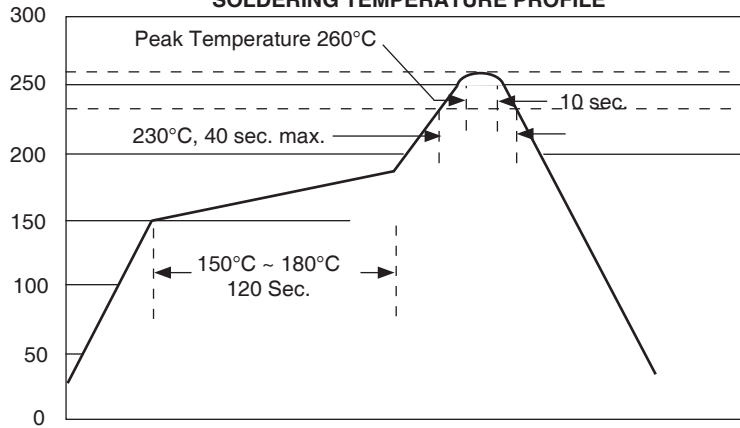


RECOMMENDED LAND PATTERN DIM. (mm)

Case Size	A	B	C
1206	1mΩ	1.0	2.3
	2mΩ ~ 30mΩ	1.6	1.7
2010	3.5	1.5	3.4
2512	1mΩ ~ 3mΩ	1.3	3.1
	4mΩ ~ 50mΩ	4.1	2.1

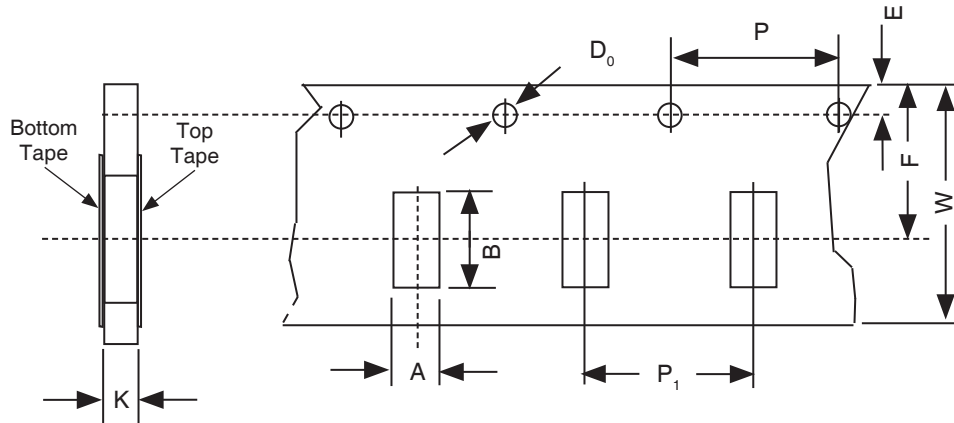


RECOMMENDED REFLOW SOLDERING TEMPERATURE PROFILE



PAPER TAPE DIMENSIONS (mm)

Case Size	A	B	K	P	P ₁	E	F	D ₀	W	Quantity per Reel
0805	1.6 ± 0.15	2.4 ± 0.2	0.84 ± 0.1	4.0 ± 0.1	4.0 ± 0.1	1.75 ± 0.1	3.5 ± 0.05	1.5 ^{+0.1/0}	8.0 ± 0.2	5,000
1206	2.0 ± 0.15	3.6 ± 0.2	0.84 ± 0.1	4.0 ± 0.1	4.0 ± 0.1	1.75 ± 0.1	3.5 ± 0.05	1.5 ^{+0.1/0}	8.0 ± 0.2	5,000



EMBOSSED PLASTIC TAPE DIMENSIONS (mm)

Case Size	A	B	K	P	P ₁	E	F	D ₀	D ₁	W	Quantity per Reel
2010	2.8 ± 0.2	5.3 ± 0.2	0.85 ± 0.15	4.0 ± 0.05	4.0 ± 0.1	1.75 ± 0.1	5.5 ± 0.05	1.5 ± 0.1	1.5 min.	12.0 ± 0.2	4,000
2512	3.6 ^{+0.2/-0.18}	6.9 ± 0.2	0.85 ± 0.15	4.0 ± 0.05	4.0 ± 0.1	1.75 ± 0.1	5.5 ± 0.05	1.5 ^{+0.1/0}	1.5 min.	12.0 ± 0.2	4,000

