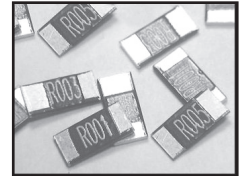


FEATURES

- HIGH POWER SURFACE MOUNTABLE 2512 CASE SIZE
- WIDE RANGE OF RESISTANCE VALUES (UP TO 500mΩ)
- METAL STRIP CONSTRUCTION
- PRECISION TOLERANCE (±1%)
- REFLOW COMPATIBLE

**RoHS
Compliant**
includes all homogeneous materials



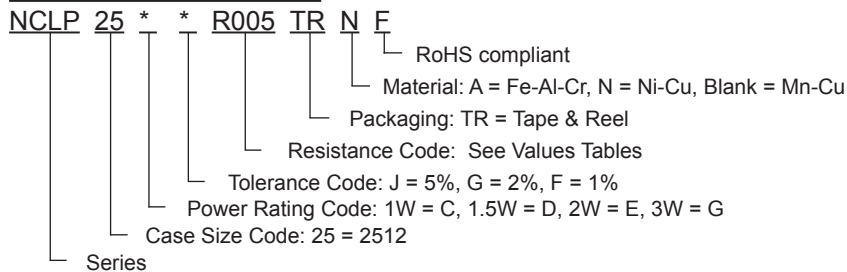
See Part Number System for Details

SPECIFICATIONS

Type	EIA Size	Material (See Note on EMF Characteristics Below)	Power Rating at 70°C	Resistance Tolerance (Code)	Temperature Coefficient (ppm/°C, +25°C ~ +125°C)	Resistance Range*	Operating Temperature Range (°C)
NCLP25...NF	2512	Ni-Cu	1W (C)	±1% (F) ±2% (G) ±5% (J)	±75ppm	3mΩ ~ 100mΩ	-55°C ~ +170°C
			1.5W (D)				
			2W (E)				
			3W (G)				
NCLP25...F	2512	Mn-Cu	1W (C)				
			1.5W (D)				
			2W (E)				
			3W (G)				
NCLP25...AF	2512	Fe-Al-Cr	1W (C)		±75ppm	120mΩ ~ 500mΩ	
			1.5W (D)				
			2W (E)				

*Contact NIC regarding availability of values not shown

PART NUMBER SYSTEM



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

THERMAL EMF CHARACTERISTICS:

Mn-Cu Construction: Thermal EMF = -1μV/°C

Ni-Cu Construction: Thermal EMF = -40μV/°C

Fe-Al-Cr Construction: Thermal EMF = 1.45μV/°C

RATED CURRENT: $I = \sqrt{P/R}$

EXAMPLE: Part Number NCLP25E_R001TRNF

P = 2W

R = 0.001W (1milli-ohm)

$I = \sqrt{P/R} = \sqrt{2 / 0.001} = 44.7A$



ENVIRONMENTAL CHARACTERISTICS

Item	Specification	Test Method	Reference Standard
	2512		
Temperature Coefficient of Resistance	Within specified value	+25°C ~ +125°C	IEC60115-1 4.8 JIS-C5201 4.8
Load Life	<±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	<±0.5%	5 x rated power for 5 seconds	IEC60115-1 4.13 JIS-C5201 4.13
Moisture Resistance (no load)	<±1%	+85°C, 85% RH, 1000 hours	IEC60115-1 4.24.2 1a JIS-C5201 4.24.2 1a
Temperature Cycling	<±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	<±0.5%	+260°C ± 5°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 ± 5°C, 2 sec. ± 0.5sec.	IEC60115-1 4.17 JIS-C5201 4.17
High Temperature Exposure	<±1%	+170°C for 1,000 hours	IEC60115-1 4.23.2 JIS-C5201 4.23.2
Low Temperature Storage	<±0.5%	-55°C for 1,000 hours	IEC60115-1 4.23.4 JIS-C5201 4.23.4
Substrate Bending	<±0.5%	Bending within 2mm	IEC60115-1 4.33 JIS-C5201 4.33
Insulation Resistance	>100MΩ	100VDC for 1 minute	IEC60115-1 4.6 JIS-C5201 4.6

NCLP25 (2512 CASE SIZE 1W, 1.5W and 2W) AVAILABLE VALUES (Ni-Cu)

Part Number	Resistance Value (mΩ)	Available Power Ratings	Available Tolerance	Available TCR
NCLP25__R003TRNF	3.0	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R004TRNF	4.0	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R010TRNF	10	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R011TRNF	11	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R012TRNF	12	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R015TRNF	15	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R018TRNF	18	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R020TRNF	20	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R022TRNF	22	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R025TRNF	25	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R030TRNF	30	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R033TRNF	33	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R039TRNF	39	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R040TRNF	40	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R047TRNF	47	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R050TRNF	50	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R057TRNF	57	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R060TRNF	60	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R068TRNF	68	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R070TRNF	70	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R075TRNF	75	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R080TRNF	80	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R085TRNF	85	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R090TRNF	90	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R100TRNF	100	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm



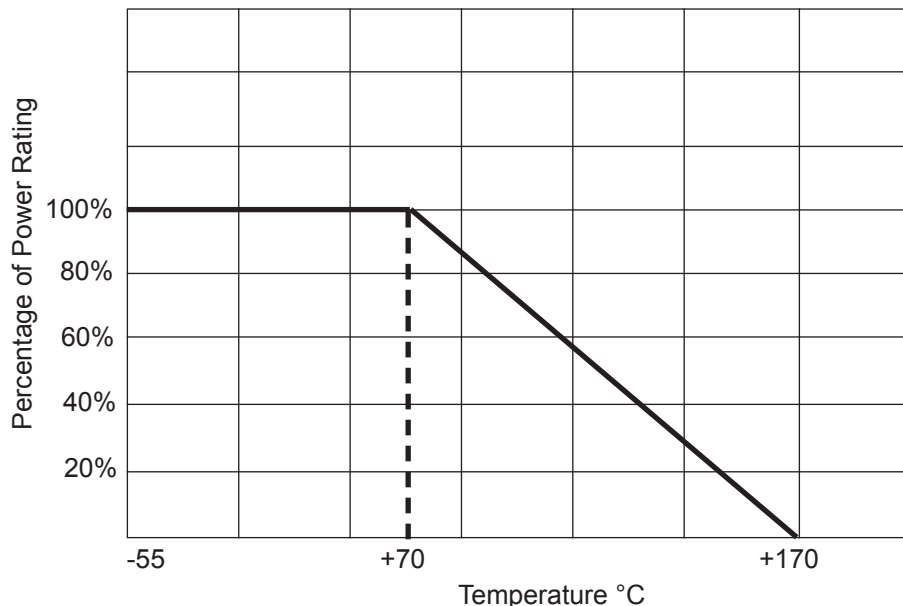
NCLP25 (2512 CASE SIZE 1W, 1.5W, 2W and 3W) AVAILABLE VALUES (Mn-Cu)

Part Number	Resistance Value (mΩ)	Available Power Ratings	Available Tolerance	Available TCR
NCLP25__R001TRF	1.0	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R0011TRF	1.1	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R002TRF	2.0	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R003TRF	3.0	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R005TRF	5.0	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R007TRF	7.0	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R008TRF	8.0	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R010TRF	10	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R015TRF	15	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R020TRF	20	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R027TRF	27	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R030TRF	30	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R033TRF	33	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R050TRF	50	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R060TRF	60	1W (C), 1.5W (D), 2W (E), 3W (G)	±1% (F), ±2% (G), ±5% (J)	±75ppm

NCLP25 (1W, 1.5W and 2W, 2512 CASE SIZE) AVAILABLE VALUES (Fe-Al-Cr)

Part Number	Resistance Value (mΩ)	Available Power Ratings	Available Tolerance	Available TCR
NCLP25__R120TRAF	120	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R130TRAF	130	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R140TRAF	140	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R150TRAF	150	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R180TRAF	180	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R200TRAF	200	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R220TRAF	220	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R240TRAF	240	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R270TRAF	270	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R280TRAF	280	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R300TRAF	300	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R400TRAF	400	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm
NCLP25__R500TRAF	500	1W (C), 1.5W (D), 2W (E)	±1% (F), ±2% (G), ±5% (J)	±75ppm

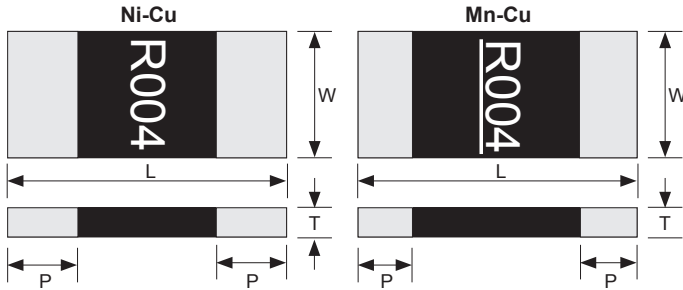
Power Derating Curve: For operation above 70°C, power rating must be derated according to the following chart:



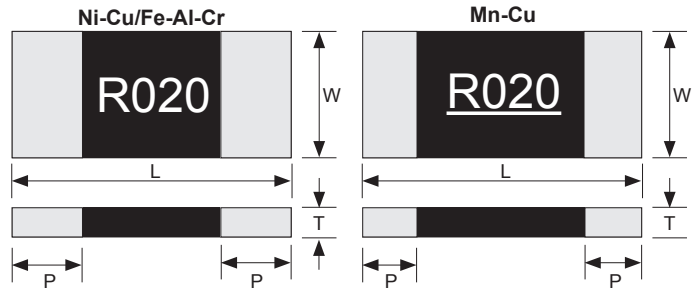
DIMENSIONS AND PART MARKING

Case Size		L	W	T	P
2512	R ≤ 4mΩ	6.4 ± 0.2	3.2 ± 0.2	0.7 ± 0.2	2.0 ± 0.2
	R > 4mΩ				0.9 ± 0.2

Marking for Values ≤ 4mΩ

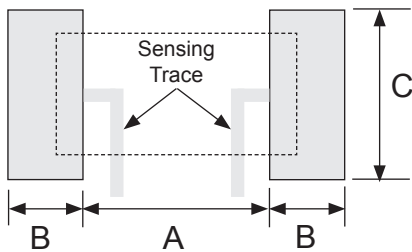


Marking for Values > 4mΩ

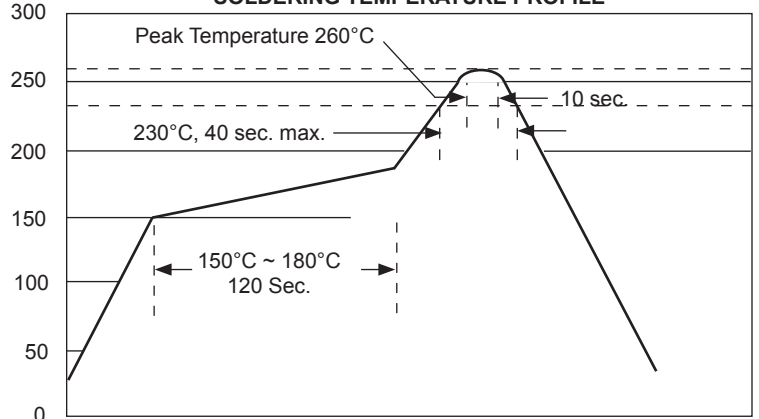


RECOMMENDED LAND PATTERN DIM. (mm)

Case Size		A	B	C
2512	1mΩ ~ 3mΩ	1.3	3.1	4.0
	4mΩ ~ 500mΩ	4.1	2.1	4.0



RECOMMENDED REFLOW SOLDERING TEMPERATURE PROFILE



EMBOSSED PLASTIC TAPE DIMENSIONS (mm)

Case Size	A	B	K	P	P ₁	E	F	D ₀	D ₁	W	Quantity per Reel
2512	3.6 ± 0.2	6.9 ± 0.2	1.25 ± 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

