

FEATURES

- MINIATURE SIZE AND LOW PROFILE
- **Pb-FREE (100ppm)**
- HIGH DENSITY PACKAGING OFFERS SIGNIFICANT SPACE SAVINGS
- LOWER PRODUCTION COSTS WITH LESS PLACEMENT
(4 RESISTORS IN ONE PACKAGE)
- REFLOW SOLDERING APPLICABLE

**RoHS
Compliant**
includes all homogeneous materials



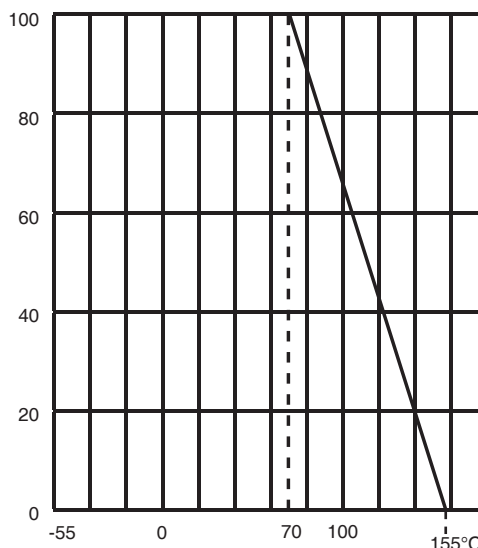
*See Part Number System for Details

SPECIFICATIONS

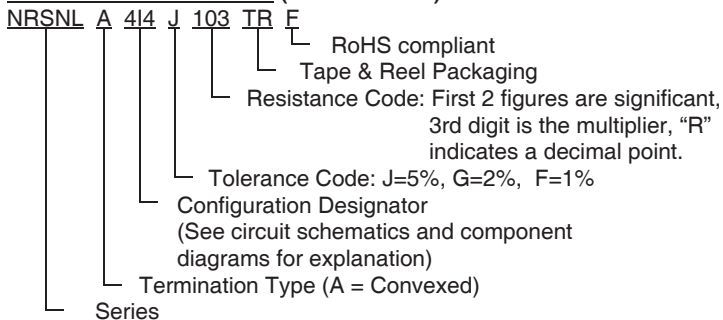
Type	NRSNLA4I4		NRSNLA6I4	
Termination Type	Convex		Convex	
Size W x L (mm)	1.0 x 2.0		1.6 x 3.2	
No. of Resistors & Circuit	4R Isolated		4R Isolated	
Power Rating per Resistor @ +70°C	1/16 (.0625W)		1/10 (.10W)	
Resistance Tolerance	F (±1%)	J (±5%)	F (±1%)	J (±5%)
Resistance Range	10Ω ~ 1MΩ	1.0Ω ~ 1MΩ	10Ω ~ 1MΩ	1.0Ω ~ 1MΩ
Temperature Coefficient	±200ppm		±100ppm	±200ppm
Maximum Working Voltage*	50V		50V	
Maximum Overload Voltage	100V		100V	
Operating Temperature Range	-55°C ~ +155°C (derated as shown)			

* Maximum allowable continuous voltage for all resistors is the lower of the two values: "MAXIMUM WORKING VOLTAGE" as specified, or $\sqrt{\text{Power rating (WATTS)} \times \text{Resistance (OHMS)}}$

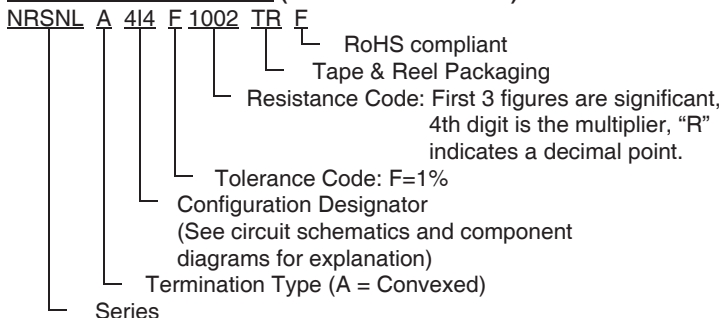
Power Derating Curve: For operation above 70°C, power rating must be derated according to the following chart:



PART NUMBER SYSTEM (E-24 VALUES)



PART NUMBER SYSTEM (E-24 & E-96 VALUES)



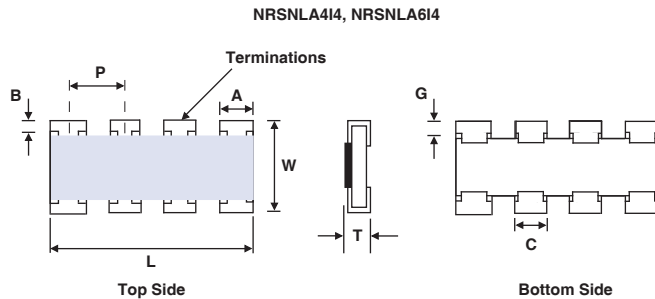
ZERO OHM JUMPER SPECIFICATIONS

Part Number	NRSNLA4I4ZOTRF	NRSNLA6I4ZOTRF
Termination Type	Convex	Convex
Size W x L (mm)	1.0 x 2.0	1.6 x 3.2
No. of Resistors & Circuit	4R Isolated	4R Isolated
Power Rating @ +70°C	1/16W	1/10W
Max. Resistance	50mΩ	50mΩ
Rated Current	1A	1A
Peak Current	1.5A	3.0A
Operating Temperature	-55°C ~ +155°C (derated as shown)	

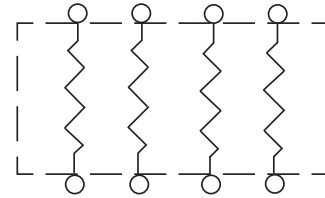


PART DIMENSIONS (mm)

Type	W	L	P	T	A	B	C	G
NRSNLA4I4	1.00 ± 0.10	2.20 ± 0.10	0.50 ± 0.05	0.45 ± 0.10	0.40 ± 0.10	0.20 ± 0.10	0.30 ± 0.05	0.25 ± 0.10
NRSNLA6I4	1.60 ± 0.10	3.20 ± 0.10	0.80 ± 0.10	0.50 ± 0.10	0.60 ± 0.10	0.30 ± 0.10	0.40 ± 0.10	0.30 ± 0.20



CIRCUIT SCHEMATICS



NRSNLA4I4
NRSNLA6I4
Circuit Type "I" (Isolated)

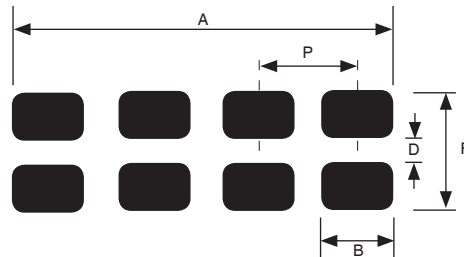
ENVIRONMENTAL SPECIFICATIONS (JIS C5201-1:1998)

Item	Specification		Test Method
	1% & 5% Tolerance	Zero Ohm Jumper	
DC Resistance Clause 4.5	Within specification	<50mΩ	DC resistance value measurement
Temperature Coefficient of Resistance Clause 4.8	As specified	N/A	Resistance at reference temperature (+20°C +5°C -1°C) to test temperature
Short Time Overload Clause 4.13	$\Delta R \pm 2\% + 0.10\Omega$	<50mΩ	Permanent resistance change after application of RCWV x 2.5 or Max Overloading Voltage for 5 Seconds
Resistance to Soldering Heat Clause 4.18	$\Delta R \pm 1\% + 0.10\Omega$ No visible damage	<50mΩ	Unmounted chips completely immersed in SAC solder bath at 260°C ± 5°C for 10 sec. ± 1 sec.
Solderability Clause 4.17	>95% coverage No visible damage		Unmounted chips completely immersed in SAC solder bath at 235°C ± 5°C for 2 sec. ± 0.5 sec.
Insulation Resistance Clause 4.6	>10,000MΩ	>10,000MΩ	Apply the maximum overload voltage (DC) for 1 minute
Dielectric Withstanding Voltage Clause 4.7	No breakdown or flashover		Apply the maximum overload voltage (AC) for 1 minute
Temperature Cycling Clause 4.19	$\Delta R \pm 1\% + 0.10\Omega$ No visible damage	<50mΩ	30 minutes @ -55°C ± 3°C, 2~3 minutes at +20°C+5°C-1°C, 30 minutes @ +155°C ± 3°C, 2~3 minutes +20°C+5°C-1°C, total of 5 continuous cycles
Load Life Clause 4.25	10Ω ≤ ~ 1MegΩ $\Delta R \pm 3\% + 0.10\Omega$ No visible damage <10Ω, ≥1MegΩ $\Delta R \pm 5\% + 0.10\Omega$ No visible damage	<50mΩ	+70°C, RCWV 1.5 hours ON, 0.5 hours OFF Total time 1,000 ± 48 hours
Humidity Load Life Clause 4.24	10Ω ≤ ~ 1MegΩ $\Delta R \pm 3\% + 0.10\Omega$ No visible damage <10Ω, ≥1MegΩ $\Delta R \pm 5\% + 0.10\Omega$ No visible damage	<50mΩ	+40°C, 90~95%RH, RCWV 1.5 hours ON, 0.5 hours OFF Total time 1,000 ± 48 hours
Adhesion Strength Clause 4.32	No remarkable damage or removal of the termination		Force: 5N for 10 seconds ± 1 second



LAND PATTERN DIMENSIONS (mm)

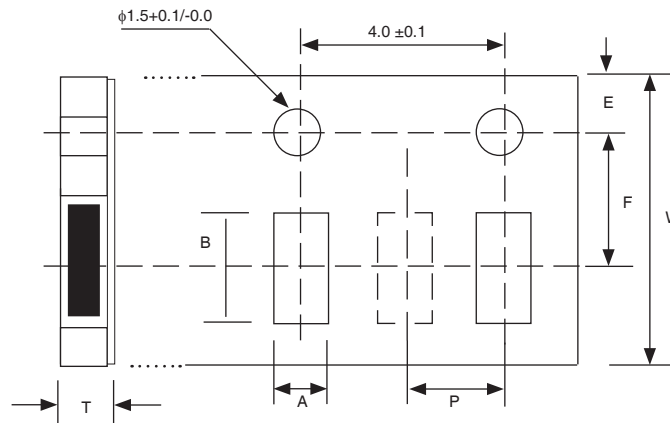
Type	Reflow Soldering				
	A	B	D	P	F
NRSNLA414	1.80 +0.15/-0.05	0.30 ± 0.05	0.50 ± 0.10	0.50	2.00 +0.40/-0.20
NRSNLA614	2.85 +0.10/-0.05	0.45 ± 0.05	0.80 ± 0.10	0.80	3.10±0.30



NRSNLA414 & NRSNLA614

TAPE DIMENSIONS (mm)

Type	Material	A	B	E	F	P	W	T	Reel Diameter/Quantity (P/N Suffix)	
									7"	13"
NRSNLA414	Paper	1.20 ± 0.2	2.20 ± 0.2	1.75 ± 0.10	3.5 ± 0.20	2.0 ± 0.05	8.0 ± 0.3	0.6 max.	10,000 (TRF)	40,000 (TR40F)
NRSNLA614		2.00 ± 0.2	3.60 ± 0.2			4.0 ± 0.1			5,000 (TRF)	20,000 (TR20F)



REEL DIMENSIONS (mm)

Type	A	B	C	D	W	Qty/Reel
NRSNLA4I4	$\phi 178$	$\phi 60$	$\phi 13.0$	$\phi 21.0$	9.0	10,000
NRSNLA6I4	± 2.0	± 1.0	± 0.2	± 1.0	± 0.5	5,000

