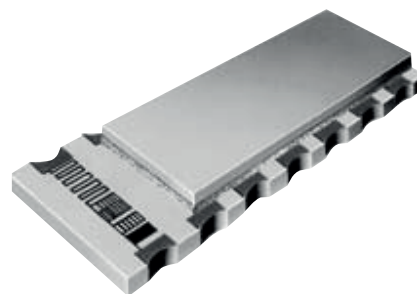


SON Series

OBSOLETE**Features**

- Compatible with standard SOIC footprint (210 Series)
- Superior temperature performance
- Tested for COTS Applications
- Absolute tolerances to $\pm 0.05\%$
- Ratio tolerances to $\pm 0.01\%$



All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

IRC's TaNFilm® Small Outline Leadless Resistor Networks are ideally suited for applications requiring precision, long term reliability and stability in a small area. Its monolithic construction eliminates vulnerable terminations such as solder connections. The SON package is ideal for the all surface mount production reflow techniques while still possessing all the unique qualities of our TaNFilm® thin film system. Testing has demonstrated performance exceeding MIL-PRF-83401 Characteristic H.

Electrical Data

Package	Power Rating at 70°C		Temperature Range	Maximum Voltage	Noise	Substrate	Termination
	Element	Network					
8-Pad	100mW	400mW	-55°C to +150°C	$\sqrt{P \times R}$ (not to exceed 50V)	< -25dB	99.5% Alumina	Solder Plated Over Nickel Barrier
14-Pad	100mW	700mW					
16-Pad	100mW	800mW					

Manufacturing Capabilities

	Resistance Range	Available Absolute Tolerances	Available Ratio Tolerances (Ratio to R1)	Best Absolute TCR	Tracking TCR (Track to R1)
Schematic A	10Ω - 24.9Ω	C D F G J	C D F G	± 100 ppm/°C	± 20 ppm/°C
	25.0Ω - 49.9Ω	C D F G J	B C D F G	± 50 ppm/°C	± 10 ppm/°C
	50Ω - 199Ω	B C D F G J	B C D F G	± 25 ppm/°C	± 5 ppm/°C
	200Ω - 999Ω	B C D F G J	A B C D F G	± 25 ppm/°C	± 5 ppm/°C
	1.0K - 25.0K	B D F G J	T Q A B D F G	± 25 ppm/°C	± 5 ppm/°C
	25.1K - 100K	B D F G J	A B D F G	± 25 ppm/°C	± 5 ppm/°C
Schematic B	10Ω - 24.9Ω	C D F G J	D F G	± 100 ppm/°C	± 25 ppm/°C
	25Ω - 49.9Ω	C D F G J	C D F G	± 50 ppm/°C	± 15 ppm/°C
	50Ω - 199Ω	B C D F G J	B C D F G	± 25 ppm/°C	± 10 ppm/°C
	200Ω - 50KΩ	B C D F G J	A B C D F G	± 25 ppm/°C	± 5 ppm/°C

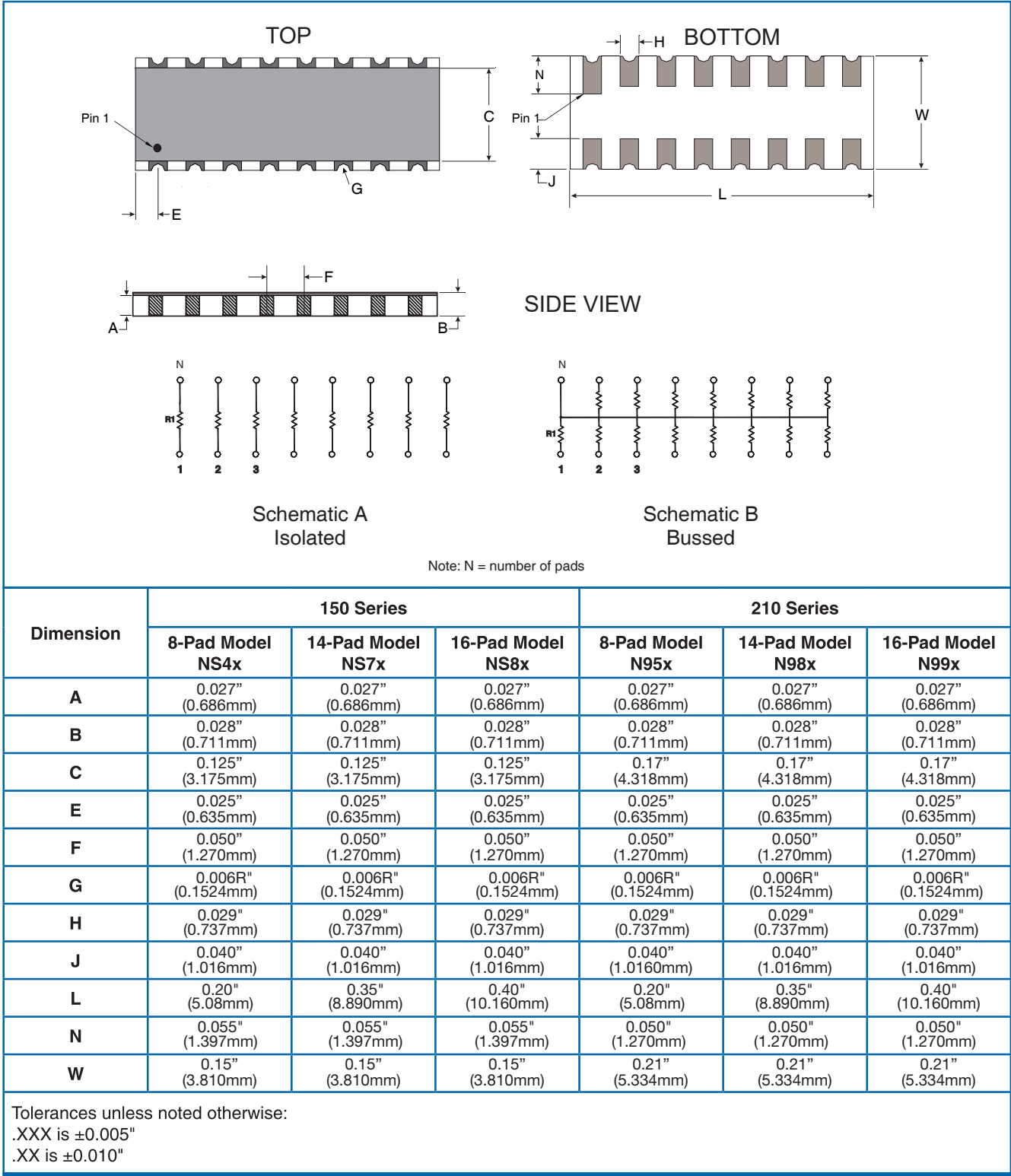
General Note

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All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

BI Technologies IRC Welwyn

www.ttelectronics.com/resistors

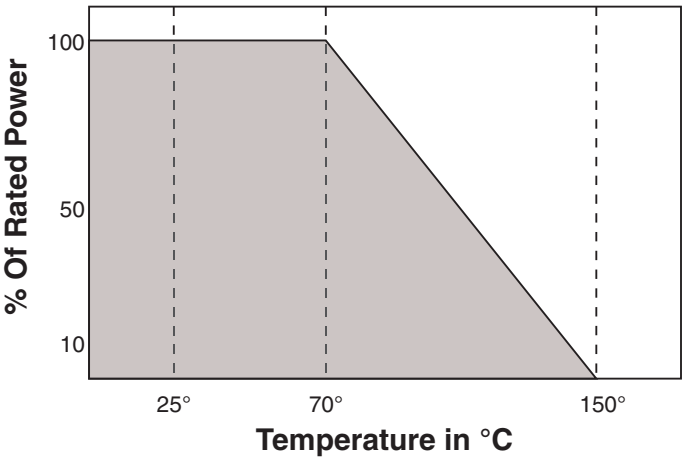
Physical Data



Environmental Data

Environmental Test	Test Method	Characteristic K Limits (ΔR)	Characteristic H Limits (ΔR)	TaNFilm® Maximum ΔR	TaNFilm® Typical ΔR
Thermal Shock And Power Conditioning	MIL-PRF-83401	$\pm 0.7\%$	$\pm 0.5\%$	$\pm 0.1\%$	$\pm 0.02\%$
Low Temperature Operation	MIL-PRF-83401	$\pm 0.25\%$	$\pm 0.1\%$	$\pm 0.05\%$	$\pm 0.02\%$
Short-time Overload	MIL-PRF-83401	$\pm 0.25\%$	$\pm 0.1\%$	$\pm 0.05\%$	$\pm 0.02\%$
Resistance To Bonding Exposure	MIL-PRF-914	$\pm 0.25\%$	$\pm 0.25\%$	$\pm 0.1\%$	$\pm 0.02\%$
Moisture Resistance	MIL-PRF-83401	$\pm 0.5\%$	$\pm 0.5\%$	$\pm 0.1\%$	$\pm 0.03\%$
Shock	MIL-PRF-83401	$\pm 0.25\%$	$\pm 0.25\%$	$\pm 0.1\%$	$\pm 0.03\%$
Vibration	MIL-PRF-83401	$\pm 0.25\%$	$\pm 0.25\%$	$\pm 0.1\%$	$\pm 0.03\%$
Life	MIL-PRF-83401	$\pm 0.5\%$	$\pm 0.5\%$	$\pm 0.1\%$	$\pm 0.03\%$
High Temperature Exposure	MIL-PRF-83401	$\pm 0.5\%$	$\pm 0.2\%$	$\pm 0.1\%$	$\pm 0.03\%$
Low Temperature Storage	MIL-PRF-83401	$\pm 0.25\%$	$\pm 0.1\%$	$\pm 0.05\%$	$\pm 0.01\%$

Power Derating Curve



Ordering Data

Prefix	SON	-	N989	-	01	-	1002	-	F	B
(Inclusion of Prefix is preferred but, historically, it may have been omitted.)										
Model										
NS4A: 8-pad, 0.150" wide, schematic A, with 60/40 Sn/Pb terminations NS4ALF: 8-pad, 0.150" wide, schematic A, with 100% matte tin, Pb-free terminations NS4B: 8-pad, 0.150" wide, schematic B, with 60/40 Sn/Pb terminations NS4BLF: 8-pad, 0.150" wide, schematic B, with 100% matte tin, Pb-free terminations NS7A: 14-pad, 0.150" wide, schematic A, with 60/40 Sn/Pb terminations NS7ALF: 14-pad, 0.150" wide, schematic A, with 100% matte tin, Pb-free terminations NS7B: 14-pad, 0.150" wide, schematic B, with 60/40 Sn/Pb terminations NS7BLF: 14-pad, 0.150" wide, schematic B, with 100% matte tin, Pb-free terminations NS8A: 16-pad, 0.150" wide, schematic A, with 60/40 Sn/Pb terminations NS8ALF: 16-pad, 0.150" wide, schematic A, with 100% matte tin, Pb-free terminations NS8B: 16-pad, 0.150" wide, schematic B, with 60/40 Sn/Pb terminations NS8BLF: 16-pad, 0.150" wide, schematic B, with 100% matte tin, Pb-free terminations N959: 8-pad, 0.210" wide, schematic A, with 60/40 Sn/Pb terminations N959LF: 8-pad, 0.210" wide, schematic A, with 100% matte tin, Pb-free terminations N954: 8-pad, 0.210" wide, schematic B, with 60/40 Sn/Pb terminations N954LF: 8-pad, 0.210" wide, schematic B, with 100% matte tin, Pb-free terminations N989: 14-pad, 0.210" wide, schematic A, with 60/40 Sn/Pb terminations N989LF: 14-pad, 0.210" wide, schematic A, with 100% matte tin, Pb-free terminations N987: 14-pad, 0.210" wide, schematic B, with 60/40 Sn/Pb terminations N987LF: 14-pad, 0.210" wide, schematic B, with 100% matte tin, Pb-free terminations N999: 16-pad, 0.210" wide, schematic A, with 60/40 Sn/Pb terminations N999LF: 16-pad, 0.210" wide, schematic A, with 100% matte tin, Pb-free terminations N998: 16-pad, 0.210" wide, schematic B, with 60/40 Sn/Pb terminations N998LF: 16-pad, 0.210" wide, schematic B, with 100% matte tin, Pb-free terminations										
TCR Code										
01 = $\pm 100\text{ppm}/^{\circ}\text{C}$ Commercial Grade 02 = $\pm 50\text{ppm}/^{\circ}\text{C}$ Commercial Grade 03 = $\pm 25\text{ppm}/^{\circ}\text{C}$ Commercial Grade 04 = $\pm 300\text{ppm}/^{\circ}\text{C}$ Military Screened Characteristic M* 05 = $\pm 100\text{ppm}/^{\circ}\text{C}$ Military Screened Characteristic K* 06 = $\pm 50\text{ppm}/^{\circ}\text{C}$ Military Screened Characteristic H* 07 = $\pm 25\text{ppm}/^{\circ}\text{C}$ Military Screened Characteristic H*										
Resistance Code										
4-Digit resistance code Ex: 1002 = 10K Ω ; 49R9 = 49.9 Ω (The USA style coding shown is preferred, but, historically, European style coding (e.g. 10K) may have been used.)										
Absolute Tolerance Code										
J = $\pm 5\%$; G = $\pm 2\%$; F = $\pm 1\%$; D = $\pm 0.5\%$; C = $\pm 0.25\%$; B = $\pm 0.1\%$										
Optional R1 Ratio Tolerance Code										
F = $\pm 1\%$; D = $\pm 0.5\%$; B = $\pm 0.1\%$; A = $\pm 0.05\%$; Q = $\pm 0.02\%$; T = $\pm 0.01\%$										

Packing

Standard options are tube packed (50 / tube) and 13" tape & reel (1000/reel)

***Special Notes:**

SON NSxx series screened per Group A MIL-PRF-55342
 SON N9xx series screened per Group A MIL-PRF-83401

For additional information or to discuss your specific requirements,
 please contact our Applications Team using the contact details below.

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