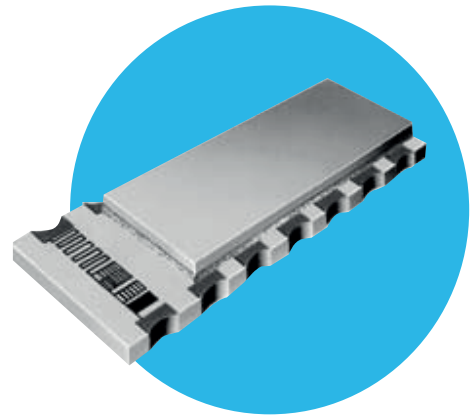


TaNFilm® Flat Precision Resistor Array

SON Series

- 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					

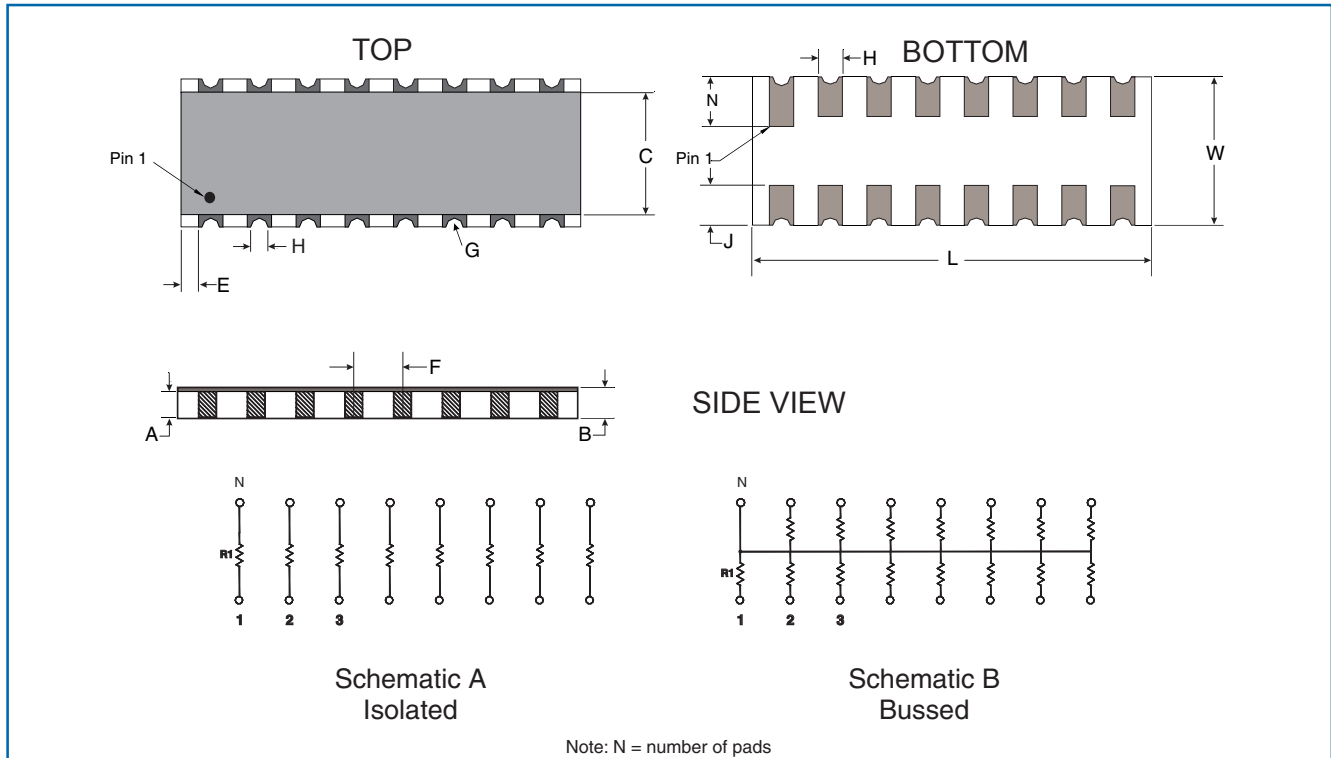
Manufacturing Capabilities

	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

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

Physical Data



Dimension	150 Series			210 Series		
	8-Pad Model NS4x	14-Pad Model NS7x	16-Pad Model NS8x	8-Pad Model N95x	14-Pad Model N98x	16-Pad Model N99x
A	0.027" (0.686mm)	0.027" (0.686mm)	0.027" (0.686mm)	0.027" (0.686mm)	0.027" (0.686mm)	0.027" (0.686mm)
B	0.028" (0.711mm)	0.028" (0.711mm)	0.028" (0.711mm)	0.028" (0.711mm)	0.028" (0.711mm)	0.028" (0.711mm)
C	0.125" (3.175mm)	0.125" (3.175mm)	0.125" (3.175mm)	0.17" (4.318mm)	0.17" (4.318mm)	0.17" (4.318mm)
E	0.025" (0.635mm)	0.025" (0.635mm)	0.025" (0.635mm)	0.025" (0.635mm)	0.025" (0.635mm)	0.025" (0.635mm)
F	0.050" (1.270mm)	0.050" (1.270mm)	0.050" (1.270mm)	0.050" (1.270mm)	0.050" (1.270mm)	0.050" (1.270mm)
G	0.009R" (0.227mm)	0.009R" (0.227mm)	0.009R" (0.227mm)	0.010R" (0.254mm)	0.010R" (0.254mm)	0.010R" (0.254mm)
H	0.030" (0.762mm)	0.030" (0.762mm)	0.030" (0.762mm)	0.030" (0.762mm)	0.030" (0.762mm)	0.030" (0.762mm)
J	0.040" (1.016mm)	0.040" (1.016mm)	0.040" (1.016mm)	0.040" (1.016mm)	0.040" (1.016mm)	0.040" (1.016mm)
L	0.21" ±0.010" (5.334 ±0.254mm)	0.36" 9.144mm	0.41" (10.414mm)	0.20" (5.080mm)	0.35" (8.890mm)	0.4" (10.160mm)
N	0.050" (1.270mm)	0.050" (1.270mm)	0.050" (1.270mm)	0.050" (1.270mm)	0.050" (1.270mm)	0.050" (1.270mm)
W	0.15" (3.810mm)	0.15" (3.810mm)	0.15" (3.810mm)	0.21" (5.334mm)	0.21" (5.334mm)	0.21" (5.334mm)

Tolerances unless noted otherwise:
.XXX is ±0.005"
.XX is ±0.010"

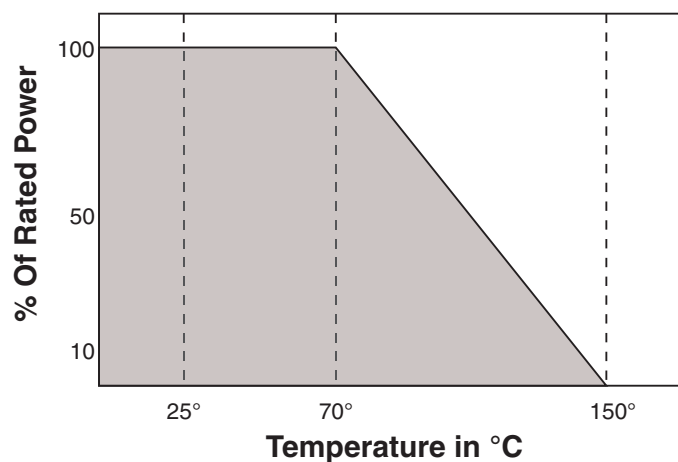
General Note

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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



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SON Series

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 = ±100ppm/°C Commercial Grade
- 02 = ±50ppm/°C Commercial Grade
- 03 = ±25ppm/°C Commercial Grade
- 04 = ±300ppm/°C Military Screened Characteristic M*
- 05 = ±100ppm/°C Military Screened Characteristic K*
- 06 = ±50ppm/°C Military Screened Characteristic H*
- 07 = ±25ppm/°C Military Screened Characteristic H*

Resistance Code

4-Digit resistance code
Ex: 1002 = 10KΩ; 49R9 = 49.9Ω
(The USA style coding shown is preferred, but, historically, European style coding (e.g. 10K) may have been used.)

Absolute Tolerance Code

J = ±5%; G = ±2%; F = ±1%; D = ±0.5%; C = ±0.25%; B = ±0.1%

Optional R1 Ratio Tolerance Code

F = ±1%; D = ±0.5%; B = ±0.1%; A = ±0.05%; Q = ±0.02%; T = ±0.01%

***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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