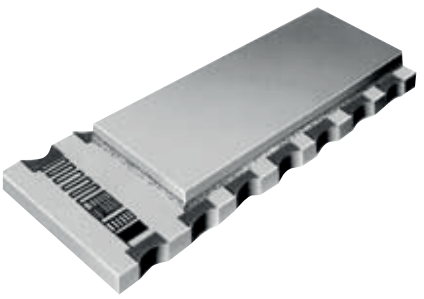
TaNFilm® Flat Precision Resistor Array

SON Series

OBSOLETE

Features

- Compatible with standard SOIC footprint (210 Series)
- Superior temperature performance
- Tested for COTS Applications
- Absolute tolerances to ±0.05%
- Ratio tolerances to ±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	$\sqrt{PxR}$ (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	±25ppm/°C
	25Ω - 49.9Ω	C D F G J	C D F G	±50 ppm/°C	±15ppm/°C
	50Ω - 199Ω	B C D F G J	B C D F G	±25 ppm/°C	±10ppm/°C
	200Ω - 50KΩ	B C D F G J	A B C D F G	±25 ppm/°C	±5ppm/°C

General Note
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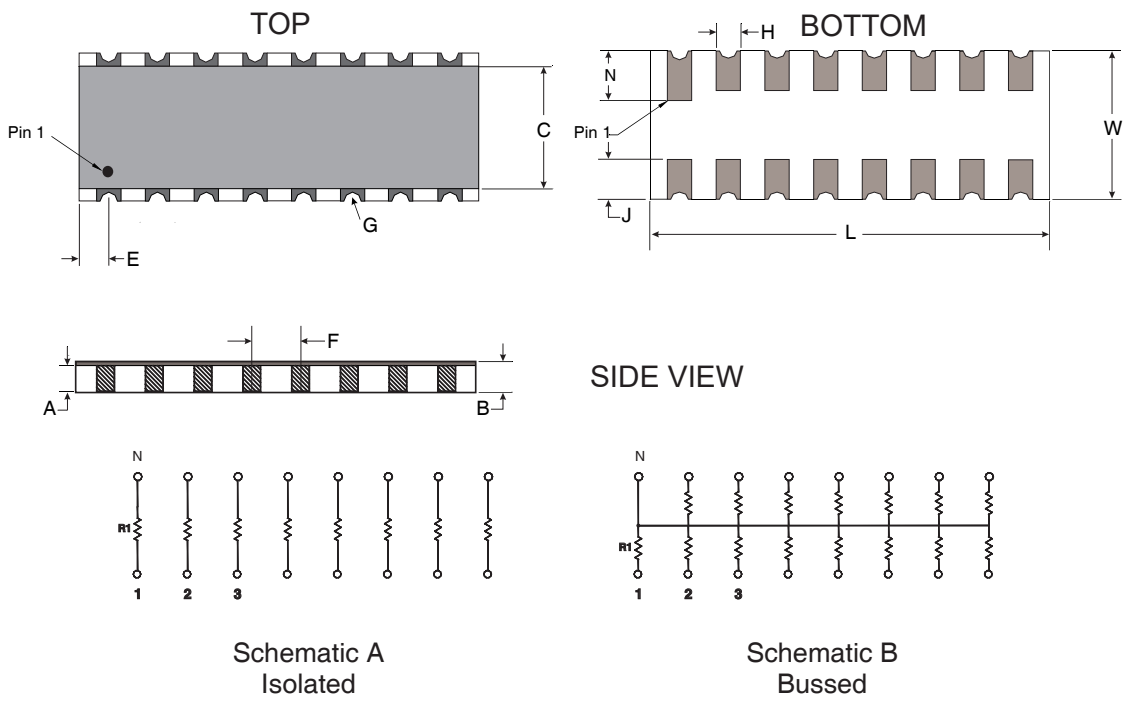
Physical Data



Schematic A
Isolated

Schematic B
Bussed

Note: N = number of pads

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	0.006R" (0.1524mm)	0.006R" (0.1524mm)	0.006R" (0.1524mm)	0.006R" (0.1524mm)	0.006R" (0.1524mm)	0.006R" (0.1524mm)
H	0.029" (0.737mm)	0.029" (0.737mm)	0.029" (0.737mm)	0.029" (0.737mm)	0.029" (0.737mm)	0.029" (0.737mm)
J	0.040” (1.016mm)	0.040” (1.016mm)	0.040” (1.016mm)	0.040” (1.0160mm)	0.040” (1.016mm)	0.040” (1.016mm)
L	0.20" (5.08mm)	0.35" (8.890mm)	0.40" (10.160mm)	0.20" (5.08mm)	0.35" (8.890mm)	0.40" (10.160mm)
N	0.055" (1.397mm)	0.055" (1.397mm)	0.055" (1.397mm)	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"

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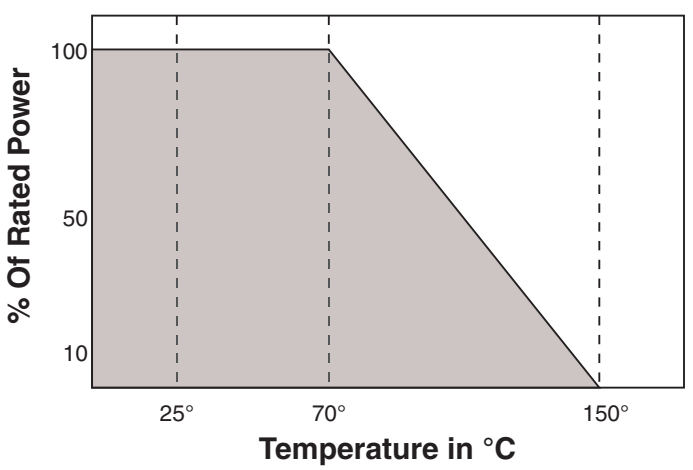
Environmental Data

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	±0.7%	±0.5%	±0.1%	±0.02%
Low Temperature Operation	MIL-PRF-83401	±0.25%	±0.1%	±0.05%	±0.02%
Short-time Overload	MIL-PRF-83401	±0.25%	±0.1%	±0.05%	±0.02%
Resistance To Bonding Exposure	MIL-PRF-914	±0.25%	±0.25%	±0.1%	±0.02%
Moisture Resistance	MIL-PRF-83401	±0.5%	±0.5%	±0.1%	±0.03%
Shock	MIL-PRF-83401	±0.25%	±0.25%	±0.1%	±0.03%
Vibration	MIL-PRF-83401	±0.25%	±0.25%	±0.1%	±0.03%
Life	MIL-PRF-83401	±0.5%	±0.5%	±0.1%	±0.03%
High Temperature Exposure	MIL-PRF-83401	±0.5%	±0.2%	±0.1%	±0.03%
Low Temperature Storage	MIL-PRF-83401	±0.25%	±0.1%	±0.05%	±0.01%

Power Derating Curve



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Ordering Data

SON - N989 - 01 - 1002 - F - B

Prefix
(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%

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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