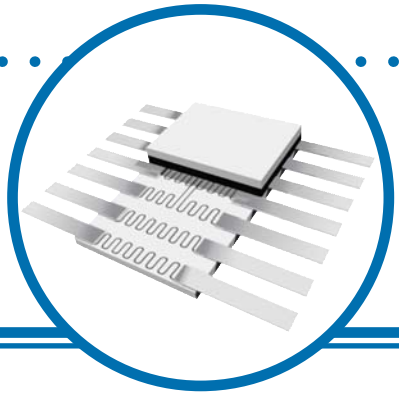
TaNFilm® Precision Flat Pack Networks

TT electronics



8900 Series

- Precision absolute and ratio tolerances available
- Qualified to MIL-R-83401 /03, /10 and /15
- Qualified to characteristics M, K and H
- Custom schematics readily available
- Absolute TCR to ±15ppm/°C

TaNFilm® resistor networks are designed for use in applications requiring a high degree of reliability, stability, tight tolerance and TCR tracking, and low noise. The sputtering process for resistor formation has been perfected to allow a continuous feed production line under high vacuum conditions, thus, insuring uniformity of properties between networks. Laser trimming makes tight ratios easily achievable. The gold plated copper leads are solid phase welded to a large area of gold conductor pads on the ceramic substrate assuring the most reliable termination and long term stability. The Tantalum Nitride resistor material is passivated for environmental protection insuring excellent performance far superior to military requirements.

Our TaNFilm® process enables us to manufacture networks containing different resistance values and still maintain tight tolerances and tracking characteristics. The nature of our photo-etch process makes it readily adaptable to meet each individual customer's needs. Custom circuit designs and special mechanical configurations can be easily achieved with a modest set up charge while maintaining our high standards of precision and reliability.

Electrical Data

Schematic	Resistance Range (Ω)	Absolute Tolerance	Optional Ratio Tolerance	Absolute TCR (ppm/°C)	Tracking TCR (ppm/°C)	Element Power (mW)
A	10 - 49.9	F, G, J	F, G	±50; ±100; ±300	±20	50
	50.0 - 199	F, G, J	D, F, G	±25; ±50; ±100; ±300	±10	
	200 - 999	B, D, F, G, J	A, B, D, F, G	±25; ±50; ±100; ±300	±5	
	1.0K - 100K	B, D, F, G, J	T, Q, A, B, D, F, G	±15; ±25; ±50; ±100; ±300	±5	
	101K - 200K	B, D, F, G, J	A, B, D, F, G	±25; ±50; ±100; ±300	±5	
B	50 - 149	B, D, F, G, J	B, D, F, G	±300; ±100	±50	25
	150 - 499	B, D, F, G, J	B, D, F, G	±300; ±100; ±50	±20	
	500 - 999	B, D, F, G, J	B, D, F, G	±25; ±50; ±100; ±300	±5	
	1.0K - 150K	B, D, F, G, J	B, D, F, G	±15; ±25; ±50; ±100; ±300	±5	

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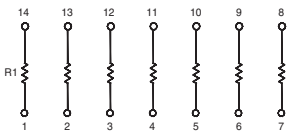
MIL-PRF-83401 Qualification Data

Specification	Size	Schematic	Resistance Range (Ω)	Absolute Tolerance (%)	Characteristic
MIL-PRF-83401/03 MIL-PRF-83401/15	14-Pin	A, B	20 - 121K	F, G, J	K, M
			100 - 100K	B, D, F, G, J	H, K, M
MIL-PRF-83401/10	16-Pin	A, B	100 - 100K	B, D, F, G, J	H, K, M

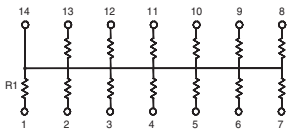
Package Specification Data (MIL and Commercial)

Schematic	Package Power		Power Derating	Voltage Rating	Temperature Range	Substrate	Lead Finish	Noise
	14-pin	16-pin						
A	350	400	100% from 0°C to 70°C derated linearly to 0% at 125°C	$\sqrt{PxR}$ not to exceed 50V	-65°C to +125°C	99.6% Alumina	Gold Plate (60/40 Sn/Pb available)	<-30dB
B	325	375						

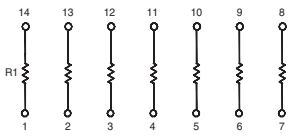
Schematics



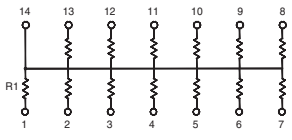
Model 8989
RZ 030, RZ 150
Schematic A



Model 8987
RZ 030, RZ 150
Schematic B



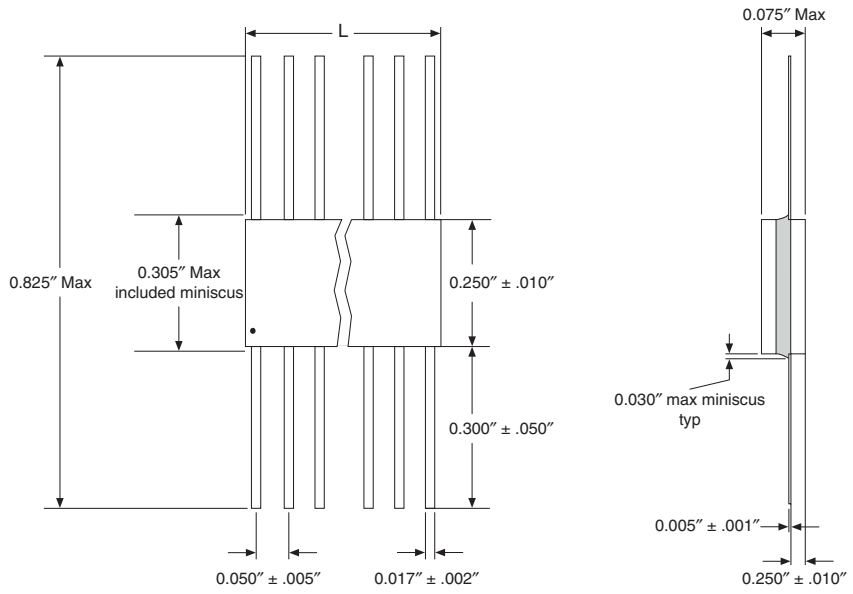
Model 8999
RZ 100
Schematic A



Model 8998
RZ 100
Schematic B

TaNFilm® Precision Flat Pack Networks

Physical Data



# of leads	Dimension L
14	0.375″ ± .010″
16	0.390″ ± .020″

Environmental Data

Test per MIL-PRF-83401	MIL-PRF-83401 Limits (ΔR%)				TaNFilm® Test Data (ΔR%)	
	M	K	H	V	Max	Typical
Thermal Shock and Power Conditioning	0.7	0.7	0.5	0.25	0.1	0.02
Low Temperature Operation	0.5	0.25	0.1	0.1	0.1	0.01
Short Term Overload	0.5	0.25	0.1	0.1	0.05	0.01
Terminal Strength	0.25	0.25	0.25	0.1	0.1	0.01
Resistance to Solder Heat	0.25	0.25	0.1	0.2	0.1	0.02
Moisture Resistance	0.5	0.5	0.4	0.25	0.1	0.03
Shock	0.25	0.25	0.25	0.25	0.1	0.03
Vibration	0.25	0.25	0.25	0.1	0.1	0.03
Life	2.0	0.5	0.5	0.1	0.1	0.03
High Temperature Exposure	1.0	0.5	0.2	0.1	0.1	0.03
Low Temperature Storage	0.5	0.25	0.1	0.1	0.1	0.02
25°C Double Load	2.0	0.5	0.5	0.1	0.05	0.03

TaNFilm® Precision Flat Pack Networks

Commercial Ordering Data

Prefix						
FP	8999	03	1001	B	F	

Model
8987 = 14-pin Flat Pack, schematic B, gold terminations
8987SD = 14-pin Flat Pack, schematic B, 60/40 Sn/Pb terminations
8989 = 14-pin Flat Pack, schematic A, gold terminations
8989SD = 14-pin Flat Pack, schematic A, 60/40 Sn/Pb terminations

8998 = 16-pin Flat Pack, schematic B, gold terminations
8998SD = 16-pin Flat Pack, schematic B, 60/40 Sn/Pb terminations
8999 = 16-pin Flat Pack, schematic A, gold terminations
8999SD = 16-pin Flat Pack, schematic A, 60/40 Sn/Pb terminations

Absolute TCR
01 = ±100ppm/°C; 02 = ±50ppm/°C; 03 = ±25ppm/°C; 11 = ±15ppm/°C

Resistance
Standard 4-digit MIL resistance code
Example: 1001 = 1000Ω; 50R0=50Ω

Absolute Tolerance
J = ±5%; G = ±2%; F = ±1.0%; D = ±0.5%; B = ±0.1%

Optional Ratio Tolerance to R_1
F = ±1.0%; D = ±0.5%; C = ±0.25%; B = ±0.1%; A = ±0.05%; Q = ±0.02%; T = ±0.01%

Custom schematics and screening available.
Screening available for non-QPL values and tolerances. Contact factory for ordering information.

MIL Screened Ordering Data (MIL-PRF-83401)

Prefix						
M83401	03	K	1001	F	A	

Specification Sheet
03 = 14-pin Flat Pack
10 = 16-pin Flat Pack
15 = 14-pin HI REL Flat Pack

Characteristic
M, K, H

Resistance
Standard 4-digit MIL resistance code
Example: 1001 = 1000Ω; 50R0=50Ω

Absolute Tolerance
J = ±5%; G = ±2%; F = ±1.0%; D = ±0.5%; B = ±0.1%

Schematic
A = Isolated; B = Bussed Schematic

Standard lead termination is gold plate.
Contact factory for optional 60/40 Sn/Pb solder dip finish.