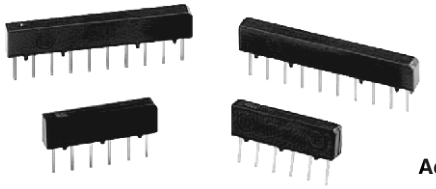
Molded, Commercial, Single In-Line Thin Film Resistor, Through Hole Network (Standard)



Actual Size

Designed to meet MIL-PRF-83401 characteristic “V” and “H”

These resistor networks are available in 6 pins, 8 pins and 10 pins styles in both standard and custom circuits. They incorporate Vishay Dale Thin Film’s patented passivated nichrome film to give superior performance on temperature coefficient of resistance, thermal stability, noise, voltage coefficient, power handling and resistance stability. The leads are attached to the metallized alumina substrates by Thermo-Compression bonding. The body is molded thermoset plastic with gold plated copper alloy leads. This product will outperform all of the requirements of characteristic “V” and “H” of MIL-PRF-83401.

FEATURES

- Lead (Pb)-free gold plated terminals standard
- Gold to gold terminations (no internal solder)
- Exceptional ratio stability over time and temperature (ΔR ± 0.015 % 2000 h at 70 °C)
- Rugged low profile molded case 6 pins, 8 pins, and 10 pins available
- Compatible with automatic insertion equipment
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

RoHS* Available

HALOGEN FREE

Note

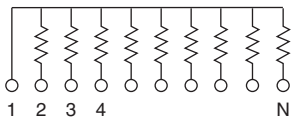
* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information/tables in this datasheet for details.

TYPICAL PERFORMANCE

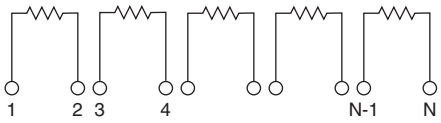
	ABSOLUTE	TRACKING
TCR	25	2
	ABSOLUTE	RATIO
TOL.	0.1	0.05

SCHEMATIC

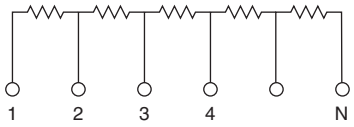
Schematic 01



Schematic 03



Schematic 06



STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Pin/Lead Number	6, 8, 10	-
Resistance Range	100 Ω to 200 kΩ per resistor	-
TCR: Absolute	± 25 ppm/°C (standard)	- 55 °C to + 125 °C
TCR: Tracking	± 2 ppm/°C (typical less 1 ppm/°C equal values) (1)	- 55 °C to + 125 °C
Tolerance: Absolute	± 0.1 % to ± 1.0 %	+ 25 °C
Tolerance: Ratio	± 0.05 % to ± 0.1 % to R_1	+ 25 °C
Power Rating: Resistor	0.100 W (per element typical at + 25 °C)	Maximum at + 70 °C
Power Rating: Package	0.500 W	Maximum at + 70 °C
Stability: Absolute	ΔR ± 0.05 %	2000 h at + 70 °C
Stability: Ratio	ΔR ± 0.015 %	2000 h at + 70 °C
Voltage Coefficient	< 0.1 ppm/V	-
Working Voltage	100 V	-
Operating Temperature Range	- 55 °C to + 125 °C	-
Storage Temperature Range	- 55 °C to + 125 °C	-
Noise	< - 30 dB	-
Thermal EMF	< 0.08 µV/°C	-
Shelf Life Stability: Absolute	ΔR ± 0.01 %	1 year at + 25 °C
Shelf Life Stability: Ratio	ΔR ± 0.002 %	1 year at + 25 °C

Note

(1) Consult factory for TCR tracking specifications 01 schematic

For technical questions, contact: thinfilm@vishay.com

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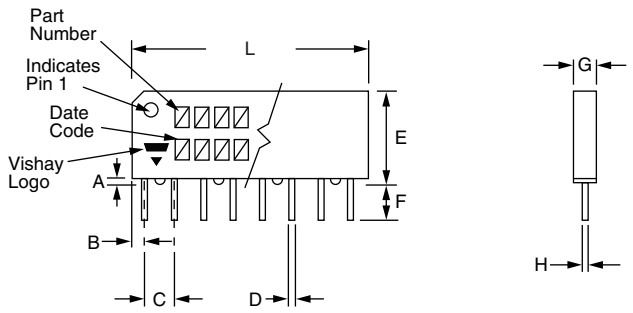
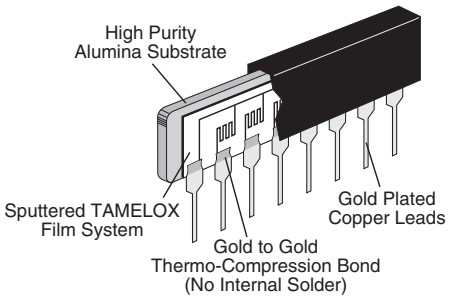
DIMENSIONS AND IMPRINTING in inches and millimeters



DIMENSION	INCHES	MILLIMETERS
A	0.035	0.89
B	0.040	1.02
C	0.100 ± 0.005 non-accum.	2.54 ± 0.13
D	0.019 ± 0.006 typical	0.48 ± 0.15
E	0.187 ± 0.010	4.75 ± 0.25
F	0.135	3.43
G	0.095	2.41
H	0.012 ± 0.004	0.31 ± 0.10
L (6 Pins)	0.583 ± 0.015	14.81 ± 0.38
L (8 Pins)	0.783 ± 0.015	19.89 ± 0.38
L (10 Pins)	0.983 ± 0.015	24.97 ± 0.38

CONSTRUCTION



MECHANICAL SPECIFICATIONS

Resistive Element	Passivated nichrome or tantalum nitride
Substrate Material	Alumina
Body Molded	Epoxy
Terminals	Copper alloy
Plating	Nickel/gold
Model TSP - Lead (Pb)-free Standard	Gold plated
Model TSPS - Lead (Pb)-free Solder Coated Option	Sn96.5, Ag3.0, Cu0.5
Model TSPL - Tin/Lead Solder Coated Option	Sn63
Tin/Lead and Lead (Pb)-free Finish	Hot solder dip

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: TSP6011002BUF

T	S	P	6	0	1		1	0	0	2	B	U	F	
T	S	P	S	1	0	0	1		1	0	0	2	C	U	F

GLOBAL MODEL (3 or 4 digits)	PIN COUNT (1 or 2 digits)	SCHEMATICS	TCR CHARACTERISTICS	RESISTANCE	TOLERANCE AND RATIO TOLERANCE	PACKAGING
TSP (Lead (Pb)-free) (e4) **TSPL** (Tin/lead) **TSPS** (Lead (Pb)-free) (e1)	**6** **8** **10**	**01** [1] = 5, 7 or 9 resistors with Pin 1 common **03** = 3, 4 or 5 isolated resistors **06** = 5, 7 or 9 series connected	**R** = ± 25 ppm/°C [2] **H** = ± 50 ppm/°C **K** = ± 100 ppm/°C	First 3 digits are significant figures and the last digit specifies the number of zeroes to follow. e.g.: 1001 = 1K 1002 = 10K	Absolute / Ratio **A** = 0.1 % [3] / 0.05 % **B** = 0.1 % / 0.1 % **C** = 0.25 % / 0.1 % **D** = 0.5 % / 0.1 % **F** = 1.0 % / 0.5 %	**UF** = Tubed

Note
[2] **01** Schematic greater than 250 Ω only

Note
[1] Consult factory for TCR tracking specifications 01 schematic

Note
[3] Tol. available on 1K and up only. R_1 is reference resistor.

Historical Part Number example: TSP803R1001F (for reference purposes only)

TSP	8	03	R	1001	F
SERIES	PINS	SCHEMATIC	TCR CHARACTERISTIC	RESISTANCE	TOLERANCE AND RATIO TOLERANCE

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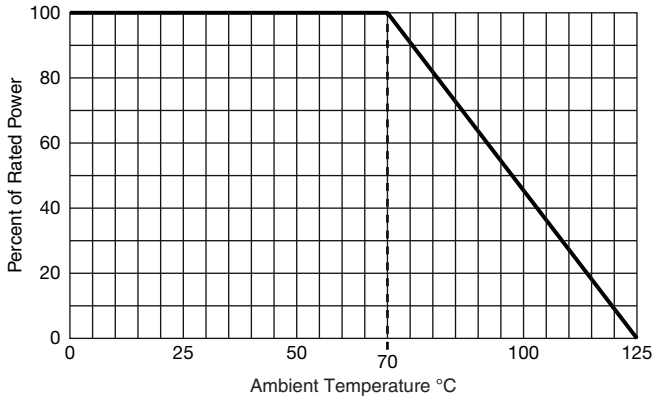
DERATING CURVE



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