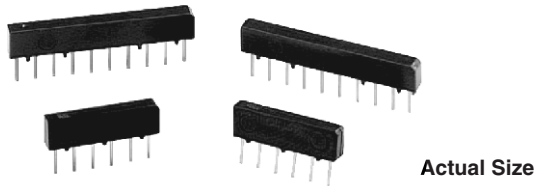


Molded, Commercial, Single In-Line Thin Film Resistor, Through Hole Network (Standard)



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 ($\Delta R \pm 0.015\%$ 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



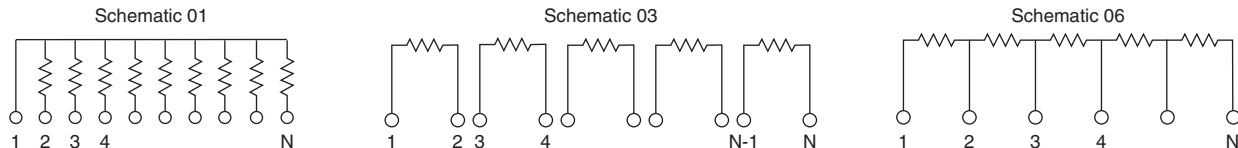
Note

* 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



| STANDARD ELECTRICAL SPECIFICATIONS | | |
|------------------------------------|--|---------------------|
| TEST | SPECIFICATIONS | CONDITIONS |
| Material | Passivated nichrome | - |
| Pin/Lead Number | 6, 8, 10 | - |
| Resistance Range | 100 Ω to 200 k Ω 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 | $\pm 0.1\%$ to $\pm 1.0\%$ | + 25 °C |
| Tolerance: Ratio | $\pm 0.05\%$ to $\pm 0.1\%$ 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 | $\Delta R \pm 0.05\%$ | 2000 h at + 70 °C |
| Stability: Ratio | $\Delta R \pm 0.015\%$ | 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 μ V/°C | - |
| Shelf Life Stability: Absolute | $\Delta R \pm 0.01\%$ | 1 year at + 25 °C |
| Shelf Life Stability: Ratio | $\Delta R \pm 0.002\%$ | 1 year at + 25 °C |

Note

⁽¹⁾ Consult factory for TCR tracking specifications 01 schematic

| 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

High Purity Alumina Substrate
Sputtered TAMELOX Film System
Gold to Gold Thermo-Compression Bond (No Internal Solder)
Gold Plated Copper Leads

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 | S | 1 | 0 | 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 Note ⁽²⁾ 01 Schematic greater than 250 Ω only | 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 |

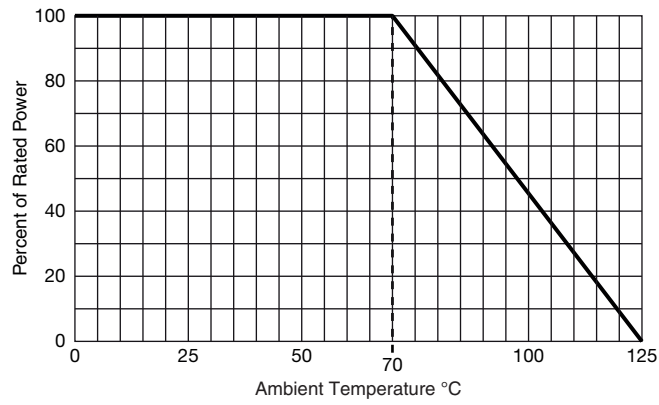
Note
⁽¹⁾ Consult factory for TCR tracking specifications 01 schematic
⁽³⁾ Tol. available on 1K and up only. R₁ is reference resistor.

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 |



DERATING CURVE





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