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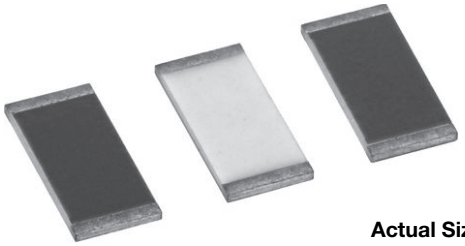
## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

# Precision Low TCR Thin Film Resistor, Surface Mount Chip, ± 5 ppm/°C TCR, 0.01 % Tolerance



Actual Size 0603

Vishay's proven precision thin film wraparound resistors will meet your exact requirements. These resistors are ideal for precision applications requiring low noise, stability, ultra low temperature coefficient of resistance, and low voltage coefficient. The chip resistors are available in any resistance ohmic value in the range specified below.

## FEATURES

- TCR of ± 5 ppm/°C standard
- Tolerances to ± 0.01 %
- Anti corrosion resistant film with (SPM) special passivation method
- Stable film and performance characteristics ($\Delta R$ ± 0.04 % at 70 °C, 10 000 h)
- Non-standard resistance values available
- Very low noise and voltage coefficient (< -30 dB, 0.1 ppm/V)
- UL 94 V-0 flame resistant
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

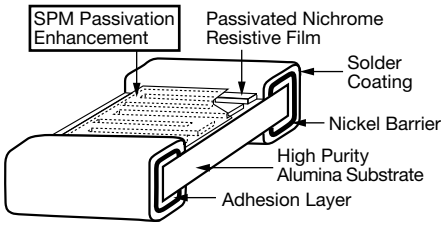
RoHS* Available

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.

## CONSTRUCTION




## TYPICAL PERFORMANCE

| | ABSOLUTE |
|---|---|
| TCR | 5 |
| TOL. | 0.01 |

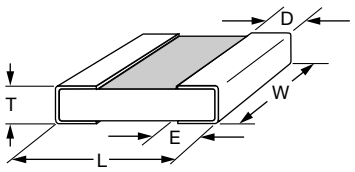
## STANDARD ELECTRICAL SPECIFICATIONS

| TEST | SPECIFICATIONS | CONDITIONS |
|---|---|---|
| **Material** | Passivated nichrome | - |
| **Resistance Range** | 50 Ω to 3 MΩ | - |
| **TCR: Absolute** | ± 5 ppm/°C | -55 °C to +125 °C |
| **Tolerance: Absolute** | ± 0.1 % to ± 0.01 % | +25 °C |
| **Stability: Absolute** | $\Delta R$ ± 0.02 % | 2000 h at 70 °C |
| **Stability: Ratio** | - | - |
| **Voltage Coefficient** | ± 0.1 ppm/V (typical) | - |
| **Working Voltage** | 75 V to 200 V | - |
| **Operating Temperature Range** | -55 °C to +125 °C | - |
| **Storage Temperature Range** | -55 °C to +150 °C | - |
| **Noise** | < -35 dB (typical) | - |
| **Shelf Life Stability: Absolute** | $\Delta R$ ± 0.01 % | 1 year at +25 °C |

## COMPONENT RATINGS

| CASE SIZE | POWER RATING (mW) | WORKING VOLTAGE (V) | RESISTANCE RANGE (Ω) |
|---|---|---|---|
| 0603 | 150 | 75 | 250 to 130K |
| 0805 | 250 | 100 | 250 to 260K |
| 1206 | 400 | 200 | 250 to 775K |
| 2010 | 800 | 200 | 500 to 2M |
| 2512 | 1000 | 200 | 500 to 3M |

## DIMENSIONS in inches

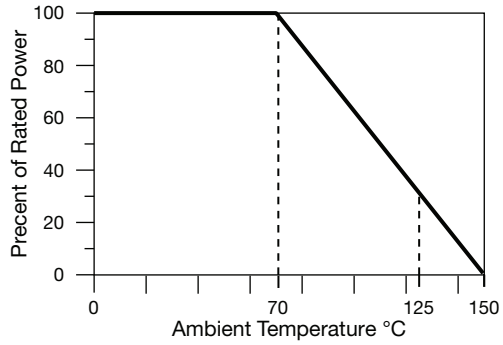



| CASE SIZE | TERM | L | W | T | D | E |
|---|---|---|---|---|---|---|
| 0603 | B | 0.064 ± 0.006 | 0.032 ± 0.005 | 0.020 max. | 0.012 ± 0.005 | 0.015 ± 0.005 |
| 0805 | B | 0.080 ± 0.006 | 0.050 ± 0.005 | 0.015 to 0.033 | 0.016 ± 0.008 | 0.015 ± 0.005 |
| 1206 | B | 0.126 ± 0.008 | 0.063 ± 0.005 | 0.015 to 0.033 | 0.020 + 0.005/- 0.010 | 0.020 + 0.005/- 0.010 |
| 2010 | G | 0.209 ± 0.009 | 0.098 ± 0.005 | 0.015 to 0.033 | 0.020 ± 0.005 | 0.020 ± 0.005 |
| 2512 | G | 0.259 ± 0.009 | 0.124 ± 0.005 | 0.015 to 0.033 | 0.020 ± 0.005 | 0.020 ± 0.005 |

## ENVIRONMENTAL TESTS - TYPICAL

| ENVIRONMENTAL TEST | 10 kΩ $\Delta R$ ± (%) | 100 kΩ $\Delta R$ ± (%) |
|---|---|---|
| **Thermal Shock** | 0.02 | 0.02 |
| **Short Time Overload** | 0.01 | 0.01 |
| **Low Temperature Operation** | 0.01 | 0.01 |
| **Resistance to Solder Heat** | 0.01 | 0.01 |
| **Moisture Resistance** | 0.02 | 0.02 |
| **High Temperature Exposure** | 0.02 | 0.02 |
| **Load Life (10 000 h, +70 °C)** | 0.04 | 0.04 |
| **TCR** | ± 5 ppm/°C | ± 5 ppm/°C |

## DERATING CURVE




## GLOBAL PART NUMBER INFORMATION

| P | L | T | 0 | 6 | 0 | 3 | Z | 1 | 0 | 0 | 1 | Q | B | T | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL | CASE SIZE | TCR CHARACTERISTIC | RESISTANCE | TOLERANCE | TERMINATION | PACKAGING |
|---|---|---|---|---|---|---|
| **PLT** | **0603**<br>**0805**<br>**1206**<br>**2010**<br>**2512** | **Z** = ± 5 ppm/°C | The first 3 digits are significant figures and the last digit specifies the number of zeros to follow. "R" designates the decimal point.<br><br>Example:<br>1001 = 1 kΩ<br>2500 = 250 Ω<br><br>Special values with more than 4 significant figures, use a R for value below 1 kΩ and a K for values greater than 1 kΩ to signify a decimal point.<br><br>982R6 = 982.6 Ω<br>532R41 = 532.41 Ω | **L** = ± 0.01 % (2)<br>**Q** = ± 0.02 %<br>**A** = ± 0.05 %<br>**B** = ± 0.1 %<br>**D** = ± 0.5 %<br>**F** = ± 1 % | **B** = Wraparound Sn/Pb solder w/Ni barrier (63 % Sn/37 % Pb w/ nickel barrier)<br><br>**S** = Wraparound lead (Pb)-free solder 96.5 % Sn/3.0 % Ag/ 0.5 % Cu RoHS compliant - e1 | **WS** = WAFFLE PACK<br>**WI** = 100 min., 1 mult (item single lot date code)<br>**WP** = 100 min., 1 mult (package unit single lot date code)<br><br>TAPE AND REEL<br>**T0** = 100 min., 100 mult<br>**T1** = 1000 min., 1000 mult (1)<br>**T3** = 300 min., 300 mult<br>**T5** = 500 min., 500 mult<br>**TF** = Full reel<br>**TS** = 100 min., 1 mult<br>**TI** = 100 min., 1 mult (item single lot date code)<br>**TP** = 100 min., 1 mult (package unit single lot date code) |

**Notes**

(1) Preferred packaging code

(2) L and Q tolerances are available only for resistance values > 250 Ω.

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