

# Ultra Precision Low TCR Thin Film Resistor, Surface Mount Chip, ± 2 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.

## CONSTRUCTION



## FEATURES

- TCR of ± 2 ppm/°C standard
- Tolerances to ± 0.01 %
- Anti-corrosion resistant film with (SPM) special passivation method
- Stable film and performance characteristics ( $\Delta R \pm 0.04\%$  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](http://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

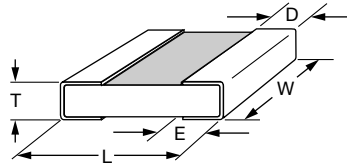
	ABSOLUTE
TCR	2
TOL.	0.01

## STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
<b>Material</b>	Passivated nichrome	-
<b>Resistance Range</b>	100 Ω to 3 MΩ	-
<b>TCR: Absolute</b>	± 2 ppm/°C	-55 °C to +125 °C
<b>Tolerance: Absolute</b>	± 0.1 % to ± 0.01 %	+25 °C
<b>Stability: Absolute</b>	$\Delta R \pm 0.02\%$	2000 h at 70 °C
<b>Stability: Ratio</b>	-	-
<b>Voltage Coefficient</b>	± 0.1 ppm/V (typical)	-
<b>Working Voltage</b>	75 V to 200 V	-
<b>Operating Temperature Range</b>	-55 °C to +125 °C	-
<b>Storage Temperature Range</b>	-55 °C to +155 °C	-
<b>Noise</b>	< -35 dB (typical)	-
<b>Shelf Life Stability: Absolute</b>	$\Delta R \pm 0.01\%$	1 year at +25 °C

## COMPONENT RATINGS

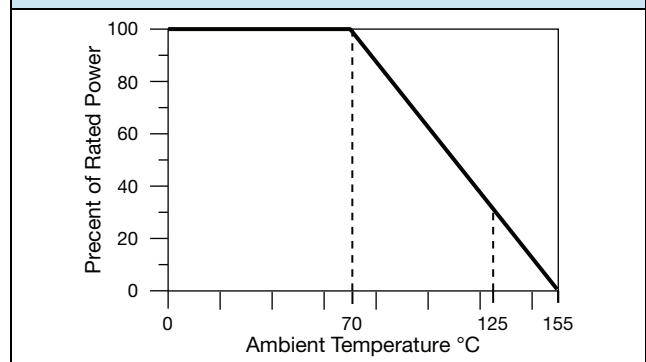
CASE SIZE	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE (Ω)
0603	150	75	100 to 130K
0805	250	100	100 to 260K
1206	400	200	100 to 775K
2010	800	200	150 to 2M
2512	1000	200	200 to 3M

**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 ΔR ± (%)	100 kΩ ΔR ± (%)
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	± 2 ppm/°C	± 2 ppm/°C

**DERATING CURVE**

**GLOBAL PART NUMBER INFORMATION**

GLOBAL MODEL	CASE SIZE	TCR CHARACTERISTIC	RESISTANCE	TOLERANCE	TERMINATION	PACKAGING
PLTU	0603 0805 1206 2010 2512	U = ± 2 ppm/°C	First 3 digits are significant figures and the last digit specifies the number of zeros to follow.  Example: 1000 = 100 Ω 1001 = 1 kΩ  Use R to indicate decimal point for value below 1 kΩ (max. 5 digits). 982R6 = 982.6 Ω  Values above 1 kΩ (max. 4 digits). 1532 = 15.3 kΩ 1003 = 100 kΩ	L = ± 0.01 % <sup>(2)</sup> Q = ± 0.02 % A = ± 0.05 % B = ± 0.1 % D = ± 0.5 % F = ± 1 %	B = wraparound Sn/Pb solder w/Ni barrier (63 % Sn/37 % Pb w/nickel barrier)  S = wraparound lead (Pb)-free solder 96.5 % Sn/3.0 % Ag/0.5 % Cu RoHS-compliant - e1	WS = WAFFLE PACK W1 = 100 min., 1 mult (item single lot date code) WP = 100 min., 1 mult (package unit single lot date code)  TAPE AND REEL T0 = 100 min., 100 mult T1 = 1000 min., 1000 mult <sup>(1)</sup> T3 = 300 min., 300 mult T5 = 500 min., 500 mult TF = Full reel TS = 100 min., 1 mult TI = 100 min., 1 mult (item single lot date code) 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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