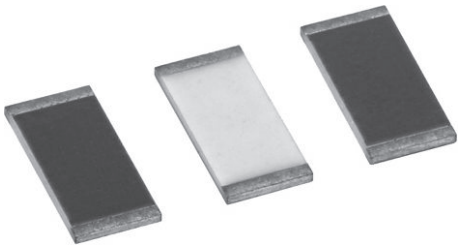
Precision Low TCR High Temperature Thin Film Resistor, Surface Mount Chip, ± 5 ppm/°C TCR, 0.02 % Tolerance

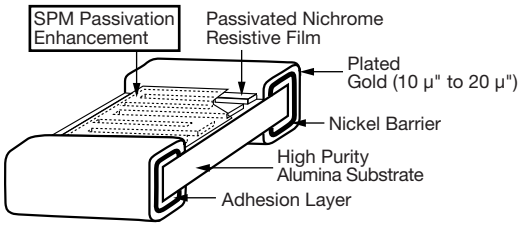


LINKS TO ADDITIONAL RESOURCES

Infographics

Vishay's proven precision thin film wraparound resistors will meet your exact requirements. These resistors are ideal for use in oil industry precision applications requiring low noise, long term stability under high temperature, 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

Pb-free Available

RoHS* Available

HALOGEN FREE

- PLTT0603 case size is qualified to AEC-Q200 for automotive applications
- -55 °C to 215 °C operating temperature range
- TCR of ± 5 ppm/°C standard
- Tolerances to ± 0.02 %
- Anti corrosion resistant film with (SPM) special passivation method
- Stable film and performance characteristics
- 0.5 % max. at 2000 h, 215 °C, 25 % rated power
- Non-standard resistance values available
- Very low noise and voltage coefficient (< -30 dB, 0.1 ppm/V)
- UL 94 V-0 flame resistant
- Gold terminations (10 µ" to 20 µ")
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL PERFORMANCE

	ABSOLUTE
TCR	5
TOL.	0.02

STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Resistance Range	75 Ω to 3 MΩ	-
TCR: Absolute	± 5 ppm/°C	-55 °C to +215 °C
Tolerance: Absolute	± 0.1 % to ± 0.02 %	+25 °C
Stability: Absolute	ΔR ± 0.5 %	2000 h at 215 °C, 25 % rated power
Stability: Ratio	-	-
Voltage Coefficient	± 0.1 ppm/V (typical)	-
Working Voltage	100 V to 200 V	-
Operating Temperature Range	-55 °C to +215 °C	-
Storage Temperature Range	-55 °C to +215 °C	-
Noise	< -35 dB (typical)	-
Shelf Life Stability: Absolute	ΔR ± 0.01 %	1 year at +25 °C

For technical questions, contact: thinfilm@vishay.com

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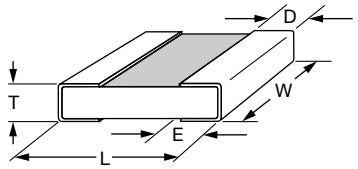
COMPONENT RATINGS

CASE SIZE	POWER RATING AT 70 °C (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE (Ω)
0603	150	75	75 to 130K
0805	250	100	250 to 260K
1206	400	200	500 to 775K
2010	800	200	500 to 2M
2512	1000	200	500 to 3M

Note
- Consult factory for additional case size

DIMENSIONS in inches



CASE SIZE	TERM	L	W	T	D	E
0603	G	0.064 ± 0.006	0.032 ± 0.005	0.015 to 0.033	0.012 ± 0.005	0.015 ± 0.005
0805	G	0.080 ± 0.006	0.050 ± 0.005	0.015 to 0.033	0.016 ± 0.008	0.015 ± 0.005
1206	G	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 - MIL-PRF-55342

ENVIRONMENTAL TEST	CONDITIONS	TYPICAL VISHAY PERFORMANCE
Thermal Shock	MIL-STD-202 method 107 cond F, -65 °C to +150 °C	± 0.02 %
Short Time Overload	MIL-PRF-55342 para 4.8.6, 2.5 x rated working voltage	± 0.01 %
Low Temperature Operation	MIL-PRF-55342 para 4.8.5, -65 °C	± 0.01 %
Resistance to Soldering Heat	MIL-STD-202 method 210	± 0.01 %
Moisture Resistance	MIL-STD-202 method 106, no power applied	± 0.02 %
High Temperature Exposure	MIL-PRF-55342 para 4.8.7, at 150 °C for 100 h	± 0.02 %
Life	MIL-STD-202 method 108, 25 % rated power for 2000 h at 215 °C	± 0.50 %
TCR	MIL-STD-202 method 304	± 5 ppm/°C

ENVIRONMENTAL TESTS - AEC-Q200 PLTT0603 Case Size Only

ENVIRONMENTAL TEST	CONDITIONS	TYPICAL VISHAY PERFORMANCE
High temperature storage	MIL-STD-202 method 108, 1000 h at 125 °C	± 0.10 %
Temperature cycling	JESD22 method JA-104, 1000 cycles, -55 °C to +155 °C	± 0.25 %
Moisture resistance	MIL-STD-202 method 106, no power applied	± 0.10 %
Biased humidity	MIL-STD-202 method 103, 1000 h at 85 °C, 85 % RH, 10 % rated power	± 0.20 %
Life	MIL-STD-202 method 108, 1000 h at 175 °C, 50 % rated power	± 0.50 %
Mechanical shock	MIL-STD-202 method 213, condition C	± 0.02 %
Vibration	MIL-STD-202 method 204, 10 Hz to 2 kHz	± 0.02 %
Resistance to soldering heat	MIL-STD-202 method 210, condition B	± 0.02 %
Electrostatic discharge	AEC-Q200-002, human body (< 1 kΩ: 1 kV; > 1 kΩ: 2 kV)	< 1 kΩ: 1 kV; > 1 kΩ: 2 kV
Solderability	MIL-STD-883 method 2003 para 2.3.1 and J-STD-002	Pass
TCR	MIL-STD-202 method 304	± 5 ppm /°C
Die shear	MIL-PRF-55342, 0.5 kg for 30 s minimun	Pass
Flame retardance	AEC-Q200-001 para 4.0	Pass

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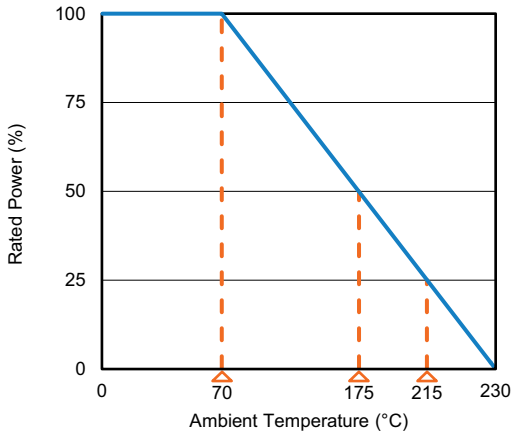
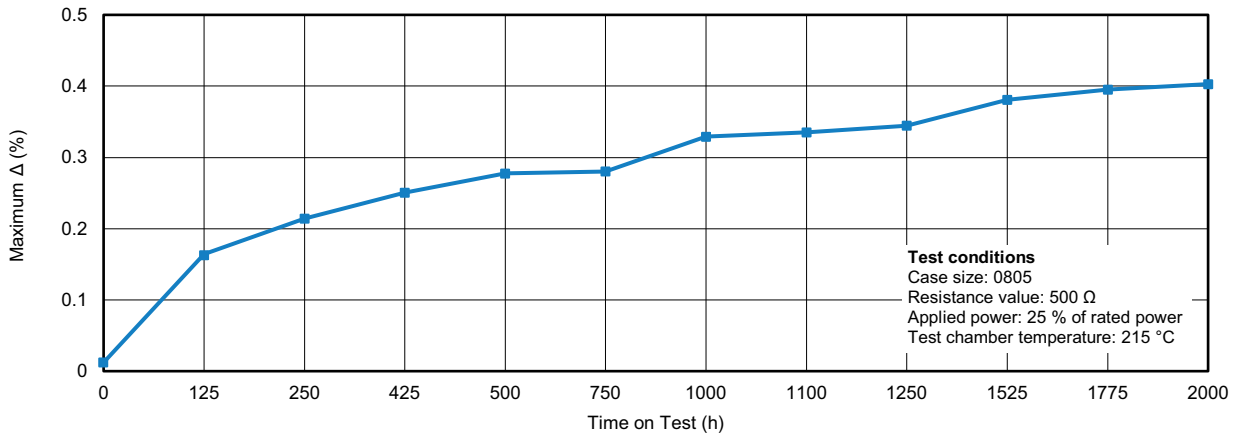
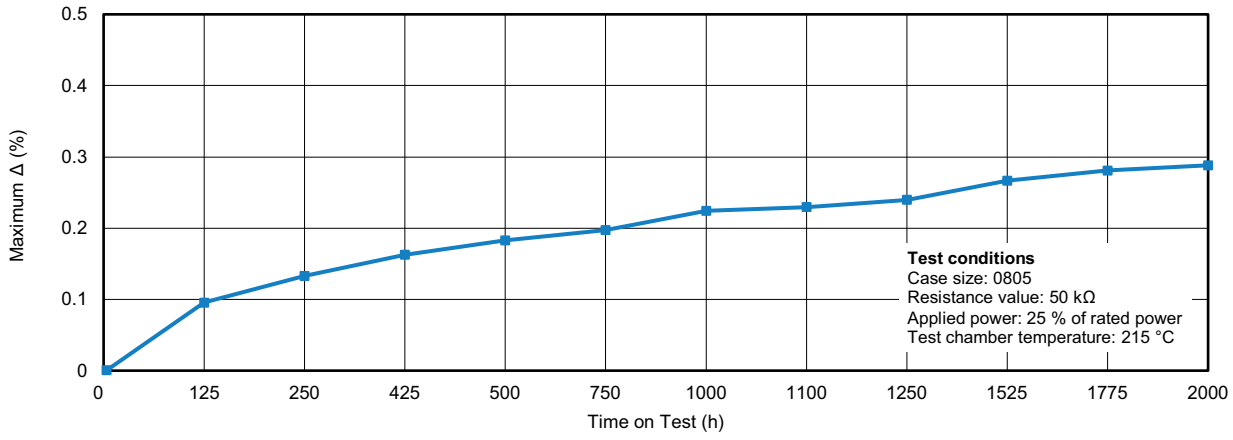
DERATING CURVE



PLTT0805 500 Ω STABILITY TEST RESULTS



PLTT0805 50 kΩ STABILITY TEST RESULTS



Note

- Performance obtained with following mounting conditions
  PCB: Polymide IPC-7831A STD land patterns
  Solder paste: PbSnAg (93.5/5/1.5)

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GLOBAL PART NUMBER INFORMATION

P	L	T	T	0	8	0	5	Z	1	0	0	1	Q	G	T	1

GLOBAL MODEL	CASE SIZE	TCR CHARACTERISTIC	RESISTANCE	TOLERANCE	TERMINATION	PACKAGING
PLTT	**0603** **0805** **1206** **2010** **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. Example: **1001** = 1 kΩ **2500** = 250 Ω 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. **982R6** = 982.6 Ω **532R41** = 532.41 Ω	**Q** = ± 0.02 % (1) **A** = ± 0.05 % **B** = ± 0.1 % **D** = ± 0.5 % **F** = ± 1 % **G** = ± 2 %	**G** = wraparound gold over Ni barrier (10 µ" min. Au)	**WS** = WAFFLE **WI** = 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. **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)

Note

(1) Q tolerances are available only for resistance values ≥ 250 Ω

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