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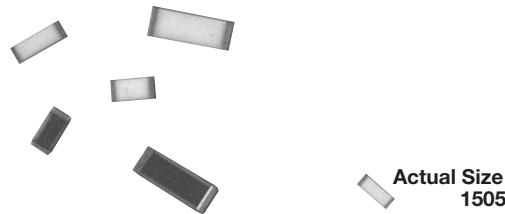
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[Vishay Thin Film](#)
[PTN1206E1000BST1](#)

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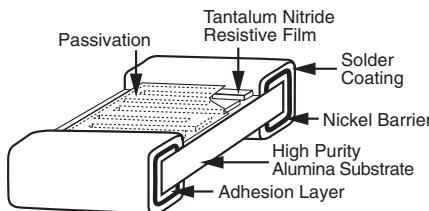
sales@integrated-circuit.com

Commercial Thin Film Chip Resistor, Surface Mount Chip



These chip resistors are available in both "top side" and "wraparound" termination styles in a variety of sizes. They incorporate self passivated, enhanced Tantalum Nitride films, to give superior performance on moisture resistance, voltage coefficient, power handling and resistance stability. The terminations consist of an adhesion layer, a leach resistant nickel barrier, and solder coating. This product will out-perform all requirements of characteristic E of MIL-PRF-55342.

CONSTRUCTION



FEATURES

- Moisture resistant
- High purity alumina substrate
- Non-standard values available
- Will pass +85 °C, 85 % relative humidity and 10 % rated power
- 100 % visual inspected per MIL-PRF-55342
- Non-inductive
- Very low noise and voltage coefficient (< -30 dB)
- Laser-trimmed tolerances to $\pm 0.05\%$
- Wraparound resistance less than 10 mΩ
- Epoxy bondable termination available
- Sulfur resistant (per ASTM B809-95 humid vapor test)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS*
 Available

HALOGEN FREE
 Available

GREEN
 (Is-2008)
 Available

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	10
TOL.	0.05

STANDARD ELECTRICAL SPECIFICATIONS

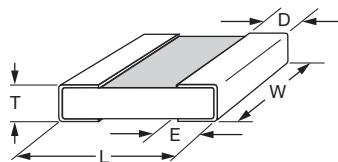
TEST	SPECIFICATIONS	CONDITIONS
Material	Tantalum nitride	-
Resistance Range	1.0 Ω to 3 MΩ	-
TCR: Absolute	$\pm 10 \text{ ppm}/^\circ\text{C}$ to $\pm 100 \text{ ppm}/^\circ\text{C}$	-55 °C to +125 °C
Tolerance: Absolute	$\pm 0.05\%$ to $\pm 5\%$	+25 °C
Stability: Absolute	$\Delta R \pm 0.03\%$	2000 h at 70 °C
Stability: Ratio	-	-
Voltage Coefficient	0.1 ppm/V	-
Working Voltage	75 V to 200 V	-
Operating Temperature Range	-55 °C to +155 °C	-
Storage Temperature Range	-55 °C to +155 °C	-
Noise	< -30 dB	-
Shelf Life Stability: Absolute	-	-

COMPONENT RATINGS

CASE SIZE (1)	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE (Ω)
0402	50	75	1.5 to 51.1K
0502	100	75	1.5 to 65K
0505	150	75	10 to 130K
0603	150	75	1.5 to 130K
0705	200	100	1.0 to 310K
0805	200	100	1.0 to 310K
1005	250	100	1.5 to 360K
1010	500	150	1.0 to 600K
1206	400	200	1.5 to 1M
1505	400	150	1.25 to 1M
2208	750	150	2.0 to 1.75M
2010	800	200	1.0 to 2M
2512	2000	200	1.5 to 3M

Note

(1) 0705 and 0805 are the same (only use 0805 when ordering)


DIMENSIONS in inches


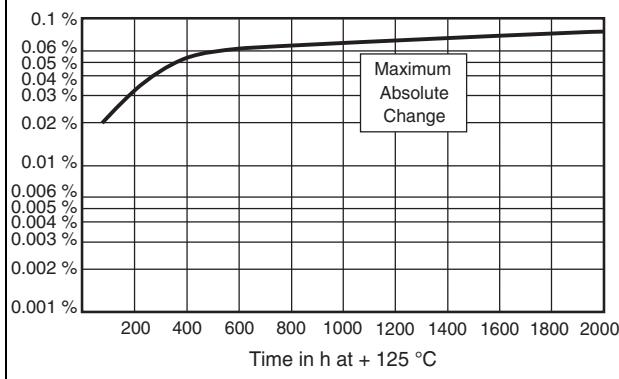
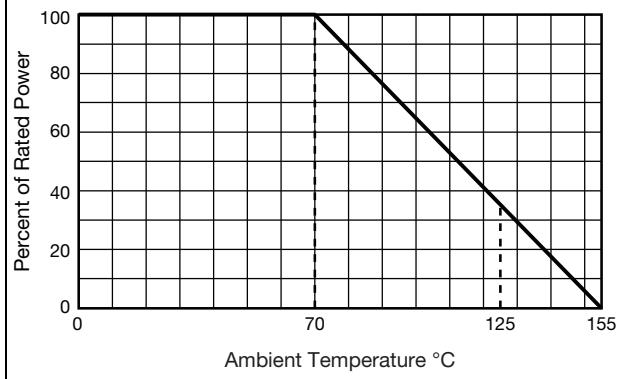
CASE SIZE	L	W	T	D	E
0402	0.042 ± 0.008	0.022 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.010 ± 0.005
0502	0.055 ± 0.006	0.025 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005
0505	0.055 ± 0.006	0.050 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005
0603	0.064 ± 0.006	0.032 ± 0.005	0.020 max.	0.012 ± 0.005	0.015 ± 0.005
0705, 0805 ⁽¹⁾	0.080 ± 0.006	0.050 ± 0.005	0.015 to 0.033	0.016 ± 0.008	0.015 ± 0.005
1005	0.105 ± 0.007	0.050 ± 0.005	0.015 to 0.033	0.015 ± 0.005	0.015 ± 0.005
1010	0.105 ± 0.007	0.100 ± 0.005	0.015 to 0.033	0.015 ± 0.005	0.015 ± 0.005
1206	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
1505	0.155 ± 0.007	0.050 ± 0.005	0.015 to 0.033	0.015 ± 0.005	0.015 ± 0.005
2010	0.209 ± 0.009	0.098 ± 0.005	0.015 to 0.033	0.020 ± 0.005	0.020 ± 0.005
2208	0.230 ± 0.007	0.075 ± 0.005	0.015 to 0.033	0.020 ± 0.005	0.020 ± 0.005
2512	0.259 ± 0.009	0.124 ± 0.005	0.015 to 0.033	0.020 ± 0.005	0.020 ± 0.005

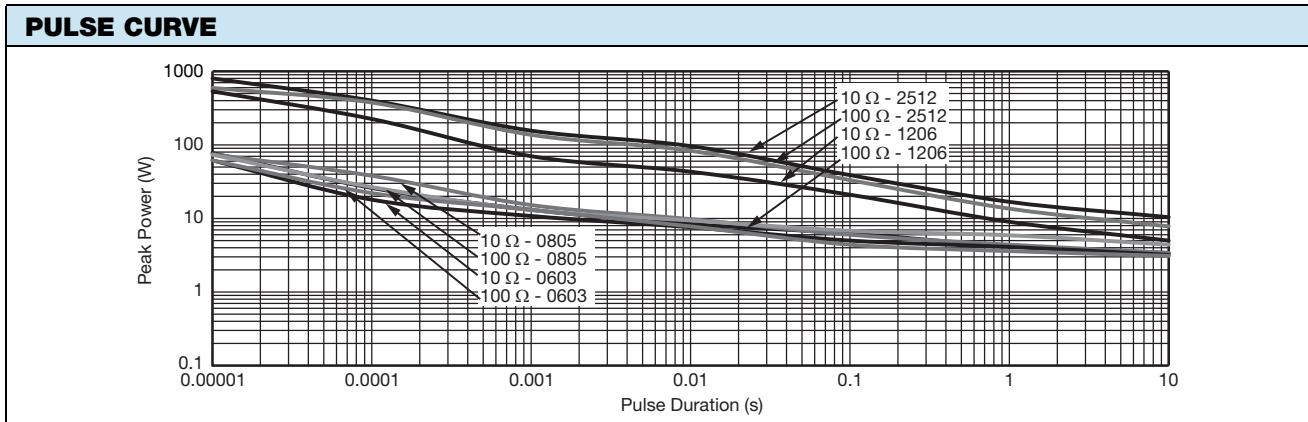
Note
⁽¹⁾ 0705 and 0805 are the same (only use 0805 when ordering)

ENVIRONMENTAL TESTS (Vishay Performance vs. MIL-PRF-55342 Requirements)

ENVIRONMENTAL TEST	LIMITS MIL-PRF-55342 CHARACTERISTIC "E"	TYPICAL VISHAY PERFORMANCE
Resistance Temperature Characteristic	± 25 ppm/°C	± 15 ppm/°C
Max. Ambient Temp. at Rated Wattage	+70 °C	+70 °C
Max. Ambient Temp. at Power Derating	+150 °C	+150 °C
Thermal Shock ΔR	± 0.1 %	± 0.040 %
Low Temperature Operation ΔR	± 0.1 %	± 0.001 %
Short Time Overload ⁽¹⁾ ΔR	± 0.10 %	± 0.002 %
High Temperature Exposure ΔR	± 0.1 %	± 0.04 %
Resistance to Soldering Heat ΔR	± 0.2 %	± 0.008 %
Moisture Resistance ΔR	± 0.2 %	± 0.004 %
Life +70 °C at 1000 h ΔR	± 0.50 %	± 0.02 %
Insulation Resistance	10 000 Ω minimum	> 100 000 MΩ

Note
⁽¹⁾ 2512 short time overload test is based on 1 W power level below critical value of 20 kΩ.

FILM LOAD LIFE STABILITY (at +125 °C)

DERATING CURVE




GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: PTN1206E1002BBT1

P	T	N	1	2	0	6	E	1	0	0	2	B	B	T	1
GLOBAL MODEL	CASE SIZE	TCR CHARACTERISTIC	RESISTANCE				TOLERANCE	TERMINATION				PACKAGING			
PTN	0402	D = ± 15 ppm/°C (1)	The first 3 digits are significant figures and the last digit specifies the number of zeros to follow. "R" designates the decimal point.				A = ± 0.05 % (2)	B = wraparound Sn/Pb solder Sn63				BS = BULK 100 min., 1 mult			
	0502	E = ± 25 ppm/°C (2)					B = ± 0.1 %	F = ± 1 % w/nickel barrier				WO = WAFFLE 100 min., 100 mult			
	0505	H = ± 50 ppm/°C (2)					D = ± 0.5 %	G = wraparound Au over Ni (gold) termination				WS = WAFFLE 100 min., 1 mult			
	0603	K = ± 100 ppm/°C					F = ± 1 %	epoxy bondable				WI = 100 min., 1 mult (item single lot date code)			
	0805	L = ± 200 ppm/°C					G = ± 2 %	RoHS-compliant - e4				WP = 100 min., 1 mult (package unit single lot date code)			
	1005	Y = ± 10 ppm/°C (3)					J = ± 5 %	S = wraparound electroplated 100 % pure matte tin				TAPE AND REEL			
	1010							RoHS-compliant - e3				T0 = 100 min., 100 mult			
	1206											T1 = 1000 min., 1000 mult (4)			
	1505											T3 = 300 min., 300 mult			
	2208											T5 = 500 min., 500 mult			
	2010											TF = Full reel			
	2512											TS = 100 min., 1 mult			

Historical Part Number example: PTN0805H8801BBT (for reference purposes only)

PTN	0805	H	8801	B	B	T
STYLE	CASE SIZE	TCR CHARACTERISTIC	OHMIC VALUE	TOLERANCE	TERMINATION	PACKAGING

Notes

- (1) Not available below 50 Ω.
- (2) Not available below 10 Ω.
- (3) $\geq 1 \text{ k}\Omega$
- (4) Preferred packaging code.

RESISTANCE	TCR (ppm/°C)	TOLERANCE (%)
10 Ω to 3 MΩ	25, 50, 100, 200	0.1, 0.5, 1, 2, 5
5 Ω to 10 Ω	100, 200	1, 2, 5
1.0 Ω to 5 Ω	200	1, 2, 5

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Vishay

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