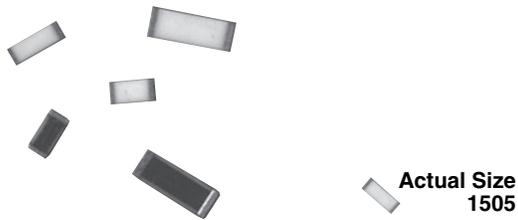
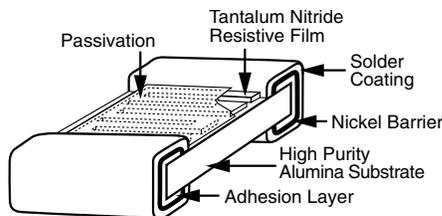


## Commercial Thin Film Chip Resistor, Surface Mount Chip



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 ± 0.1 %
- Wraparound resistance less than 10 mΩ
- Epoxy bondable termination available
- Sulfur resistant (per ASTM B809-95 humid vapor test)
- Material categorization: For definitions please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### Note

\* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

### TYPICAL PERFORMANCE

	ABSOLUTE
TCR	25
TOL.	0.1

### STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Tantalum nitride	-
Resistance Range	10 Ω to 3 MΩ	-
TCR: Absolute	± 25 ppm/°C to ± 100 ppm/°C	- 55 °C to + 125 °C
Tolerance: Absolute	± 0.1 % to ± 5 %	+ 25 °C
Stability: Absolute	ΔR ± 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 + 125 °C	-
Storage Temperature Range	- 55 °C to + 150 °C	-
Noise	< - 30 dB	-
Shelf Life Stability: Absolute	-	-

### COMPONENT RATINGS

CASE SIZE <sup>(1)</sup>	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE (Ω)
0402	50	75	20 to 51.1K
0502	100	75	20 to 65K
0505	150	75	20 to 130K
0603	150	75	10 to 130K
0705	200	100	10 to 301K
0805	200	100	10 to 301K
1005	250	100	10 to 360K
1010	500	150	50 to 600K
1206	400	200	10 to 1M
1505	400	150	10 to 1M
2208	750	150	10 to 1.75M
2010	800	200	10 to 2M
2512	1000	200	10 to 3M

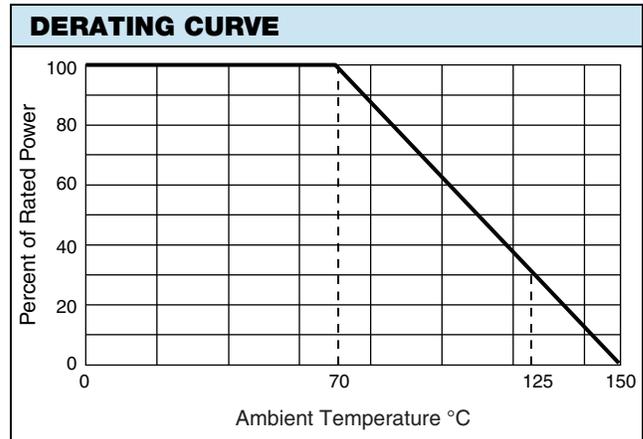
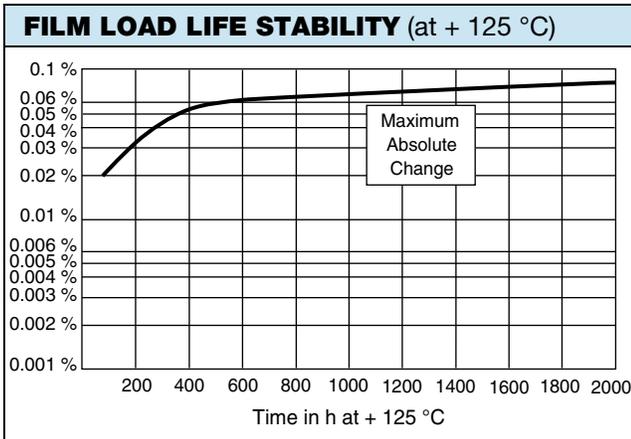
### Note

<sup>(1)</sup> 0705 and 0805 are the same (only use 0805 when ordering)

<b>DIMENSIONS</b> 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 <sup>(1)</sup>	0.080 ± 0.006	0.050 ± 0.005	0.015 to 0.033	0.015 ± 0.005	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**
<sup>(1)</sup> 0705 and 0805 are the same (only use 0805 when ordering)

<b>ENVIRONMENTAL TESTS</b> (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 $\Delta R$	± 0.1 %	± 0.040 %
Low Temperature Operation $\Delta R$	± 0.1 %	± 0.001 %
Short Time Overload $\Delta R$	± 0.10 %	± 0.002 %
High Temperature Exposure $\Delta R$	± 0.1 %	± 0.04 %
Resistance to Soldering Heat $\Delta R$	± 0.2 %	± 0.008 %
Moisture Resistance $\Delta R$	± 0.2 %	± 0.004 %
Life + 70 °C at 1000 h $\Delta R$	± 0.50 %	± 0.02 %
Insulation Resistance	10 000 Ω minimum	> 100 000 MΩ



### 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
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GLOBAL MODEL	CASE SIZE	TCR CHARACTERISTIC	RESISTANCE	TOLERANCE	TERMINATION	PACKAGING
<b>PTN</b>	<b>0402</b> <b>0502</b> <b>0505</b> <b>0603</b> <b>0805</b> <b>1005</b> <b>1010</b> <b>1206</b> <b>1505</b> <b>2208</b> <b>2010</b> <b>2512</b>	<b>E</b> = ± 25 ppm/°C <b>H</b> = ± 50 ppm/°C <b>K</b> = ± 100 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: 10R0 = 10 Ω 1000 = 100 Ω 1001 = 1 kΩ	<b>B</b> = ± 0.1 % <b>D</b> = ± 0.5 % <b>F</b> = ± 1 % <b>G</b> = ± 2 % <b>J</b> = ± 5 %	<b>B</b> = Wraparound Sn/Pb solder Sn63 w/nickel barrier <b>G</b> = Wraparound Au over Ni (gold) termination epoxy bondable RoHS compliant - e4 <b>S</b> = Wraparound electroplated 100 % pure matte tin RoHS-compliant - e3	<b>BS</b> = BULK 100 min., 1 mult <b>WS</b> = WAFFLE 100 min., 1 mult <b>W0</b> = WAFFLE 100 min., 100 mult  TAPE AND REEL <b>T0</b> = 100 min., 100 mult <b>T1</b> = 1000 min., 1000 mult <sup>(1)</sup> <b>T3</b> = 300 min., 300 mult <b>T5</b> = 500 min., 500 mult <b>TF</b> = Full reel <b>TS</b> = 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

**Note**

<sup>(1)</sup> Preferred packaging code



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## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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