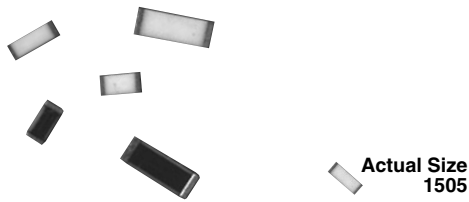
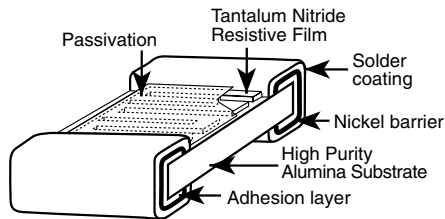


## Commercial Thin Film Chip Resistors



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 H of MIL-PRF-55342.

### CONSTRUCTION



### FEATURES

- Lead (Pb)-free or Sn/Pb terminations available
- 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
- Very low noise and voltage coefficient (< - 30 dB)
- Non-inductive
- Laser-trimmed tolerances to ± 0.1 %
- Wraparound resistance less than 10 mΩ
- Epoxy bondable termination available


**RoHS\***  
COMPLIANT

**SURFACE MOUNT  
CHIPS**

### TYPICAL PERFORMANCE

	ABS
TCR	25
TOL	0.1

### STANDARD ELECTRICAL SPECIFICATIONS

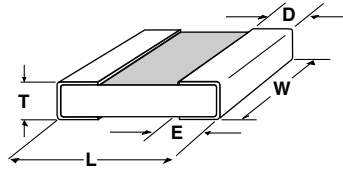
TEST	SPECIFICATIONS	CONDITIONS
Material	Tantalum nitride	
Absolute TCR	± 25 ppm/°C, ± 50 ppm/°C, ± 100 ppm/°C	- 55 °C to + 125 °C
Absolute Tolerance	± 1.0 %, ± 0.5 % and ± 0.1 %	+ 25 °C
Operating Temperature Range	- 55 °C to + 125 °C	
Noise	< - 25 dB	

CASE SIZE	POWER RATING (mW)	MAX. WORKING VOLTAGE	RESISTANCE RANGE - (Ω)
0402	50	75	20 - 35K
0502	100	75	20 - 65K
0505	150	75	20 - 130K
0603	150	75	10 - 80K
0805 <sup>(1)</sup> , 0705 <sup>(1)</sup>	200	100	10 - 301K
1005	250	100	10 - 301K
1010	500	150	50 - 600K
1206	400	200	10 - 1M
1505	400	150	10 - 1M
2208	750	150	10 - 1.75M
2010	800	200	10 - 2M
2512	1000	200	10 - 3M

**Note**

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

\* Pb containing terminations are not RoHS compliant, exemptions may apply

**DIMENSIONS** in inches

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

**ENVIRONMENTAL TESTS (VISHAY PERFORMANCE VS. MIL-PRF-55342 REQUIREMENTS)**

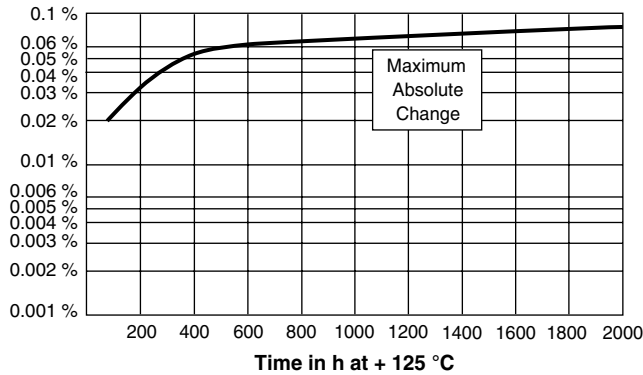
ENVIRONMENTAL TEST	LIMITS MIL-PRF-55342 CHARACTERISTIC "H"	TYPICAL VISHAY PERFORMANCE
Resistance Temperature Characteristic	± 50 ppm/°C	± 35 ppm/°C
Max. Ambient Temp. at Rated Wattage	+ 70 °C	+ 70 °C
Max. Ambient Temp. at Power Derating	+ 150 °C	+ 150 °C
Thermal Shock $\Delta R$	± 0.25 %	± 0.040 %
Low Temperature Operation $\Delta R$	± 0.25 %	± 0.005 %
Short Time Overload $\Delta R$	± 0.10 %	± 0.010 %
High Temperature Exposure $\Delta R$	± 0.20 %	± 0.150 %
Resistance to Bonding Exposure $\Delta R$	± 0.25 %	± 0.005 %
Moisture Resistance $\Delta R$	± 0.40 %	± 0.029 %
Life + 70 °C at 1000 hours $\Delta R$	± 0.50 %	± 0.035 %
Insulation Resistance $\Omega$	10 000 Minimum	> 100 000 M $\Omega$

**Note**

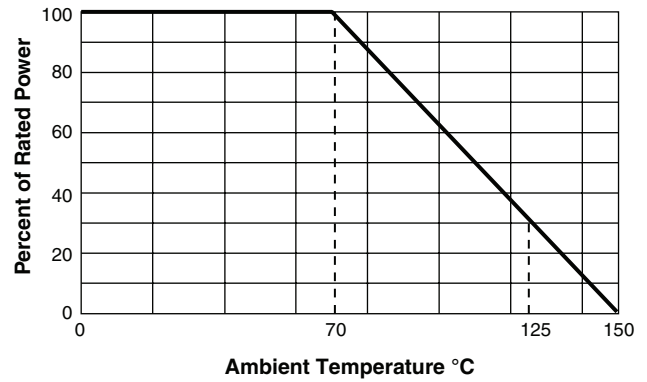
<sup>(1)</sup> 0705 and 0805 are the same (only use 0805 when ordering)



**FILM LOAD LIFE STABILITY (at + 125 °C)**



**DERATING CURVE**



**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: PTN1206E1002BBT1 (preferred part number format)

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 0502 0505 0603 0805 1005 1010 1206 1505 2208 2010 2512	E = ± 25 ppm/°C H = ± 50 ppm/°C K = ± 100 ppm/°C  < 50 Ω  ± 100 ppm/°C best	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 = ± 0.1 % D = ± 0.5 % F = ± 1 % G = ± 2 % J = ± 5 %	B = Wraparound Sn/Pb solder 63 % Sn/ 37 % Pb w/ nickel barrier G = Wraparound Au over Ni (gold) termination epoxy bondable RoHS compliant - e4 S = Wraparound lead (Pb)-free solder 96.5 % Sn/3.0 %Ag/ 0.5 % Cu RoHS compliant - e1	BS = BULK 100 Min 1 Mult WS = WAFFLE 100 Min 1 Mult  TAPE AND REEL T0 = 100 Min 100 Mult T1 = 1000 Min 1000 Mult T3 = 300 Min 300 Mult T5 = 500 Min 500 Mult TF = Full Reel TS = 100 Min 1 Mult

Historical Part Number example: PTN0805H8801BBT

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

SURFACE MOUNT CHIPS



## Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.