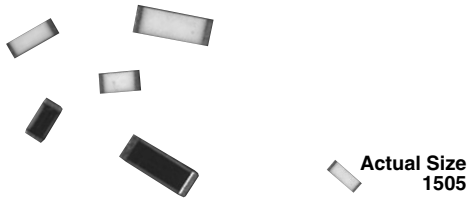
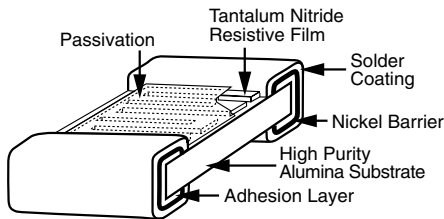


## Commercial Thin Film Chip Resistors



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 E 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  $\pm 0.1$  %
- Wraparound resistance less than 10 m $\Omega$
- Epoxy bondable termination available
- Compliant to RoHS directive 2002/95/EC


**RoHS\***  
COMPLIANT

**SURFACE MOUNT  
CHIPS**

### TYPICAL PERFORMANCE

	ABS
TCR	25
TOL	0.1

### STANDARD ELECTRICAL SPECIFICATIONS

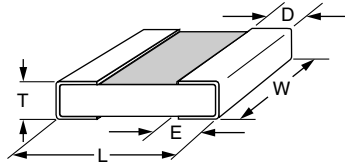
TEST	SPECIFICATIONS	CONDITIONS
Material	Tantalum nitride	
Absolute TCR	$\pm 25$ ppm/ $^{\circ}$ C, $\pm 50$ ppm/ $^{\circ}$ C, $\pm 100$ ppm/ $^{\circ}$ C	- 55 $^{\circ}$ C to + 125 $^{\circ}$ C
Absolute Tolerance	$\pm 1.0$ %, $\pm 0.5$ % and $\pm 0.1$ %	+ 25 $^{\circ}$ C
Operating Temperature Range	- 55 $^{\circ}$ C to + 125 $^{\circ}$ C	
Noise	< - 30 dB	

CASE SIZE	POWER RATING (mW)	MAX. WORKING VOLTAGE	RESISTANCE RANGE ( $\Omega$ )
0402	50	75	20 to 35K
0502	100	75	20 to 65K
0505	150	75	20 to 130K
0603	150	75	10 to 80K
0805 <sup>(1)</sup> , 0705 <sup>(1)</sup>	200	100	10 to 301K
1005	250	100	10 to 301K
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)

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

**DIMENSIONS** in inches

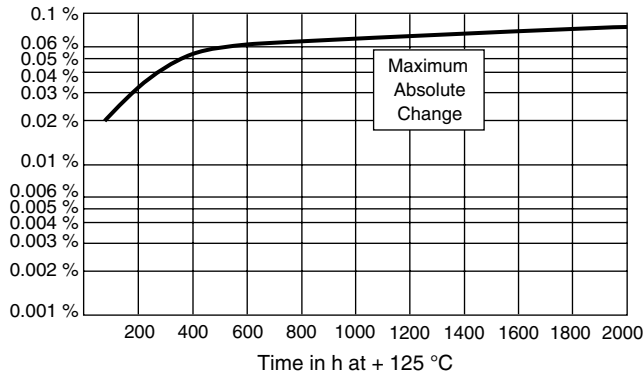
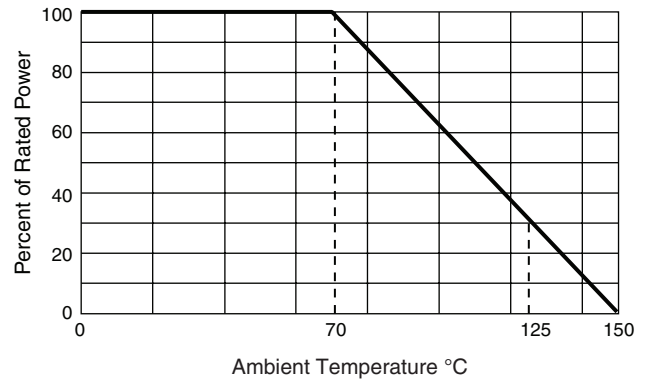
CASE SIZE	L	W	T	D	E
0402	0.042 ± 0.008	0.022 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.010 ± 0.005
0502	0.055 ± 0.006	0.025 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005
0505	0.055 ± 0.006	0.050 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005
0603	0.064 ± 0.006	0.032 ± 0.005	0.020 Max.	0.012 ± 0.005	0.015 ± 0.005
0805 <sup>(1)</sup> , 0705 <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

**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 $\Delta R$	± 0.1 %	± 0.040 %
Low Temperature Operation $\Delta R$	± 0.1 %	Average from AI qual. ± 0.001 %
Short Time Overload $\Delta R$	± 0.10 %	PTN AI qual. ± 0.002 %
High Temperature Exposure $\Delta R$	± 0.1 %	± 0.04 % based on PTN AI termination qual. reports
Resistance to Soldering Heat $\Delta R$	± 0.2 %	PTN AI qual. ± 0.008 %
Moisture Resistance $\Delta R$	± 0.2 %	PTN AI qual. ± 0.004 %
Life + 70 °C at 1000 h $\Delta R$	± 0.50 %	PTN AI qual. ± 0.014 %
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 <b>PTN</b>	CASE SIZE <b>0402 0502 0505 0603 0805 1005 1010 1206 1505 2208 2010 2512</b>	TCR CHARACTERISTIC <b>E = ± 25 ppm/°C H = ± 50 ppm/°C K = ± 100 ppm/°C</b>	RESISTANCE 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	TOLERANCE <b>B = ± 0.1 % D = ± 0.5 % F = ± 1 % G = ± 2 % J = ± 5 %</b>	TERMINATION <b>B</b> = Wraparound Sn/Pb solder Min. 60 % Pb w/nickel barrier <b>G</b> = Wraparound Au over Ni (gold) termination epoxy bondable RoHS compliant - e4 <b>S</b> = Wraparound lead (Pb)-free solder 96.5 % Sn/3.0 %Ag/ 0.5 % Cu RoHS compliant - e1	PACKAGING <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 <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															
PTN	0805	H	8801	B	B	T									
STYLE	CASE SIZE	TCR CHARACTERISTIC	OHMIC VALUE	TOLERANCE	TERMINATION	PACKAGING									



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