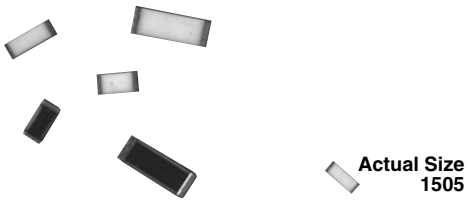
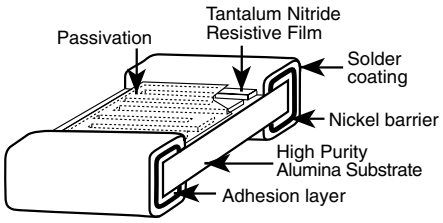
Commercial Thin Film Chip Resistors



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
- Non-magnetic termination option
- Compliant to RoHS directive 2002/95/EC

Pb-free 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	

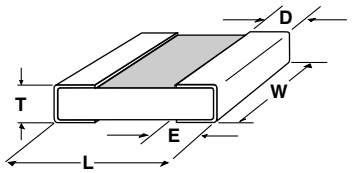
CASE SIZE	POWER RATING (mW)	MAX. WORKING VOLTAGE	RESISTANCE RANGE (Ω)
0402	50	75	20 to 35K
0502	100	75	20 to 65K
0505	150	75	20 to 130K
0603	150	75	10 to 80K
0805 (1), 0705 (1)	200	100	10 to 301K
1005	250	100	10 to 301K
1010	500	150	50 to 600K
1206	400	200	10 to 1M
1505	400	150	10 to 1M
2208	750	150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

Note

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

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

DIMENSIONS in inches

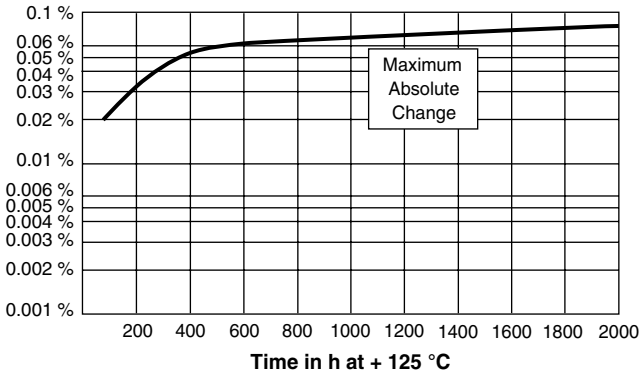


CASE SIZE	TERM	L	W	T	D	E
0402	B	0.042 ± 0.008	0.022 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.010 ± 0.005
0502	B	0.055 ± 0.006	0.025 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005
0505	B	0.055 ± 0.006	0.050 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005
0603	B	0.064 ± 0.006	0.032 ± 0.005	0.020 Max.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

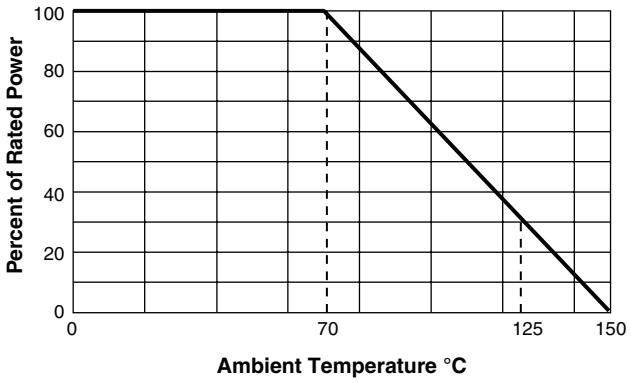
ENVIRONMENTAL TESTS (VISHAY PERFORMANCE VS. MIL-PRF-55342 REQUIREMENTS)			
ENVIRONMENTAL TEST		LIMITS MIL-PRF-55342 CHARACTERISTIC "H"	TYPICAL VISHAY PERFORMANCE
Resistance Temperature Characteristic		± 50 ppm/°C	± 35 ppm/°C
Max. Ambient Temp. at Rated Wattage		+ 70 °C	+ 70 °C
Max. Ambient Temp. at Power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

Note
(1) 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

PTN

CASE SIZE

0402
0502
0505
0603
0805
1005
1010
1206
1505
2208
2010
2512

TCR CHARACTERISTIC

E = ± 25 ppm/°C
H = ± 50 ppm/°C
K = ± 100 ppm/°C

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 = ± 0.1 %
D = ± 0.5 %
F = ± 1 %
G = ± 2 %
J = ± 5 %

TERMINATION

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
M = Non-magnetic wraparound lead (Pb)-free solder 99.5 % Sn/3.0 %Ag/ 0.5 % Cu

PACKAGING

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

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