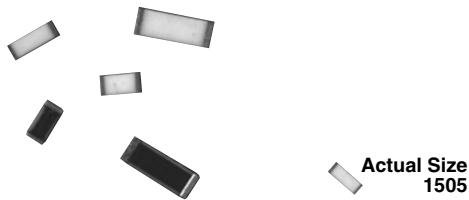
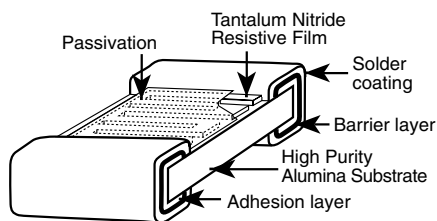


Precision Thin Film Non-Magnetic Chip Resistors ± 25 ppm/°C, Tolerances to 0.1 %



These devices eliminate materials that would disturb magnetic fields applications such as in MRI magnetic resonance imaging machines. The PNM series chip resistor has been carefully engineered with non-magnetic materials to eliminate the effects of these stray magnetic fields on circuit performance, thereby resulting in simplified shielding requirements and improved sound quality in audio applications. Providing signal conditioning without distortion from magnetic fields.

CONSTRUCTION



FEATURES

- Non-magnetic
- 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
- Halogen-free according to IEC 61249-2-21 definition available
- Compliant to RoHS directive 2002/95/EC



RoHS*
COMPLIANT
HALOGEN
FREE
Available

**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	

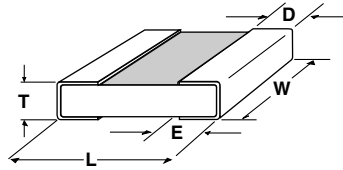
CASE SIZE	POWER RATING (mW)	MAX. WORKING VOLTAGE	RESISTANCE RANGE (Ω)
0402	50	75	20 to 35K
0502	100	75	20 to 65K
0505	150	75	20 to 130K
0603	150	75	10 to 80K
0805 ⁽¹⁾ , 0705 ⁽¹⁾	200	100	10 to 301K
1005	250	100	10 to 301K
1010	500	150	50 to 600K
1206	400	200	10 to 1M
1505	400	150	10 to 1M
2208	750	150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



SURFACE MOUNT CHIPS

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 ⁽¹⁾ , 0705 ⁽¹⁾	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)

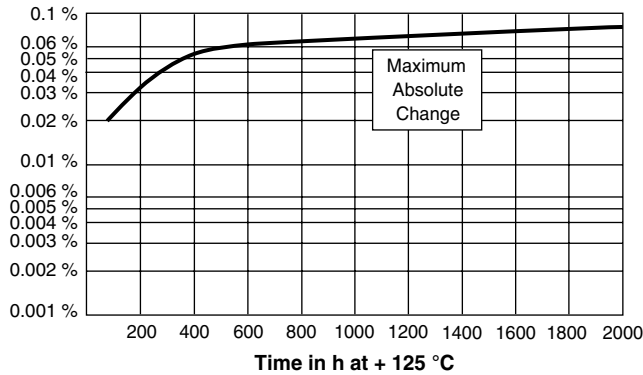
ENVIRONMENTAL TEST	LIMITS MIL-PRF-55342 CHARACTERISTIC "H"	TYPICAL VISHAY PERFORMANCE
Resistance Temperature Characteristic	± 50 ppm/°C	± 35 ppm/°C
Max. Ambient Temp. at Rated Wattage	+ 70 °C	+ 70 °C
Max. Ambient Temp. at Power Derating	+ 150 °C	+ 150 °C
Thermal Shock ΔR	± 0.25 %	± 0.040 %
Low Temperature 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 M Ω

Note

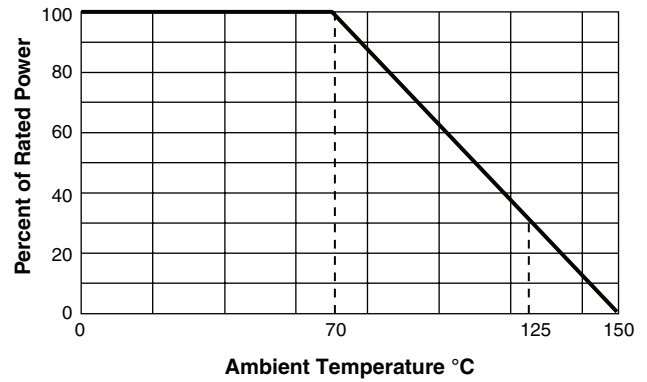
⁽¹⁾ 0705 and 0805 are the same (only use 0805 when ordering)



FILM LOAD LIFE STABILITY (at + 125 °C)



DERATING CURVE



GLOBAL PART NUMBER INFORMATION															
New Global Part Numbering: PNM1206E1002BBT1 (preferred part number format)															
P	N	M	1	2	0	6	E	1	0	0	2	B	B	T	1
GLOBAL MODEL	CASE SIZE	TCR CHARACTERISTIC		RESISTANCE			TOLERANCE	TERMINATION		PACKAGING					
PNM Non-magnetic resistor	0402 0502 0505 0603 0805 1005 1010 1206 1505 2208 2010 2512	E = $\pm 25 \text{ ppm}/^\circ\text{C}$ H = $\pm 50 \text{ ppm}/^\circ\text{C}$ K = $\pm 100 \text{ ppm}/^\circ\text{C}$ < 50 Ω $\pm 100 \text{ ppm}/^\circ\text{C}$ 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 k Ω			B = $\pm 0.1 \%$ D = $\pm 0.5 \%$ F = $\pm 1 \%$ G = $\pm 2 \%$ J = $\pm 5 \%$	B = Wraparound Sn/Pb solder 63 % Sn/ 37 % Pb 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					

SURFACE MOUNT CHIPS



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