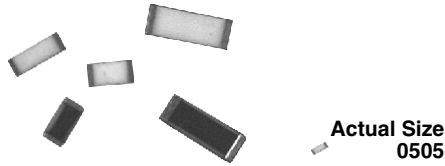
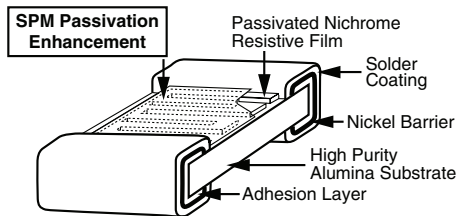


## Commercial Thin Film Chip Resistors



For applications requiring low noise, stability, low temperature coefficient of resistance, and low voltage coefficient, all VISHAY's proven precision thin film wraparound resistors will meet your exact requirements. Manufactured with the same material and processes as QPL and manufactured in a QPL facility.

### CONSTRUCTION



### FEATURES

- Lead (Pb)-free or Sn/Pb terminations available
- Moisture resistant (SPM) special passivation method
- Non-standard values available
- Pre-tinned terminations over nickel barrier (Gold available)
- Very low noise and voltage coefficient (< - 30 dB, 0.1 ppm/V)
- Non-inductive
- Laser-trimmed tolerances to 0.02 %
- In-lot tracking less than 5 ppm/°C
- Epoxy bondable termination available


**RoHS\***  
COMPLIANT

**SURFACE MOUNT CHIPS**

### TYPICAL PERFORMANCE

	ABS
TCR	25
TOL	0.1

### STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	
Absolute TCR	± 25 ppm/°C (available to ± 10 ppm/°C)	- 55 °C to + 125 °C
Absolute Tolerance	± 0.1 % (available to ± 0.02 %)	+ 25 °C
Power Rating	See table	
Voltage Coefficient	0.1 ppm/V typical	
Working Voltage	See table	
Operating Temperature Range	- 55 °C to + 125 °C	
Storage Temperature Range	- 55 °C to + 150 °C	
Noise	< - 35 dB typical	

CASE SIZE	POWER RATING - (mW)	MAX WORKING VOLTAGE	RESISTANCE RANGE - (Ω)	
			≥ 0.1 %	< 0.1 %
0402	50	75	20 to 100K	250 to 100K
0502	100	75	20 to 150K	250 to 150K
0505	150	75	20 to 301K	250 to 301K
0603	150	75	10 to 261K	250 to 261K
0805 <sup>(1)</sup> , 0705 <sup>(1)</sup>	250	100	10 to 475K	250 to 475K
1005	250	100	10 to 649K	250 to 649K
1010	500	150	50 to 1M	250 to 1M
1206	400	200	10 to 1.5M <sup>(2)</sup>	250 to 1M
1505	400	150	10 to 1M	250 to 1M
2208	800	150	10 to 3.16M <sup>(2)</sup>	250 to 1M
2010	800	200	10 to 4.02M <sup>(2)</sup>	250 to 1M
2512	1000	200	10 to 6.19M <sup>(2)</sup>	250 to 1M

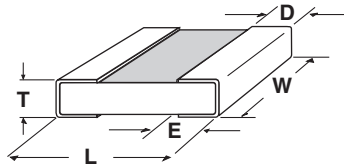
#### Notes

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

<sup>(2)</sup> Values > 1M best TCR ± 25 ppm/°C

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

**DIMENSIONS** in inches



SURFACE MOUNT CHIPS

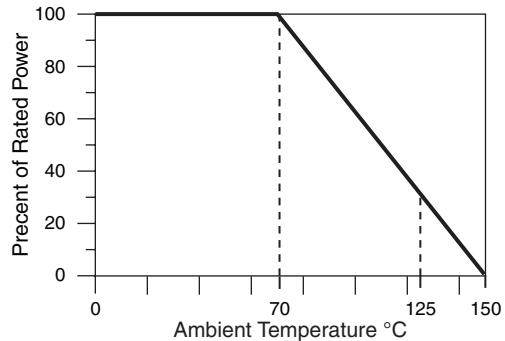
CASE SIZE	TERM	L	W	T	D	E
0402	B	0.042 ± 0.008	0.022 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.010 ± 0.005
0502	B	0.055 ± 0.006	0.025 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005
0505	B	0.055 ± 0.006	0.050 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005
0603	B	0.064 ± 0.006	0.032 ± 0.005	0.020 Max.	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	0.016 ± 0.008	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		
Environmental Test	10 kΩ ΔR ± (%)	100 kΩ ΔR ± (%)
Thermal Shock	0.02	0.02
Short Time Overload	0.01	0.01
Low Temperature Operation	0.01	0.01
Resistance to Solder Heat	0.04	0.03
Moisture Resistance	0.02	0.01
High Temperature Exposure	0.03	0.06
Load Life (10 000 h, + 70 °C)	0.05	0.05
TCR	± 25 ppm/°C	± 25 ppm/°C

**Note**

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

**DERATING CURVE**



**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: P-1206E1002BBTS (preferred part number format)

<b>P</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>E</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>B</b>	<b>B</b>	<b>T</b>	<b>S</b>
<b>GLOBAL MODEL</b>	<b>CASE SIZE</b>	<b>TCR CHARACTERISTIC</b>		<b>RESISTANCE</b>			<b>TOLERANCE</b>		<b>TERMINATION</b>			<b>PACKAGING</b>		
P-	0402 0502 0505 0603 0805 1005 1010 1206 1505 2208 2010 2512	Y = ± 10 ppm/°C* D = ± 15 ppm/°C E = ± 25 ppm/°C** H = ± 50 ppm/°C K = ± 100 ppm/°C  * > 250 Ω ** > 25 Ω		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 1001 = 1 kΩ 1002 = 10 kΩ			Q = ± 0.02 %* A = ± 0.05 %* B = ± 0.1 % D = ± 0.5 % F = ± 1 % G = ± 2 % J = ± 5 %  * For values ≥ 1 kΩ		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: P0805H6801BBT

<b>P</b>	<b>0805</b>	<b>H</b>	<b>6801</b>	<b>B</b>	<b>B</b>	<b>T</b>
<b>STYLE</b>	<b>CASE SIZE</b>	<b>TCR CHARACTERISTIC</b>	<b>OHMIC VALUE</b>	<b>TOLERANCE</b>	<b>TERMINATION</b>	<b>PACKAGING</b>



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