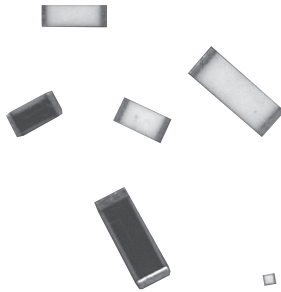


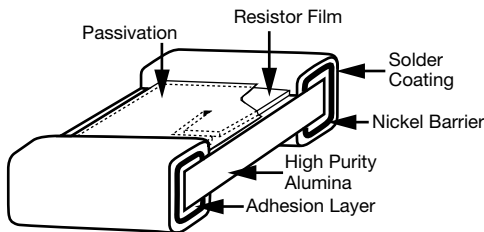
## Low Value (0.03 Ω to 10 Ω) Thin Film Resistor, Surface Mount Chip



Actual Size  
0805

With extremely low resistances and high power capabilities, Vishay's proven and unique ultra-low value resistors can be used in your hybrid or surface-mount applications. These resistors are available with solderable or weldable terminations.

### CONSTRUCTION



### FEATURES

- Homogeneous **nickel alloy film**
- No inductance for high-frequency applications
- Alumina substrates for high power handling capability (2 W maximum power rating)
- Pre-soldered or gold terminations
- Epoxy bondable termination available
- Sulfur resistant (per ASTM B809-95 humid vapor test)
- Material categorization:

For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### Note

\* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information/tables in this datasheet for details.



**RoHS\***  
Available

**HALOGEN FREE**  
Available

**GREEN**  
(5-2008)  
Available

### TYPICAL PERFORMANCE

	ABSOLUTE
◆	
TCR	300
TOL.	1.0

### VALUE AND MINIMUM TOLERANCE

VALUE (Ω)	MINIMUM TOLERANCE
0.1	± 2.0 %
0.25	± 1.0 %
0.5	± 1.0 %
1.0	± 1.0 %
2.0	± 1.0 %
10.0	± 1.0 %
< 0.1	20 %

### STANDARD ELECTRICAL SPECIFICATIONS

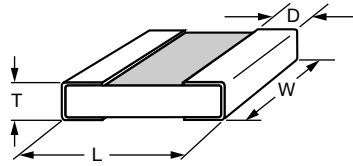
TEST	SPECIFICATIONS	CONDITIONS
Material	Nickel alloy	-
Resistance Range	0.03 Ω to 10 Ω	-
TCR: Absolute	± 300 ppm/°C	- 55 °C to + 125 °C
Tolerance: Absolute	1 % to 20 % (value dependent)	-
Stability: Absolute	-	-
Stability: Ratio	-	-
Voltage Coefficient	-	-
Working Voltage	$\sqrt{P \times R}$	-
Operating Temperature Range	- 55 °C to + 125 °C	-
Storage Temperature Range	- 55 °C to + 150 °C	-
Noise	< - 35 dB (typical)	-
Shelf Life Stability: Absolute	-	-

### COMPONENT RATINGS

CASE SIZE <sup>(1)</sup>	POWER RATING (mW)	RESISTANCE RANGE (Ω)
0505	125	0.05 to 5.0
0508	400	0.03 to 2.0
0603	125	0.10 to 5.0
0612	500	0.05 to 2.5
0705/0805	200	0.10 to 6.0
1005	250	0.15 to 10.0
1020	1000	0.03 to 3.0
1206	330	0.10 to 10.0
1225	2000	0.03 to 2.6
1505	500	0.25 to 10.0
2010	1000	0.17 to 10.0
2512	2000	0.18 to 10.0

### Notes

- Resistor values beyond ranges shall be reviewed by the factory
- (1) 0705 and 0805 are the same (only use 0805 when ordering)

**DIMENSIONS** in inches and millimeters


CASE SIZE	SIZE							
	L		W		T		D	
	INCHES	MILLIMETERS	INCHES	MILLIMETERS	INCHES	MILLIMETERS	INCHES	MILLIMETERS
	+ 0.010/- 0.005	+ 0.25/- 0.13	± 0.005	± 0.13	MAX.		+ 0.010/- 0.005	+ 0.25/- 0.13
0505	0.050	1.27	0.050	1.27	0.020	0.51	0.016	0.41
0508	0.047	1.19	0.081	2.06	0.020	0.51	0.015	0.38
0603	0.064	1.65	0.032	0.81	0.020	0.51	0.012	0.30
0612	0.063	1.60	0.126	3.20	0.020	0.51	0.015	0.38
0705, 0805 <sup>(1)</sup>	0.075	1.91	0.050	1.27	0.020	0.51	0.021	0.53
1005	0.100	2.54	0.050	1.27	0.030	0.76	0.021	0.53
1020	0.100	2.54	0.200	5.08	0.030	0.76	0.015	0.38
1206	0.126	3.20	0.063	1.60	0.030	0.76	0.020	0.51
1225	0.126	3.20	0.252	5.59	0.020	0.51	0.020	0.51
1505	0.150	3.81	0.050	1.27	0.030	0.76	0.021	0.53
2010	0.200	5.08	0.100	2.54	0.030	0.76	0.019	0.48
2512	0.250	6.35	0.125	3.18	0.030	0.76	0.019	0.48

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

**MECHANICAL SPECIFICATIONS**

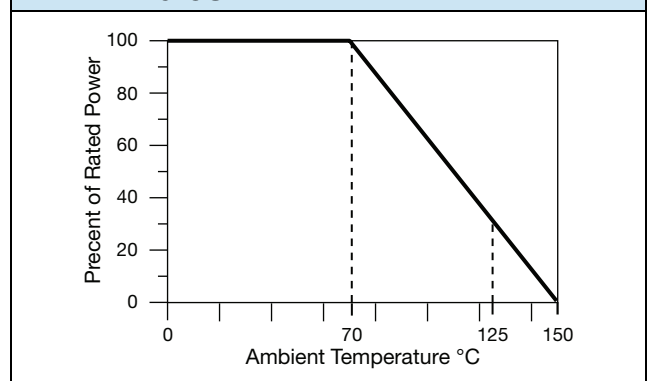
Resistive Element	Nickel alloy
Substrate Material	Alumina
Terminals	Pre-soldered or gold
Lead (Pb)-free Option	96.5 % Sn, 3.0 % Ag, 0.5 % Cu
Tin/Lead Option	Sn63
Lead (Pb)-free Finish and Tin/Lead	Hot solder dip

**ENVIRONMENTAL TESTS**

ENVIRONMENTAL TEST	LIMITS <sup>(1)</sup> $\Delta R \pm \%$	TYPICAL $1 \Omega \Delta R \pm \%$
STO <sup>(2)</sup>	0.5	- 0.19
LTO	0.1	- 0.03
RSH	0.5	- 0.14
Moisture	0.5	0.07
HTE	1.0	0.02
Load Life (2000 h at + 70 °C)	0.5	0.20
TCR (ppm)	± 300	+ 150

**Notes**

- <sup>(1)</sup> 0.01  $\Omega$  additional allowed for measurement error  
<sup>(2)</sup> Testing conducted at 2.0 x working voltage on 2512 case size all other 2.5 x

**DERATING CURVE**




GLOBAL PART NUMBER INFORMATION														
New Global Part Numbering: L-1206M1R00GBT1														
L	-	1	2	0	6	M	1	R	0	0	G	B	T	1
GLOBAL MODEL	CASE SIZE	TCR CHARACTERISTICS	OHMIC VALUE	TOLERANCE	TERMINATION	PACKAGING								
L- = Low value wraparound chip resistor	0505 0508 0603 0612 0805 <sup>(1)</sup> 1005 1020 1206 1225 1505 2010 2512	M = 300 ppm/°C N = 350 ppm/°C O = 400 ppm/°C P = 500 ppm/°C	First 3 digits are significant figures and the last digit specifies the number of zeros to follow. "R" designates the decimal point.  Example: 0R10 = 0.1 Ω 1R60 = 1.6 Ω	F = 1 % G = 2 % H = 3 % J = 5 % K = 10 % L = 20 %	B = Wraparound Sn/Pb solder 63 % Sn/37 % Pb w/ nickel barrier G = Wraparound Au over Ni (gold) termination epoxy bondable RoHS compliant - e4 W = Top side wire bondable Au (gold) 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 <sup>(1)</sup> T3 = 300 min., 300 mult T5 = 500 min., 500 mult TF = Full reel TI = 100 min., 1 mult (item single lot date code) TS = 100 min., 1 mult								
Historical Part Number Example: L1206M1R00HBT (for reference purposes only)														
L	1206	M	1R00	H	B	T								
STYLE	CASE SIZE	TCR CHARACTERISTICS	OHMIC VALUE	TOLERANCE	TERMINATION	PACKAGING								

**Note**

<sup>(1)</sup> Preferred packaging code



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