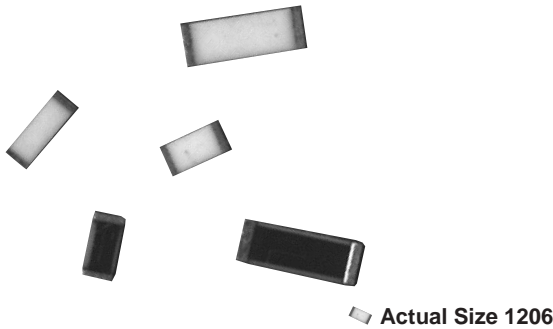


Precision Thin Film Chip Resistors

SURFACE MOUNT CHIPS



For low noise and precision applications, superior stability, low temperature coefficient of resistance, and low voltage coefficient, Vishay's proven precision thin film wraparound resistors meet your exact requirements.

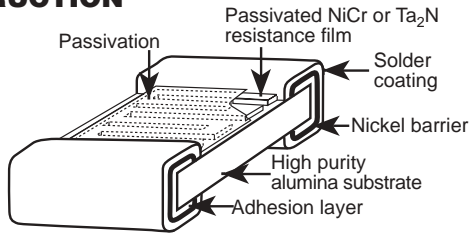
FEATURES

- Low temperature coefficient down to $\pm 10\text{ppm}/^\circ\text{C}$
- Very low noise and voltage coefficient
- Laser trimmed tolerances to $\pm 0.01\%$
- In lot tracking $< 5\text{ppm}/^\circ\text{C}$ on request
- Termination: Thin film technology
- Available with gold plated or pre-tinned terminations over nickel barrier

TYPICAL PERFORMANCE

	ABS
TCR	10
TOL	0.01

CONSTRUCTION



RESISTANCE TOLERANCE

TOLERANCE	CODE	OHMIC VALUES
± 0.01	L	> 250 ohms
± 0.02	P	> 100 ohms
± 0.05	W	> 50 ohms
± 0.1	B	> 25 ohms
± 0.25	C	> 10 ohms
± 0.5	D	> 10 ohms
+ 1	F	> 10 ohms
+ 2	G	> 10 ohms
+ 5	J	> 10 ohms
Special	S	—

STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS		CONDITIONS
MATERIAL	PASSIVATED NICHROME	TANTALUM NITRIDE	
Resistance Range	10 ohms to 1M ohms		See case sizes
Absolute TCR:	Y: $\pm 10\text{ppm}/^\circ\text{C}$	H: $\pm 50\text{ppm}/^\circ\text{C}$ *	Y only for values $- 50\Omega - 1M\Omega$
	E: $\pm 25\text{ppm}/^\circ\text{C}$	K: $\pm 100\text{ppm}/^\circ\text{C}$	E does whole value range
Absolute Tolerance:	$\pm 0.01\%$ to $\pm 5\%$ **		
Stability Load Life	$\pm 0.1\%$ $\pm 0.25\%$		2000 hrs. @ $+70^\circ\text{C}$
Voltage Coefficient	0.1ppm/Volt		
Operating Temperature Range	$- 55^\circ\text{C}$ to $+ 155^\circ\text{C}$		
Storage Temperature Range	$- 55^\circ\text{C}$ to $+ 155^\circ\text{C}$		
Noise	$- 35$ dB Typical		
Thermal EMF	$0.1\mu\text{V}/^\circ\text{C}$		
Shelf Life Stability	100ppm	200ppm	

* Standard ** 0.01% up to 0.05 on Y only.

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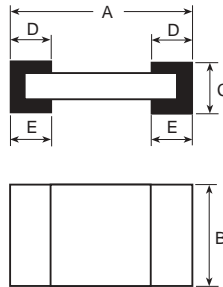


SURFACE MOUNT CHIPS

CASE SIZE	POWER RATING (mW)		LIMITING ELEMENT VOLTAGE (V)	RESISTANCE RANGE (OHMS)
0505	125	50*	50	10 to 260K
0603	125	75*	50	10 to 260K
0705	200	100*	50	10 to 300K
0805	200	100*	50	10 to 300K
1005	250	125*	75	10 to 500K
1206	330	150*	75	10 to 1M
1505	350	175*	75	10 to 500K
2010	1000	500*	100	10 to 1M

*Power Dissipation to minimize drift.

DIMENSIONS



CASE SIZE	DIMENSIONS in inches (millimeters)			
	A	B	C	D/E
	Max. Tol. 0.025 (+ 0.64) Min. Tol. - 0.005 (- 0.13)	Max. 0.010 (+ 0.26) Min. - 0.005 (- 0.13)	Max. 0.024 (+ 0.64) Min. - 0.005 (- 0.13)	Max. 0.005 (+ 0.13) Min. - 0.005 (- 0.13)
0505	0.050 (1.27)	0.050 (1.27)	0.015 (0.38)	0.015 (0.38)
0603	0.060 (1.52)	0.030 (0.75)	0.015 (0.38)	0.015 (0.38)
0705	0.075 (1.91)	0.050 (1.27)	0.015 (0.38)	0.015 (0.38)
0805				
1005	0.100 (2.54)	0.050 (1.27)	0.015 (0.38)	0.015 (0.38)
1206	0.126 (3.20)	0.063 (1.60)	0.015 (0.38)	0.015 (0.38)
1505	0.150 (3.81)	0.050 (1.27)	0.015 (0.38)	0.015 (0.38)
2010	0.200 (5.08)	0.100 (2.54)	0.015 (0.38)	0.015 (0.38)

ENVIRONMENTAL TEST					
TEST	CONDITIONS	DRIFTS ($\Delta R/R \pm\%$)			
		TANTALUM NITRIDE		NICHROME	
		MIL-PRF-55342 Requirements	Typical Performance	MIL-PRF-55342 Requirements	Typical Performance
Thermal Shock	MIL-PRF-55342 F MIL-STD-702, Method 107	0.25%	0.02%	0.05%	0.02%
Short Term Overload	MIL-PRF-55342 F Para 3.10.4.7.5	0.10%	0.01%	0.05%	0.01%
Low Temperature Operation	MIL-PRF-55342 F Para 3,9 & 4.7.4	0.25%	0.01%	0.05%	0.01%
Resistance to Solder Heat	MIL-PRF-55342 F Para 3.12, 4.7.7, 4.7.1.2	0.25%	0.04%	0.05%	0.03%
Moisture Resistance	MIL-PRF-55342 F Para 3.11 & 4.7.6 MIL-STD-202, Method 106	0.40%	0.01%	0.10%	0.01%
High Temperature	MIL-PRF-55342 F Para 3.11 & 4.7.6	0.20%	0.075%	0.05%	0.05%
Load Life	MIL-PRF-55342 F 2000 hours Pn at +70°C MIL-STD-202, Method 108	0.50%	0.15%	0.5%	0.10%

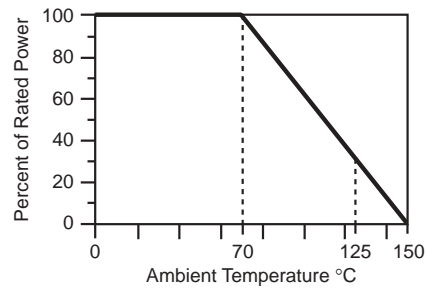
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SURFACE MOUNT CHIPS

MECHANICAL SPECIFICATIONS	
Resistive Element	Nichrome or Tantalum Nitride
Substrate Material	99.5% Alumina
Protection	Silicon Nitride and Silicone Rosin
Body	Alumina (Substrate)
Terminals	B Type (for soldering): Pre-tinned over Nickel Barrier or G Type: Gold over Nickel Barrier

DERATING CURVE



PACKAGING					
Several types of packaging are available: Tube, waffle-pack and tape and reel.					
Size	Number of Pieces per Package			Tape Width	
	Tube	Waffle Pack (2"x 2")	Tape and Reel		
			Min.	Max.	
0505	500	100	500	4000	8mm
0603					
0805					
0705					
1005	250	140	500	4000	
1206		100			
1505					
2010	100	60			12mm*

*8mm on request.

How to Order

Series	Case size	TCR	Ohmic value	Tolerance	Termination
P	0505	H	1003	B	B
P = Standard chip P HR = (Consult factory for high reliability chip)		K = ±100 ppm/°C H = ±50 ppm/°C E = ±25 ppm/°C Y = ±10 ppm/°C	The first three digits (2 digits are enough for tolerance G and J) are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point. 10R0 = 10 ohms 3901 = 3900 ohms 1004 = 1M ohm	L = 0.01% P = 0.02% W = 0.05% B = 0.1% C = 0.25% D = 0.5% F = 1% G = 2% J = 5% S = Special	B : Tinned over nickel barrier G : Gold over nickel barrier