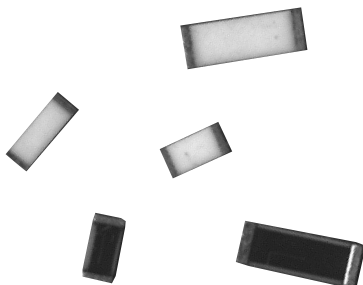


Precision Thin Film Chip Resistors

SURFACE MOUNT
CHIPS



 Actual Size 1206

FEATURES

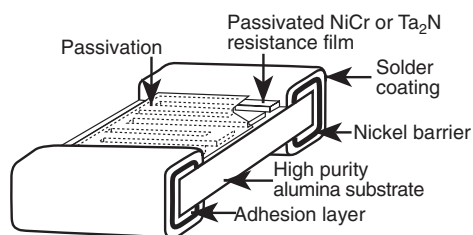
- Low temperature coefficient down to $\pm 10\text{ppm}/^\circ\text{C}$
- Very low noise and voltage coefficient
- Laser trimmed tolerances to $\pm 0.01\%$
- In lot tracking $< 5\text{ppm}/^\circ\text{C}$ on request
- Termination: Thin film technology
- Available with gold plated or pre-tinned terminations over nickel barrier
- Short circuit (jumpers) $r < 50\text{m}\Omega$, $I < 2\text{A}$

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.

TYPICAL PERFORMANCE

	ABS
TCR	10
TOL	0.01

CONSTRUCTION



STANDARD ELECTRICAL SPECIFICATIONS

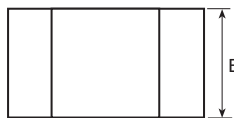
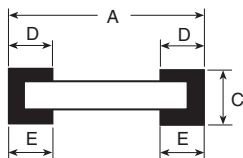
TEST	SPECIFICATIONS		CONDITIONS
MATERIAL	PASSIVATED NICHROME	TANTALUM NITRIDE	
Resistance Range	10 ohms to 1M ohms		See case sizes
Absolute TCR:	Y: $\pm 10\text{ppm}/^\circ\text{C}$	H: $\pm 50\text{ppm}/^\circ\text{C}$ *	Y only for values $- 50\Omega - 3\text{M}\Omega$
	E: $\pm 25\text{ppm}/^\circ\text{C}$	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 $+ 155^\circ\text{C}$ *** (for $+ 200^\circ\text{C}$ operations (N terminations) please consult Sfernice)		
Storage Temperature Range	$- 55^\circ\text{C}$ to $+ 155^\circ\text{C}$		
Noise	$- 35\text{ dB}$ 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.

*** For temperature up to 200°C , please consult factory.



DIMENSIONS



CASE SIZE	DIMENSIONS in millimeters (inches)				POWER RATING mW		LIMITING ELEMENT VOLTAGE V	RESISTANCE RANGE (SEE BELOW FOR EXTENDED Ω RANGE)
	A	B	C	D/E				
	Max. Tol. + 0.152 (+ 0.006) Min. Tol. - 0.152 (- 0.006)	Max. Tol. + 0.127 (+ 0.005) Min. Tol. - 0.127 (- 0.005)	Max. Tol. + 0.127 (+ 0.005) Min. Tol. - 0.127 (- 0.005)	Max Tol.. 0.13 (+ 0.005) Min Tol. - 0.13 (- 0.005)	Pn	Pd		
0402	1.00 (0.040)	0.6 (0.023)	0.5 (0.02)	0.38 (0.015)	50	37	37	10 Ω to 50k Ω
0505	1.35 (0.053)	1.27 (0.050)	0.5 (0.02)	0.38 (0.015)	125	50	50	10 Ω to 260k Ω
0603	1.52 (0.060)	0.75 (0.030)	0.5 (0.02)	0.38 (0.015)	125	75	50	10 Ω to 260k Ω
0705 0805	1.19 (0.075)	1.27 (0.050)	0.5 (0.02)	0.38 (0.015)	200	100	50	10 Ω to 300k Ω
1005	2.54 (0.100)	1.27 (0.050)	0.5 (0.02)	0.38 (0.015)	250	125	75	10 Ω to 500k Ω
1206	3.06 (0.120)	1.60 (0.063)	0.5 (0.02)	0.38 (0.015)	330	150	75	10 Ω to 1M Ω
1505	3.81 (0.150)	1.32 (0.054)	0.5 (0.02)	0.38 (0.015)	350	175	75	10 Ω to 500k Ω
2010	5.08 (0.200)	2.54 (0.100)	0.5 (0.02)	0.38 (0.015)	1000	500	100	10 Ω to 3M Ω

EXTENDED OHMIC VALUE RANGE FOR HIGH PRECISION WRAPAROUND THIN FILM CHIP RESISTORS

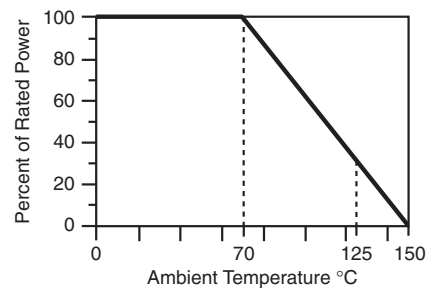
SIZE	TIGHTEST TOLERANCE	EXTENDED OHMIC VALUE RANGE	BEST TCR (PPM/°C)
0402	0.05	50k - 100k	25
	0.1	100k - 1M	50
0505	0.05	250k - 300k	25
0603	0.1	300k - 2M5	50
0705	0.05	300k - 500k	25
0805	0.1	500k - 5M	50
1206	0.05	1M - 2M	25
	0.1	2M - 15M	50
2010	0.05	3M - 6M	25
	0.25	6M - 50M	50

Using special NiCr and CrSi alloys we are able to extend the ohmic value range as indicated above

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%

MECHANICAL SPECIFICATIONS

Resistive Element	Nichrome or Tantalum Nitride
Substrate Material	99.5% Alumina
Protection	Silicon Nitride and Silicone Rosin
Body	Alumina (Substrate)
Terminals	B: SnPb over nickel barrier N: SnAg over nickel barrier G: 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.	
0402 0505 0603 0805 0705	500	100	500	4000	8mm
1005	250	140			
1206		100			
1505					
2010	100	60			8mm*

*12mm 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)	0402 0505 0603 0705 0805 1005 1206 1505 2010	K = ± 100 ppm/°C H = ± 50 ppm/°C E = ± 25 ppm/°C Y = ± 10 ppm/°C X = Jumper	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 0R00 = Jumper	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 X = Jumper	B : SnPb over nickel barrier N : SnAg over nickel barrier G : Gold over nickel barrier



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