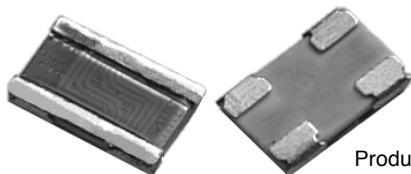


## Bulk Metal<sup>®</sup> Foil Technology Surface Mount Current Sensing Chip Resistors



Product may not be to scale

### INTRODUCTION

Model VCS2516 are surface mount resistors designed with 4 pads for kelvin connection. Utilizing Vishay Bulk Metal<sup>®</sup> Foil as the resistance element, they provide performance capabilities far greater than other resistor technologies can supply in a product of comparable size.

These small devices dissipate the heat almost entirely through the pads so surface mount users are encouraged to be generous with the pads and board traces. Some hybrid users may want to use conductive epoxy for the interconnection and gold terminations are available on special order. (Tin/lead oxidizes on the surface and the conductive epoxy joint eventually fails electrically.) Lead (Pb)-free terminations (100% Sn) are also available.

Our Application Engineering Department is prepared to advise and to make recommendations for non standard technical requirements and special applications, Please contact us.

### FEATURES

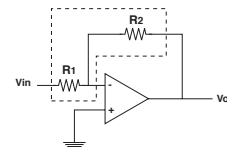
- Low Ohmic Values: 0.01Ω to 1.0Ω
- Low Temperature Coefficient of Resistance (TCR): 10ppm/°C, nominal (- 55°C to + 125°C, + 25°C Ref.)
- Tight Resistance Tolerance: to ± 0.1%
- High Power Rating: 1 watt at + 85°C
- Current Rating: 5 Amperes maximum
- Low Thermal EMF: 0.05μV/°C typical
- Low Current Noise: - 40dB
- Low Voltage Coefficient: < 0.1ppm/V
- Non Inductive: < 0.08μH

### TERMINATIONS

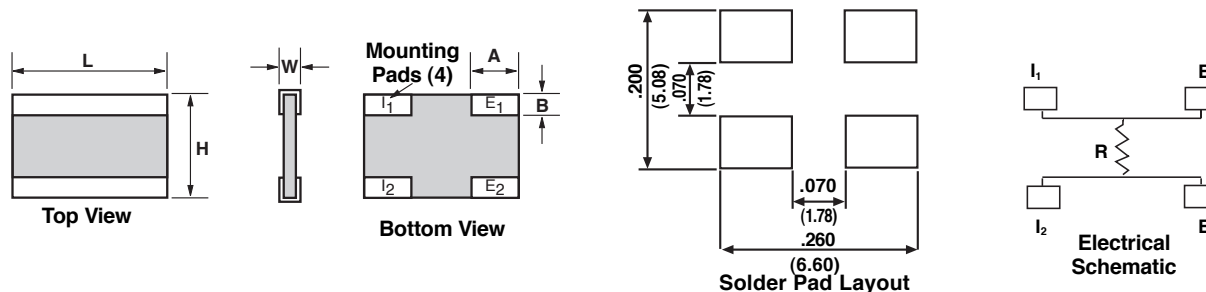
- Lead (Pb)-free two options are available:  
Gold Plated  
Tin Plated
- Tin/Lead (Sn 60% Pb 40%) Plated

### APPLICATIONS

- Automatic test equipment (ATE)
- Airborne (in heads-up display systems)
- High precision instrumentation
- Electron beam recording equipment
- Electron microscopes
- Current sensing applications
- Forced balance electronic scales
- Applications that require superior frequency stability etc.



**FIGURE 1 - DIMENSIONS** in inches and millimeters



### DIMENSIONS

	INCHES	mm
L	0.250 ± 0.010	6.35 ± 0.25
H	0.160 ± 0.010	4.06 ± 0.25
W	0.040 maximum	1.02 maximum
A	0.080 ± 0.005	2.03 ± 0.13
B	0.040 ± 0.010	1.02 ± 0.25

SALES

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**TABLE 1 - TEMPERATURE COEFFICIENT OF RESISTANCE - 55°C TO + 125°C, + 25°C REF.**

VALUE (Ω)	TCR (ppm/°C)
> 0R500 to 1R0	± 10
> 0R100 to 0R500	± 15
> 0R050 to 0R100	± 20
> 0R030 to 0R050	± 35
> 0R020 to 0R030	± 50
0R01 to 0R020	± 80

**TABLE 2 - PERFORMANCE SPECIFICATIONS**

TEST	MIL-PRF-55342 ΔR LIMITS	MAXIMUM ΔR LIMITS*
Thermal Shock 5x (-65°C to + 150°C)	± 0.10%	± 0.02%
Low Temperature Operation	± 0.10%	± 0.02%
Short Time Overload	± 0.10%	± 0.02%
High Temperature Exposure	± 0.10%	± 0.02%
Resistance to Bonding Exposure	± 0.2%	± 0.05%
Moisture Resistance	± 0.2%	± 0.03%
Life 2000 @ 70°C: Rated Power On Ceramic PCB	± 0.5%	± 0.05%

\*Error at low values as shown + 0.001 for measurement.

**TABLE 3 - CHARACTERISTICS**

MODEL NUMBER	RESISTANCE RANGE	RESISTANCE TOLERANCE	POWER RATING @ + 85°C	MAXIMUM CURRENT
VCS2516	0.1Ω to 1.0Ω 0.01Ω to <0.1Ω	± 1.0% Standard  ± 0.5% and ± 0.1% available	1 watt on ceramic substrate (0.5 W on FR4 PC Board)	5 Ampere

Note: Tighter Tolerances are available. Please contact Application Engineering.

**TABLE 4 - ORDERING INFORMATION**

MODEL	CHIP SIZE	RESISTANCE VALUE			TOLERANCE	TERMINATION	PACKAGING
VCS	2516	RESISTANCE RANGE	LETTER DESIGNATOR	MULTIPLIER FACTOR	A ± 0.05% B ± 0.1% C ± 0.25% D ± 0.5% F ± 1.0% G ± 2.0% J ± 5.0%	S - Lead (Pb)-free B - Tin/Lead G - Gold Plated	T = Tape and Reel W = Waffle Pack
		0.01Ω to 1.0Ω	R	x 1.0			

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