

### Bulk Metal® Technology

### Precision, Low Value, Current Sense/Current Shunt Resistors



Any value available within resistance range

#### INTRODUCTION

Model VCS101, VCS103 and VCS401 resistors are available in 2 configurations. This Bulk Metal® resistor can serve as a low ohm, high power resistive shunt or as a medium power current sensing resistor. Resistors are non insulated.

Our Applications 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:  $0.005 \Omega$  to  $0.25 \Omega$
- Resistive Tolerance: to  $\pm 0.1 \%$
- Temperature Coefficient of Resistance (TCR):  $\pm 20 \text{ ppm}/^\circ\text{C}$  at  $0.1 \Omega$ , available to  $\pm 15 \text{ ppm}/^\circ\text{C}$
- Contact Applications Engineering for tighter limits
- 4 leads for Kelvin connection
- Power Rating: to  $1.5 \text{ W}$  at  $+25^\circ\text{C}$  (free air)
- Maximum Operating Temperature:  $+175^\circ\text{C}$
- Lead (Pb)-free available
- For better performances, see VCS200 and VCS300 series datasheets

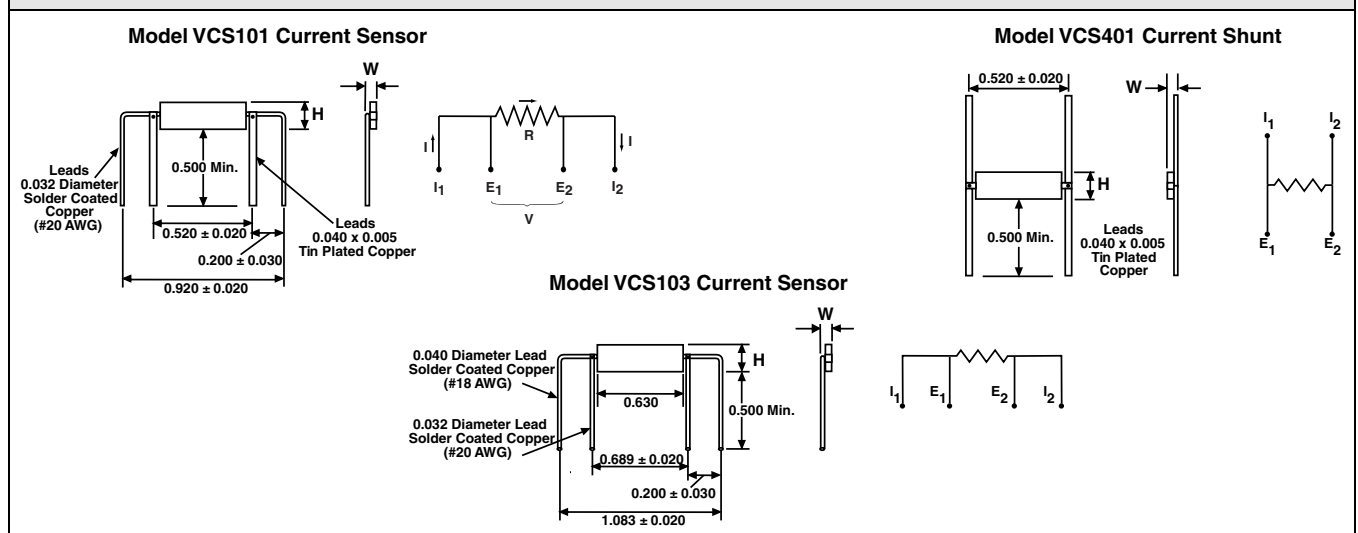


**RoHS\***  
COMPLIANT

#### APPLICATIONS

- High Precision Instrumentation
- Automatic Test Equipment
- Current Sensing Application
- Industrial
- Medical
- Military
- Measurement Instrumentation

**FIGURE 1 - DIMENSIONS AND SCHEMATIC**



**TABLE 1 - CHARACTERISTICS AND DIMENSIONS**

MODEL NUMBER	RESISTANCE RANGE ( $\Omega$ )	TIGHTEST RESISTANCE TOLERANCE (%)	POWER RATING at $+25^\circ\text{C}$	MAXIMUM CURRENT	DIMENSIONS		
						INCHES	(mm)
VCS101 <sup>1)</sup>	0.005 to $0.01 \Omega$ 0.01 to $0.05 \Omega$ 0.05 to $0.2 \Omega$	$\pm 1$ $\pm 0.5$ $\pm 0.1$	1 W	15 A	H	0.130	(3.30)
VCS401 <sup>1)</sup>					W	0.080	(2.03)
VCS103 <sup>1)</sup>	0.005 to $0.01 \Omega$ 0.01 to $0.05 \Omega$ 0.05 to $0.25 \Omega$	$\pm 1$ $\pm 0.5$ $\pm 0.1$	1.5 W	15 A	H	0.190	(4.83)
					W	0.080	(2.03)

#### Note

1. Tighter Performances are available, please contact application engineering department

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

**TABLE 2 - VCS101, VCS103 AND VCS401 PERFORMANCE<sup>1)</sup>**

TEST OR CONDITION	VCS101, VCS103 AND VCS401
Maximum Ambient Temp. at Rated Power	+ 25 °C
Maximum Ambient Temp. at Zero Power	+ 175 °C
Temperature Coefficient	See Table 3
Thermal Shock	± 0.05 %
Short Time Overload	± 0.5 %
Terminal Strength	± 0.1 %
High Temperature Exposure	± 1.0 %
Moisture Resistance	± 0.1 %
Low Temperature Storage	± 0.05 %
Shock (Specified Pulse)	± 0.1 %
Vibration (High Frequency)	± 0.1 %
Life (Rated Power, + 25 °C, 2000 hrs.)	± 3.0 %
Resistance Tolerance	± 0.1 %, ± 1 %, ± 3 %, ± 5 %, ± 10 %

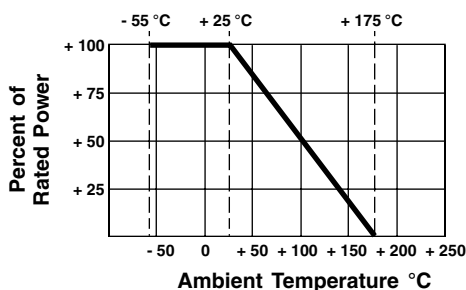
**Note**

1.  $\Delta R$ 's plus additional 0.0005  $\Omega$  for measurement error.

**TABLE 3 - TC SPECIFICATIONS**

VALUE	TC (ppm/°C)
0.005 $\Omega$ to 0.01 $\Omega$	± 90
> 0.01 $\Omega$ to 0.05 $\Omega$	± 30
> 0.05 $\Omega$ to 0.25 $\Omega$	± 20

**FIGURE 2 - POWER DERATING CURVE**



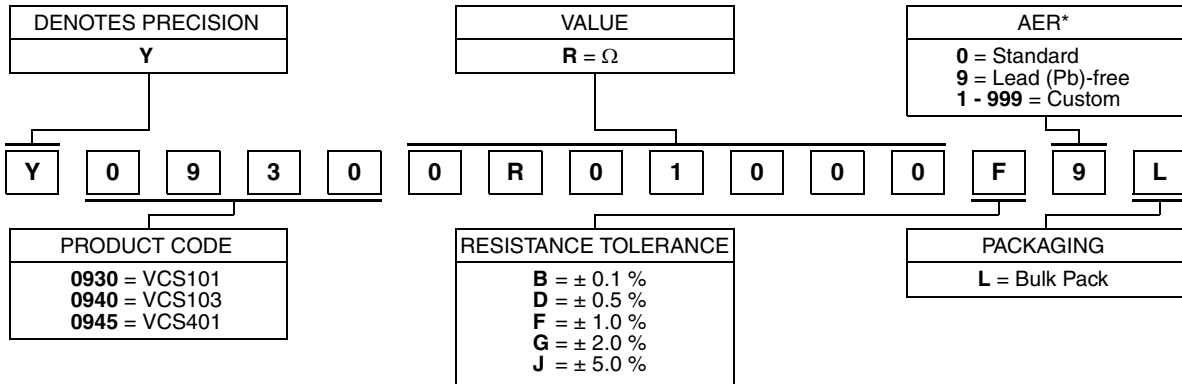
**Note**

- Further derating not necessary.



**TABLE 4 - GLOBAL PART NUMBER INFORMATION**

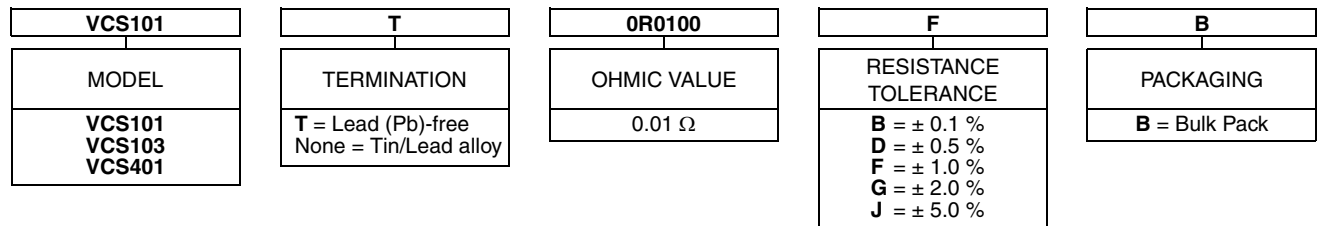
NEW GLOBAL PART NUMBER: Y09300R01000F9L (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y0930 0R01000 F 9 L:

TYPE: VCS101  
VALUE:  $0.01\ \Omega$   
ABSOLUTE TOLERANCE:  $\pm 1.0\%$   
TERMINATION: Lead (Pb)-free  
PACKAGING: Bulk Pack

HISTORICAL PART NUMBER: VCS101T 0R0100 F B (will continue to be used)



**Note**

\* For non-standard requests, please contact Application Engineering.



### Disclaimer

All product specifications and data are subject to change without notice.

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