Bulk Metal® Foil Technology Conformally Coated Precision Current Sensing Resistors with TCR of 5 ppm/°C and values down to 5 mΩ

Any value available within resistance range

The VCS200 Series offers resistance values as low as 5 mΩ and TCR's as low as 5 ppm/°C with excellent long term stability. The resistors are conformally coated. The 4 terminal current sensing resistors can sustain 2 W continuously without an appreciable change in resistance (0.5 % maximum). The typical 50 % derating of the power specification associated with other technologies is not necessary.

Our Application Engineering Department is available to advise and to make recommendations. For non-standard technical requirements and special applications, please contact us.

FEATURES

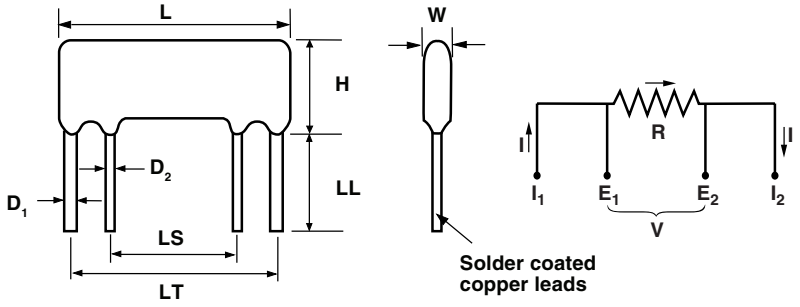
- Temperature Coefficient of Resistance (TCR): ± 5 ppm/°C (0 to 60 °C) (see table 1)
- Tolerance: to ± 0.02 % (see table 1)
- Power Rating: 2 W at 25 °C
- Load Life Stability: ± 0.005 % at 25 °C, 2000 hours at Rated Power
- Resistance Range: 0.005 Ω to 500 Ω
- Electrostatic Discharge (ESD) above 25 000 V
- Non Inductive, Non Capacitive Design
- Rise Time: 1.0 ns without ringing
- Current Noise: < - 40 dB
- Thermal EMF: 0.05 µV/°C typical
- Voltage Coefficient: < 0.1 ppm/V
- Non Inductive: 0.08 µH
- Non Hot Spot Design
- Terminal Finishes Available: Lead (Pb)-free, Tin/Lead Alloy
- Any value available within resistance range (e.g. 1K234)
- Prototype samples available from 48 hours. For more information, please contact foil@vishay.com
- For better performances, please see VCS300 series datasheet

Pb-free Available

RoHS* COMPLIANT

FIGURE 1 - DIMENSIONS AND SCHEMATIC in inches (millimeters)

Models VCS201, VCS202 and VCS232



MODEL	L (Maximum)	H (Maximum)	W (Maximum)	LL (Minimum)	LS ± 0.020 (± 0.51)	LT ± 0.020 (± 0.51)	D_1 (Nominal)	D_2 (Nominal)
VCS201	1.060 (26.92)	0.374 (9.50)	0.177 (4.50)	0.500 (12.7)	0.530 (13.46)	0.925 (23.5)	0.032 (0.81)	0.025 (0.64)
VCS202, VCS232	1.240 (31.5)	0.512 (13.0)	0.177 (4.50)	0.500 (12.7)	0.689 (17.5)	1.083 (27.51)	0.040 (1.02)	0.032 (0.81)

TABLE 1 - CHARACTERISTICS

MODEL NUMBER	RESISTANCE RANGE	TIGHTEST RESISTANCE TOLERANCE %	TCR (ppm/°C) 0 °C to + 60 °C	MAXIMUM CURRENT - Amp	POWER RATING at + 25 °C
VCS201 & VCS202	0.005 Ω to 0.01 Ω	± 1	± 30	10	1.5 W
	> 0.01 Ω to 0.05 Ω	± 0.5	± 25		
	> 0.05 Ω to 0.2 Ω	± 0.1	± 15	15	2 W
VCS232	0.2 Ω to 1.0 Ω	± 0.05	± 15	3	2 W
	> 1 Ω to 10 Ω	± 0.05	± 5		
	> 10 Ω to 500 Ω	± 0.02	± 5		

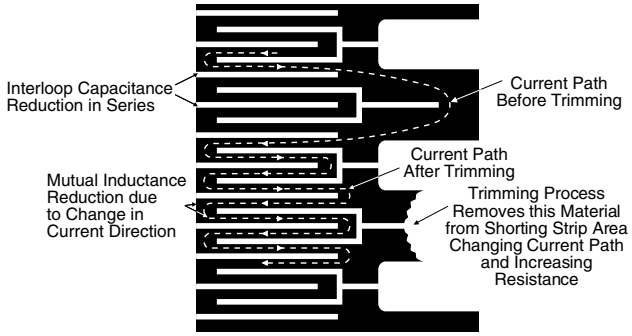
* Pb containing terminations are not RoHS compliant, exemptions may apply

TABLE 2 - VISHAY VCS201, VCS202, VCS232 PERFORMANCE	
TEST OR CONDITION	**VCS201, 202, 232 PERFORMANCE[1)]**
Maximum Ambient Temperature at Rated Power	+ 25 °C
Maximum Ambient Temperature at Zero Power	+ 150 °C
Thermal Shock	± 0.1 %
Short Time Overload	± 0.1 %
Resistance to Solder Heat	± 0.05 %
Terminal Strength	± 0.05 %
High Temperature Exposure	± 0.1 %
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 hours)	± 0.5 %
Thermal EMF (Lead to Lead)	0.2 µV/°C Maximum (E terminals)

Note

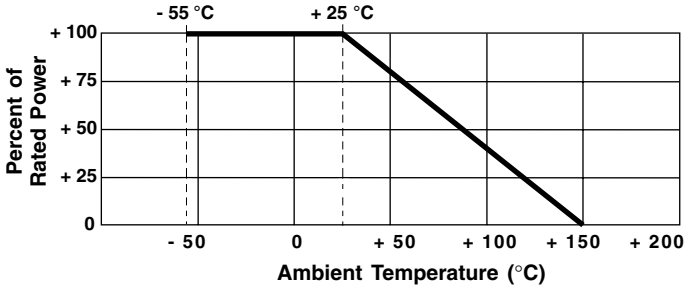
1. ΔR's plus additional 0.0005 Ω for measurement error

FIGURE 2 - TRIMMING TO VALUES (Conceptual Illustration)



Note: Foil shown in black, etched spaces in white

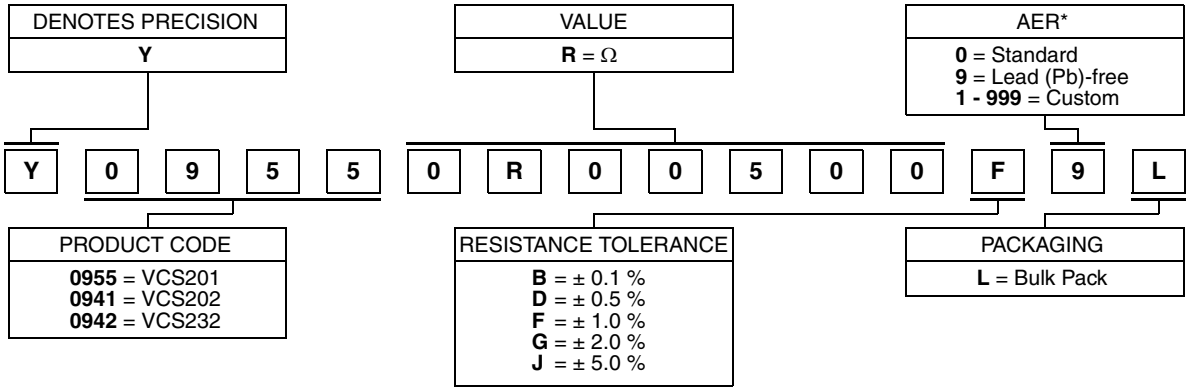
FIGURE 3 - POWER DERATING CURVE



(Further Derating Not Necessary)

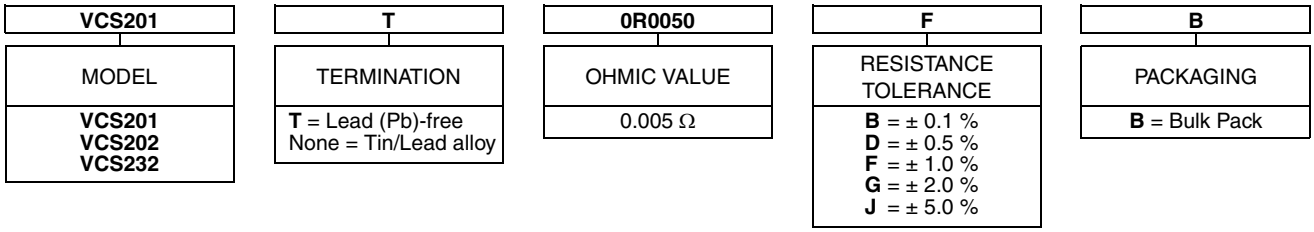
TABLE 4 - GLOBAL PART NUMBER INFORMATION

NEW GLOBAL PART NUMBER: Y09550R00500F9L (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y0955 0R00500 F 9 L:
TYPE: VCS201
VALUE: 0.005 Ω
ABSOLUTE TOLERANCE: ± 1.0 %
TERMINATION: Lead (Pb)-free
PACKAGING: Bulk Pack

HISTORICAL PART NUMBER: VCS201T 0R0050 F B (will continue to be used)



Note

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

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