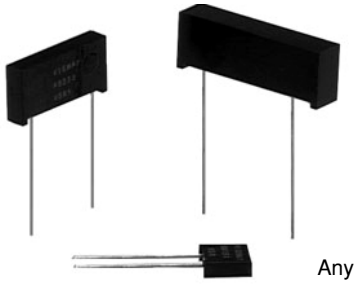
Bulk Metal® Foil Technology Industrial Precision Resistors with TCR of ± 4ppm/°C, Tolerance of ± 0.01%



Any value at any tolerance available within resistance range

THROUGH HOLE

INTRODUCTION

Bulk Metal® Foil Technology out performs all other resistor technologies available today for applications that require high precision and high stability.

This technology has been pioneered and developed by VISHAY, and products based on this technology are the most suitable for a wide range of applications.

Generally Bulk Metal® Foil technology allows us to produce customer orientated products designed to satisfy challenging and specific technical requirements.

The VSR series of resistors is a low cost version of the well established S-Series of resistors. These resistors are made of foil elements so all of the inherent performance of foil is retained. They do not however, have the same TCR or tolerance ranges (see table 1 for details). These products find a wide range of usage in high end stereo equipment and some grades of test and measurement equipment.

Standoffs are dimensioned to provide a minimum lead clearance of 0.010 inches between the resistor body and the printed circuit board, when the standoffs are seated on the board. This allows for proper cleaning after the soldering process**.

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

FEATURES

Pb-free

RoHS COMPLIANT

- Temperature Coefficient of Resistance (TCR)*:
  ± 4ppm/°C (0°C to + 60°C, + 25°C Ref.)
  ± 8ppm/°C (- 55°C to + 125°C, + 25°C Ref.)
- Resistance Range: 0.5Ω to 1MΩ (higher or lower values of resistance are available)
- Resistance Tolerance: to ± 0.01%
- Long Term Stability: Typical Foil Performance
- Very Low Current Noise: - 40dB
- Low Inductance: 0.08μH
- Thermal EMF: 0.05μV/°C
- Voltage Coefficient: < 0.1ppm/V
- Matched Sets Available
- Terminal Finishes Available:
  Lead (Pb)-free (100% Sn)
  Tin/Lead Alloy (Sn 60%, Pb 40%)
- For better performances please review the **S Series** datasheet

* For values below 50Ω please contact Application Engineering

APPLICATIONS

- Industrial
- Medical
- Audio (high end stereo equipment)
- Test and Measurement equipment
- Precision Amplifiers

FIGURE 1 - IMPRINTING AND DIMENSIONS

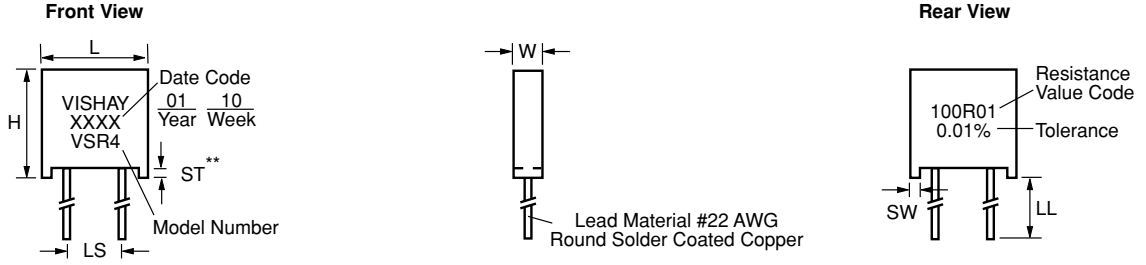


TABLE 1 - MODEL SELECTION

MODEL NUMBER	RESISTANCE (Ω)	POWER AT +70°C	POWER AT +125°C	MAXIMUM WORKING VOLTAGE	DIMENSIONS Inches	DIMENSIONS m m	SHELF LIFE STABILITY (MAXIMUM ΔR)	LOAD LIFE STABILITY (MAXIMUM ΔR)	MAXIMUM TEMPERATURE COEFFICIENT OF RESISTANCE (+ 25°C Ref.)	TIGHTEST TOLERANCE% VS. LOWEST RESISTANCE VALUE Ω
VSR **VSRJ*** (0.20 LS)	1 to 150K	0.3W up to 100K 0.25W over 100K	0.2W 0.15W	300	W: 0.105 ± 0.010 L: 0.300 ± 0.010 H: 0.326 ± 0.010 ST: 0.010 Minimum SW: 0.040 ± 0.005 LL: 1.000 ± 0.125 LS: 0.150 ± 0.005*	2.67 ± 0.25 7.62 ± 0.25 8.28 ± 0.25 0.254 Minimum 1.02 ± 0.13 25.4 ± 3.18 3.81 ± 0.13	25 ppm after 1 year	0.05% 2,000 hours @ + 125°C	0°C to + 60°C ± 4 ppm/°C - 55°C to + 125°C ± 8 ppm/°C	± 0.01 / 25 ± 0.02 / 12 ± 0.05 / 5 ± 0.5 / 1 ± 1 / 0.5
VSR4	1 to 500K	0.5W up to 200K 0.25W over 200K	0.4W 0.2W	350	W: 0.160 Maximum L: 0.575 Maximum H: 0.413 Maximum ST: 0.035 ± 0.005 SW: 0.050 ± 0.005 LL: 1.000 ± 0.125 LS: 0.400 ± 0.020	4.06 Maximum 14.61 Maximum 10.49 Maximum 0.889 ± 0.13 1.27 ± 0.13 25.4 ± 3.18 10.16 ± 0.51				
VSR5	1 to 750K	0.75W up to 300K 0.4W over 300K	0.6W 0.3W	350	W: 0.160 Maximum L: 0.820 Maximum H: 0.413 Maximum ST: 0.035 ± 0.005 SW: 0.050 ± 0.005 LL: 1.000 ± 0.125 LS: 0.650 ± 0.020	4.06 Maximum 20.83 Maximum 10.49 Maximum 0.889 ± 0.13 1.27 ± 0.13 25.4 ± 3.18 16.51 ± 0.51				
VSR6	0.5 to 1M	1.0W up to 400K 0.5W over 400K	0.8W 0.4W	500	W: 0.260 Maximum L: 1.200 Maximum H: 0.413 Maximum ST: 0.035 ± 0.005 SW: 0.050 ± 0.005 LL: 1.000 ± 0.125 LS: 0.900 ± 0.020	6.60 Maximum 30.48 Maximum 10.49 Maximum 0.889 ± 0.13 1.27 ± 0.13 25.4 ± 3.18 22.86 ± 0.51				

* 0.200 inches (5.08 mm) lead spacing available— specify VSRJ. Note Minor Outline Dimension Variations:

	INCHES	mm
W:	0.098 Maximum	2.49 Maximum
L:	0.295 Maximum	7.49 Maximum
H:	0.315 Maximum	8.00 Maximum
ST:	0.015 ± 0.0015	0.381 ± 0.038
LL:	1.000 ± 0.125	25.4 ± 0.318
LS:	0.200 ± 0.003	5.08 ± 0.076

TABLE 2 - ORDERING INFORMATION

Please specify Vishay "VSR" Series as follows:

Example:

VSR	**T = Lead (Pb)-free, (none) = Tin/Lead Alloy**	**100R01**	**T = ± 0.01% Q = ± 0.02% A = ± 0.05% B = ± 0.1% C = ± 0.25% D = ± 0.5% F = ± 1%**
MODEL NO.	TERMINATION	RESISTANCE VALUE	TOLERANCE

Resistance Value, in ohms, is expressed by a series of 6 characters, 5 of which represent significant digits while the 6th is a dual purpose letter that designates both the multiplier and the location of the comma or decimal.

RESISTANCE RANGE	LETTER DESIGNATOR	MULTIPLIER FACTOR	EXAMPLE
0.5Ω to < 1KΩ	R	x 1	100R01 = 100.01Ω
1KΩ to < 1MΩ	K	x 10^3	15K231 = 15,231Ω
1MΩ	M	x 10^6	1M0000 = 1,000,000Ω

For example: VSRT100K00D - Model: VSR; Termination: Lead (Pb)-free; Value: 100KΩ; Tolerance: 0.5%.

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SALES
• AMERICAS: foilsales.usa@vishay.com • ASIA/JAPAN: foilsales.asia@vishay.com • UK/HOLLAND/SCANDINAVIA: foilsales.eunorth@vishay.com
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