

### Ultra High Precision, High Resolution Z-Foil Audio Resistor, with TCR of $\pm 0.2 \text{ ppm}/^\circ\text{C}$ , Tolerance to $\pm 0.01 \%$ and Noise $< -40 \text{ dB}$



Any value at any tolerance available within resistance range

#### INTRODUCTION

The VAR, composed of Vishay's Bulk Metal® Z-foil technology, with improved sound quality, provides a combination of low noise and low inductance/capacitance, making it unrivalled for applications requiring low noise and distortion-free properties.

While the regular foil resistors are already widely acknowledged as the leading resistors for audio applications, the special "naked Z-foil resistor" design without mold or encapsulation, adds an additional dimension for reducing signal distortion and increasing clarity in signal processing.

Our application engineering department is available to advise and to make recommendations. For non-standard technical requirements and special applications, please contact us.

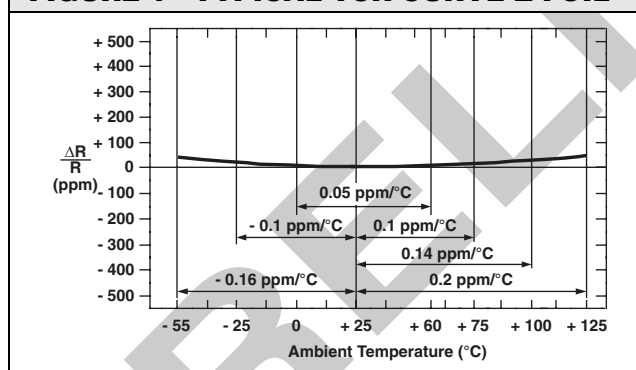
#### FEATURES

- Temperature coefficient of resistance (TCR):  
-  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$ ,  $25^\circ\text{C}$  ref.  
 $\pm 0.2 \text{ ppm}/^\circ\text{C}$  typical (see table 1)
- Rated power: to  $0.4 \text{ W}$  at  $+70^\circ\text{C}$
- Tolerance: to  $\pm 0.01 \%$
- Load life stability: to  $\pm 0.01 \%$  at  $70^\circ\text{C}$ ,  $2000 \text{ h}$  at rated power
- Resistance range:  $10 \Omega$  to  $100 \text{ k}\Omega$  (higher or lower values of resistance are available)
- Electrostatic discharge (ESD) above  $25\,000 \text{ V}$
- Non inductive, non capacitive design
- Rise time:  $1 \text{ ns}$  without ringing
- Current noise:  $< -40 \text{ dB}$
- Thermal EMF:  $0.05 \mu\text{V}/^\circ\text{C}$  typical
- Voltage coefficient:  $< 0.1 \text{ ppm/V}$
- Low inductance:  $< 0.08 \mu\text{H}$  typical
- Non hot spot design
- Terminal finishes available: lead (Pb)-free tin/lead alloy



Available  
**RoHS\***  
COMPLIANT

**FIGURE 1 - TYPICAL TCR CURVE Z-FOIL**



#### APPLICATIONS

- High precision amplifiers
- High-end speaker system
- High-end audio circuit
- Transducer
- High fidelity audio amplifier

**TABLE 1 - RESISTANCE VERSUS TCR (-55 °C to +125 °C, +25 °C Ref.)**

RESISTOR	RESISTANCE VALUE ( $\Omega$ )	TYPICAL TCR AND MAXIMUM SPREAD ( $\text{ppm}/^\circ\text{C}$ )	TIGHTEST TOLERANCE (%)
VAR	100 to $< 100\text{K}$	$\pm 0.2 \pm 1.8$	0.01
	50 to $< 100$	$\pm 0.2 \pm 2.8$	0.01
	10 to $< 50$	$\pm 0.2 \pm 3.8$	0.02

#### Note:

- For other values and tighter tolerances, please contact application engineering using the footer below

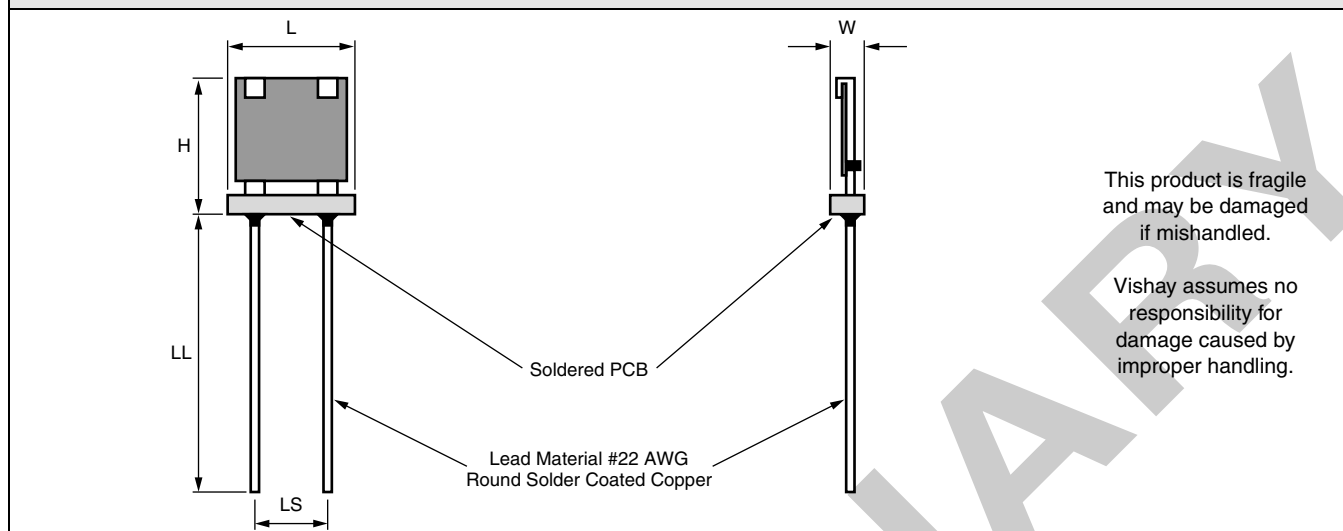
\* Pb containing terminations are not RoHS compliant, exemptions may apply

# VAR (Vishay Audio Resistor)



Vishay Foil Resistors Ultra High Precision, High Resolution Z-Foil Audio Resistor,  
with TCR of  $\pm 0.2 \text{ ppm}/^\circ\text{C}$ , Tolerance to  $\pm 0.01 \%$   
and Noise  $< -40 \text{ dB}$

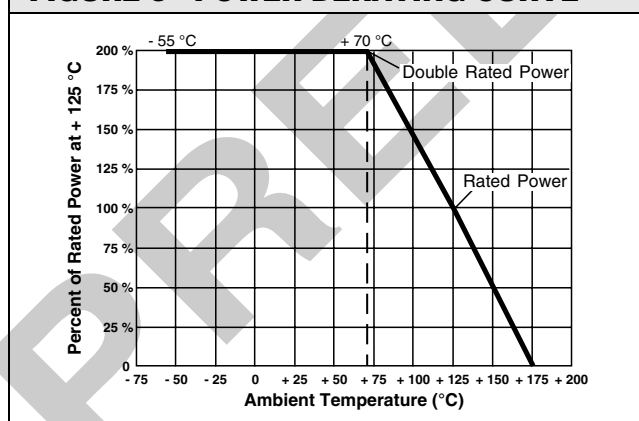
**FIGURE 2 - STANDARD DIMENSIONS**



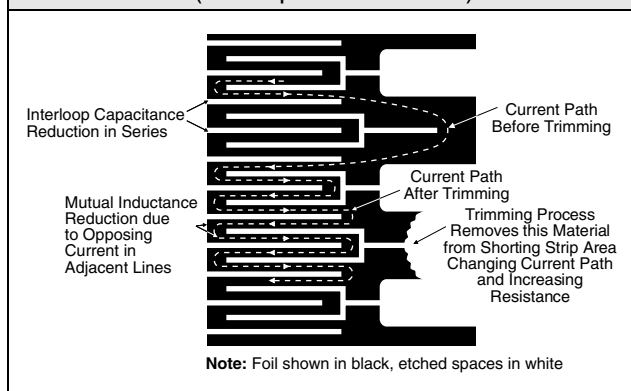
**TABLE 2 - SPECIFICATIONS**

RESISTANCE RANGE ( $\Omega$ )	MAXIMUM WORKING VOLTAGE	AMBIENT POWER RATING		DIMENSIONS	
		at $+70^\circ\text{C}$	at $+125^\circ\text{C}$	INCHES	mm
10 to 100K	200	0.4 W	0.2 W	W: 0.080 max. L: 0.250 max. H: 0.310 max. LL: $1.000 \pm 0.125$ LS: $0.150 \pm 0.005$	W: 2.03 max. L: 6.35 max. H: 7.87 max. LL: $25.4 \pm 3.18$ LS: $3.81 \pm 0.13$

**FIGURE 3 - POWER DERATING CURVE**



**FIGURE 4 - TRIMMING TO VALUES**  
(Conceptual Illustration)



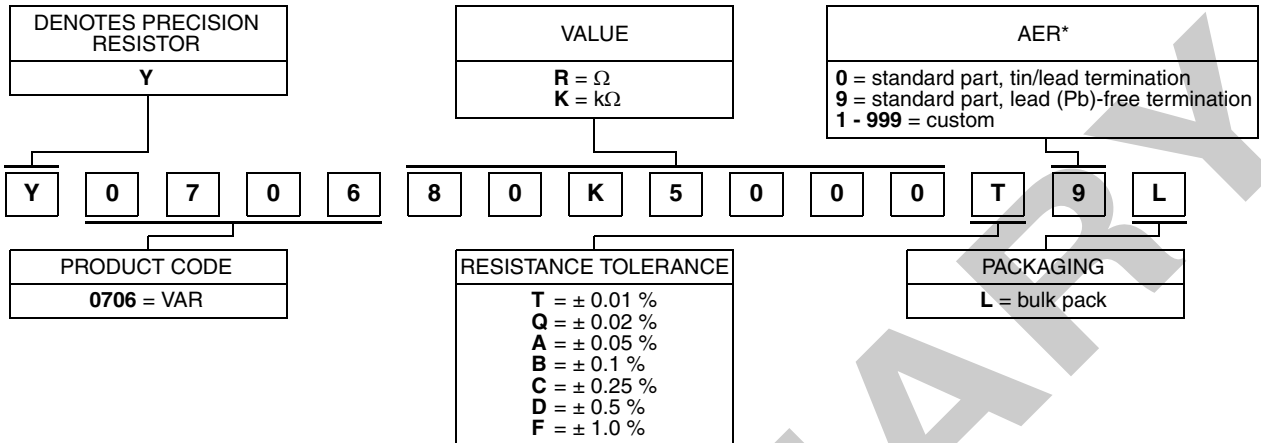


## VAR (Vishay Audio Resistor)

Ultra High Precision, High Resolution Z-Foil Audio Resistor, Vishay Foil Resistors  
with TCR of  $\pm 0.2 \text{ ppm}/^\circ\text{C}$ , Tolerance to  $\pm 0.01 \%$   
and Noise  $< -40 \text{ dB}$

**TABLE 3 - GLOBAL PART NUMBER INFORMATION**

NEW GLOBAL PART NUMBER: Y070680K5000T9L (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y0706 80K5000 T 9 L:

TYPE: VAR

VALUE: 80.5  $k\Omega$

ABSOLUTE TOLERANCE:  $\pm 0.01 \%$

TERMINATION: lead (Pb)-free

PACKAGING: bulk pack

**Note**

\* Application engineering release: for non-standard requests, please contact application engineering.