

**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 CAR, 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 case or encapsulation, adds an additional dimension for reducing signal distortion and increasing clarity in signal processing.

For non standard requirements such as higher values (using multiple chips) and tighter tolerances, please contact our application engineering department.

FEATURES

- **Temperature coefficient of resistance (TCR):**
- 55°C to $+125^\circ\text{C}$, 25°C ref.
 $\pm 0.2 \text{ ppm}/^\circ\text{C}$ typical (see table 1)
- Rated power: to 0.4 W at $+70^\circ\text{C}$
- Tolerance: to $\pm 0.01 \%$
- Load life stability: to $\pm 0.01 \%$ at 70°C , 2000 h at rated power
- Resistance range: 10Ω to $100 \text{ k}\Omega$ (higher or lower values of resistance are available)
- Electrostatic discharge (ESD) above 25 000 V
- Non inductive, non capacitive design
- Rise time: 1 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:
RoHS Compliant
Tin/Lead Alloy

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 $+125^\circ\text{C}$, $+25^\circ\text{C}$ Ref.)

RESISTOR	RESISTANCE VALUE (Ω)	TYPICAL TCR AND MAXIMUM SPREAD ($\text{ppm}/^\circ\text{C}$)	TIGHTEST TOLERANCE (%)
CAR	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

FIGURE 1 - TYPICAL TCR CURVE Z-FOIL

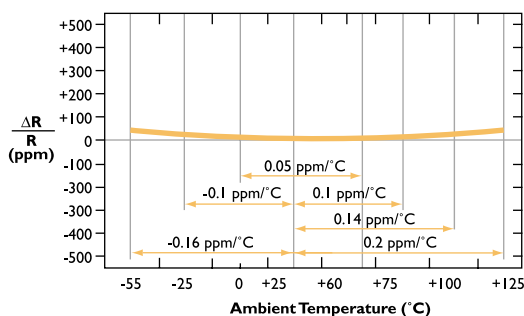
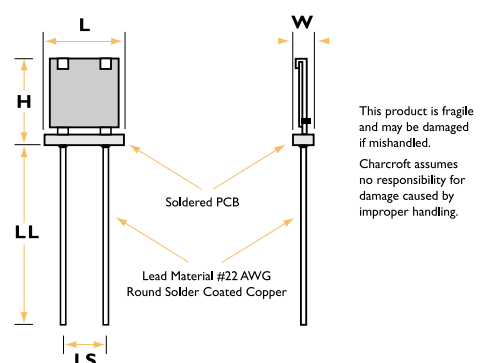


FIGURE 2 - STANDARD DIMENSIONS



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TABLE 2 - SPECIFICATIONS

RESISTANCE RANGE (Ω)	MAXIMUM WORKING VOLTAGE	AMBIENT POWER RATING		DIMENSIONS mm
		at $+70^\circ\text{C}$	at $+125^\circ\text{C}$	
10 to 100K	200V	0.4 W	0.2 W	W: 2.50 max. L: 7.50 max. H: 8.00 max. LL: 25 min LS: 5.08 ± 0.13

FIGURE 3 - POWER DERATING CURVE

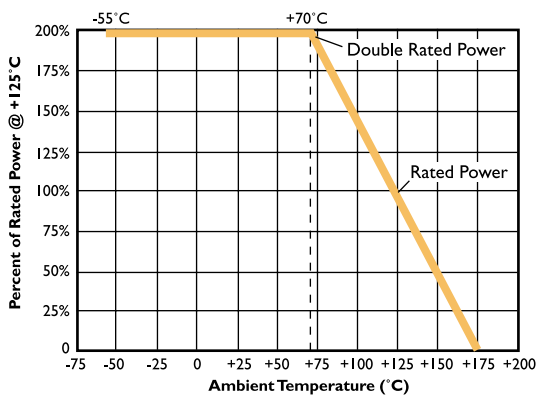


FIGURE 4 - TRIMMING TO VALUES (CONCEPTUAL ILLUSTRATION)

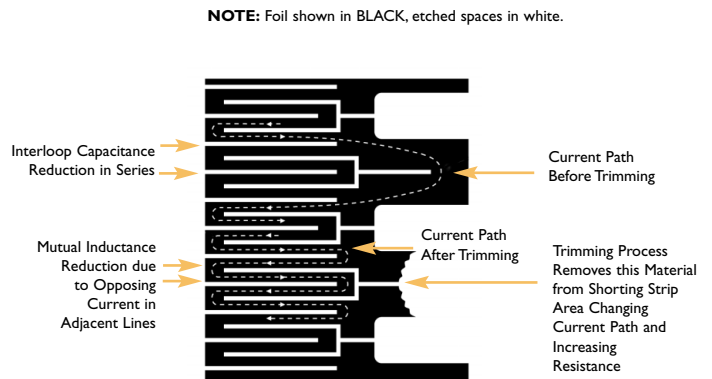


TABLE 3 - ORDERING INFORMATION

Specify CAR (Charcroft audio resistors) as follows:

Example:

CAR
MODEL NO.

T = RoHS compliant
None = Tin/Lead alloy
TERMINATION

250R00
RESISTANCE VALUE

T = $\pm 0.01\%$
Q = $\pm 0.02\%$
A = $\pm 0.05\%$
B = $\pm 0.1\%$
C = $\pm 0.25\%$
D = $\pm 0.5\%$
F = $\pm 1.0\%$
TOLERANCE

TR = Tape & Reel
None = Bulk (loose)
PACKAGING

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
10 Ω to <1K Ω
1K Ω to 100K Ω

LETTER DESIGNATOR
R
K

MULTIPLIER FACTOR
 $\times 1$
 $\times 10^3$

EXAMPLE
100R01 = 100.01 Ω
5K2310 = 5,231 Ω

For example: CAR T 250R00Q - Model: CAR Version, Termination: RoHS compliant; Value: 250 Ω , Tolerance: 0.02 % Packaging: Bulk