Ultra High Precision, High Resolution Z-Foil Audio Resistor, with TCR of ± 0.2 ppm/°C, Tolerance to ± 0.005 % and Noise < - 40 dB

FEATURES
- Temperature coefficient of resistance (TCR):
  - -55°C to + 125°C, 25°C ref.
  - ± 0.2 ppm/°C typical (see table 1)
- Rated power: to 0.4 W at + 70°C
- Tolerance: to ± 0.005 %
- Load life stability: to ± 0.01 % at 70°C, 2000 h at rated power
- Resistance range: 10Ω to 100 kΩ (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 dB
- Thermal EMF: 0.05 µV/°C typical
- Voltage coefficient: < 0.1 ppm/V
- Low inductance: < 0.08 µH 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

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 unrivaled 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.

CAR resistors are now offered with 100% Component Linearity Testing (CLT) to detect potential defects beyond the limits of standard visual and electrical inspection. These small defects can distort the harmonic performance of the component and only Charcroft is able to offer this testing as standard – providing the reassurance of achieving the cleanest sound possible.

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

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

<table>
<thead>
<tr>
<th>RESISTOR</th>
<th>RESISTANCE VALUE (Ω)</th>
<th>TYPICAL TCR AND MAXIMUM SPREAD (ppm/°C)</th>
<th>TIGHTEST TOLERANCE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR</td>
<td>10 to &lt; 50</td>
<td>± 0.2 ± 3.8</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>50 to &lt; 100</td>
<td>± 0.2 ± 2.8</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>100 to &lt; 100K</td>
<td>± 0.2 ± 1.8</td>
<td>0.005</td>
</tr>
<tr>
<td>CARS*</td>
<td>100K to 250K</td>
<td>± 2.0 ± 2.5</td>
<td>0.005</td>
</tr>
</tbody>
</table>

*Values > 100K available in a single chip using CK foil. For further details see our S Series data sheets ACC087.

This product is fragile and may be damaged if mishandled. Charcroft assumes no responsibility for damage caused by improper handling.

www.charcroft.com
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### TABLE 2 - SPECIFICATIONS

<table>
<thead>
<tr>
<th>RESISTANCE RANGE (Ω)</th>
<th>MAXIMUM WORKING VOLTAGE</th>
<th>AMBIENT POWER RATING at +70°C</th>
<th>AMBIENT POWER RATING at +125°C</th>
<th>DIMENSIONS mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 to 100K</td>
<td>200V</td>
<td>0.4 W</td>
<td>0.2 W</td>
<td>W: 2.50 max.</td>
</tr>
<tr>
<td>&gt;100K to 250K</td>
<td></td>
<td>0.25W</td>
<td>0.125W</td>
<td>L: 7.50 max.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>H: 8.00 max.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL: 25 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LS: 5.08 ± 0.13</td>
</tr>
</tbody>
</table>

### FIGURE 3 - POWER DERATING CURVE

### FIGURE 4 - TRIMMING TO VALUES (CONCEPTUAL ILLUSTRATION)

NOTE: Foil shown in BLACK, etched spaces in white.

### TABLE 3 - ORDERING INFORMATION

Specify CAR (Charcroft audio resistors) as follows:

Example: CARS  T 250R00Q - Model: CAR, Version, Termination: RoHS compliant; Value: 250 Ω, Tolerance: ± 0.005 %, Packaging: Bulk

For example: CAR T 250R00Q - Model: CAR, Version, Termination: RoHS compliant; Value: 250 Ω, Tolerance: ± 0.005 %, Packaging: Bulk

**RESISTANCE RANGES**
- 10Ω to <1KΩ
- 1KΩ to 100KΩ

**LETTER DESIGNATOR**
- R
- K

**MULTIPLIER FACTOR**
- 1
- x 10³

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