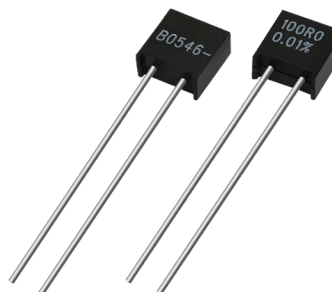


Ultra High Precision Z-Foil Miniature Resistor

TCR of ± 0.05 ppm/°C, PCR of 5 ppm at Rated Power and Tolerance to $\pm 0.01\%$

FEATURES

- Temperature coefficient of resistance (TCR):
 ± 0.05 ppm/°C typical (0°C to +60°C);
 ± 0.2 ppm/°C typical (-55°C to +125°C, +25°C ref.)
- Tolerance: to $\pm 0.01\%$
- Power coefficient of resistance (PCR)
 "ΔR due to self heating": ± 5 ppm at rated power
- Electrostatic discharge (ESD) above 25 000 V
- Resistance range: 5 Ω to 30 kΩ (for higher or lower values, please contact us)
- Power rating: 0.25 W at +70°C; 0.125 W at +125°C
- Load life stability: $\pm 0.01\%$ maximum ΔR at +70°C at rated power for 2000 h
- Non inductive, non capacitive design
- Current noise: -40 dB
- Thermal EMF: <0.1 μV/°C
- Voltage coefficient: <0.1 ppm/V
- Non inductive: <0.08 μH
- Non hot spot design
- Maximum working voltage: 250 V
- Terminal finishes available: lead (Pb)-free; tin/lead alloy
- Any value available within resistance range (e.g., 1K234)
- Prototype samples available from 48 h. For more information, please contact: foil@vpgsensors.com
- For better performances, please see Z201 datasheet



Available
RoHS*
 COMPLIANT

INTRODUCTION

Any value at any tolerance available with resistance range

The Z202 is a miniaturized version of the now famous Z201. It is made with a Bulk Metal® Z-Foil element so it retains all of the inherent performance of Z-Foil resistors.

The Z-Foil technology provides a significant reduction of the resistive component's sensitivity to ambient temperature variations (TCR) and applied power changes (PCR). Designers can now guarantee a high degree of stability and accuracy in fixed-resistor applications using solutions based on VFR revolutionary Z-Foil technology.

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

Table 1 – Tolerance and TCR Versus

VALUE	STANDARD TOLERANCE	TYPICAL TCR AND MAXIMUM SPREAD -55°C to +125°C (+25°C Ref.)
50 Ω to 30 kΩ	$\pm 0.01\%$	$\pm 0.2 \pm 1.8$
20 Ω to <50 Ω	$\pm 0.02\%$	$\pm 0.2 \pm 2.8$
10 Ω to <20 Ω	$\pm 0.05\%$	$\pm 0.2 \pm 4.8$
5 Ω to <10 Ω	$\pm 0.1\%$	$\pm 0.2 \pm 6.8$

Note

* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS compliant. Please see the information/tables in this datasheet for details.

Figure 1 – Imprinting and Dimensions

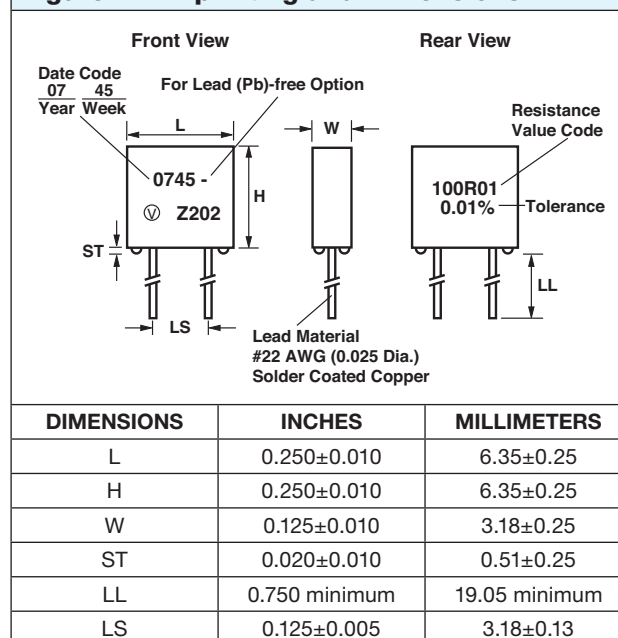
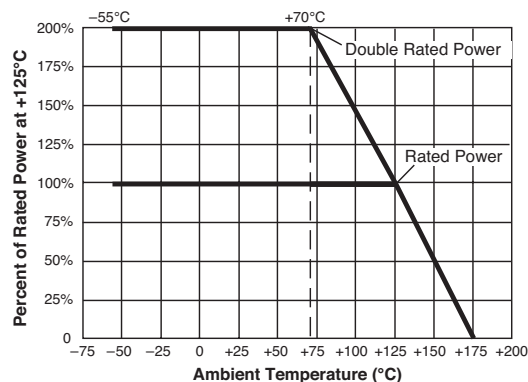
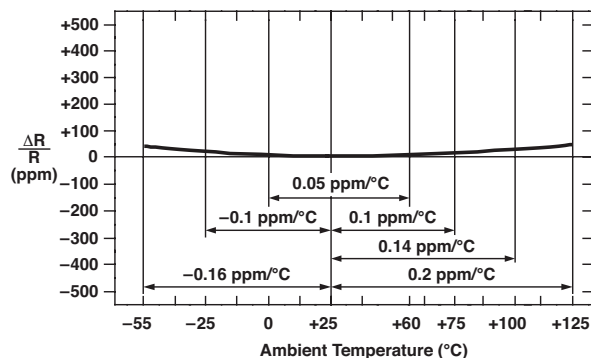
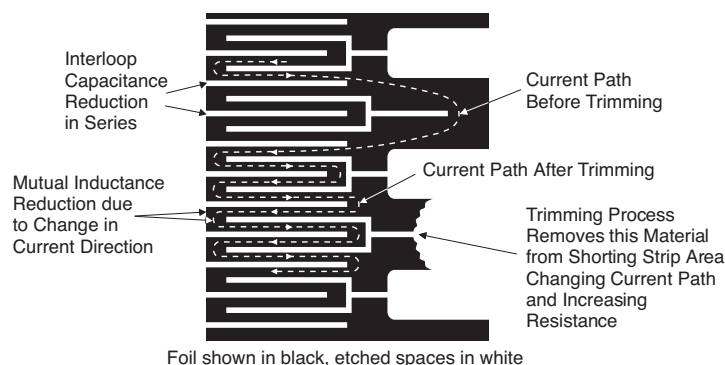


Figure 2 – Power Derating Curve**Figure 3 – Typical TCR Curve Z-Foil****Figure 4 – Trimming to Values****Note**

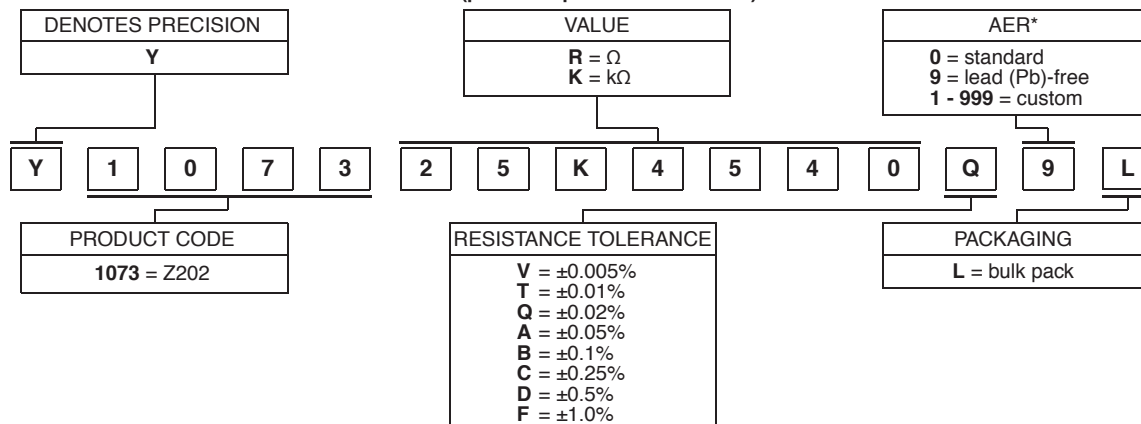
To acquire a precision resistance value, the Bulk Metal® Foil chip is trimmed by selectively removing built-in "shorting bars." To increase the resistance in known increments, marked areas are cut, producing progressively smaller increases in resistance. This method reduces the effect of "hot spots" and improves the long-term stability of Bulk Metal® Foil resistors.

Table 2 – Environmental Performance Comparison

	MIL-PRF-55182 CHAR J	Z202	
		MAXIMUM ΔR	TYPICAL ΔR
Test Group I Thermal shock (5 × -65°C to +150°C) Short time overload (6.25 × P _{nom} × 5 s)	±0.2% ±0.2%	±0.01% (100 ppm) ±0.01% (100 ppm)	±0.005% (50 ppm) ±0.005% (50 ppm)
Test Group II Resistance temperature characteristic Low temperature storage Low temperature operation Terminal strength	±25ppm/°C ±0.15% ±0.15% ±0.2%	See table 1 ±0.01% (100 ppm) ±0.01% (100 ppm) ±0.01% (100 ppm)	±0.05ppm/°C (0°C to +60°C) ±0.002% (20 ppm) ±0.002% (20 ppm) ±0.002% (20 ppm)
Test Group III DWV Resistance to soldering heat Moisture resistance	±0.15% ±0.1% ±0.4%	±0.01% (100 ppm) ±0.01% (100 ppm) ±0.05% (500 ppm)	±0.002% (20 ppm) ±0.005% (50 ppm) ±0.01% (100 ppm)
Test Group IV Shock Vibration	±0.2% ±0.2%	±0.01% (100 ppm) ±0.01% (100 ppm)	±0.002% (20 ppm) ±0.002% (20 ppm)
Test Group V Life test at 0.125 W, 125°C for 2000 h	±0.5%	±0.025% (250 ppm)	±0.01% (100 ppm)
Test Group Va Life test at 0.25 W (2 × rated power), 70°C for 2000 h	±0.5%	±0.02% (200 ppm)	±0.01% (100 ppm)
Test Group VI High temperature exposure	±2.0%	±0.1% (1000 ppm)	±0.05% (500 ppm)

Table 3 – Global Part Number Information

NEW GLOBAL PART NUMBER: Y107325K4540Q9L (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y1073 25K4540 Q 9 L:

TYPE: Z202

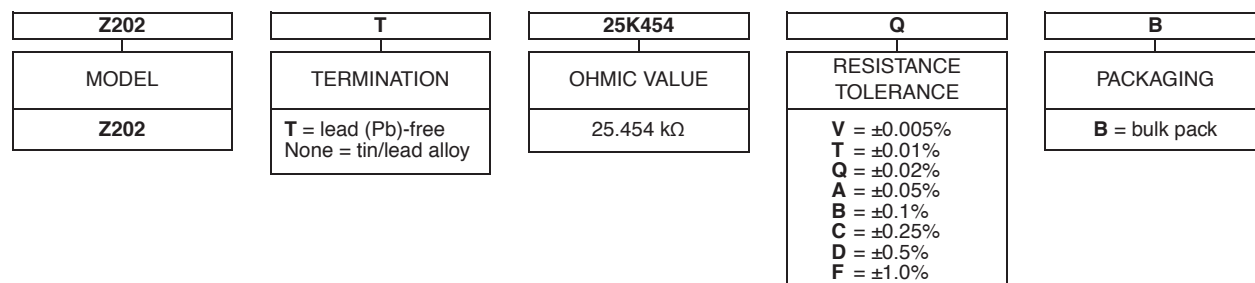
VALUE: 25.454 k Ω

ABSOLUTE TOLERANCE: $\pm 0.02\%$

TERMINATION: lead (Pb)-free

PACKAGING: bulk pack

HISTORICAL PART NUMBER EXAMPLE: Z202T 25K454 Q B (will continue to be used)



Note

*For non-standard requests, please contact application engineering.