

Ultra High Precision Z-Foil Miniature Resistor with TCR of $\pm 0.05 \text{ ppm/}^\circ\text{C}$, PCR of 5 ppm at Rated Power and Tolerance to $\pm 0.01 \%$



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 Vishay's 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.

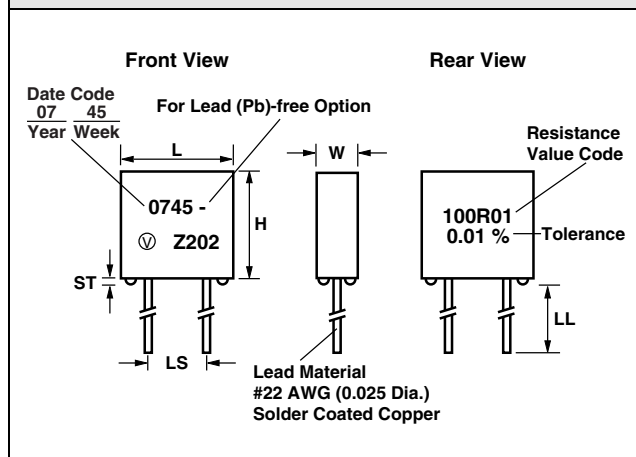
FEATURES

- Temperature coefficient of resistance (TCR):
 $\pm 0.05 \text{ ppm/}^\circ\text{C}$ typical (0°C to $+60^\circ\text{C}$);
 $\pm 0.2 \text{ ppm/}^\circ\text{C}$ typical (-55°C to $+125^\circ\text{C}$, $+25^\circ\text{C}$ ref.)
- Tolerance: to $\pm 0.01 \%$
- Power coefficient of resistance (PCR) "ΔR due to self heating": $\pm 5 \text{ ppm}$ at rated power
- Electrostatic discharge (ESD) above 25 000 V
- Resistance range: 5Ω to $30 \text{ k}\Omega$
(for higher or lower values, please contact us)
- Power rating: 0.25 W at $+70^\circ\text{C}$; 0.125 W at $+125^\circ\text{C}$
- Load life stability: $\pm 0.01 \%$ maximum ΔR at $+70^\circ\text{C}$ at Rated power for 2000 h
- Non inductive, non capacitive design
- Current noise: -40 dB
- Thermal EMF: $< 0.1 \mu\text{V/}^\circ\text{C}$
- Voltage coefficient: $< 0.1 \text{ ppm/V}$
- Non inductive: $< 0.08 \mu\text{H}$
- 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. $1\text{K}234$)
- Prototype samples available from 48 h. For more information, please contact foil@vishay.com
- For better performances, please see Z201 datasheet



RoHS*
COMPLIANT

FIGURE 1 - IMPRINTING AND DIMENSIONS



DIMENSIONS	INCHES	mm
L:	0.250 ± 0.010	6.35 ± 0.25
H:	0.250 ± 0.010	6.35 ± 0.25
W:	0.125 ± 0.010	3.18 ± 0.25
ST:	0.020 ± 0.010	0.51 ± 0.25
LL:	0.750 minimum	19.05 minimum
LS:	0.125 ± 0.005	3.18 ± 0.13

FIGURE 2 - POWER DERATING CURVE

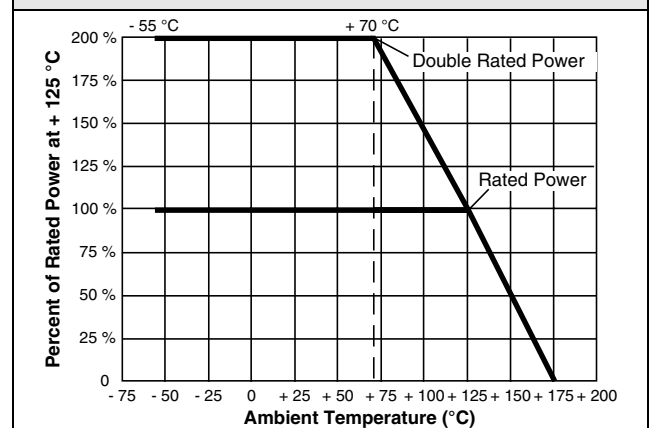
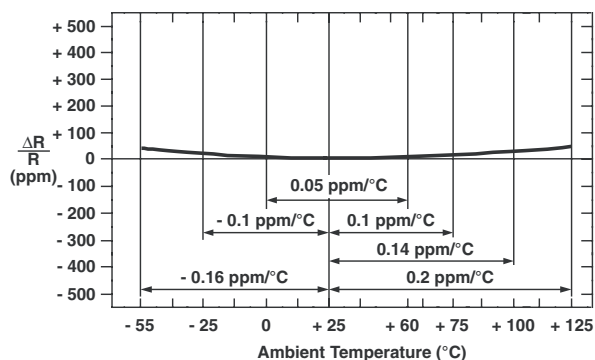
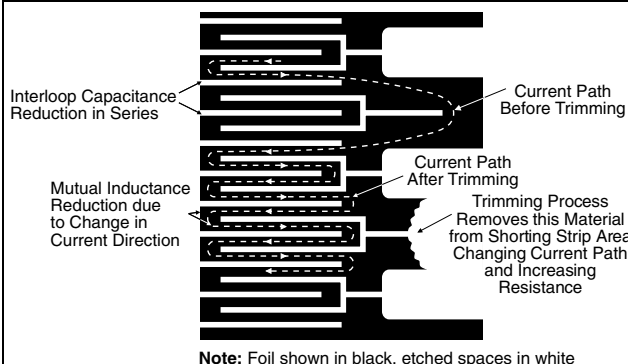


TABLE 1 - TOLERANCE AND TCR VERSUS

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

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

Vishay Foil Resistors Ultra High Precision Z-Foil Miniature Resistor with TCR of $\pm 0.05 \text{ ppm/}^\circ\text{C}$, PCR of 5 ppm at Rated Power and Tolerance to $\pm 0.01 \%$

FIGURE 3 - TYPICAL TCR CURVE Z-FOIL**FIGURE 4 - TRIMMING TO VALUES**
(Conceptual Illustration)**TABLE 2 - ENVIRONMENTAL PERFORMANCE COMPARISON**

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

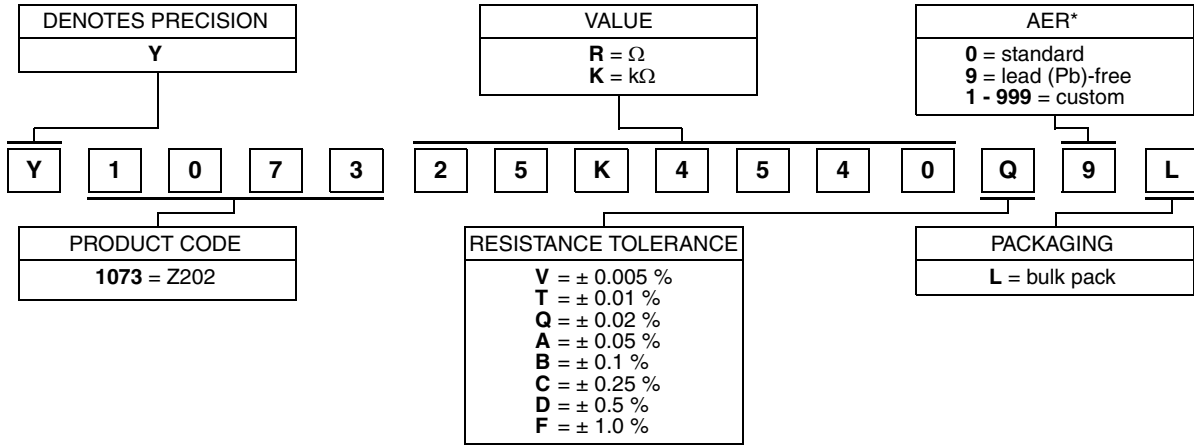


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Vishay Foil Resistors

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

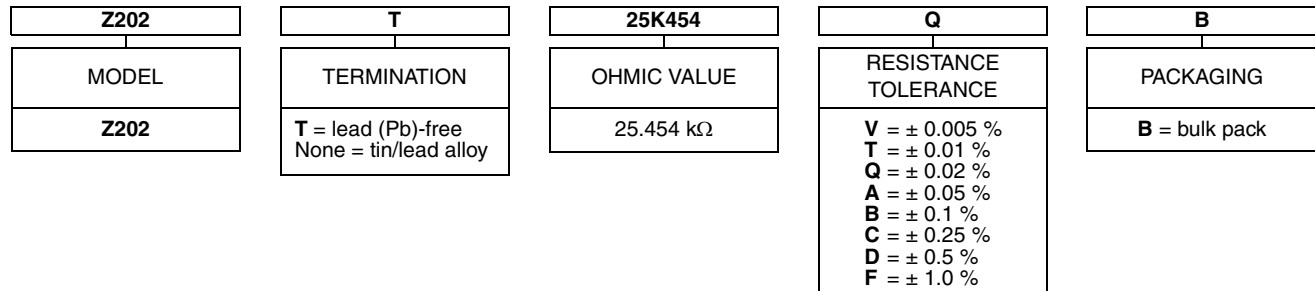
VALUE: $25.454 \text{ k}\Omega$

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.



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All product specifications and data are subject to change without notice.

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