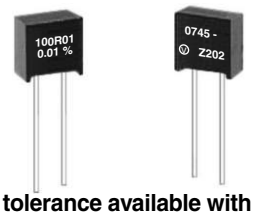
Ultra High Precision Z-Foil Miniature Resistor with TCR of ± 0.05 ppm/°C, PCR of 5 ppm at Rated Power and Tolerance to ± 0.01 %



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.

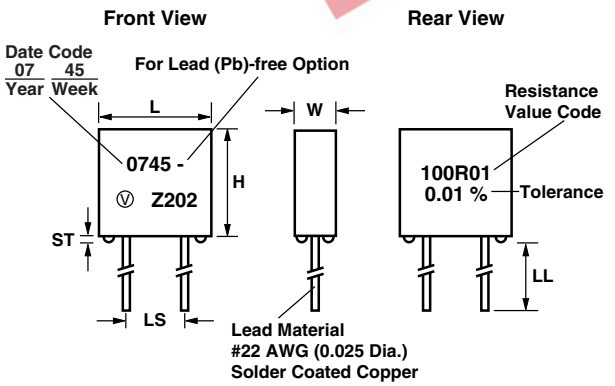
FEATURES

Pb-free Available

RoHS* COMPLIANT

- 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 ± 0.01 %
- Power coefficient of resistance (PCR) "ΔR due to self heating": ± 5 ppm at rated rower
- 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: ± 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@vishay.com
- For better performances, please see Z201 datasheet

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

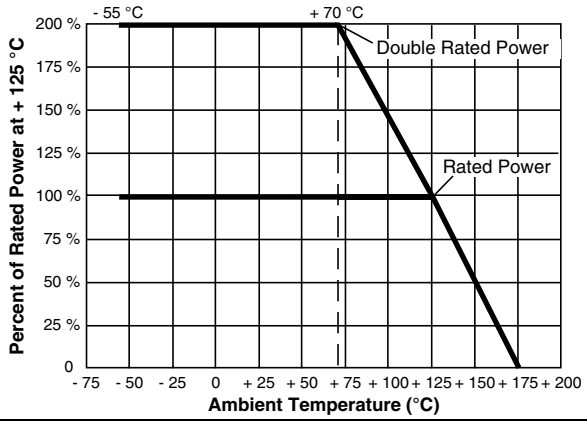


TABLE 1 - TOLERANCE AND TCR VERSUS

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

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

FIGURE 3 - TYPICAL TCR CURVE Z-FOIL

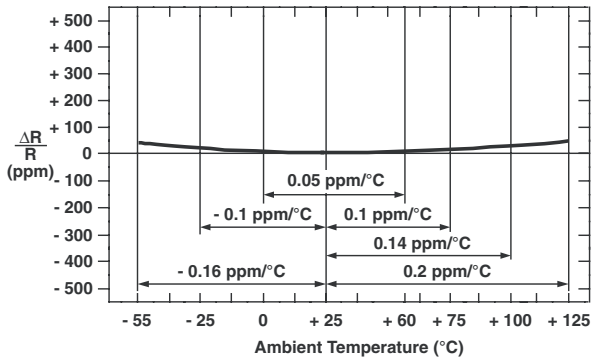
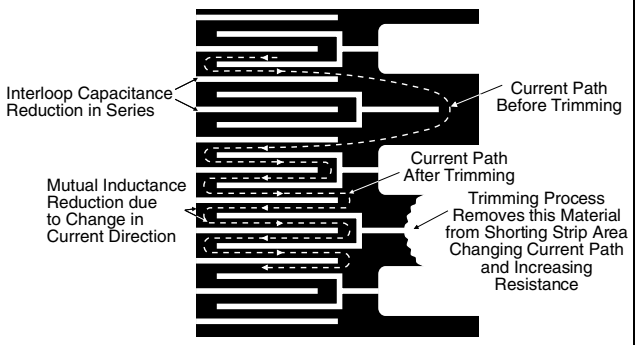


FIGURE 4 - TRIMMING TO VALUES

(Conceptual Illustration)



Note: Foil shown in black, etched spaces in white

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)	± 0.2 %	± 0.01 % (100 ppm)	± 0.005 % (50 ppm)
Short time overload (6.25 x P_{nom} x 5 s)	± 0.2 %	± 0.01 % (100 ppm)	± 0.005 % (50 ppm)
Test Group II			
Resistance temperature characteristic	± 25 ppm/°C	See table 1	± 0.05 ppm/°C (0 °C to + 60 °C)
Low temperature storage	± 0.15 %	± 0.01 % (100 ppm)	± 0.002 % (20 ppm)
Low temperature operation	± 0.15 %	± 0.01 % (100 ppm)	± 0.002 % (20 ppm)
Terminal strength	± 0.2 %	± 0.01 % (100 ppm)	± 0.002 % (20 ppm)
Test Group III			
DWV	± 0.15 %	± 0.01 % (100 ppm)	± 0.002 % (20 ppm)
Resistance to soldering heat	± 0.1 %	± 0.01 % (100 ppm)	± 0.005 % (50 ppm)
Moisture resistance	± 0.4 %	± 0.05 % (500 ppm)	± 0.01 % (100 ppm)
Test Group IV			
Shock	± 0.2 %	± 0.01 % (100 ppm)	± 0.002 % (20 ppm)
Vibration	± 0.2 %	± 0.01 % (100 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 x 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)

DENOTES PRECISION					VALUE							AER*		
Y					**R** = Ω **K** = kΩ							**0** = standard **9** = lead (Pb)-free **1 - 999** = custom		
Y	**1**	**0**	**7**	**3**	**2**	**5**	**K**	**4**	**5**	**4**	**0**	**Q**	**9**	**L**
PRODUCT CODE					RESISTANCE TOLERANCE							PACKAGING		
1073 = Z202					**V** = ± 0.005 % **T** = ± 0.01 % **Q** = ± 0.02 % **A** = ± 0.05 % **B** = ± 0.1 % **C** = ± 0.25 % **D** = ± 0.5 % **F** = ± 1.0 %							**L** = bulk pack		

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

TYPE: Z202
VALUE: 25.454 kΩ
ABSOLUTE TOLERANCE: ± 0.02 %
TERMINATION: lead (Pb)-free
PACKAGING: bulk pack

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

Z202	T	25K454	Q	B
MODEL	TERMINATION	OHMIC VALUE	RESISTANCE TOLERANCE	PACKAGING
Z202	**T** = lead (Pb)-free None = tin/lead alloy	25.454 kΩ	**V** = ± 0.005 % **T** = ± 0.01 % **Q** = ± 0.02 % **A** = ± 0.05 % **B** = ± 0.1 % **C** = ± 0.25 % **D** = ± 0.5 % **F** = ± 1.0 %	**B** = bulk pack

Note

* For non-standard requests, please contact Application Engineering.

Disclaimer

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

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.