

Ultra High Precision Z-Foil Surface Mount Power Resistors in TO-220 Configuration with TCR of ± 0.05 ppm/°C, Tolerance to ± 0.01 % and Power Rating to 8 W



Any value at any tolerance available within resistance range

Model VPR220SZ, made from Vishay Bulk Metal® Z-Foil, offers very low TCR, high stability, tight tolerance, low PCR and fast response time in a small surface mount molded resistor.

The Z-Foil technology provides a significant reduction of the resistive components sensitivity to ambient temperature variations and applied power changes. Designers now can 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 make recommendations. For non-standard technical requirements and special applications, please contact us.



RoHS*
COMPLIANT

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 ± 0.01 %
- Power Coefficient of Resistance (PCR) "ΔR due to self heating": 5 ppm at rated power
- Electrostatic Discharge (ESD) above 25 000 V
- Load Life Stability: ± 0.005 % (25 °C, 2000 hours at Rated Power)
- Resistance Range: 5 Ω to 10 kΩ
- Power Rating: 8 W chassis mounted (per MIL-PRF-39009)
- Non Inductive, Non Capacitive Design
- Current Noise: < - 40 dB
- Voltage Coefficient: < 0.1 ppm/V
- Non Inductive: < 0.08 μH
- Non Hot Spot Design
- Thermal EMF: 0.05 μV/°C typical
- Terminal Finishes Available: Lead (Pb)-free Tin/Lead Alloy
- For higher performances please contact us

TABLE 1 - SPECIFICATIONS

Load Life Stability at 2000 h	± 0.05 % max ΔR under full rated power at + 25 °C
Power Rating at + 25 °C	8 W or 3 A ¹⁾ on heat sink ²⁾ 1.5 W or 3 A ¹⁾ in free air Further derating not necessary.
Current Noise	< 0.010 μV (rms)/V of applied voltage (- 40 dB)
High Frequency Operation Rise Time Inductance ³⁾ (L) Capacitance (C)	1 ns 0.1 μH maximum: 0.03 μH typical 1.0 pF maximum: 0.5 pF typical
Voltage Coefficient⁴⁾	< 0.1 ppm/V
Operating Temperature Range	- 55 °C to + 150 °C
Maximum Working Voltage	300 V. Not to exceed power rating.
Thermal EMF⁵⁾	0.15 μV/°C maximum (lead effect)

Notes

1. Whichever is lower.
2. Heat sink chassis dimensions and requirements per MIL-PRF-39009:

DIMENSION	INCHES	mm
L	6.00	152.4
W	4.00	101.6
H	2.00	50.8
T	0.04	1.0

3. Inductance (L) due mainly to the leads.
4. The resolution limit of existing test equipment (within the measurement capability of the equipment, or "essentially zero").
5. μV/°C relates to EMF due to lead temperature difference.

TABLE 2 - VPR220SZ

RESISTANCE RANGE (Ω)	TIGHTEST RESISTANCE TOLERANCE	TCR ¹⁾ - 55 °C to + 125 °C, Ref. + 25 °C
50 to 10K	± 0.01 %	± 2.5 ppm/°C
25 to < 50	± 0.02 %	
10 to < 25	± 0.05 %	
5 to < 10	± 0.1 %	

Weight = 1 g Maximum

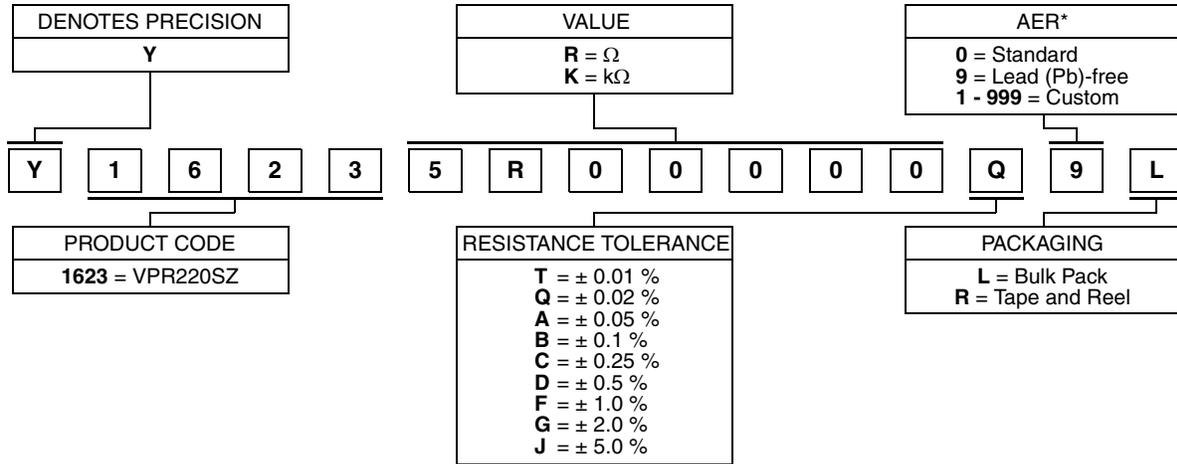
Note

1. Maximum specifications.

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

TABLE 3 - GLOBAL PART NUMBER INFORMATION

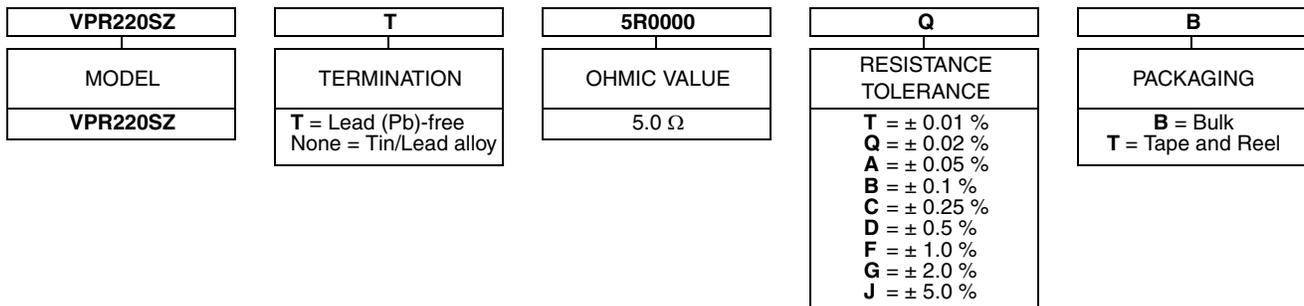
NEW GLOBAL PART NUMBER: Y16235R00000Q9L (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y1623 5R00000 Q 9 L:

TYPE: VPR220SZ
 VALUE: 5.0 Ω
 ABSOLUTE TOLERANCE: $\pm 0.02\%$
 TERMINATION: Lead (Pb)-free
 PACKAGING: Bulk

HISTORICAL PART NUMBER: VPR220SZT 5R0000 Q B (will continue to be used)



Note

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



Disclaimer

ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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

The product specifications do not expand or otherwise modify VPG's terms and conditions of purchase, including but not limited to, the warranty expressed therein.

VPG makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. **To the maximum extent permitted by applicable law, VPG disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.**

Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on VPG's knowledge of typical requirements that are often placed on VPG products. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. You should ensure you have the current version of the relevant information by contacting VPG prior to performing installation or use of the product, such as on our website at vpgsensors.com.

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

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

Copyright Vishay Precision Group, Inc., 2014. All rights reserved.