POWERTRON
A VPG Brand

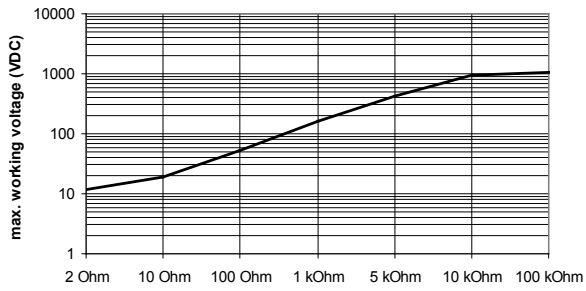
FEATURES

- Resistances from 0.02Ohm to 100kOhms
- Power Rating to 50Watt
- Resistance Tolerances to ±1%
- TCR to ±50ppm/K
- Load Stability to 0.5%
- TO-220 Housing
- Convenient SMD D2Pak

Pb-Free

RoHS COMPLIANT

TABLE 1—SPECIFICATIONS

TYPE		NHRS 2-T220
Resistance Range		0.02 Ohms to 15kOhms
Power Rating	**Free air 70°C**	1.5W
	With heatsink	50W
Tolerances **from 0.02 Ohms** **from 1.0 Ohms**		 2% / 5% 1% / 2% / 5%
Thermal Resistance		2.1 K/W
Stability (1000h)		0.5%
Temperature Coefficient **0.02 to 0.049 Ohms** **0.05 to 0.099 Ohms** **0.1 Ohms to 100 kOhms**		 ±600 ppm/K ±300 ppm/K ±100 ppm/K upon request ±50 ppm/K
Voltage Proof		1.5 kVDC
Max. Voltage **depending on resistance value**		
Operating Temperature Range		-40 to 155°C
Resistor Material		Thick Film
Substrate		Al_2O_3
Backplate		Copper / Nickel-plated
Housing		PPS
Connector Material		Cu / tinned
Soldering Profile		During surface mount soldering the soldering profile must secure the metal tab of this resistor is not exceeding 220°C
Terminals		2 (standard contact S)

ORDERING INFORMATION

Part Number - Resistance - Contact - Tolerance
NHRS 2-T220 1K100 S 1%

FIGURE 1—TEMPERATURE COEFFICIENT

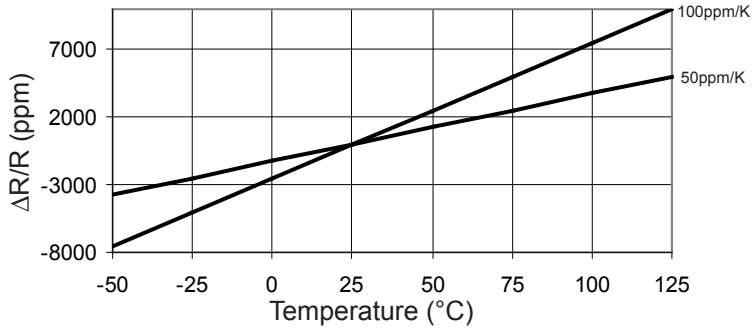
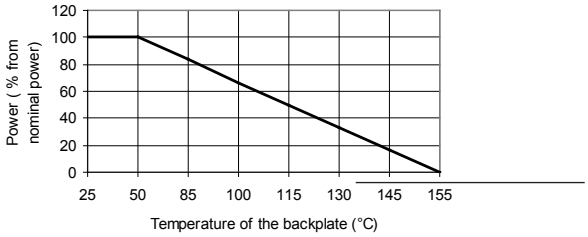


FIGURE 2—DERATING

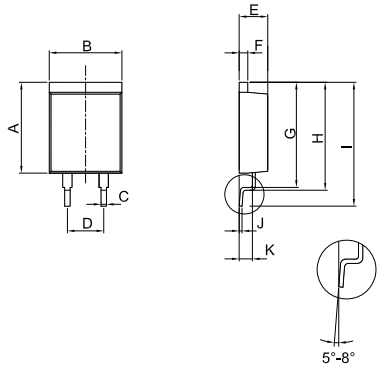


Power Rating Notes -
The NHRS Series Resistors must be attached to a suitable heatsink.
The maximum internal resistor temperature is 155°C.
To specify an appropriate heatsink use the following formula :

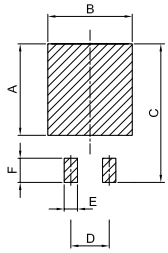
$$R_{\theta H} = \frac{T_{MAX} - (P \times R_{\theta R}) - T_A}{P}$$

Where: $R_{\theta H}$ = Thermal Resistance of Heatsink (K/W)
$R_{\theta R}$ = Thermal Resistance of Resistor (K/W)
T_{MAX} = Maximum Temperature of Resistor
T_A = Ambient Temperature of Heatsink (°C)
P = Power Through Resistor (W)

FIGURE 3—DIMENSIONS in mm (inches)



Dimension	mm
A ±0.2 (±0.008)	12.70 (0.50)
B ±0.2 (±0.008)	10.16 (0.40)
C ±0.1 (±0.004)	0.76 (0.03)
D ±0.1 (±0.004)	5.08 (0.20)
E ±0.1 (±0.004)	4.00 (0.16)
F ±0.1 (±0.004)	1.20 (0.05)
G ±0.2 (±0.008)	14.60 (0.57)
H ±0.2 (±0.008)	15.00 (0.59)
I ±0.2 (±0.008)	17.33 (0.68)
J ±0.1 (±0.004)	0.40 (0.02)
K ±0.1 (±0.004)	1.85 (0.07)



Dimension	mm
A	12.10 (0.476)
B	11.16 (0.439)
C	18.33 (0.722)
D	5.08 (0.200)
E	1.76 (0.069)
F	3.20 (0.126)

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.