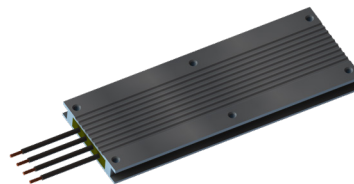


## FEATURES

- Resistances from 0.001 Ohm to 500 Ohms
- Power Rating to 2500 Watt
- Resistance Tolerances to  $\pm 0.1\%$
- TCR to  $\pm 25 \text{ ppm/K}$
- Load Stability to 0.1%
- Very Low Inductance ( $< 50 \text{ nH}$ )



**RoHS\***  
COMPLIANT

**TABLE 1 – SPECIFICATIONS**

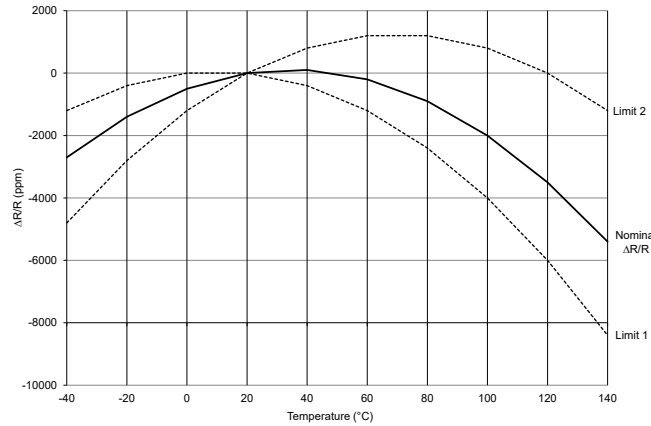
TYPE		8065	80110	80216	80320	80370
Resistance Range (Ohms)		0.001 to 400	0.001 to 500	0.002 to 500	0.002 to 500	0.005 to 500
Power Rating	Free air 70°C	24 W	32 W	60 W	80 W	90 W
	With heatsink	350 W	600 W	1200 W	2000 W	2500 W
Tolerances from 0.001 Ohms from 0.01 Ohms from 0.02 Ohms		0.5% / 1% / 2% / 5% 0.25% / 0.5% / 1% / 2% / 5% 0.1% / 0.25% / 0.5% / 1% / 2% / 5%				
Thermal Resistance		0.16 K/W	0.09 K/W	0.04 K/W	0.026 K/W	0.022 K/W
Stability (1000h)		0.1% / 0.2% / 0.5% (depends on stress)				
Temperature Coefficient Standard (Q) Option (R) Extended Temperature Range		$\pm 25 \text{ ppm/K}$ (20 to 60°C) $\pm 50 \text{ ppm/K}$ (-40 to 130°C)				
Voltage Proof		1.5 kVDC (higher upon request)				
Maximum Current		60 A upon request special cable up to 150 A				
Inductivity		$< 50 \text{ nH}$				
Capacity against housing		500 pF	850 pF	1.7 nF	2.5 nF	2.9 nF
Thermal EMF		$< 1 \mu\text{V/K}$				
Operating Temperature Range		-40 to 130°C				
Resistor Material		CuNiMn-Foil				
Substrate		Anodized aluminium				
Housing		Anodized aluminium				
Connector Material		Cu / tinned				
Terminals		4				
Connector Material		Standard: Cu-Cable / 4mm <sup>2</sup> / 500mm length (D) (other upon request / AWG possible)				

## ORDERING INFORMATION

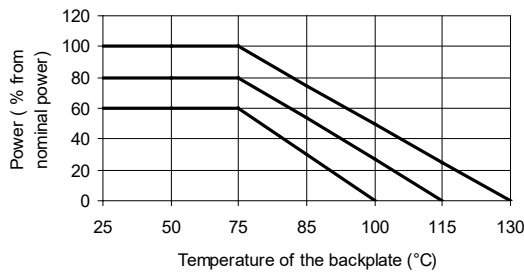
Part Number - Resistance - Contact - Tolerance - TCR

FHR 4-80216 1R000 D 1% Q

**FIGURE 1 – TEMPERATURE COEFFICIENT**



**FIGURE 2 – DERATING**



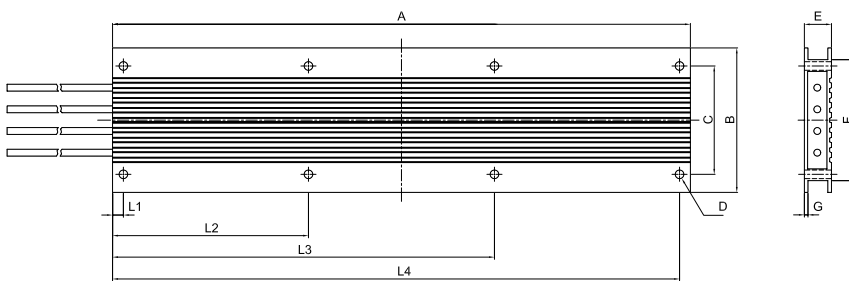
**Power Rating Notes -**

The FHR Series Resistors must be attached to a suitable heat-sink. The maximum internal resistor temperature is 130°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 )

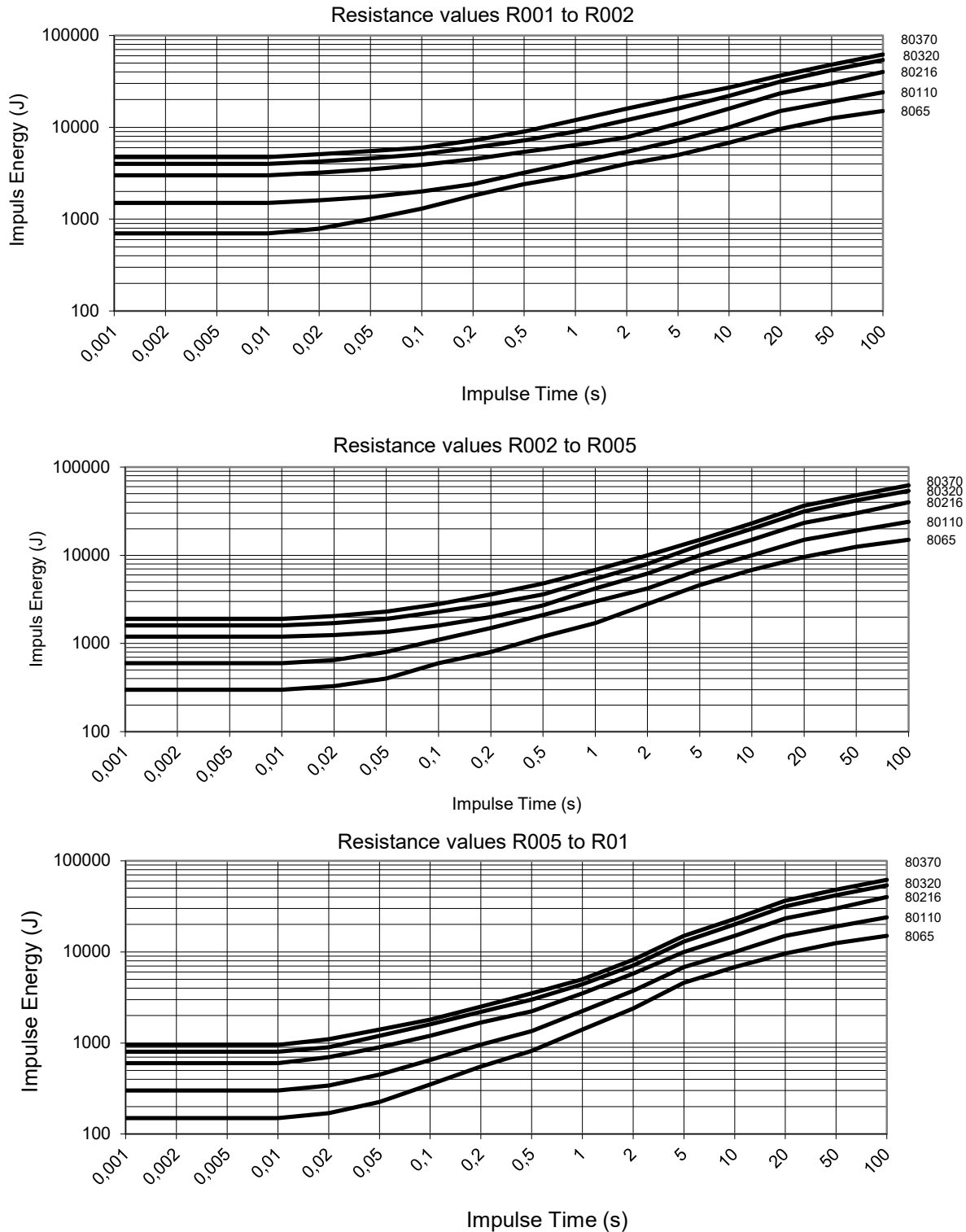
**FIGURE 3 – DIMENSIONS in mm (inches)**



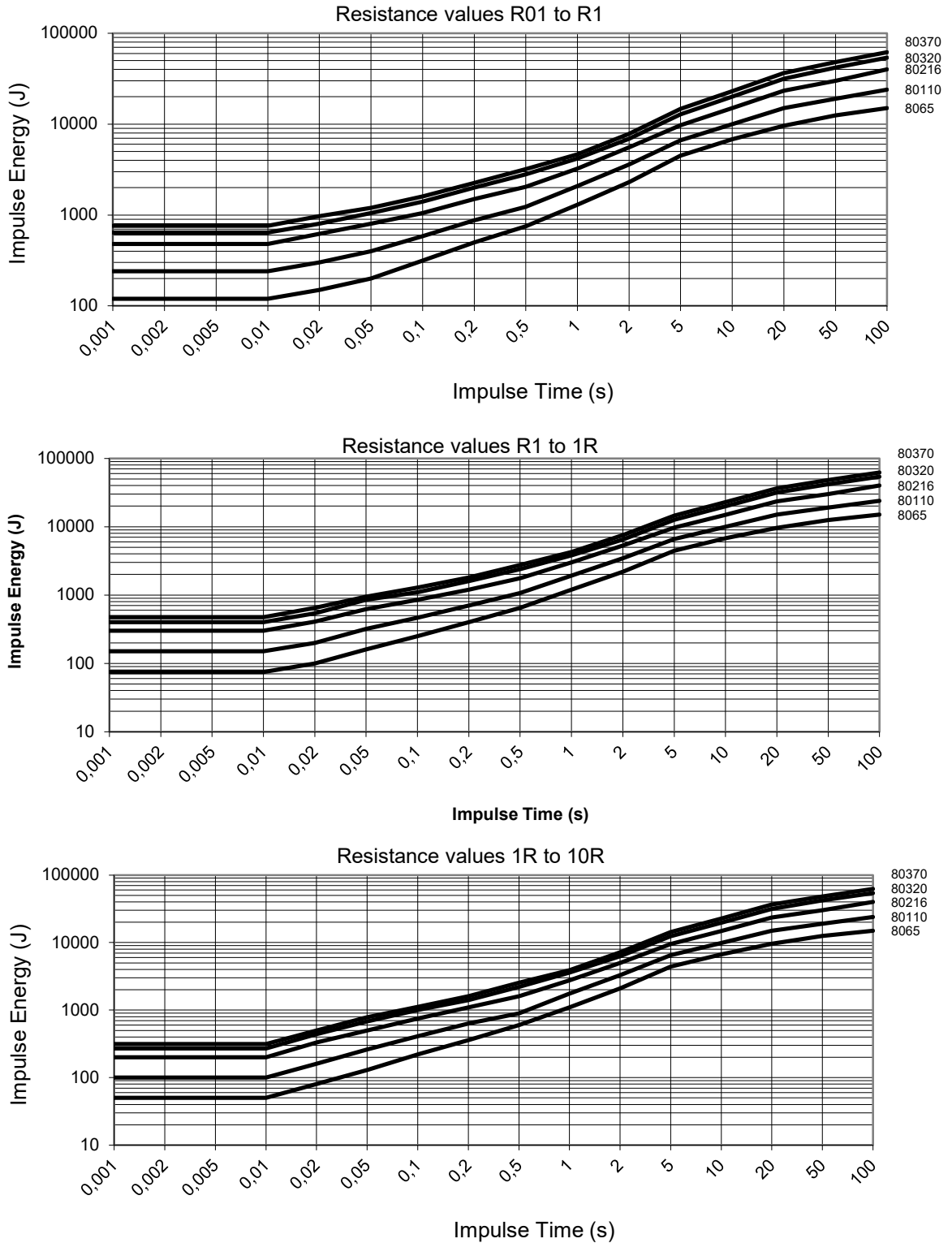
Dimension	mm
B ±0.3 (±0.012)	80.00 (3.15)
C ±0.3 (±0.012)	60.00 (2.36)
D ±0.2 (±0.008)	Ø4.75 (Ø0.19)
E ±0.2 (±0.008)	15.00 (0.59)
F ±0.3 (±0.012)	67.00 (2.64)
G ±0.1 (±0.004)	2.00 (0.08)

Dimension	8065	80110	80216	80320	80370
A ±0.3(±0.012)	65.00 (2.56)	110.00 (4.33)	216.00 (8.50)	320.00 (12.60)	370.00 (14.57)
L1 ±0.3(±0.012)	6.00 (0.24)	6.00 (0.24)	6.00 (0.24)	6.00 (0.24)	6.00 (0.24)
L2 ±0.3(±0.012)	59.00 (2.32)	104.00 (4.09)	108.00 (4.25)	108.50 (4.27)	125.50 (4.94)
L3 ±0.3(±0.012)	-	-	210.00 (8.27)	211.50 (8.33)	244.50 (9.63)
L4 ±0.3(±0.012)	-	-	-	314.00 (12.36)	364.00 (14.33)

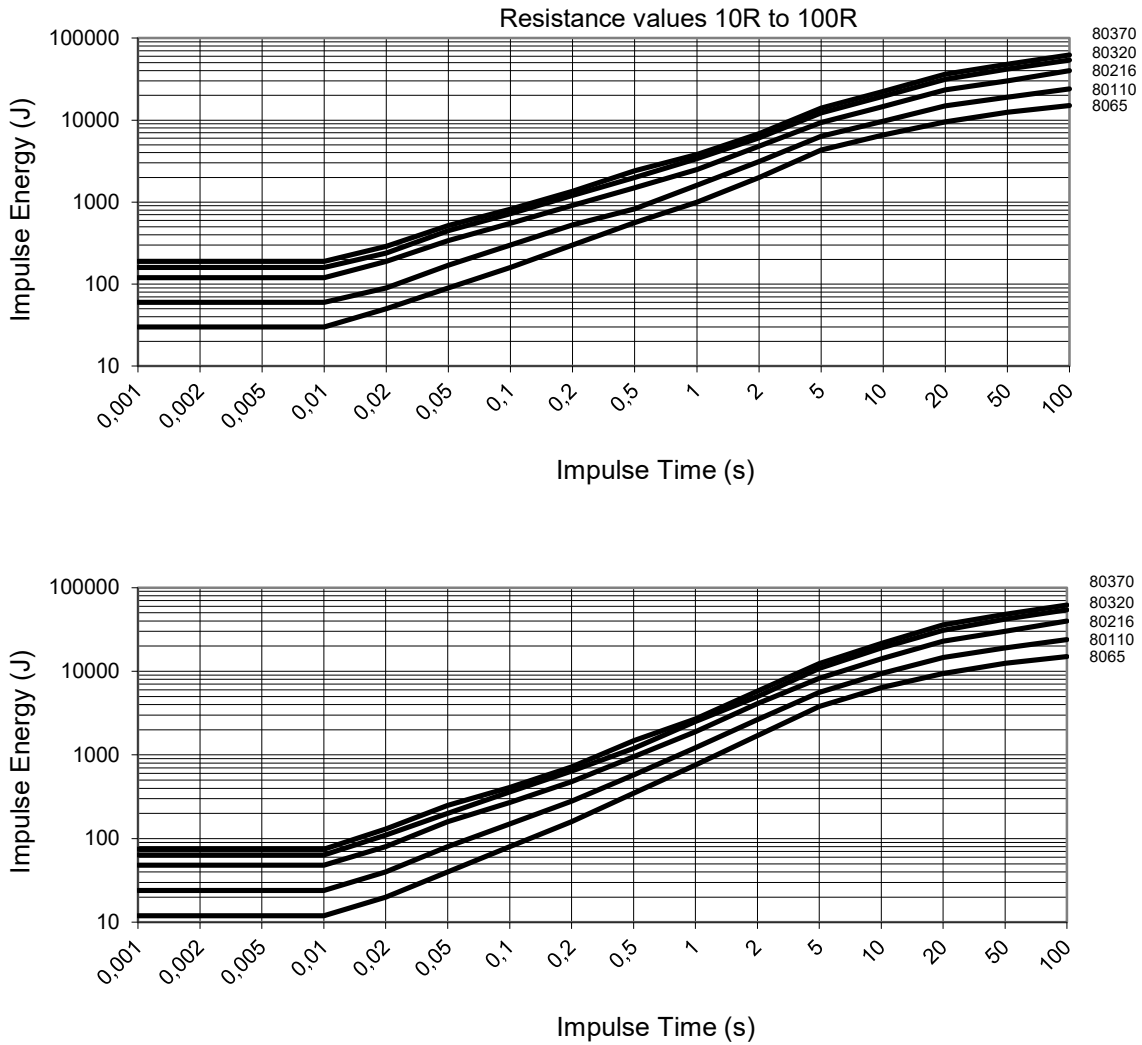
**FIGURE 4—STABILITY AGAINST IMPULSES** (Reference values without heatsink)



**FIGURE 4—STABILITY AGAINST IMPULSES** (Reference values without heatsink)



**FIGURE 4 – STABILITY AGAINST IMPULSES** (Reference values without heatsink)



**FIGURE 5 – LEAD VARIATIONS**

Type	max. Current	Description
D	60 A	insulated round cable (cu-tinned)
H1	70 A	insulated Cu-flat cable
H2	85 A	insulated Cu-flat cable
H3	100 A	insulated Cu-flat cable
H4	120 A	insulated Cu-flat cable
H5	150 A	insulated Cu-flat cable



## 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](http://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.