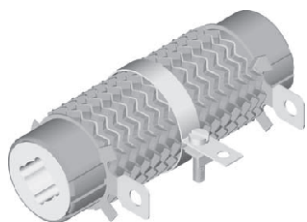


# Cemented Wirewound Resistors with Corrugated Ribbon



## FEATURES

- All welded construction
- Power rating up to 500 W
- Corrugated ribbon construction aids rapid cooling
- Available in adjustable design = "E"
- Material categorization:  
for definitions of compliance please see  
[www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

STANDARD ELECTRICAL SPECIFICATIONS					
MODEL	POWER RATING $P_{40^{\circ}\text{C}}$ W	RESISTANCE RANGE <sup>(1)</sup> $\Omega$ TCR + 650 ppm/K to + 750 ppm/K WM 10	RESISTANCE RANGE <sup>(1)</sup> $\Omega$ TCR - 10 ppm/K to - 80 ppm/K WM 50	RESISTANCE RANGE <sup>(1)</sup> $\Omega$ TCR + 100 ppm/K to + 180 ppm/K WM 110	TOLERANCE $\pm$ %
ZBS 20/100 ZBS 20/100 E	50	0.13 to 0.51	0.56 to 2.2	1.3 to 6.2	10, 5
ZBS 20/165 ZBS 20/165 E	100	0.27 to 1	1.1 to 4.7	2.4 to 12	10, 5
ZBS 20/265 ZBS 20/265 E	150	0.47 to 1.8	2 to 7.5	4.3 to 22	10, 5
ZBS 30/100 ZBS 30/100 E	75	0.1 to 0.43	0.47 to 3.3	1 to 8.2	10, 5
ZBS 30/133 ZBS 30/133 E	110	0.15 to 0.62	0.68 to 5.1	1.5 to 12	10, 5
ZBS 30/165 ZBS 30/165 E	150	0.2 to 0.91	1.0 to 6.8	2 to 16	10, 5
ZBS 30/215 ZBS 30/215 E	200	0.27 to 1.1	1.2 to 9.1	2.7 to 24	10, 5
ZBS 30/265 ZBS 30/265 E	250	0.3 to 1.3	1.5 to 11	3.9 to 27	10, 5
ZBS 30/330 ZBS 30/330 E	300	0.39 to 1.8	2 to 15	5.1 to 36	10, 5
ZBS 45/370 ZBS 45/370 E	375	0.75 to 3	3.3 to 24	8.2 to 56	10, 5
ZBS 60/370 ZBS 60/370 E	500	0.91 to 3.9	4.3 to 33	10 to 75	10, 5

## Notes

- For available "Mounting Accessories for Resistors", please see: [www.vishay.com/doc?221015](http://www.vishay.com/doc?221015)
- <sup>(1)</sup> Resistance value to be selected for  $\pm 10$  % tolerance from E12 and for  $\pm 5$  % from E24

**PART NUMBER AND PRODUCT DESCRIPTION**

Part Number: ZBS202S01100KLX000

Z	B	S	2	0	2	S	0	1	1	0	0	K	L	X	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

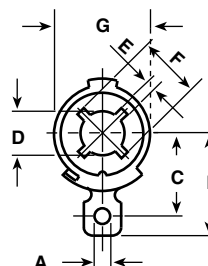
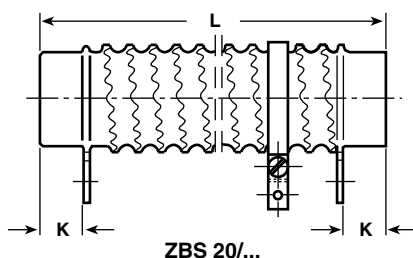
MODEL	VARIANT/ TERMINAL	TCR/MATERIAL	VALUE	TOLERANCE CODE	PACKAGING CODE	SPECIAL
<b>ZBS202S</b> = ZBS 20/100 <b>ZBS204L</b> = ZBS 20/165 <b>ZBS207D</b> = ZBS 20/265 <b>ZBS302S</b> = ZBS 30/100 <b>ZBS303P</b> = ZBS 30/133 <b>ZBS304L</b> = ZBS 30/165 <b>ZBS305Z</b> = ZBS 30/215 <b>ZBS307D</b> = ZBS 30/265 <b>ZBS308D</b> = ZBS 30/303 <b>ZBS3096</b> = ZBS 30/330 <b>ZBS45AA</b> = ZBS 45/370 <b>ZBS60AA</b> = ZBS 60/370	<b>0</b> = Neutral <b>1</b> = E <b>Z</b> = Value overflow (BV)	<b>1</b> = - 10ppm/K to - 80 ppm/K WM 50 Class 1 <b>3</b> = 100 ppm/K to 180 ppm/K WM 110 Class 3 <b>4</b> = 650 ppm/K to 750 ppm/K WM 10 Class 1  <b>See also note (1)</b>	<b>2 digit value</b> <b>1 digit multiplier</b> <b>MULTIPLIER</b> 8 = *10 <sup>-2</sup> 9 = *10 <sup>-1</sup> 0 = *10 <sup>0</sup>	<b>J</b> = ± 5.0 % <b>K</b> = ± 10.0 %	<b>LX</b> = Loose pack, without quantity	<b>000</b> = Standard <b>3 digit code</b> = Special <sup>(1)</sup>

Product Description: ZBS 20/100 50 10R 10 % LX

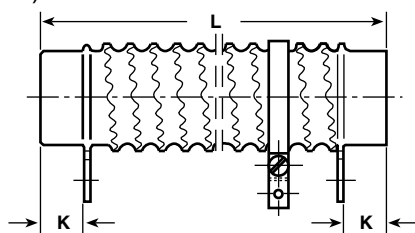
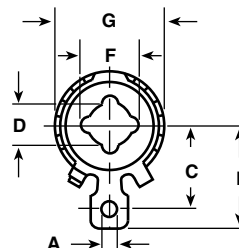
ZBS 20/100	50	10R	10 %	LX
MODEL <sup>(2)</sup>	TCR/MATERIAL <sup>(2)</sup>	VALUE <sup>(2)</sup>	TOLERANCE CODE <sup>(2)</sup>	PACKAGING DESCRIPTION <sup>(3)</sup>

**Notes**

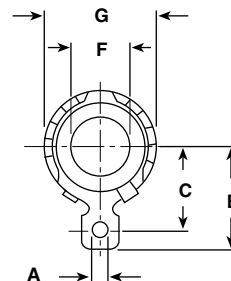
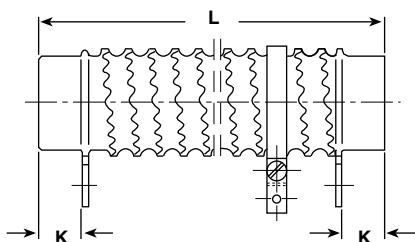
- (1) For special variants or special winding, please contact: [ww1resistors@vishay.com](mailto:ww1resistors@vishay.com)  
(2) See "Part Number" above  
(3) See "Packaging Code" above

**DIMENSIONS**


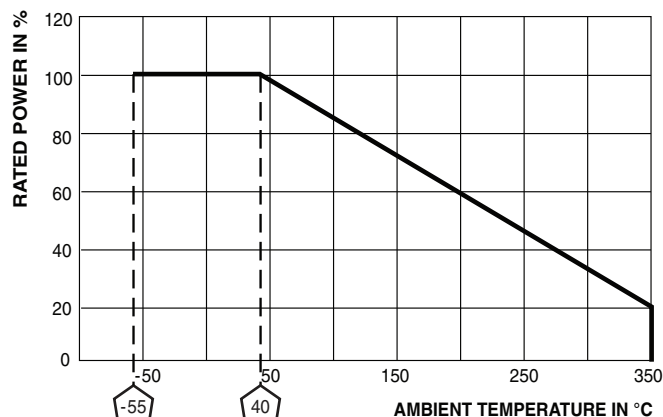
MODEL	DIMENSIONS in millimeters [inches]									
	L	K	A	B	C	D	E	F	G	MASS (g)
<b>ZBS 20/100</b> <b>ZBS 20/100 E</b>	100 ± 2.5 [3.937 ± 0.098]	15 [0.591]	4.2 [0.165]	26.5 [1.043]	22 [0.866]	10 [0.394]	1.5 [0.059]	14 [0.551]	24 [0.945]	100
<b>ZBS 20/165</b> <b>ZBS 20/165 E</b>	165 ± 4 [6.496 ± 0.157]	15 [0.591]	4.2 [0.165]	26.5 [1.043]	22 [0.866]	10 [0.394]	1.5 [0.059]	14 [0.551]	24 [0.945]	150
<b>ZBS 20/265</b> <b>ZBS 20/265 E</b>	265 ± 6.6 [10.433 ± 0.260]	15 [0.591]	4.2 [0.165]	26.5 [1.043]	22 [0.866]	10 [0.394]	1.5 [0.059]	14 [0.551]	24 [0.945]	250

**DIMENSIONS** (continued)

**ZBS 30/...**


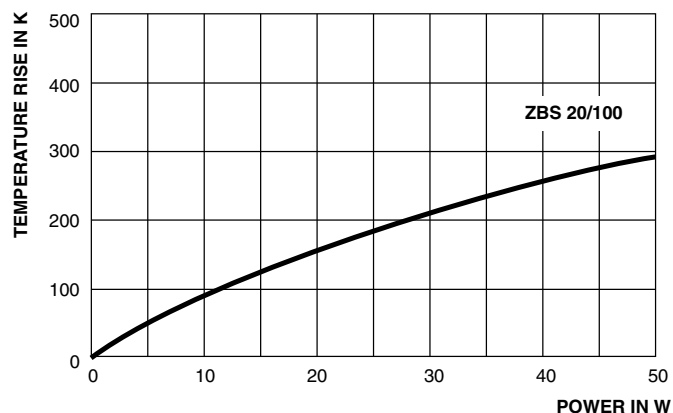
MODEL	DIMENSIONS in millimeters [inches]								MASS (g)
	L	K	A	B	C	D	F	G	
<b>ZBS 30/100</b> <b>ZBS 30/100 E</b>	100 ± 2.5 [3.937 ± 0.098]	15 [0.591]	5.2 [0.205]	34 [1.339]	28 [1.102]	14 [0.551]	18.5 [0.728]	37 ± 1 [1.457 ± 0.039]	200
<b>ZBS 30/133</b> <b>ZBS 30/133 E</b>	133 ± 3.3 [5.236 ± 0.130]	15 [0.591]	5.2 [0.205]	34 [1.339]	28 [1.102]	14 [0.551]	18.5 [0.728]	37 ± 1 [1.457 ± 0.039]	250
<b>ZBS 30/165</b> <b>ZBS 30/165 E</b>	165 ± 4 [6.496 ± 0.157]	15 [0.591]	5.2 [0.205]	34 [1.339]	28 [1.102]	14 [0.551]	18.5 [0.728]	37 ± 1 [1.457 ± 0.039]	300
<b>ZBS 30/215</b> <b>ZBS 30/215 E</b>	215 ± 5.4 [8.465 ± 0.213]	15 [0.591]	5.2 [0.205]	34 [1.339]	28 [1.102]	14 [0.551]	18.5 [0.728]	37 ± 1 [1.457 ± 0.039]	400
<b>ZBS 30/265</b> <b>ZBS 30/265 E</b>	265 ± 6.6 [10.433 ± 0.260]	15 [0.591]	5.2 [0.205]	34 [1.339]	28 [1.102]	14 [0.551]	18.5 [0.728]	37 ± 1 [1.457 ± 0.039]	500
<b>ZBS 30/330</b> <b>ZBS 30/330 E</b>	330 ± 8 [12.992 ± 0.315]	15 [0.591]	5.2 [0.205]	34 [1.339]	28 [1.102]	14 [0.551]	18.5 [0.728]	37 ± 1 [1.457 ± 0.039]	600


**ZBS 45/370, ZBS 60/370**

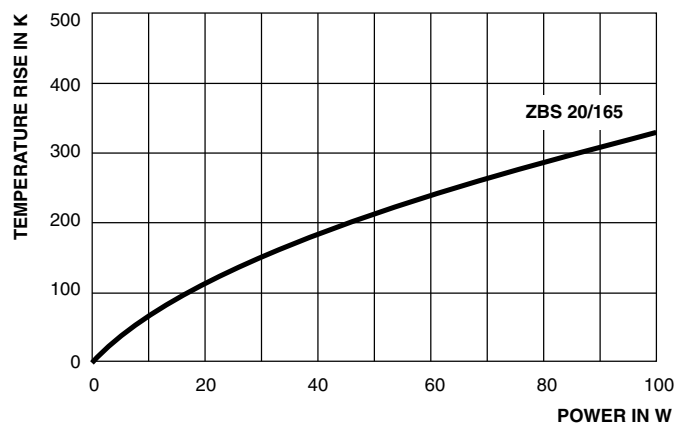
MODEL	DIMENSIONS in millimeters [inches]							
	L	K	A	B	C	F	G	MASS (g)
ZBS 45/370 ZBS 45/370 E	370 ± 9 [14.567 ± 0.354]	15 [0.591]	5.2 [0.205]	42.5 [1.673]	37 [1.457]	30 [1.181]	52 ± 1 [2.047 ± 0.039]	1000
ZBS 60/370 ZBS 60/370 E	370 ± 9 [14.567 ± 0.354]	15 [0.591]	5.2 [0.205]	51.5 [2.028]	45.5 [1.791]	45 [1.772]	67 ± 1 [2.638 ± 0.039]	1200



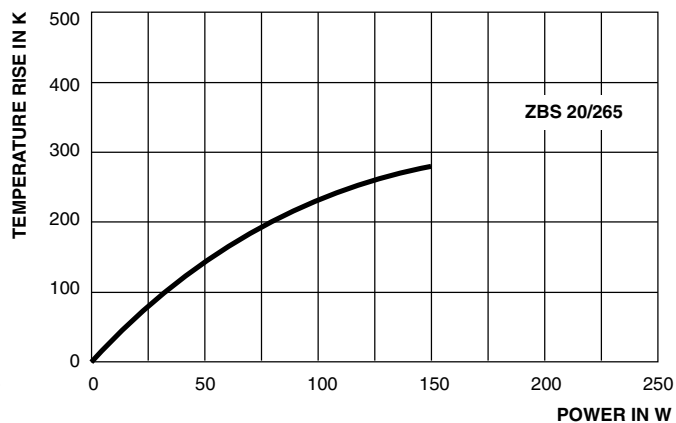
Derating



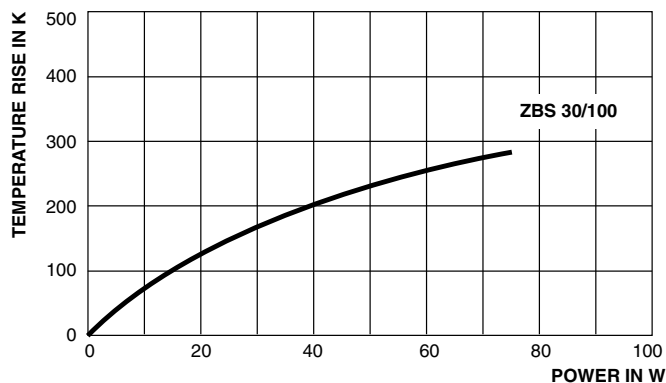
Temperature Rise



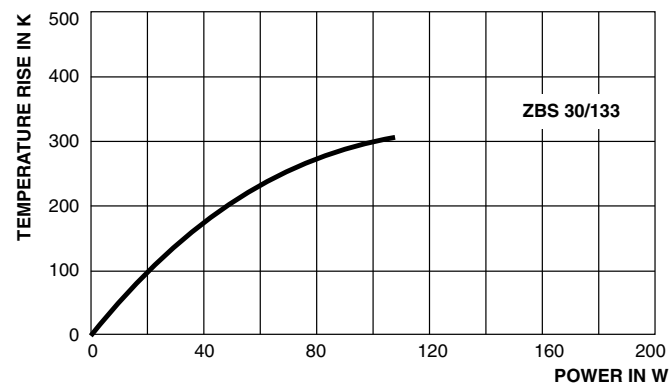
Temperature Rise



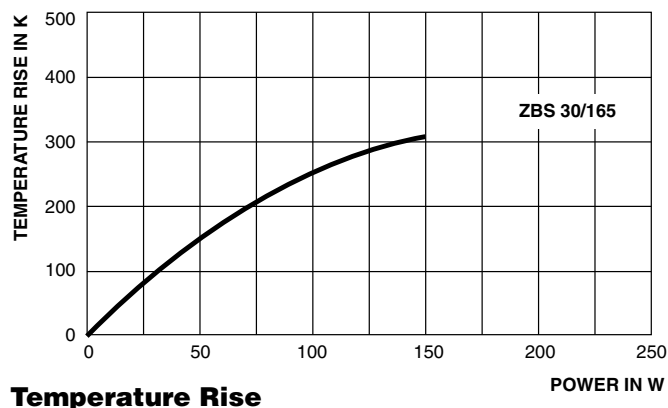
Temperature Rise



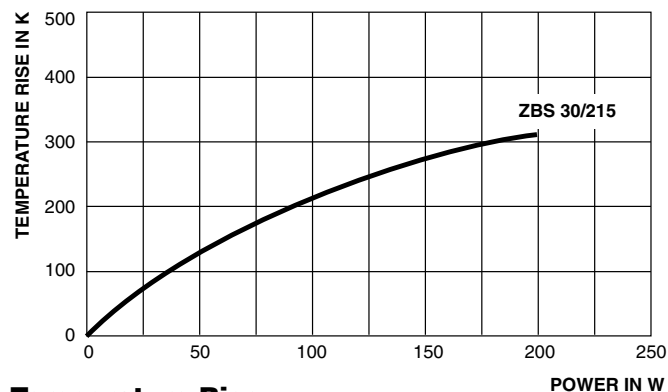
Temperature Rise



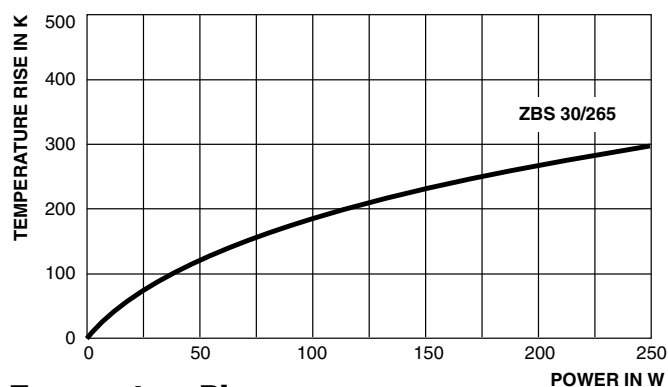
Temperature Rise



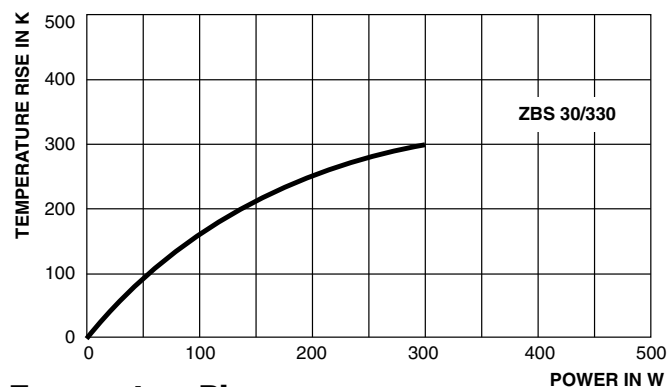
Temperature Rise



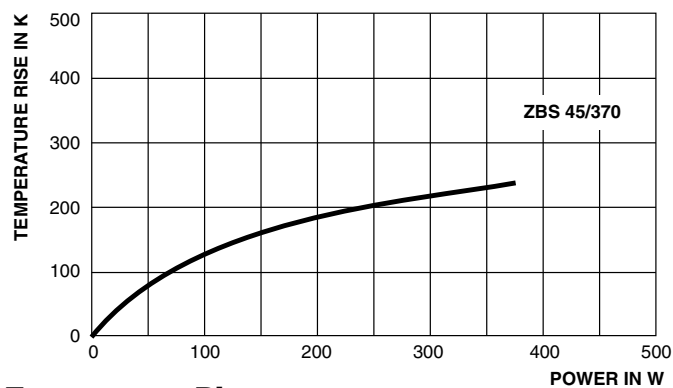
Temperature Rise



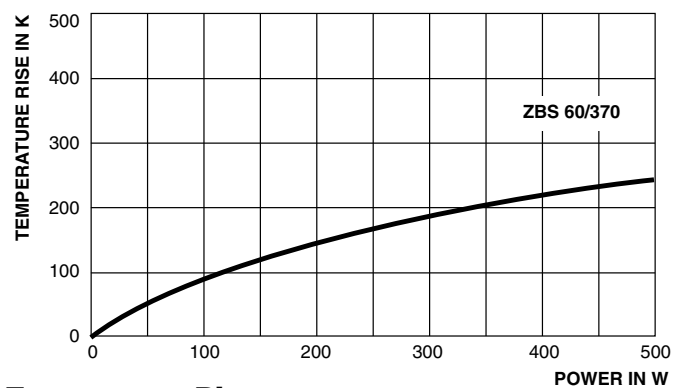
Temperature Rise



Temperature Rise



Temperature Rise



Temperature Rise



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay 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.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. 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. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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