

## Vitreous Wirewound Resistors with Ferrules



### FEATURES

- Caps made from drawn brass, nickel plated (GZK style)
- Machined caps with inner thread available (GDK style: M4 is standard, other threads on request)
- Easy to change when mounted with spring clips
- Complete vitreous coating for perfect humidity protection
- TCR 100 ppm/K to 180 ppm/K - WM 110 (Class 3)
- Non inductive version = "Ni"
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

| STANDARD ELECTRICAL SPECIFICATIONS |                                            |                       |                                             |                      |
|------------------------------------|--------------------------------------------|-----------------------|---------------------------------------------|----------------------|
| MODEL                              | POWER RATING<br>$P_{40^{\circ}\text{C}}$ W | LIMITING VOLTAGE<br>V | RESISTANCE RANGE <sup>(1)</sup><br>$\Omega$ | TOLERANCE<br>$\pm$ % |
| GWK 10                             | 10                                         | 280                   | 1.8 to 16K                                  | 10                   |
|                                    |                                            |                       | 6.8 to 16K                                  | 5                    |
|                                    |                                            |                       | 270 to 16K                                  | 2                    |
| GWK 10 Ni                          | 7                                          | 280                   | 2.4 to 1K                                   | 10                   |
|                                    |                                            |                       | 15 to 1K                                    | 5                    |
| GWK 20                             | 20                                         | 400                   | 2.2 to 27K                                  | 10                   |
|                                    |                                            |                       | 12 to 27K                                   | 5                    |
|                                    |                                            |                       | 360 to 27.8K                                | 2                    |
| GWK 20 Ni                          | 13                                         | 400                   | 4.7 to 1.8K                                 | 10                   |
|                                    |                                            |                       | 20 to 1.8K                                  | 5                    |
| GWK 40                             | 30                                         | 580                   | 3.3 to 43K                                  | 10                   |
|                                    |                                            |                       | 12 to 43K                                   | 5                    |
|                                    |                                            |                       | 470 to 43K                                  | 2                    |
| GWK 40 Ni                          | 20                                         | 580                   | 6.8 to 2.7K                                 | 10                   |
|                                    |                                            |                       | 20 to 2.7K                                  | 5                    |
| GWK 60                             | 40                                         | 850                   | 6.2 to 82K                                  | 5, 10                |
|                                    |                                            |                       | 47 to 82K                                   | 2                    |
| GWK 60 Ni                          | 25                                         | 850                   | 13 to 5.1K                                  | 5, 10                |
| GWK 100                            | 80                                         | 1200                  | 8.2 to 82K                                  | 5, 10                |
|                                    |                                            |                       | 47 to 82K                                   | 2                    |
| GWK 100 Ni                         | 50                                         | 1200                  | 27 to 10K                                   | 5, 10                |
| GWK 150                            | 100                                        | 1600                  | 12 to 110K                                  | 5, 10                |
|                                    |                                            |                       | 30 to 110K                                  | 2                    |
| GWK 150 Ni                         | 60                                         | 1600                  | 36 to 15K                                   | 5, 10                |
| GWK 200                            | 160                                        | 2300                  | 20 to 180K                                  | 2, 5, 10             |
| GWK 200 Ni                         | 100                                        | 2300                  | 56 to 22K                                   | 5, 10                |
| GWK 300                            | 260                                        | 4000                  | 36 to 330K                                  | 2, 5, 10             |
| GWK 300 Ni                         | 180                                        | 4000                  | 100 to 43K                                  | 5, 10                |

### Notes

- For available "Mounting Accessories for Resistors", please see: [www.vishay.com/doc?221015](http://www.vishay.com/doc?221015)
- (1) Resistance value to be selected for  $\pm 10$  % tolerance from E12 and for  $\pm 5$  % and  $\pm 2$  % from E24

**PART NUMBER AND PRODUCT DESCRIPTION**

Part Number: GWK100J1000KLX000

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G | W | K | 1 | 0 | 0 | J | 1 | 0 | 0 | 0 | K | L | X | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MODEL                                                                                                                                                                                                                                       | VARIANT/<br>TERMINAL                                              | VALUE                                                                                                                                                                                                                           | TOLERANCE<br>CODE                                                           | PACKAGING<br>CODE                              | SPECIAL                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------|
| <b>GWK010</b> = GWK 10<br><b>GWK020</b> = GWK 20<br><b>GWK040</b> = GWK 40<br><b>GWK060</b> = GWK 60<br><b>GWK100</b> = GWK 100<br><b>GWK150</b> = GWK 150<br><b>GWK200</b> = GWK 200<br><b>GWK220</b> = GWK 220<br><b>GWK300</b> = GWK 300 | <b>I</b> = GZK<br><b>J</b> = GDK<br>(also known as<br>GDR and M4) | <b>3 digit value</b><br><b>1 digit multiplier</b><br><b>8</b> = $\times 10^{-2}$<br><b>9</b> = $\times 10^{-1}$<br><b>0</b> = $\times 10^0$<br><b>1</b> = $\times 10^1$<br><b>2</b> = $\times 10^2$<br><b>3</b> = $\times 10^3$ | <b>G</b> = $\pm 2.0\%$<br><b>J</b> = $\pm 5.0\%$<br><b>K</b> = $\pm 10.0\%$ | <b>LX</b> =<br>Loose pack,<br>without quantity | <b>000</b> = Standard<br><b>3 digit code</b> =<br>Special or NI version <sup>(1)</sup> |

Product Description: GWK100 GDK 100R 10 % LX

|                      |                                     |                      |                                  |                                         |
|----------------------|-------------------------------------|----------------------|----------------------------------|-----------------------------------------|
| <b>GWK100</b>        | <b>GDK</b>                          | <b>100R</b>          | <b>10 %</b>                      | <b>LX</b>                               |
| MODEL <sup>(2)</sup> | VARIANT/<br>TERMINAL <sup>(2)</sup> | VALUE <sup>(2)</sup> | TOLERANCE<br>CODE <sup>(2)</sup> | PACKAGING<br>DESCRIPTION <sup>(3)</sup> |

**Notes**
<sup>(1)</sup> For special variants, special winding, or NI version, please contact: [ww1resistors@vishay.com](mailto:ww1resistors@vishay.com)
<sup>(2)</sup> See "Part Number" above

<sup>(3)</sup> See "Packaging Code" above

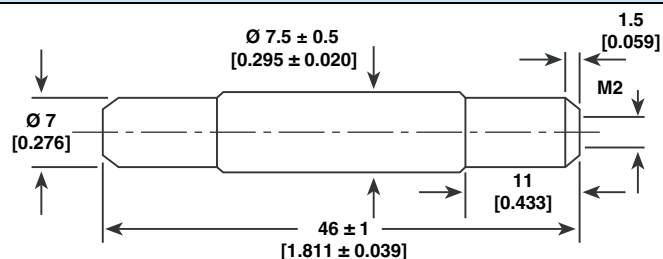
**DIMENSIONS** in millimeters [inches]


Figure 1: GWK 10

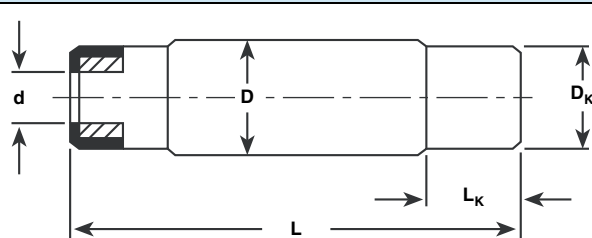
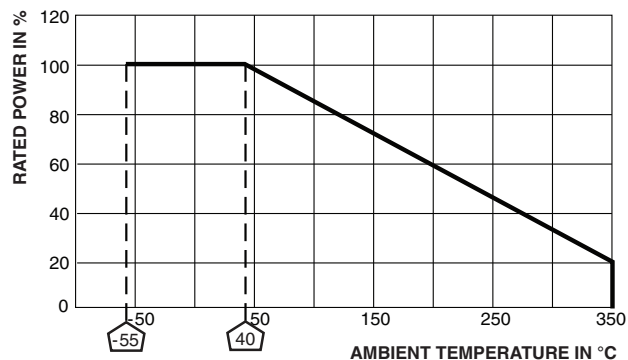


Figure 2: GWK 20...GWK 300

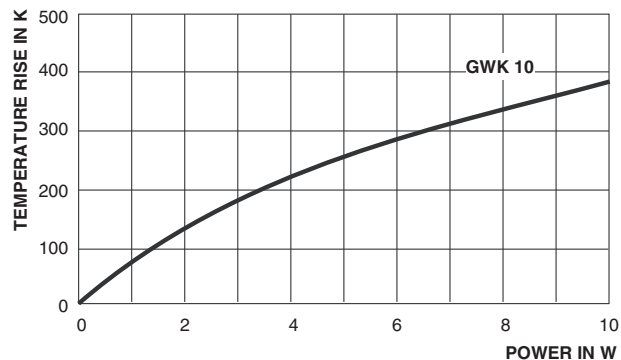
| MODEL                | GWK 10<br>GWK 10 Ni               | GWK 20<br>GWK 20 Ni                | GWK 40<br>GWK 40 Ni                 | GWK 60<br>GWK 60 Ni                  |
|----------------------|-----------------------------------|------------------------------------|-------------------------------------|--------------------------------------|
| <b>D</b>             | See Drawing Figure 1              | 12.3 $\pm$ 0.8 [0.484 $\pm$ 0.031] | 15.3 $\pm$ 0.8 [0.602 $\pm$ 0.031]  | 15.3 $\pm$ 0.8 [0.602 $\pm$ 0.031]   |
| <b>L</b>             |                                   | 51 $\pm$ 1.3 [2.008 $\pm$ 0.051]   | 61 $\pm$ 1.5 [2.402 $\pm$ 0.059]    | 81 $\pm$ 2 [3.189 $\pm$ 0.079]       |
| <b>D<sub>K</sub></b> |                                   | 11 [0.433]                         | 14 [0.551]                          | 14 [0.551]                           |
| <b>L<sub>K</sub></b> |                                   | 10 [0.394]                         | 13 [0.512]                          | 13 [0.512]                           |
| <b>d</b>             |                                   | 4.5 [0.177]                        | 5.5 [0.217]                         | 5.5 [0.217]                          |
| MODEL                | GWK 100<br>GWK 100 Ni             | GWK 150<br>GWK 150 Ni              | GWK 200<br>GWK 200 Ni               | GWK 300<br>GWK 300 Ni                |
| <b>D</b>             | 22 $\pm$ 1 [0.866 $\pm$ 0.039]    | 22 $\pm$ 1 [0.866 $\pm$ 0.039]     | 22 $\pm$ 1 [0.866 $\pm$ 0.039]      | 22 $\pm$ 1 [0.866 $\pm$ 0.039]       |
| <b>L</b>             | 101 $\pm$ 2.5 [3.976 $\pm$ 0.098] | 121 $\pm$ 3 [4.764 $\pm$ 0.118]    | 166.5 $\pm$ 4.2 [6.555 $\pm$ 0.165] | 266.5 $\pm$ 6.7 [10.492 $\pm$ 0.264] |
| <b>D<sub>K</sub></b> | 21 [0.827]                        | 21 [0.827]                         | 21 [0.827]                          | 21 [0.827]                           |
| <b>L<sub>K</sub></b> | 16 [0.63]                         | 16 [0.63]                          | 16 [0.63]                           | 16 [0.63]                            |
| <b>d</b>             | 10 [0.394]                        | 10 [0.394]                         | 10 [0.394]                          | 10 [0.394]                           |



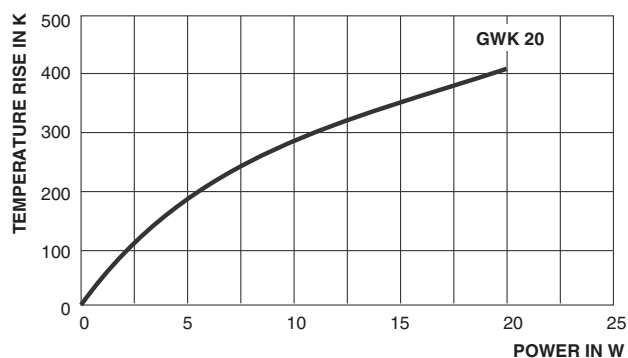
## DERATING



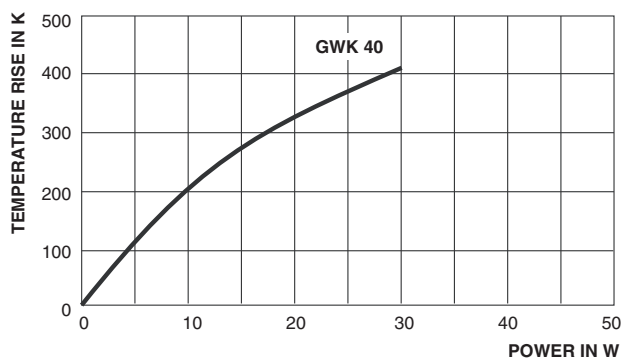
## TEMPERATURE RISE



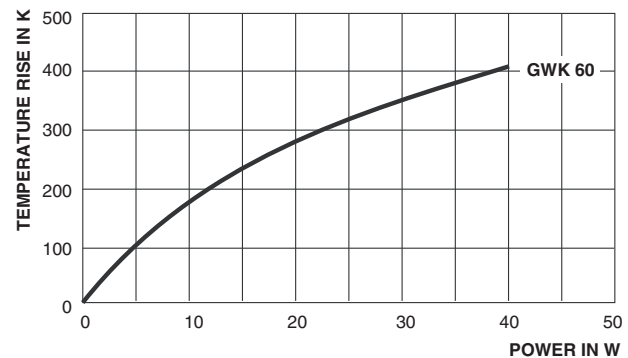
## TEMPERATURE RISE



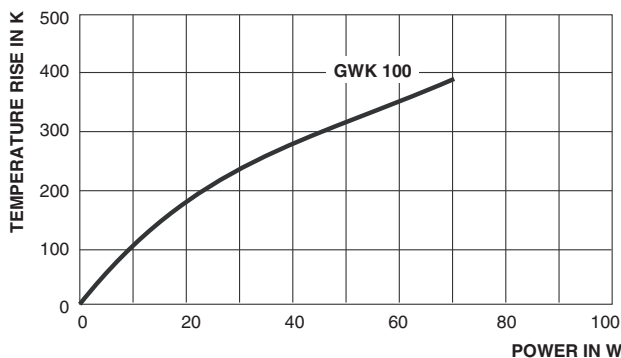
## TEMPERATURE RISE



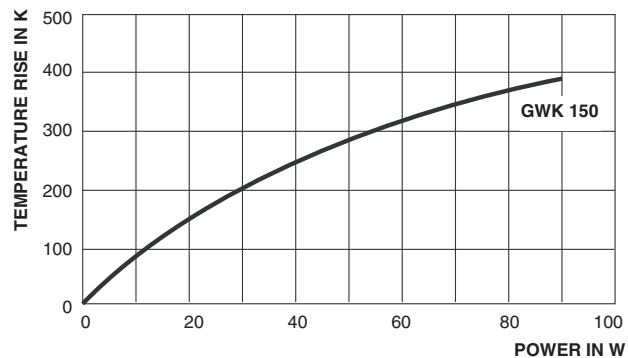
## TEMPERATURE RISE



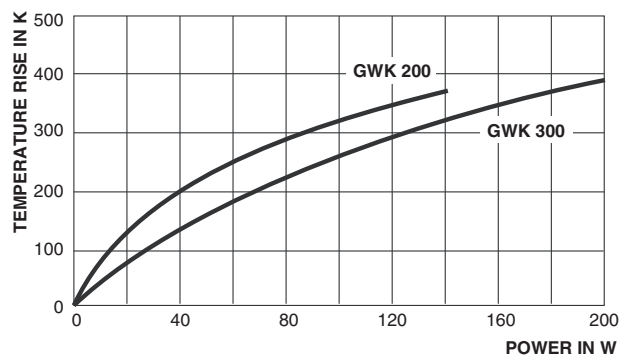
## TEMPERATURE RISE



## TEMPERATURE RISE



## TEMPERATURE RISE



**PULSE HANDLING FOR SHORT PULSES** (less than 100 ms)

For single pulsed up to 100 ms duration time the following energy resistance chart can be used to calculate the energy a resistor can handle. Look to the resistance value or the next higher value of the model you need and follow this row to the energy per ohm column to the left. The energy per ohm value multiplied by the resistance value is the energy the resistor can handle for 100 ms. This energy divided by 0.1 ms is the power the resistor can handle for 100 ms. For the power the resistor can handle for 10 ms needed divide the energy by 0.01. The maximum pulse power is limited at 625 x rated power.

Do not use this chart for GWK...Ni styles. For more information and assistance please contact factory.

| ENERGY RESISTANCE CHART |       |                    |       |                    |       |                    |       |                    |       |                    |       |                    |       |                    |       |
|-------------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| GWK10                   |       | GWK 20             |       | GWK 40             |       | GWK 60             |       | GWK 100            |       | GWK 150            |       | GWK 200            |       | GWK 300            |       |
| ENERGY/Ω<br>(Ws/Ω)      | R (Ω) | ENERGY/Ω<br>(Ws/Ω) | R (Ω) | ENERGY/Ω<br>(Ws/Ω) | R (Ω) | ENERGY/Ω<br>(Ws/Ω) | R (Ω) | ENERGY/Ω<br>(Ws/Ω) | R (Ω) | ENERGY/Ω<br>(Ws/Ω) | R (Ω) | ENERGY/Ω<br>(Ws/Ω) | R (Ω) | ENERGY/Ω<br>(Ws/Ω) | R (Ω) |
| 1.17E - 04              | 16.0K | 1.15E - 04         | 27.0K | 1.15E - 04         | 43.0K | 1.15E - 04         | 82.0K | 2.80E - 04         | 82.0K | 2.80E - 04         | 110K  | 2.80E - 04         | 180K  | 2.79E - 04         | 330K  |
| 1.17E - 04              | 13.0K | 1.16E - 04         | 2.40K | 1.15E - 04         | 36.0K | 1.15E - 04         | 68.0K | 2.80E - 04         | 62.0K | 2.80E - 04         | 82.0K | 2.80E - 04         | 130K  | 2.80E - 04         | 240K  |
| 1.72E - 04              | 9.1K  | 1.70E - 04         | 16.0K | 1.69E - 04         | 24.0K | 1.68E - 04         | 43.0K | 4.41E - 04         | 43.0K | 4.40E - 04         | 56.0K | 4.40E - 04         | 91.0K | 4.40E - 04         | 160K  |
| 2.88E - 04              | 6.2K  | 2.83E - 04         | 11.0K | 2.82E - 04         | 18.0K | 2.81E - 04         | 33.0K | 7.52E - 04         | 30.0K | 7.51E - 04         | 39.0K | 7.51E - 04         | 62.0K | 7.50E - 04         | 120K  |
| 4.53E - 04              | 4.3K  | 4.47E - 04         | 7.5K  | 4.45E - 04         | 11.0K | 4.42E - 04         | 22.0K | 1.20E - 03         | 22.0K | 1.20E - 03         | 30.0K | 1.20E - 03         | 47.0K | 1.20E - 03         | 82.0K |
| 7.72E - 04              | 3.0K  | 7.65E - 04         | 5.1K  | 7.58E - 04         | 8.2K  | 7.54E - 04         | 15.0K | 1.84E - 03         | 15.0K | 1.83E - 03         | 20.0K | 1.83E - 03         | 33.0K | 1.83E - 03         | 62.0K |
| 1.24E - 03              | 2.2K  | 1.23E - 03         | 3.9K  | 1.22E - 03         | 5.6K  | 1.21E - 03         | 11.0K | 2.93E - 03         | 10.0K | 2.93E - 03         | 15.0K | 2.93E - 03         | 22.0K | 2.92E - 03         | 39.0K |
| 1.91E - 03              | 1.5K  | 1.87E - 03         | 2.7K  | 1.86E - 03         | 3.9K  | 1.84E - 03         | 7.5K  | 4.53E - 03         | 3.0K  | 4.51E - 03         | 4.3K  | 4.49E - 03         | 6.8K  | 4.48E - 03         | 12.0K |
| 3.06E - 03              | 1.1K  | 3.00E - 03         | 1.8K  | 2.98E - 03         | 2.7K  | 2.95E - 03         | 5.1K  | 7.12E - 03         | 2.2K  | 7.09E - 03         | 3.0K  | 7.05E - 03         | 4.7K  | 7.04E - 03         | 9.1K  |
| 5.05E - 03              | 330   | 4.79E - 03         | 560   | 4.70E - 03         | 820   | 4.58E - 03         | 1.6K  | 1.14E - 02         | 1.6K  | 1.14E - 02         | 2.0K  | 1.13E - 02         | 3.3K  | 1.13E - 02         | 6.2K  |
| 8.11E - 03              | 220   | 7.61E - 03         | 390   | 7.44E - 03         | 560   | 7.20E - 03         | 1.1K  | 1.85E - 02         | 1.1K  | 1.84E - 02         | 1.5K  | 1.83E - 02         | 2.4K  | 1.83E - 02         | 4.3K  |
| 1.31E - 02              | 160   | 1.23E - 02         | 300   | 1.19E - 02         | 430   | 1.17E - 02         | 750   | 2.98E - 02         | 750   | 2.97E - 02         | 1.0K  | 2.94E - 02         | 1.6K  | 2.94E - 02         | 3.0K  |
| 2.06E - 02              | 110   | 2.01E - 02         | 200   | 1.94E - 02         | 300   | 1.89E - 02         | 560   | 4.81E - 02         | 560   | 4.78E - 02         | 750   | 4.75E - 02         | 1.2K  | 4.73E - 02         | 2.2K  |
| 3.56E - 02              | 75    | 3.24E - 02         | 150   | 3.16E - 02         | 200   | 3.04E - 02         | 390   | 1.14E - 01         | 390   | 1.14E - 01         | 560   | 7.23E - 02         | 1.0K  | 7.20E - 02         | 1.8K  |
| 5.77E - 02              | 56    | 5.30E - 02         | 100   | 5.10E - 02         | 150   | 4.93E - 02         | 270   | 1.79E - 01         | 300   | 1.78E - 01         | 390   | 1.13E - 01         | 910   | 1.13E - 01         | 1.6K  |
| 1.34E - 01              | 43    | 1.24E - 01         | 75    | 1.21E - 01         | 110   | 7.49E - 02         | 220   | 2.81E - 01         | 200   | 2.79E - 01         | 270   | 1.77E - 01         | 620   | 1.76E - 01         | 1.1K  |
| 2.14E - 01              | 30    | 1.98E - 01         | 51    | 1.90E - 01         | 75    | 1.17E - 01         | 200   | 4.81E - 01         | 150   | 4.79E - 01         | 180   | 2.77E - 01         | 430   | 2.76E - 01         | 750   |
| 3.47E - 01              | 20    | 3.14E - 01         | 36    | 3.00E - 01         | 56    | 1.83E - 01         | 150   | 7.75E - 01         | 100   | 7.69E - 01         | 130   | 4.75E - 01         | 300   | 4.72E - 01         | 560   |
| 5.96E - 01              | 15    | 5.48E - 01         | 24    | 5.22E - 01         | 36    | 2.88E - 01         | 100   | 1.19E + 00         | 68    | 1.17E + 00         | 100   | 7.62E - 01         | 220   | 7.57E - 01         | 390   |
| 9.93E - 01              | 10    | 8.86E - 01         | 18    | 8.41E - 01         | 27    | 4.96E - 01         | 68    | 1.87E + 00         | 51    | 1.85E + 00         | 68    | 1.17E + 00         | 150   | 1.16E + 00         | 270   |
| 1.54E + 00              | 7.5   | 1.38E + 00         | 13    | 1.29E + 00         | 20    | 7.98E - 01         | 51    | 2.92E + 00         | 36    | 2.89E + 00         | 47    | 1.83E + 00         | 110   | 1.81E + 00         | 200   |
| 2.52E + 00              | 5.1   | 2.21E + 00         | 9.1   | 2.05E + 00         | 15    | 1.23E + 00         | 36    | 4.61E + 00         | 27    | 4.56E + 00         | 36    | 2.85E + 00         | 82    | 2.82E + 00         | 150   |
| 4.00E + 00              | 3.9   | 3.48E + 00         | 6.8   | 3.26E + 00         | 10    | 1.93E + 00         | 27    | 7.46E + 00         | 18    | 7.36E + 00         | 24    | 4.50E + 00         | 56    | 4.45E + 00         | 100   |
| 6.58E + 00              | 2.7   | 5.64E + 00         | 4.7   | 5.26E + 00         | 6.8   | 3.05E + 00         | 18    | 1.21E + 01         | 12    | 1.19E + 01         | 18    | 7.24E + 00         | 39    | 7.16E + 00         | 68    |
| 1.12E + 01              | 1.8   | 9.11E + 00         | 3.6   | 8.50E + 00         | 5.1   | 4.84E + 00         | 13    | 1.97E ± 01         | 8.2   | 1.93E + 01         | 12    | 1.17E + 01         | 27    | 1.15E + 01         | 51    |
|                         |       | 1.56E + 01         | 2.2   | 1.42E + 01         | 3.3   | 7.86E + 00         | 9.1   |                    |       |                    |       | 1.89E + 01         | 20    | 1.86E + 01         | 36    |
|                         |       |                    |       |                    |       | 1.29E + 01         | 6.2   |                    |       |                    |       |                    |       |                    |       |



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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**

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<http://moschip.ru/get-element>

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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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