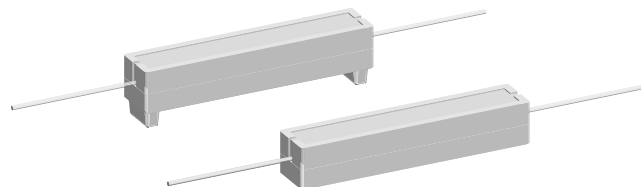




## Wirewound Resistors, Commercial Power, Axial Lead



### FEATURES

- High performance for low cost
- Meets or exceeds requirements of EIA Standard RS-344
- High power to size ratio
- Ceramic cases are available with circuit board stand-offs (designated with a -3 model ending)
- Special inorganic potting compound and ceramic case provide high thermal conductivity in a fireproof package
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

HALOGEN  
**FREE**  
Available

**GREEN**  
(5-2008)  
Available

### STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | POWER RATING<br>$P_{40^{\circ}\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$ | TOLERANCE<br>$\pm \%$ | WEIGHT<br>(TYPICAL)<br>g |
|--------------|---|------------------------------|-----------------------|--------------------------|
| CP0002       | 2   | 0.1 to 1K                    | 5, 10                 | 2.0                      |
| CP0002...3   | 2   | 0.1 to 1K                    | 5, 10                 | 2.2                      |
| CP0003       | 3   | 0.1 to 2K                    | 5, 10                 | 3.4                      |
| CP0003...3   | 3   | 0.1 to 2K                    | 5, 10                 | 3.6                      |
| CP0005       | 5   | 0.1 to 2.4K                  | 5, 10                 | 4.8                      |
| CP0005...3   | 5   | 0.1 to 2.4K                  | 5, 10                 | 5.0                      |
| CP0007       | 7   | 0.1 to 7K                    | 5, 10                 | 6.8                      |
| CP0007...3   | 7   | 0.1 to 7K                    | 5, 10                 | 7.0                      |
| CP0010       | 10  | 0.1 to 11K                   | 5, 10                 | 9.5                      |
| CP0010...3   | 10  | 0.1 to 11K                   | 5, 10                 | 9.9                      |
| CP0015       | 15  | 0.1 to 11K                   | 5, 10                 | 16.8                     |
| CP0015...3   | 15  | 0.1 to 11K                   | 5, 10                 | 17.4                     |
| CP0020       | 20  | 0.1 to 16K                   | 5, 10                 | 22.8                     |
| CP0020...3   | 20  | 0.1 to 16K                   | 5, 10                 | 23.6                     |
| CP0022       | 22  | 0.1 to 16K                   | 5, 10                 | 24.5                     |
| CP0022...3   | 22  | 0.1 to 16K                   | 5, 10                 | 25.3                     |
| CP0025       | 25  | 0.1 to 16K                   | 5, 10                 | 37.0                     |

### TECHNICAL SPECIFICATIONS

| PARAMETER                       | UNIT                    | CHARACTERISTICS  |
|---------------------------------|-------------------------|--|
| Temperature Coefficient         | ppm/ $^{\circ}\text{C}$ | $\pm 300$ 1 $\Omega$ and above; $\pm 600$ below 1 $\Omega$ |
| Short Time Overload             | -                       | 5 x rated power for 5 s                                    |
| Terminal Strength               | lb                      | 10 minimum   |
| Operating Temperature Range     | $^{\circ}\text{C}$      | -65 to +275  |
| Dielectric Withstanding Voltage | $V_{AC}$                | 1000   |
| Maximum Working Voltage         | V                       | $(P \times R)^{1/2}$                                       |

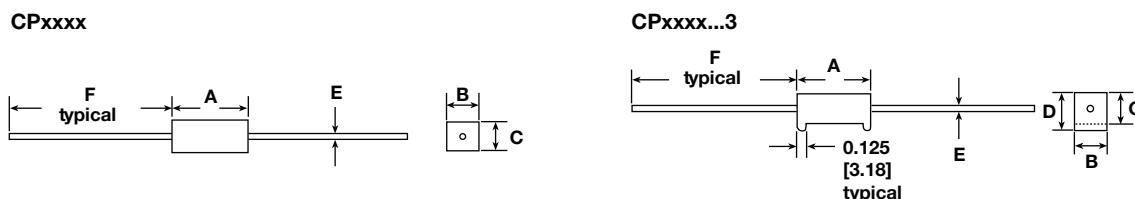
#### Note

- Wirewound CP resistors can reliably function as a fuse and as a resistor. Such components involve compromise between fusing and resistive functions; therefore, each design should be tailored to the application to ensure optimum performance. Contact factory by using the e-mail address at the bottom of this page for design assistance



| GLOBAL PART NUMBER INFORMATION   |   |   |                  |  |   |                |  |   |   |   |   |   |  |   |   |  |  |
|--|---|---|------------------|--|---|----------------|--|---|---|---|---|---|--|---|---|--|--|
| Global Part Numbering Example: CP000515R00JE143  |   |   |                  |  |   |                |  |   |   |   |   |   |  |   |   |  |  |
| C  | P | 0 | 0                | 0  | 5 | 1              | 5  | R | 0   | 0 | J | E | 1  | 4 | 3 |  |  |
| GLOBAL MODEL<br>(See Standard Electrical Specifications Global Model column for options) |   |   |                  | VALUE<br>R = decimal<br>K = thousand<br>R1500 = 0.15 Ω<br>1K500 = 1500 Ω |   |                | TOLERANCE<br>J = ± 5.0 %<br>K = ± 10.0 % |   | PACKAGING<br>E14 = lead (Pb)-free bulk pack<br>E31 = lead (Pb)-free four layer bulk pack<br>B14 = bulk pack<br>B31 = four layer bulk pack |   |   |   | SPECIAL<br>(Dash number)<br>(Up to 3 digits)<br>From 1 to 999<br>as applicable |   |   |  |  |
| Historical Part Numbering Example: CP-5-3 15 Ω 5 % B14                                   |   |   |                  |  |   |                |  |   |   |   |   |   |  |   |   |  |  |
| CP-5-3   |   |   | 15 Ω             |  |   | 5 %            |  |   | B14   |   |   |   |  |   |   |  |  |
| HISTORICAL MODEL   |   |   | RESISTANCE VALUE |  |   | TOLERANCE CODE |  |   | PACKAGING   |   |   |   |  |   |   |  |  |

**DIMENSIONS** in inches [millimeters]



| GLOBAL MODEL          | DIMENSIONS in inches [millimeters]     |                         |                         |                         |                         |                         |
|-----------------------|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                       | A <sup>(1)</sup><br>± 0.031<br>[0.794] | B<br>± 0.031<br>[0.794] | C<br>± 0.031<br>[0.794] | D<br>± 0.031<br>[0.794] | E<br>± 0.002<br>[0.050] | F<br>± 0.125<br>[3.175] |
| CP0002                | 0.688 [17.46]                          | 0.250 [6.35]            | 0.250 [6.35]            | -                       | 0.032 [0.813]           | 1.500 [38.10]           |
| CP0002...3            | 0.688 [17.46]                          | 0.250 [6.35]            | 0.250 [6.35]            | 0.313 [7.94]            | 0.032 [0.813]           | 1.500 [38.10]           |
| CP0003                | 0.875 [22.22]                          | 0.313 [7.94]            | 0.313 [7.94]            | -                       | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0003...3            | 0.875 [22.22]                          | 0.313 [7.94]            | 0.313 [7.94]            | 0.375 [9.52]            | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0005                | 0.875 [22.22]                          | 0.375 [9.52]            | 0.344 [8.73]            | -                       | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0005...3            | 0.875 [22.22]                          | 0.375 [9.52]            | 0.344 [8.73]            | 0.406 [10.32]           | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0007                | 1.391 [35.32]                          | 0.375 [9.52]            | 0.344 [8.73]            | -                       | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0007...3            | 1.391 [35.32]                          | 0.375 [9.52]            | 0.344 [8.73]            | 0.469 [11.91]           | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0010                | 1.875 [47.62]                          | 0.375 [9.52]            | 0.344 [8.73]            | -                       | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0010...3            | 1.875 [47.62]                          | 0.375 [9.52]            | 0.344 [8.73]            | 0.469 [11.91]           | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0015                | 1.875 [47.62]                          | 0.500 [12.70]           | 0.500 [12.70]           | -                       | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0015...3            | 1.875 [47.62]                          | 0.500 [12.70]           | 0.500 [12.70]           | 0.625 [15.87]           | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0020 <sup>(2)</sup> | 2.500 [63.50]                          | 0.500 [12.70]           | 0.500 [12.70]           | -                       | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0020...3            | 2.500 [63.50]                          | 0.500 [12.70]           | 0.500 [12.70]           | 0.625 [15.87]           | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0022                | 2.500 [63.50]                          | 0.500 [12.70]           | 0.500 [12.70]           | -                       | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0022...3            | 2.500 [63.50]                          | 0.500 [12.70]           | 0.500 [12.70]           | 0.625 [15.87]           | 0.036 [0.914]           | 1.500 [38.10]           |
| CP0025                | 2.500 [63.50]                          | 0.625 [15.87]           | 0.625 [15.87]           | -                       | 0.040 [1.016]           | 1.500 [38.10]           |

**Note**

<sup>(1)</sup> Potting compound may extend outside of ceramic case up to 0.060 [1.52] maximum per side



## MATERIAL SPECIFICATIONS

**Element:** copper-nickel alloy or nickel-chrome alloy, depending on resistance value

**Core:** woven fiberglass

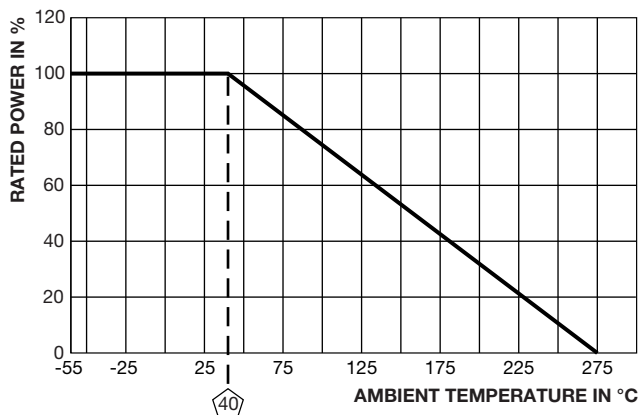
**Body:** steatite ceramic case with inorganic potting compound

**End Caps:** tin plated steel

**Terminals:** tinned copper

**Part Marking:** Dale, model, wattage, value, tolerance, date code

## DERATING



| PERFORMANCE                     |   |                        |
|---------------------------------|---|------------------------|
| TEST                            | CONDITIONS OF TEST  | TEST LIMITS (EIA-344)  |
| Thermal Shock                   | -55 °C to +275 °C, 5 cycles, 30 min dwell time                      | ± (5.0 % + 0.05 Ω) ΔR  |
| Short Time Overload             | 5 x rated power for 5 s   | ± (4.0 % + 0.05 Ω) ΔR  |
| Dielectric Withstanding Voltage | 1000 V <sub>RMS</sub> , for 1 min                                   | ± (2.0 % + 0.05 Ω) ΔR  |
| Low Temperature Storage         | -65 °C, full rated working voltage for 45 min                       | ± (3.0 % + 0.05 Ω) ΔR  |
| Humidity                        | 75 °C, 90 % to 100 % RH, 240 h                                      | ± (5.0 % + 0.05 Ω) ΔR  |
| Load Life                       | 1000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF"             | ± (10.0 % + 0.05 Ω) ΔR |
| Terminal Strength               | 5 pounds for 30 s; body twisted about axis, 3 x 360° rotations      | ± (2.0 % + 0.05 Ω) ΔR  |
| Resistance to Solder Heat       | Terminal immersed 3.5 s in molten solder at 1/8" to 3/16" from body | ± (4.0 % + 0.05 Ω) ΔR  |



## 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.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. 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.