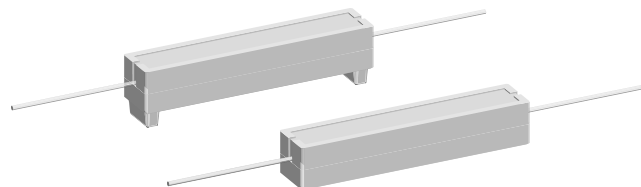




## Wirewound Resistors, Commercial Power, Axial Lead



### 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)



### 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

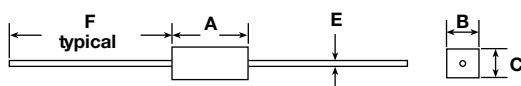
|  |   |   |   |   |   |   |                             |   |  |   |   |   |   |  |   |  |  |
|--|---|---|---|---|---|---|-----------------------------|---|--|---|---|---|---|--|---|--|--|
| C  | P | 0 | 0 | 0   | 5 | 1 | 5                           | R | 0  | 0 | J | E | 1 | 4  | 3 |  |  |
| GLOBAL MODEL   |   |   |   | VALUE   |   |   | TOLERANCE                   |   | PACKAGING  |   |   |   |   | SPECIAL  |   |  |  |
| (See Standard Electrical Specifications Global Model column for options) |   |   |   | R = decimal<br>K = thousand<br>R1500 = 0.15 Ω<br>1K500 = 1500 Ω |   |   | J = ± 5.0 %<br>K = ± 10.0 % |   | 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 |   |   |   |   | (Dash number)<br>(Up to 3 digits)<br>From 1 to 999 as applicable |   |  |  |

Historical Part Numbering Example: CP-5-3 15  $\Omega$  5 % B14

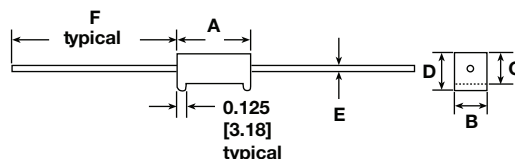
|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| CP-5-3           | 15 $\Omega$      | 5 %            | B14       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

## DIMENSIONS in inches [millimeters]

CPxxxx



CPxxxx...3



| GLOBAL MODEL          | DIMENSIONS in inches [millimeters]         |                             |                             |                             |                             |                             |
|-----------------------|--|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
|                       | A <sup>(1)</sup><br>$\pm 0.031$<br>[0.794] | B<br>$\pm 0.031$<br>[0.794] | C<br>$\pm 0.031$<br>[0.794] | D<br>$\pm 0.031$<br>[0.794] | E<br>$\pm 0.002$<br>[0.050] | F<br>$\pm 0.125$<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

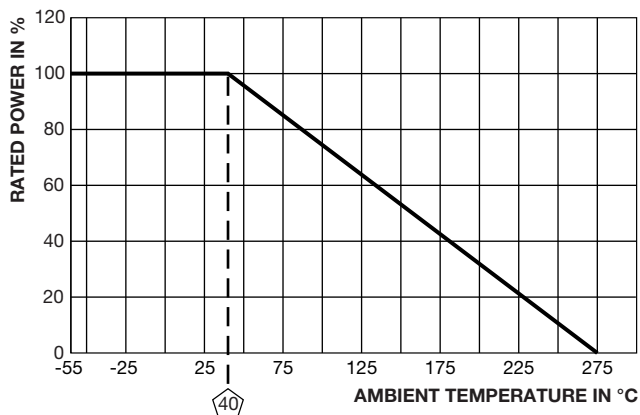
**Body:** steatite ceramic case with inorganic potting compound

**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  |



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