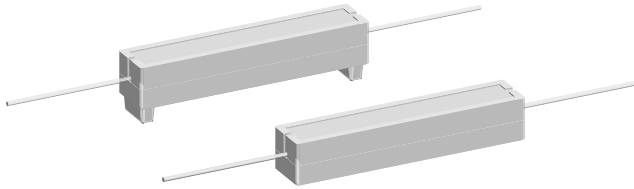


## Wirewound/Metal Oxide Resistors, Commercial Power, Axial Lead



### 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



**RoHS\***  
COMPLIANT

### STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | POWER RATING<br>P <sub>40 °C</sub><br>W | RESISTANCE RANGE<br>Ω<br>± 10 % Standard, ± 5 % Available |               | WEIGHT<br>(Typical)<br>g |
|--------------|-----------------------------------------|-----------------------------------------------------------|---------------|--------------------------|
|              |                                         | WIREWOUND**                                               | METAL OXIDE** |                          |
| CP0002       | 2                                       | 0.1 - 1K                                                  | 100 - 12K     | 2.0                      |
| CP0002...3   | 2                                       | 0.1 - 1K                                                  | 100 - 12K     | 2.2                      |
| CP0003       | 3                                       | 0.1 - 2K                                                  | 150 - 22K     | 3.4                      |
| CP0003...3   | 3                                       | 0.1 - 2K                                                  | 150 - 22K     | 3.6                      |
| CP0005       | 5                                       | 0.1 - 2.4K                                                | 150 - 27K     | 4.8                      |
| CP0005...3   | 5                                       | 0.1 - 2.4K                                                | 150 - 27K     | 5.0                      |
| CP0007       | 7                                       | 0.1 - 5K                                                  | 1K - 35K      | 6.8                      |
| CP0007...3   | 7                                       | 0.1 - 5K                                                  | 1K - 35K      | 7.0                      |
| CP0010       | 10                                      | 0.1 - 7K                                                  | 1K - 40K      | 9.5                      |
| CP0010...3   | 10                                      | 0.1 - 7K                                                  | 1K - 40K      | 9.9                      |
| CP0015       | 15                                      | 0.1 - 8K                                                  | 1K - 40K      | 16.8                     |
| CP0015...3   | 15                                      | 0.1 - 8K                                                  | 1K - 40K      | 17.4                     |
| CP0020       | 20                                      | 0.1 - 10K                                                 | 1K - 45K      | 22.8                     |
| CP0020...3   | 20                                      | 0.1 - 10K                                                 | -             | 23.6                     |
| CP0022       | 22                                      | 0.1 - 10K                                                 | -             | 24.5                     |
| CP0022...3   | 22                                      | 0.1 - 10K                                                 | -             | 25.3                     |
| CP0025       | 25                                      | 0.1 - 10K                                                 | -             | 37.0                     |

\*\* To specifically order a Wirewound sub-assembly for resistance values that overlap between the Wirewound and Metal Oxide technologies, the model will be a CPxxxx...85 for standard body and CPxxxx...91 for body with stand-offs. To specifically order a Metal Oxide sub-assembly for resistance values that overlap between the Wirewound and Metal Oxide technologies, the model will be a CPxxxx...100 for a standard body and CPxxxx...101 for body with stand-offs. If no dash type is specified, either technology may be supplied.

### TECHNICAL SPECIFICATIONS

| PARAMETER                       | UNIT            | WIREWOUND CHARACTERISTICS                                 |
|---------------------------------|-----------------|-----------------------------------------------------------|
| Temperature Coefficient         | ppm/°C          | ± 600 below 1 Ω,<br>± 300 1 Ω and above                   |
| Short Time Overload             | -               | 5 x rated power for 5 sec.                                |
| Terminal Strength               | lb              | 10 minimum                                                |
| Operating Temperature Range     | °C              | - 65/+ 275                                                |
| Dielectric Withstanding Voltage | V <sub>AC</sub> | 1000                                                      |
| Maximum Working Voltage         | V               | (P x R) <sup>1/2</sup>                                    |
| PARAMETER                       | UNIT            | METAL OXIDE CHARACTERISTICS                               |
| Temperature Coefficient         | ppm/°C          | ± 300 for CP0002 to CP0005;<br>± 400 for CP0007 to CP0020 |
| Short Time Overload             | -               | 5 x rated power for 5 sec.                                |
| Terminal Strength               | lb              | 10 minimum                                                |
| Operating Temperature Range     | °C              | - 65/+ 225                                                |
| Dielectric Withstanding Voltage | V <sub>AC</sub> | 1000                                                      |
| Maximum Working Voltage         | V               | (P x R) <sup>1/2</sup>                                    |

**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

New Global Part Numbering: CP000515R00JB143 (preferred part number format)

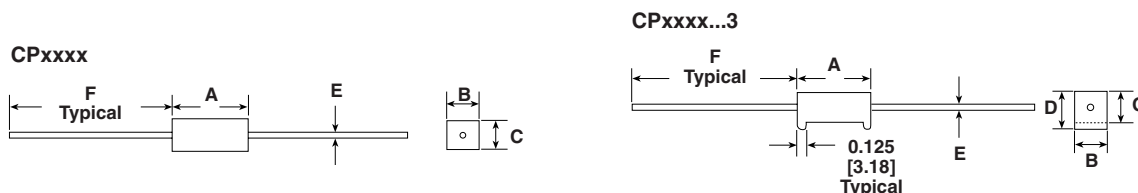
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| C | P | 0 | 0 | 0 | 5 | 1 | 5 | R | 0 | 0 | J | B | 1 | 4 | 3 |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|

| 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 | H = ± 3.0 %<br>J = ± 5.0 %<br>K = ± 10.0 % | E14 = Lead (Pb)-free bulk pack<br>E31 = Lead (Pb)-free four layer bulk pack<br><br>B14 = Bulk pack<br>B31 = Four layer bulk pack | (Dash Number)<br>(up to 3 digits)<br>From 1 - 999<br>as applicable |

Historical Part Number example: CP-5-3 15 Ω 5 % B14 (will continue to be accepted)

|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| CP-5-3           | 15 Ω             | 5 %            | B14       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

## DIMENSIONS



| GLOBAL MODEL | DIMENSIONS in inches [millimeters] |                         |                         |                         |                      |                |                                 |                        |
|--------------|------------------------------------|-------------------------|-------------------------|-------------------------|----------------------|----------------|---------------------------------|------------------------|
|              | A*<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>± 0.001 [0.025] |                | F                               |                        |
|              |                                    |                         |                         |                         | WIREWOUND            | METAL OXIDE    | WIREWOUND<br>± 0.125<br>[3.175] | METAL OXIDE<br>MINIMUM |
| CP0002       | 0.688 [17.46]                      | 0.250 [6.35]            | 0.250 [6.35]            | -                       | 0.032 [0.813]        | 0.0236 [0.600] | 1.500 [38.10]                   | 0.750 [19.05]          |
| CP0002...3   | 0.688 [17.46]                      | 0.250 [6.35]            | 0.250 [6.35]            | 0.313 [7.94]            | 0.032 [0.813]        | 0.0236 [0.600] | 1.500 [38.10]                   | 0.750 [19.05]          |
| CP0003       | 0.875 [22.22]                      | 0.313 [7.94]            | 0.313 [7.94]            | -                       | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0003...3   | 0.875 [22.22]                      | 0.313 [7.94]            | 0.313 [7.94]            | 0.375 [9.52]            | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0005       | 0.875 [22.22]                      | 0.375 [9.52]            | 0.344 [8.73]            | -                       | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0005...3   | 0.875 [22.22]                      | 0.375 [9.52]            | 0.344 [8.73]            | 0.406 [10.32]           | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0007       | 1.391 [35.32]                      | 0.375 [9.52]            | 0.344 [8.73]            | -                       | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0007...3   | 1.391 [35.32]                      | 0.375 [9.52]            | 0.344 [8.73]            | 0.469 [11.91]           | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0010       | 1.875 [47.62]                      | 0.375 [9.52]            | 0.344 [8.73]            | -                       | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0010...3   | 1.875 [47.62]                      | 0.375 [9.52]            | 0.344 [8.73]            | 0.469 [11.91]           | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0015       | 1.875 [47.62]                      | 0.500 [12.70]           | 0.500 [12.70]           | -                       | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0015...3   | 1.875 [47.62]                      | 0.500 [12.70]           | 0.500 [12.70]           | 0.625 [15.87]           | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| CP0020**     | 2.500 [63.50]                      | 0.500 [12.70]           | 0.500 [12.70]           | -                       | 0.036 [0.914]        | 0.032 [0.813]  | 1.500 [38.10]                   | 1.000 [25.40]          |
| 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]                   | -                      |

\* Potting compound may extend outside of ceramic case up to 0.060" [1.52] maximum per side.

\*\* Dimensions for the metal oxide are: A = 2.360 [59.94], B = 0.570 [14.48], C = 0.530 [13.46], E = 0.032 [0.813], F = 1.000 [25.40]

## MATERIAL SPECIFICATIONS

**Element:** Wirewound = Copper-nickel alloy or nickel-chrome alloy, depending on resistance value  
Metal Oxide = High temperature fired Metal Oxide film

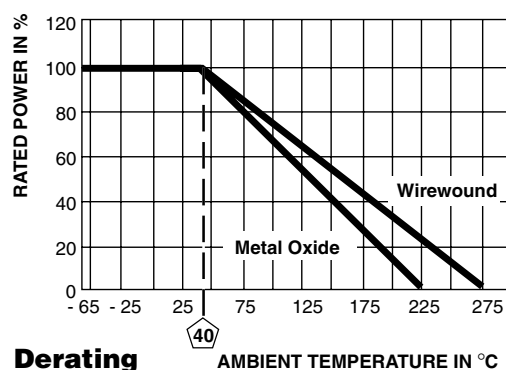
**Core:** Wirewound = Woven fiberglass  
Metal Oxide = Alumina ceramic

**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



| PERFORMANCE                     |                                                                                |                        |
|---------------------------------|--------------------------------------------------------------------------------|------------------------|
| TEST                            | CONDITIONS OF TEST                                                             | TEST LIMITS (EIA-344)  |
| Thermal Shock                   | - 55 °C to + 275 °C (+ 225 °C for Metal Oxide), 5 cycles, 30 minute dwell time | ± (5.0 % + 0.05 Ω) ΔR  |
| Short Time Overload             | 5 x rated power for 5 seconds                                                  | ± (4.0 % + 0.05 Ω) ΔR  |
| Dielectric Withstanding Voltage | 1000 V <sub>rms</sub> , for one minute                                         | ± (2.0 % + 0.05 Ω) ΔR  |
| Low Temperature Storage         | - 65 °C, full rated working voltage for 45 minutes                             | ± (3.0 % + 0.05 Ω) ΔR  |
| Humidity                        | 75 °C, 90 % - 100 % RH, 240 hours                                              | ± (5.0 % + 0.05 Ω) ΔR  |
| Load Life                       | 1000 hours at rated power, + 25 °C, 1.5 hours "ON", 0.5 hours "OFF"            | ± (10.0 % + 0.05 Ω) ΔR |
| Terminal Strength               | 5 pounds for 30 seconds; body twisted about axis, 3 360° rotations             | ± (2.0 % + 0.05 Ω) ΔR  |
| Resistance to Solder Heat       | Terminal immersed 3.5 seconds in molten solder at 1/8" to 3/16" from body      | ± (4.0 % + 0.05 Ω) ΔR  |



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- Консультации по применению компонента;
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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.