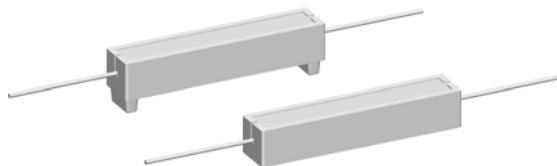




## Wirewound/Metal Oxide Resistors, Commercial Power, Axial Lead



## FEATURES

- High performance for low cost
- High power to size ratio
- Ceramic cases are available with circuit board stand-offs (designated with a ...3 model ending)
- Special cement 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**  
**GREEN**  
(5-2008)

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | POWER RATING<br>$P_{40^{\circ}\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$<br>WIREWOUND (1) | RESISTANCE RANGE<br>$\Omega$<br>METAL OXIDE (1) | TOLERANCE<br>$\pm$ % | WEIGHT<br>(typical)<br>g |
|--------------|-----------------------------------------------|-----------------------------------------------|-------------------------------------------------|----------------------|--------------------------|
| CP0002       | 2                                             | 0.1 to 100                                    | 101 to 30K                                      | 5, 10                | 2.0                      |
| CP0003       | 3                                             | 0.1 to 100                                    | 101 to 33K                                      | 5, 10                | 3.4                      |
| CP0005       | 5                                             | 0.1 to 100                                    | 101 to 50K                                      | 5, 10                | 3.6                      |
| CP0005...3   | 5                                             | 0.1 to 100                                    | 101 to 50K                                      | 5, 10                | 4.8                      |
| CP0007       | 7                                             | 0.1 to 100                                    | 101 to 50K                                      | 5, 10                | 5.0                      |
| CP0007...3   | 7                                             | 0.1 to 100                                    | 101 to 50K                                      | 5, 10                | 6.8                      |
| CP0010       | 10                                            | 0.1 to 100                                    | 101 to 50K                                      | 5, 10                | 9.5                      |
| CP0010...3   | 10                                            | 0.1 to 100                                    | 101 to 50K                                      | 5, 10                | 9.9                      |
| CP0015       | 15                                            | 0.1 to 100                                    | 101 to 50K                                      | 5, 10                | 16.8                     |
| CP0020       | 20                                            | 0.1 to 100                                    | 101 to 50K                                      | 5, 10                | 22.8                     |

## TECHNICAL SPECIFICATIONS

| PARAMETER                       | UNIT                    | WIREWOUND CHARACTERISTICS | METAL OXIDE CHARACTERISTICS |
|---------------------------------|-------------------------|---------------------------|-----------------------------|
| Temperature Coefficient         | ppm/ $^{\circ}\text{C}$ | $\pm 400$                 | $\pm 400$                   |
| Short Time Overload             | -                       | 5 x rated power for 5 s   | 5 x rated power for 5 s     |
| Terminal Strength               | lb                      | 10 minimum                | 10 minimum                  |
| Operating Temperature Range     | $^{\circ}\text{C}$      | -65 to +275               | -65 to +225                 |
| Dielectric Withstanding Voltage | $V_{AC}$                | 1000                      | 1000                        |
| Maximum Working Voltage         | V                       | $(P \times R)^{1/2}$      | $(P \times R)^{1/2}$        |

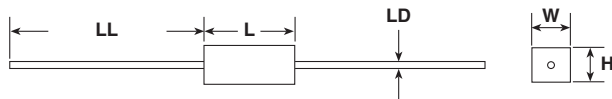
## GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: CP000515R00JE663

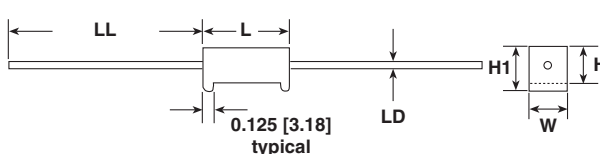
|                                                                                          |   |                                                                                        |   |                                                  |   |                                             |   |                                                                                |   |   |   |   |   |   |   |  |  |
|------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------|---|--------------------------------------------------|---|---------------------------------------------|---|--------------------------------------------------------------------------------|---|---|---|---|---|---|---|--|--|
| C                                                                                        | P | 0                                                                                      | 0 | 0                                                | 5 | 1                                           | 5 | R                                                                              | 0 | 0 | J | E | 6 | 6 | 3 |  |  |
| GLOBAL MODEL<br>(See Standard Electrical Specifications Global Model column for options) |   | VALUE<br>R = Decimal<br>K = Thousand<br>R1500 = 0.15 $\Omega$<br>1K500 = 1500 $\Omega$ |   | TOLERANCE<br>J = $\pm 5.0$ %<br>K = $\pm 10.0$ % |   | PACKAGING<br>E66 = Lead (Pb)-free bulk pack |   | SPECIAL<br>(Dash Number)<br>(up to 3 digits)<br>From 1 to 999<br>as applicable |   |   |   |   |   |   |   |  |  |

**DIMENSIONS** in inches [millimeters]

CPxxxx



CPxxxx...3



| GLOBAL MODEL | DIMENSIONS in inches [millimeters] |                    |                    |                     |                      |                     |
|--------------|------------------------------------|--------------------|--------------------|---------------------|----------------------|---------------------|
|              | L <sup>(1)</sup><br>± 0.060 [1.5]  | W<br>± 0.040 [1.0] | H<br>± 0.040 [1.0] | H1<br>± 0.060 [1.5] | LD<br>± 0.002 [0.05] | LL<br>± 0.120 [3.0] |
| CP0002       | 0.71 [18]                          | 0.276 [7]          | 0.276 [7]          | -                   | 0.0256 [0.65]        | 1.378 [35]          |
| CP0003       | 0.87 [22]                          | 0.315 [8]          | 0.315 [8]          | -                   | 0.031 [0.8]          | 1.378 [35]          |
| CP0005       | 0.87 [22]                          | 0.394 [10]         | 0.354 [9]          | -                   | 0.031 [0.8]          | 1.378 [35]          |
| CP0005...3   | 0.87 [22]                          | 0.394 [10]         | 0.354 [9]          | 0.413 [10.5]        | 0.031 [0.8]          | 1.378 [35]          |
| CP0007       | 1.38 [35]                          | 0.394 [10]         | 0.354 [9]          | -                   | 0.031 [0.8]          | 1.378 [35]          |
| CP0007...3   | 1.38 [35]                          | 0.394 [10]         | 0.354 [9]          | 0.472 [12]          | 0.031 [0.8]          | 1.378 [35]          |
| CP0010       | 1.89 [48]                          | 0.394 [10]         | 0.354 [9]          | -                   | 0.031 [0.8]          | 1.378 [35]          |
| CP0010...3   | 1.89 [48]                          | 0.394 [10]         | 0.354 [9]          | 0.472 [12]          | 0.031 [0.8]          | 1.378 [35]          |
| CP0015       | 1.89 [48]                          | 0.492 [12.5]       | 0.453 [11.5]       | -                   | 0.031 [0.8]          | 1.378 [35]          |
| CP0020       | 2.36 [60]                          | 0.551 [14]         | 0.531 [13.5]       | -                   | 0.031 [0.8]          | 1.378 [35]          |

**Notes**

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

**MATERIAL SPECIFICATIONS**

**Element:** Wirewound = copper-nickel alloy or nickel-chrome alloy, depending on resistance value.  
Metal oxide = high temperature fired metal oxide film.

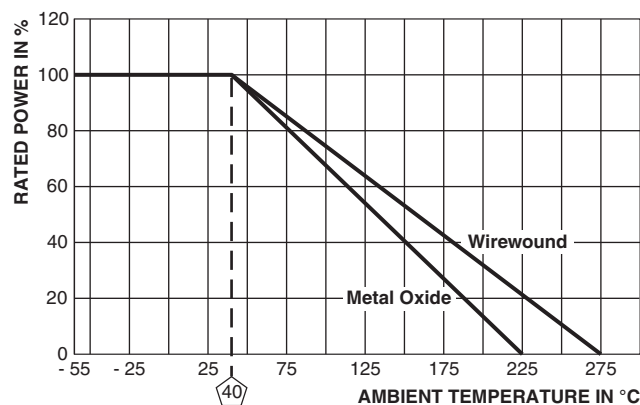
**Core:** Wirewound = ceramic  
Metal Oxide = ceramic

**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

**DERATING**

| PERFORMANCE                     |                                                                          |                        |
|---------------------------------|--------------------------------------------------------------------------|------------------------|
| TEST                            | CONDITIONS OF TEST                                                       | TEST LIMITS (EIA-344)  |
| Thermal Shock                   | -55 °C to +275 °C (+225 °C for Metal Oxide), 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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