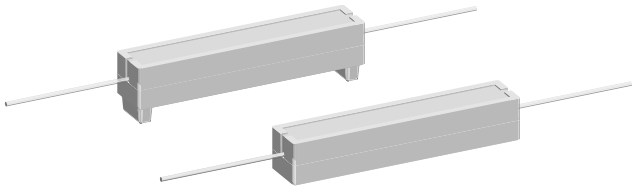
# Wirewound Resistors, Commercial Power, Axial Lead



## FEATURES

- High power to size ratio
- Ceramic cases are available with circuit board stand-offs (designated with a -3 model ending)
- Superior surge capability
- Complete welded construction
- Available in non-inductive styles with Aryton-Perry winding (CPWN in lieu of CPW, maximum resistance is one-half CPW range)
- 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

Pb-free Available

e3

RoHS* Available

HALOGEN FREE Available

GREEN (5-2008) Available

**Note**

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING $P_{40\,°C}$ W | RESISTANCE RANGE Ω | TOLERANCE ± % | WEIGHT (typical) g |
|---|---|---|---|---|---|
| CPW02 | CPW-2 | 2 | 0.1 to 7K | 1, 2, 3, 5 | 2.0 |
| CPW02...3 | CPW-2-3 | 2 | 0.1 to 7K | 1, 2, 3, 5 | 2.2 |
| CPW03 | CPW-3 | 3 | 0.1 to 7.5K | 1, 2, 3, 5 | 3.4 |
| CPW03...3 | CPW-3-3 | 3 | 0.1 to 7.5K | 1, 2, 3, 5 | 3.6 |
| CPW05 | CPW-5 | 5 | 0.1 to 8.5K | 1, 2, 3, 5 | 4.8 |
| CPW05...3 | CPW-5-3 | 5 | 0.1 to 8.5K | 1, 2, 3, 5 | 5.0 |
| CPW07 | CPW-7 | 7 | 0.1 to 18K | 1, 2, 3, 5 | 6.8 |
| CPW07...3 | CPW-7-3 | 7 | 0.1 to 18K | 1, 2, 3, 5 | 7.0 |
| CPW10 | CPW-10 | 10 | 0.12 to 30K | 1, 2, 3, 5 | 9.5 |
| CPW10...3 | CPW-10-3 | 10 | 0.12 to 30K | 1, 2, 3, 5 | 9.9 |
| CPW15 | CPW-15 | 15 | 0.12 to 30K | 1, 2, 3, 5 | 16.8 |
| CPW15...3 | CPW-15-3 | 15 | 0.12 to 30K | 1, 2, 3, 5 | 17.4 |
| CPW20 | CPW-20 | 20 | 0.18 to 45K | 1, 2, 3, 5 | 22.8 |
| CPW20...3 | CPW-20-3 | 20 | 0.18 to 45K | 1, 2, 3, 5 | 23.6 |

## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | CPW RESISTOR CHARACTERISTICS |
|---|---|---|
| Temperature Coefficient | ppm/°C | ± 30 for 10 Ω and above; ± 50 for 1.0 Ω to 9.9 Ω; ± 90 for 0.5 Ω to 0.99 Ω |
| Short Time Overload | - | 5 x rated power for 5 s |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Operating Temperature Range | °C | -65 to +275 |
| Terminal Strength | lb | 10 minimum |
| Dielectric Withstanding Voltage | $V_{AC}$ | 1000 |

## GLOBAL PART NUMBER INFORMATION

**Global Part Numbering example: CPW0515R00JB313**

| C | P | W | 0 | 5 | 1 | 5 | R | 0 | 0 | J | B | 3 | 1 | 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 | **F** = ± 1.0 %<br>**G** = ± 2.0 %<br>**H** = ± 3.0 %<br>**J** = ± 5.0 % | **E14** = Lead (Pb)-free bulk<br>**E31** = Lead (Pb)-free four layer bulk<br>**E01** = Lead (Pb)-free skin pack<br>**B14** = Tin/lead bulk<br>**B31** = Tin/lead four layer bulk<br>**J01** = Tin/lead skin pack | (Dash Number)<br>(up to 3 digits)<br>From **1 to 999**<br>as applicable |

**Historical Part Numbering example: CPW-5-3 15 Ω 5 % B31**

| CPW-5-3 | 15 Ω | 5 % | B31 |
|---|---|---|---|
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

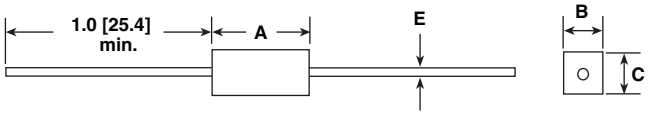


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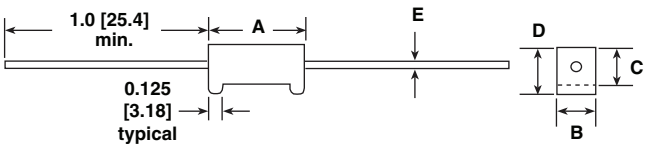
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## DIMENSIONS in inches [millimeters]

CPWxx




CPWxx...3




| GLOBAL MODEL | DIMENSIONS in inches [millimeters] | | | | |
|---|---|---|---|---|---|
| | A (1) ± 0.031 [0.794] | B ± 0.031 [0.794] | C ± 0.031 [0.794] | D ± 0.031 [0.794] | E ± 0.001 [0.025] |
| CPW02 | 0.688 [17.46] | 0.250 [6.35] | 0.250 [6.35] | - | 0.032 [0.813] |
| CPW02...3 | 0.688 [17.46] | 0.250 [6.35] | 0.250 [6.35] | 0.313 [7.94] | 0.032 [0.813] |
| CPW03 | 0.875 [22.22] | 0.313 [7.94] | 0.313 [7.94] | - | 0.032 [0.813] |
| CPW03...3 | 0.875 [22.22] | 0.313 [7.94] | 0.313 [7.94] | 0.375 [9.52] | 0.032 [0.813] |
| CPW05 | 0.875 [22.22] | 0.375 [9.52] | 0.344 [8.73] | - | 0.032 [0.813] |
| CPW05...3 | 0.875 [22.22] | 0.375 [9.52] | 0.344 [8.73] | 0.406 [10.32] | 0.032 [0.813] |
| CPW07 | 1.391 [35.32] | 0.375 [9.52] | 0.344 [8.73] | - | 0.032 [0.813] |
| CPW07...3 | 1.391 [35.32] | 0.375 [9.52] | 0.344 [8.73] | 0.469 [11.91] | 0.032 [0.813] |
| CPW10 | 1.875 [47.62] | 0.375 [9.52] | 0.344 [8.73] | - | 0.032 [0.813] |
| CPW10...3 | 1.875 [47.62] | 0.375 [9.52] | 0.344 [8.73] | 0.469 [11.91] | 0.032 [0.813] |
| CPW15 | 1.875 [47.62] | 0.500 [12.70] | 0.500 [12.70] | - | 0.032 [0.813] |
| CPW15...3 | 1.875 [47.62] | 0.500 [12.70] | 0.500 [12.70] | 0.625 [15.87] | 0.032 [0.813] |
| CPW20 | 2.500 [63.50] | 0.500 [12.70] | 0.500 [12.70] | - | 0.032 [0.813] |
| CPW20...3 | 2.500 [63.50] | 0.500 [12.70] | 0.500 [12.70] | 0.625 [15.87] | 0.032 [0.813] |

**Note**

(1) 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:** ceramic

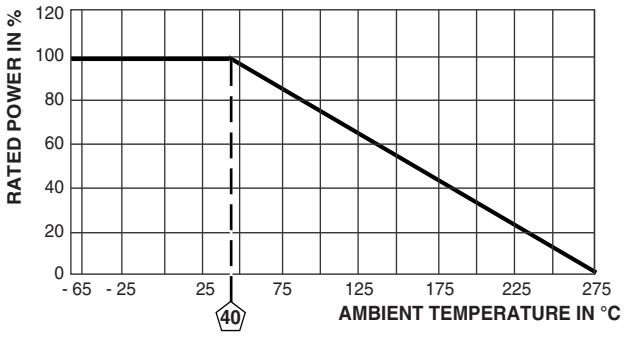
**End Caps:** stainless steel

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

**Terminals:** tinned copperweld®

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

## DERATING




## PERFORMANCE

| TEST | CONDITIONS OF TEST | TEST LIMITS (EIA RS-344) |
|---|---|---|
| Thermal Shock | -55 °C to +275 °C, 5 cycles, 30 min dwell time | ± (2.0 % + 0.05 Ω) $\Delta R$ |
| Short Time Overload | 5 x rated power for 5 s | ± (2.0 % + 0.05 Ω) $\Delta R$ |
| Dielectric Withstanding | 1000 $V_{RMS}$ for 1 min | ± (0.1 % + 0.05 Ω) $\Delta R$ |
| Low Temperature Storage | -65 °C, full rated working voltage for 45 min | ± (2.0 % + 0.05 Ω) $\Delta R$ |
| Bias Humidity | 75 °C, 90 % to 100 % RH, 240 h | ± (2.0 % + 0.05 Ω) $\Delta R$ |
| Load Life | 1000 h at rated power, +40 °C, 1.5 h “ON”, 0.5 h “OFF” | ± (3.0 % + 0.05 Ω) $\Delta R$ |
| Terminal Strength | 5 s to 10 s 10 pound pull test, torsion test - 3 alternating directions, 360° each | ± (1.0 % + 0.05 Ω) $\Delta R$ |
| Resistance to Solder Heat | Terminal immersed 3.5 s in molten solder at 1/8" to 3/16" from body | ± (1.0 % + 0.05 Ω) $\Delta R$ |



For technical questions, contact: ww2aresistors@vishay.com

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