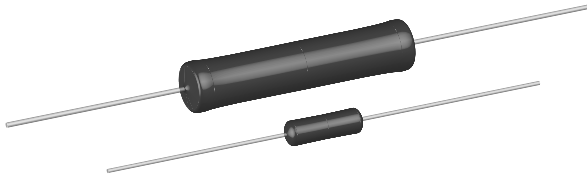


Wirewound Resistors, Commercial Coated, Axial Lead



FEATURES

- High performance for low cost
- High temperature silicone coating
- Complete welded construction
- Excellent stability in operation
- High power to size ratio

STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING* $P_{25^{\circ}\text{C}}$ W | | RESISTANCE RANGE Ω $\pm 5\%, \pm 10\%^{**}$ | WEIGHT (Maximum) g |
|--------------|------------------|--|-----------------------------|--|------------------------------|
| | | Characteristic U + 250°C | Characteristic V + 350°C | | |
| CW1/2 | CW-1/2 | 0.5 | — | 0.1 - 1.77k | 0.21 |
| CW001 | CW-1 | 1.0 | — | 0.1 - 6.37k | 0.34 |
| CW01M | CW-1M | 1.0 | — | 0.1 - 3.3k | 0.3 |
| CW002 | CW-2 | 4.0 | 5.5 | 0.1 - 28.7k | 2.1 |
| CW02M | CW-2M | 3.0 | 3.75 | 0.1 - 12k | 0.65 |
| CW02B | CW-2B | 3.0 | 3.75 | 0.1 - 15k | 0.7 |
| CW02B...13 | CW-2B-13 | 4.0 | 6.0 | 0.1 - 6k8 | 0.9 |
| CW02C | CW-2C | 2.5 | 3.25 | 0.1 - 19.9k | 1.8 |
| CW02C...14 | CW-2C-14 | 2.5 | 3.25 | 0.1 - 19.9k | 1.2 |
| CW005 | CW-5 | 5.0 | 6.5 | 0.1 - 58.5k | 4.2 |
| CW005...2 | CW-5-2 | 4.0 | 5.0 | 0.1 - 40.3k | 4.2 |
| CW005...3 | CW-5-3 | 5.0 | 6.5 | 0.1 - 58.5k | 4.2 |
| CW007 | CW-7 | 7.0 | 9.0 | 0.1 - 95.2k | 4.7 |
| CW010 | CW-10 | 10.0 | 13.0 | 0.1 - 167k | 9.0 |
| CW010...3 | CW-10-3 | 10.0 | 13.0 | 0.1 - 167k | 9.0 |

*Vishay Dale CW models have two power ratings, depending on operating temperature and stability requirements.

**3% tolerance available.

• Shaded areas indicate most popular models.

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | CW RESISTOR CHARACTERISTICS |
|---------------------------------|----------|--|
| Temperature Coefficient | ppm/°C | ± 90 for below 1.0 Ω , ± 50 for 1.0 Ω to 9.9 Ω , ± 30 for 10 Ω and above |
| Dielectric Withstanding Voltage | V_{AC} | 1000 |
| Short Time Overload | - | 5 x rated power for 5 seconds for 3.75 watt size and smaller, 10 x rated power for 5 seconds for 4 watt size and greater |
| Terminal Strength | lb | 10 minimum |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Operating Temperature Range | °C | Characteristic U = - 65/+ 250, Characteristic V = - 65/+ 350 |
| Power Rating | - | Characteristic U = + 250°C max. hot spot temperature, $\pm 0.5\%$ max. ΔR in 2000 hr. load life Characteristic V = + 350°C max. hot spot temperature, $\pm 3.0\%$ max. ΔR in 2000 hr. load life |

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CW02C10K00JB1214 (preferred part numbering format)

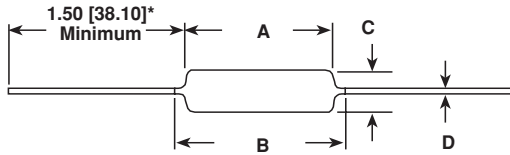
C W 0 2 C 1 0 K 0 0 J B 1 2 1 4

| GLOBAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING | SPECIAL |
|--|--|--|--|--|
| (See Standard Electrical Specifications Global Model column for options) | R = Decimal K = Thousand 1R500 = 1.5 Ω 1K500 = 1.5K Ω | H = $\pm 3\%$ J = $\pm 5\%$ K = $\pm 10\%$ | *E70 = Lead Free, Tape/Reel *E73 = Lead Free, Tape/Reel *E12 = Lead Free, Bulk S70 = Tin/Lead, Tape/Reel S73 = Tin/Lead, Tape/Reel B12 = Tin/Lead, Bulk | (Dash Number) (up to 3 digits) From 1-999 as applicable |

*Lead Free will not be available until Q2 2005

Historical Part Number example: CW-2C-14 10K Ω 5% B12 (will continue to be accepted)

| CW-2C-14 | 10K Ω | 5% | B12 |
|------------------|------------------|----------------|-----------|
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

DIMENSIONS


*On some standard reel pack methods, the leads may be trimmed to a shorter length than shown.

MATERIAL SPECIFICATIONS

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

Core: Ceramic: Steatite or alumina, depending on physical size

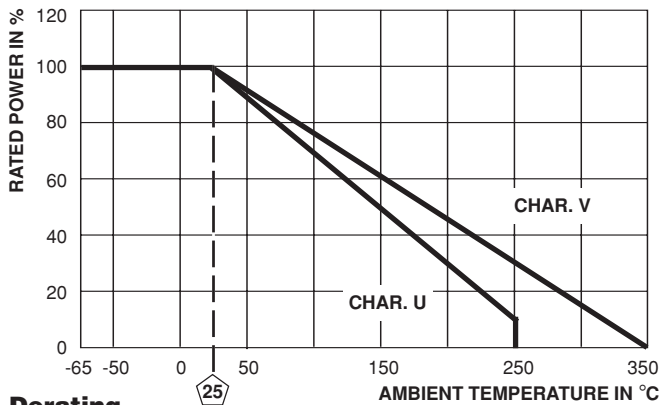
Coating: Special high temperature silicone

Standard Terminals: Tinned Copperweld®

End Caps: Stainless steel

Part Marking: DALE, Model, Wattage*, Value, Tolerance, Date Code

*Wattage marked on resistor will be "V" characteristic, CW1/2 will not be marked with wattage


Derating

| MODEL | DIMENSIONS in inches [millimeters] | | | |
|------------|------------------------------------|------------------|---------------------------------|----------------------------------|
| | A | B (Maximum)** | C | D |
| CW1/2 | 0.250 ± 0.031 [6.35 ± 0.787] | 0.281 [7.14] | 0.085 ± 0.020 [2.16 ± 0.508] | 0.020 ± 0.002 [0.508 ± 0.051] |
| CW001 | 0.406 ± 0.031 [10.31 ± 0.787] | 0.437 [11.10] | 0.094 ± 0.031 [2.39 ± 0.787] | 0.020 ± 0.002 [0.508 ± 0.051] |
| CW01M | 0.285 ± 0.025 [7.24 ± 0.635] | 0.311 [7.90] | 0.110 ± 0.015 [2.79 ± 0.381] | 0.020 ± 0.002 [0.508 ± 0.051] |
| CW002 | 0.625 ± 0.062 [15.87 ± 1.57] | 0.765 [19.43] | 0.250 ± 0.032 [6.35 ± 0.813] | 0.040 ± 0.002 [1.02 ± 0.051] |
| CW02M | 0.500 ± 0.062 [12.70 ± 1.57] | 0.562 [14.27] | 0.185 ± 0.015 [4.70 ± 0.381] | 0.032 ± 0.002 [0.813 ± 0.051] |
| CW02B | 0.562 ± 0.062 [14.27 ± 1.57] | 0.622 [15.80] | 0.188 ± 0.032 [4.78 ± .813] | 0.032 ± 0.002 [0.813 ± 0.051] |
| CW02B...13 | 0.500 ± 0.062 [12.70 ± 1.57] | 0.563 [14.30] | 0.188 ± 0.032 [4.78 ± 0.813] | 0.032 ± 0.002 [0.813 ± 0.051] |
| CW02C | 0.500 ± 0.062 [12.70 ± 1.57] | 0.593 [15.06] | 0.218 ± 0.032 [5.54 ± 0.813] | 0.040 ± 0.002 [1.02 ± 0.051] |
| CW02C...14 | 0.500 ± 0.062 [12.70 ± 1.57] | 0.593 [15.06] | 0.218 ± 0.032 [5.54 ± .813] | 0.032 ± 0.002 [0.813 ± 0.051] |
| CW005 | 0.875 ± 0.062 [22.22 ± 1.57] | 1.0 [25.40] | 0.312 ± 0.032 [7.92 ± 0.813] | 0.040 ± 0.002 [1.02 ± 0.051] |
| CW005...2 | 0.875 ± 0.062 [22.22 ± 1.57] | 1.0 [25.40] | 0.250 ± 0.032 [6.35 ± .813] | 0.032 ± 0.002 [0.813 ± 0.051] |
| CW005...3 | 0.875 ± 0.062 [22.22 ± 1.57] | 1.0 [25.40] | 0.312 ± 0.032 [7.92 ± 0.813] | 0.032 ± 0.002 [0.813 ± 0.051] |
| CW007 | 1.218 ± 0.062 [30.94 ± 1.57] | 1.281 [32.54] | 0.312 ± 0.032 [7.92 ± 0.813] | 0.040 ± 0.002 [1.02 ± 0.051] |
| CW010 | 1.781 ± 0.062 [45.24 ± 1.57] | 1.875 [47.62] | 0.375 ± 0.032 [9.52 ± 0.813] | 0.040 ± 0.002 [1.02 ± 0.051] |
| CW010...3 | 1.781 ± 0.062 [45.24 ± 1.57] | 1.875 [47.62] | 0.375 ± 0.032 [9.52 ± 0.813] | 0.032 ± 0.002 [0.813 ± 0.051] |

**B (Maximum) dimension is clean lead to clean lead.

| PERFORMANCE* | | |
|---------------------------------|---|--------------------------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS (CHARACTERISTIC V) |
| Thermal Shock | Rated power applied until thermally stable, then a minimum of 15 minutes at - 55°C | ± (2.0% + 0.05Ω) ΔR |
| Short Time Overload | 5 x rated power (3.75 watt and smaller), 10 x rated power (4 watt and larger) for 5 seconds | ± (2.0% + 0.05Ω) ΔR |
| Dielectric Withstanding Voltage | 1000V rms, one minute | ± (0.1% + 0.05Ω) ΔR |
| Low Temperature Storage | - 65°C for 24 hours | ± (2.0% + 0.05Ω) ΔR |
| High Temperature Exposure | 250 hours at + 350°C | ± (4.0% + 0.05Ω) ΔR |
| Moisture Resistance | MIL-STD-202 Method 106, 7b not applicable | ± (2.0% + 0.05Ω) ΔR |
| Shock, Specified Pulse | MIL-STD-202 Method 213, 100g's for 6 milliseconds, 10 shocks | ± (0.2% + 0.05Ω) ΔR |
| Vibration, High Frequency | Frequency varied 10 to 2000Hz, 20g peak, 2 directions 6 hours each | ± (0.2% + 0.05Ω) ΔR |
| Load Life | 2000 hours at rated power, + 25°C, 1.5 hours "ON", 0.5 hours "OFF" | ± (3.0% + 0.05Ω) ΔR |
| Terminal Strength | 5 to 10 second 10 pound pull test; torsion test - 3 alternating directions, 360° each | ± (1.0% + 0.05Ω) ΔR |

*All ΔR figures shown are maximum, based upon testing requirements per MIL-PRF-26 at a maximum operating temperature of + 350°C. ΔR maximum figures are considerably lower when tested at a maximum operating temperature of + 250°C.