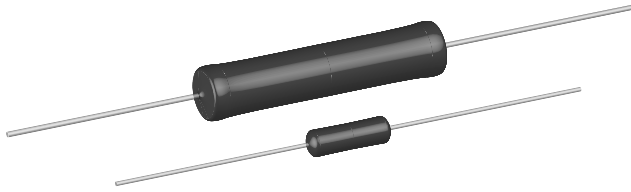


Wirewound Resistors, High Energy, Silicone Coated, Axial Lead


FEATURES

- High continuous energy handling up to 106.5 J
- High temperature silicone coating
- Complete welded construction
- Excellent stability in operation
- High power to size ratio
- Material categorization:
for definitions of compliance please see
www.vishay.com/doc?99912



| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | |
|------------------------------------|--|--|------------------------------|--------------------------------------|----------------------|--------------------|
| GLOBAL MODEL | POWER RATING ⁽¹⁾ $P_{25\text{ }^\circ\text{C}}$ W CHARACTERISTIC U +250 °C | POWER RATING ⁽¹⁾ $P_{25\text{ }^\circ\text{C}}$ W CHARACTERISTIC V +350 °C | RESISTANCE RANGE Ω | MAXIMUM SHORT TERM PULSE ENERGY J | TOLERANCE \pm % | WEIGHT (max.) g |
| CW02B...HE | 3.0 | 3.75 | 1.5 to 87.5 | 10.4 | 5, 10 | 0.7 |
| CW005...HE | 5.0 | 6.5 | 5.5 to 343.6 | 39.1 | 5, 10 | 4.2 |
| CW010...HE | 10.0 | 13.0 | 15.0 to 938.0 | 106.5 | 5, 10 | 9.0 |

Note

⁽¹⁾ Vishay Dale CW...HE models have two power ratings, depending on operating temperature and stability requirements.

| TECHNICAL SPECIFICATIONS | | |
|-----------------------------|--------|--|
| PARAMETER | UNIT | CW...HE RESISTOR CHARACTERISTICS |
| Temperature Coefficient | ppm/°C | \pm 30 for 10 Ω and above, \pm 50 for 1.0 Ω to 9.9 Ω |
| Short Time Overload | - | 5x rated power for 5 s for CW02B...HE 10x rated power for 5 s for CW005...HE and CW010...HE |
| Terminal Strength | lb | 10 minimum |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Operating Temperature Range | °C | Characteristic U = -65 to +250, characteristic V = -65 to +350 |
| Power Rating | - | Characteristic U = +250 °C max. hot spot temperature, \pm 0.5 % max. ΔR in 2000 h load life Characteristic V = +350 °C max. hot spot temperature, \pm 3.0 % max. ΔR in 2000 h load life |

| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | | |
|---|---|------------------------------------|---|-------------------------------------|---|--|---|---|---|---|-------------------------|---|---|---|---|--|
| Global Part Numbering example: CW02B10R00JE12HE | | | | | | | | | | | | | | | | |
| C | W | 0 | 2 | B | 1 | 0 | R | 0 | 0 | J | E | 1 | 2 | H | E | |
| GLOBAL MODEL (5 digits) | | VALUE (5 digits) | | TOLERANCE (1 digit) | | PACKAGING (3 digits) | | | | | SPECIAL (2 to 3 digits) | | | | | |
| CW02B CW005 CW010 | | R = Decimal 10R00 = 10 Ω | | J = \pm 5.0 % K = \pm 10.0 % | | E70 = Lead (Pb)-free, tape/reel, 1K pcs. (CW02B only) E73 = Lead (Pb)-free, tape/reel, 500 pcs. E12 = Lead (Pb)-free, bulk S70 = Tin/lead, tape/reel, 1K pcs. (CW02B only) S73 = Tin/lead, tape/reel, 500 pcs. B12 = Tin/lead, bulk | | | | | HE = High energy | | | | | |

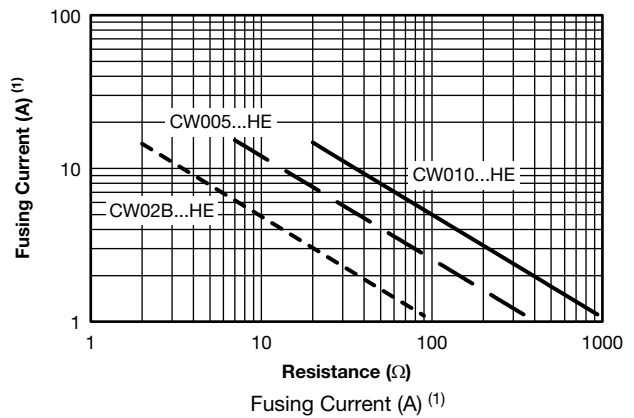
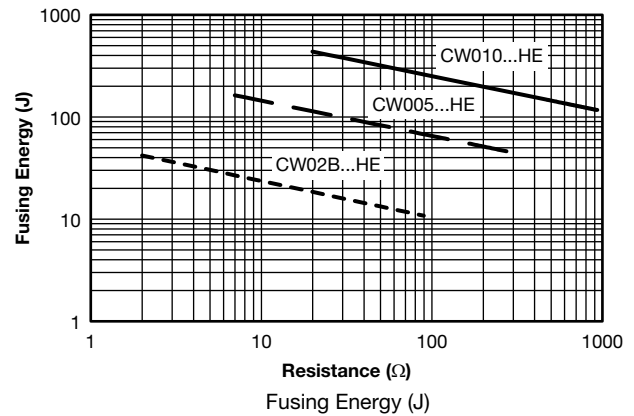
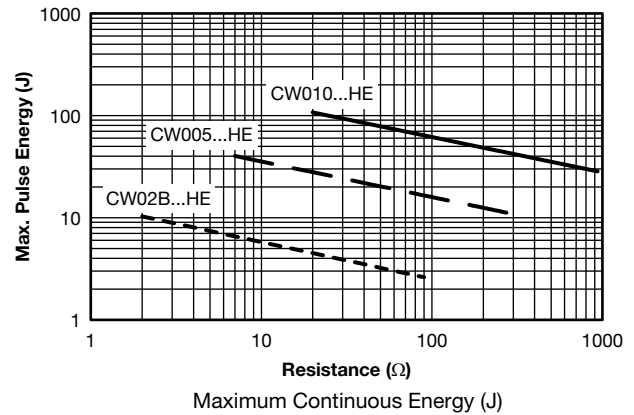


STANDARD ENERGY PERFORMANCE CHARACTERISTICS

| GLOBAL MODEL | RESISTANCE RANGE Ω | MAX. PULSE ENERGY J/ Ω | FUSING ENERGY J/ Ω | CURRENT TO FUSE ⁽¹⁾ A/ Ω | POWER TO FUSE ⁽¹⁾ W/ Ω |
|----------------|---------------------------|-------------------------------|---------------------------|--|--|
| CW02B...HE | 1.5 to 2.0 | 5.200 | 21.150 | 7.2700 | 211.3000 |
| | 2.1 to 2.8 | 3.286 | 13.393 | 4.1357 | 134.0286 |
| | 2.9 to 4.0 | 2.000 | 8.200 | 2.2650 | 82.0925 |
| | 4.1 to 5.6 | 1.268 | 5.196 | 1.2857 | 51.8839 |
| | 5.7 to 7.6 | 0.842 | 3.408 | 0.7684 | 34.1000 |
| | 7.7 to 10.8 | 0.519 | 2.111 | 0.4250 | 21.1056 |
| | 10.9 to 15.4 | 0.325 | 1.312 | 0.2351 | 13.0870 |
| | 15.5 to 21.8 | 0.202 | 0.817 | 0.1312 | 8.1839 |
| | 21.9 to 30.5 | 0.121 | 0.521 | 0.0748 | 5.1980 |
| | 30.6 to 41.7 | 0.084 | 0.341 | 0.0444 | 3.4101 |
| CW005...HE | 41.8 to 59.1 | 0.052 | 0.213 | 0.0247 | 2.1289 |
| | 59.2 to 87.5 | 0.031 | 0.125 | 0.0128 | 1.2442 |
| | 5.5 to 7.6 | 5.145 | 20.921 | 1.9026 | 209.2105 |
| | 7.7 to 10.5 | 3.324 | 13.552 | 1.1086 | 135.4800 |
| | 10.6 to 15.1 | 2.040 | 8.311 | 0.6040 | 83.1311 |
| | 15.2 to 21.4 | 1.280 | 5.206 | 0.3369 | 52.0425 |
| | 21.5 to 29.3 | 0.836 | 3.410 | 0.1993 | 34.1003 |
| | 29.4 to 41.8 | 0.519 | 2.110 | 0.1098 | 21.1053 |
| | 41.9 to 59.6 | 0.322 | 1.309 | 0.0607 | 13.0871 |
| | 59.7 to 84.6 | 0.201 | 0.818 | 0.0338 | 8.1840 |
| CW010...HE | 84.7 to 118.6 | 0.120 | 0.519 | 0.0192 | 5.1980 |
| | 118.7 to 162.3 | 0.084 | 0.341 | 0.0114 | 3.4100 |
| | 162.4 to 230.6 | 0.052 | 0.213 | 0.0063 | 2.1290 |
| | 230.7 to 343.6 | 0.031 | 0.125 | 0.0033 | 1.2442 |
| | 15.0 to 20.7 | 5.145 | 20.923 | 0.6986 | 209.2101 |
| | 20.8 to 28.6 | 3.329 | 13.549 | 0.4070 | 135.4773 |
| | 28.7 to 41.0 | 2.037 | 8.312 | 0.2224 | 83.1395 |
| | 41.1 to 58.0 | 1.281 | 5.217 | 0.1243 | 52.1643 |
| | 58.1 to 79.7 | 0.836 | 3.410 | 0.0733 | 34.1003 |
| | 79.8 to 113.6 | 0.518 | 2.111 | 0.0404 | 21.1054 |
| 113.7 to 162.3 | 0.322 | 1.309 | 0.0223 | 13.0871 | |
| 162.4 to 230.5 | 0.201 | 0.818 | 0.0124 | 8.1841 | |
| 230.6 to 323.2 | 0.120 | 0.520 | 0.0071 | 5.1980 | |
| 323.3 to 442.7 | 0.084 | 0.341 | 0.0042 | 3.4100 | |
| 442.8 to 629.3 | 0.052 | 0.213 | 0.0023 | 2.1290 | |
| 629.4 to 938.0 | 0.031 | 0.124 | 0.0012 | 1.2442 | |

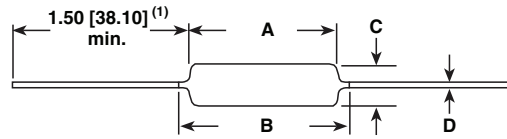
Note

⁽¹⁾ Time to fuse is 0.1 s.





DIMENSIONS in inches (millimeters)



| MODEL | DIMENSIONS in inches [millimeters] | | | |
|------------|------------------------------------|----------------------------|------------------------------|-------------------------------|
| | A | B [MAXIMUM] ⁽²⁾ | C | D |
| CW02B...HE | 0.562 ± 0.062 [14.27 ± 1.57] | 0.622 [15.80] | 0.188 ± 0.032 [4.78 ± 0.813] | 0.032 ± 0.002 [0.813 ± 0.051] |
| CW005...HE | 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] |
| CW010...HE | 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] |

Notes

- ⁽¹⁾ On some standard reel pack methods, the leads may be trimmed to a shorter length than shown.
- ⁽²⁾ B (maximum) dimension is clean lead to clean lead.

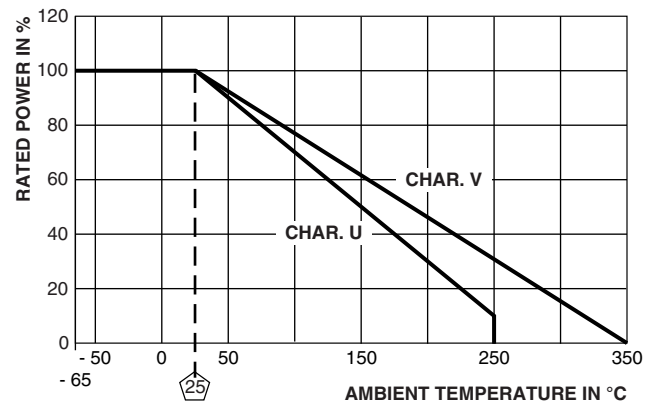
MATERIAL SPECIFICATIONS

- Element:** Nickel-chrome alloy
- Core:** Ceramic: Steatite
- Coating:** Special high temperature silicone
- Standard Terminals:** Tinned Copperweld[®]
- End Caps:** Stainless steel
- Part Marking:** DALE, model, wattage ⁽³⁾, value, tolerance, date code

Note

- ⁽³⁾ Wattage marked on resistor will be "V" characteristic.

DERATING



| PERFORMANCE | | |
|---------------------------|--|---|
| TEST | CONDITIONS OF TEST | TEST LIMITS ⁽⁴⁾ (CHARACTERISTIC V) |
| Thermal Shock | Rated power applied until thermally stable, then a minimum of 15 min at -55 °C | ± (2.0 % + 0.05 Ω) ΔR |
| Short Time Overload | 5x rated power for 5 s for CW02B...HE 10x rated power for 5 s for CW005...HE and CW010...HE | ± (2.0 % + 0.05 Ω) ΔR |
| High Temperature Exposure | 250 h at +350 °C | ± (4.0 % + 0.05 Ω) ΔR |
| Load Life | 2000 h at rated power, +25 °C, 1.5 h "ON", 0.5 h "OFF" | ± (3.0 % + 0.05 Ω) ΔR |

Note

- ⁽⁴⁾ 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.



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