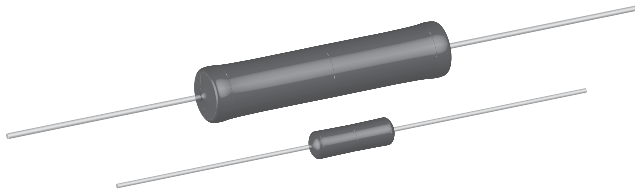


Wirewound Resistors, Miniature, Industrial, Precision Power, Silicone Coated, Axial Lead


DESIGN SUPPORT TOOLS
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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

FEATURES

- From 1.4 to 4 times higher power ratings than conventional resistors of equivalent size
- High temperature coating (> 350 °C)
- Complete welded construction
- Meets applicable requirements of MIL-PRF-26
- Available in non-inductive styles (type GN) with Ayrton-Perry winding for lowest reactive components
- Excellent stability in operation (typical resistance shift < 0.5 %)
- MIL-PRF-26 qualified, type RW resistors can be found at: www.vishay.com/doc?30281
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | | | |
|------------------------------------|-------------|---|--|--------------------------------|-------------------------------|--------------------------------|--|--------------------|
| GLOBAL MODEL | HIST. MODEL | POWER RATING ⁽¹⁾ $P_{25\text{ }^\circ\text{C}}$ W U ± 0.05 % to ± 5 % | POWER RATING ⁽¹⁾ $P_{25\text{ }^\circ\text{C}}$ W V ± 3 % to ± 5 % | RESISTANCE RANGE Ω ± 0.05 % | RESISTANCE RANGE Ω ± 0.1 % | RESISTANCE RANGE Ω ± 0.25 % | RESISTANCE RANGE Ω ± 0.5 %, ± 1 %, ± 3 %, ± 5 % | WEIGHT (typical) g |
| G001...80 | G-1-80 | 1.0 | - | 1.0 to 1K | 0.499 to 1K | 0.499 to 3.4K | 0.1 to 3.4K | 0.20 |
| G001...380 | G-1-380 | 1.0 | - | - | 0.499 to 1K | 0.499 to 1K | 0.1 to 1K | 0.20 |
| G002 | G-2 | 1.5 | - | 1.0 to 1.3K | 0.499 to 1.3K | 0.499 to 4.9K | 0.1 to 4.9K | 0.21 |
| G003...80 | G-3-80 | 2.0 | - | 1.0 to 2.74K | 0.499 to 2.74K | 0.499 to 10.4K | 0.1 to 10.4K | 0.34 |
| G003...380 | G-3-380 | 2.0 | - | - | 0.499 to 2.74K | 0.499 to 2.74K | 0.1 to 2.74K | 0.34 |
| G005 | G-5 | 4.0 | 5.0 | 0.499 to 6.5K | 0.499 to 6.5K | 0.1 to 24.5K | 0.1 to 24.5K | 0.80 |
| G05C | G-5C | 5.0 | 7.0 | 0.499 to 8.6K | 0.499 to 8.6K | 0.1 to 32.3K | 0.1 to 32.3K | 1.20 |
| G010 | G-10 | 7.0 | 10.0 | 0.499 to 25.7K | 0.499 to 25.7K | 0.1 to 95.2K | 0.1 to 95.2K | 3.60 |

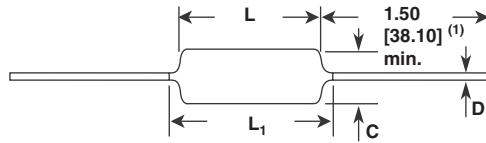
Notes

- G002, G005, G05C, and G010: Core consists of beryllium oxide ceramic
- Models not available as lead (Pb)-free: G001...380 and G003...380
- Shaded area indicates most popular models

⁽¹⁾ Vishay Dale G models have two power ratings depending on operation temperature and stability requirements. Models not available for characteristic V are: G001...380, G001...380, G002, G003...80, and G003...380

| TECHNICAL SPECIFICATIONS | | |
|-----------------------------|--------|--|
| PARAMETER | UNIT | G RESISTOR CHARACTERISTICS |
| Temperature Coefficient | ppm/°C | ± 20 for 10 Ω and above; ± 50 for 1 Ω to 9.9 Ω; ± 90 for 0.5 Ω to 0.99 Ω |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Insulation Resistance | Ω | 1000 MΩ minimum dry, 100 MΩ minimum after moisture test |
| Terminal Strength | lb | 5 minimum for G001...80 thru G003...380, 10 minimum for all others |
| Operating Temperature Range | °C | Characteristic U = -65 to +250, characteristic V = -65 to +350 |
| Power Rating | - | Characteristic U = +250 °C max. hot spot temperature, ± 0.5 % max. ΔR in 2000 h load life Characteristic V = +350 °C max. hot spot temperature, ± 3.0 % max. ΔR in 2000 h load life |

| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | |
|--|--|------------------|---|---|----------------|---|--|-----------|---|--|---|---|---|---|--|
| Global Part Numbering example: G00310R00FS7080 | | | | | | | | | | | | | | | |
| G | 0 | 0 | 3 | 1 | 0 | R | 0 | 0 | F | S | 7 | 0 | 8 | 0 | |
| GLOBAL MODEL (4 or 5 digits) | RESISTANCE VALUE (5 digits) | | | TOLERANCE CODE (1 digit) | | | PACKAGING (3 digits) | | | SPECIAL (up to 3 digits) | | | | | |
| (see Standard Electrical Specifications Global Model column for options) | R = decimal K = thousand 15R00 = 15 Ω 10K00 = 10 kΩ | | | A = 0.05 % B = 0.1 % C = 0.25 % D = 0.5 % F = 1.0 % H = 3.0 % J = 5.0 % K = 10.0 % | | | E70 = lead (Pb)-free, tape / reel (smaller than G010) E73 = lead (Pb)-free, tape / reel (500 pieces) E12 = lead (Pb)-free, bulk S70 = tin / lead, tape / reel (smaller than G010) S73 = tin / lead, tape / reel (500 pieces) B12 = tin / lead, bulk | | | (dash number) From 1 to 999 as applicable | | | | | |
| Historical Part Numbering example: G-3-80 10 Ω 1 % S70 | | | | | | | | | | | | | | | |
| G-3-80 | | 10 Ω | | | 1 % | | | S70 | | | | | | | |
| HISTORICAL MODEL | | RESISTANCE VALUE | | | TOLERANCE CODE | | | PACKAGING | | | | | | | |

DIMENSIONS in inches [millimeters]


| GLOBAL MODEL | DIMENSIONS in inches [millimeters] | | | |
|-------------------------|------------------------------------|------------------------------------|---|----------------------------------|
| | L | L ₁ max. ⁽²⁾ | C | D |
| G001...80 G001...380 | 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] |
| G002 | 0.312 ± 0.016 [7.92 ± 0.406] | 0.328 [8.33] | 0.078 + 0.016 - 0.031 [1.98 + 0.406 - 0.787] | 0.020 ± 0.002 [0.508 ± 0.051] |
| G003...80 G003...380 | 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] |
| G005 | 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] |
| G05C | 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] |
| G010 | 0.875 ± 0.062 [22.23 ± 1.57] | 1.0 [25.4] | 0.312 ± 0.032 [7.92 ± 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) L₁ max. dimension is clean lead to clean lead

MATERIAL SPECIFICATIONS

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

Core: Ceramic, beryllium oxide or alumina, depending on resistor model

Coating: Special high temperature silicone

Standard Terminals: 100 % Sn, or 60/40 Sn/Pb coated Copperweld®

End Caps: Stainless steel

Part Marking: DALE, model, wattage ⁽³⁾, value, tolerance, date code

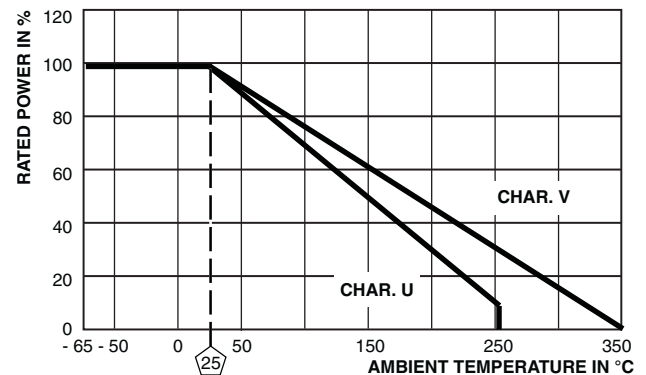
Note

- ⁽³⁾ Wattage marked on part will be "U" characteristic

GN NON-INDUCTIVE

Models of equivalent physical and electrical specifications are available with non-inductive (Ayrtton-Perry) winding. They are identified by inserting the letter N after G in the model number (GN005, for example). Two conditions apply:

- For GN models, divide maximum resistance values by two
- Body O.D. on GN05C may exceed that of the G05C by 0.010"

DERATING

TERMINATION

When G resistors will be operated at full rated power, resistance welding or high temperature solder are the recommended termination methods. Termination should be made within 1/2" from end of resistor body.

| PERFORMANCE | | |
|---------------------------------|--|---|
| TEST | CONDITIONS OF TEST | TEST LIMITS |
| | | CHARACTERISTIC U CHARACTERISTIC V |
| Thermal Shock | Rated power applied until thermally stable, then a min. of 15 min at -55 °C | ± (0.2 % + 0.05 Ω) ΔR ± (2.0 % + 0.05 Ω) ΔR |
| Short Time Overload | 5x power (G001...80 thru G05C), 10 x power (G010) for 5 s | ± (0.2 % + 0.05 Ω) ΔR ± (2.0 % + 0.05 Ω) ΔR |
| Dielectric Withstanding Voltage | 500 V _{RMS} minimum for G001...80 thru G003...380, 1000 V _{RMS} minimum for all others, duration of 1 min | ± (0.1 % + 0.05 Ω) ΔR ± (0.1 % + 0.05 Ω) ΔR |
| Low Temperature Storage | -65 °C for 24 h | ± (0.2 % + 0.05 Ω) ΔR ± (2.0 % + 0.05 Ω) ΔR |
| High Temperature Exposure | 250 h at +250 °C (characteristic U) | ± (0.5 % + 0.05 Ω) ΔR ± (2.0 % + 0.05 Ω) ΔR |
| Moisture Resistance | MIL-STD-202 Method 106, 7b not applicable | ± (0.2 % + 0.05 Ω) ΔR ± (2.0 % + 0.05 Ω) ΔR |
| Shock, Specified Pulse | MIL-STD-202 Method 213, 100 g's for 6 ms, 10 shocks | ± (0.1 % + 0.05 Ω) ΔR ± (0.2 % + 0.05 Ω) ΔR |
| Vibration, High Frequency | Frequency varied 10 Hz to 2000 Hz, 20 g peak, 2 directions 6 h each | ± (0.1 % + 0.05 Ω) ΔR ± (0.2 % + 0.05 Ω) ΔR |
| Load Life | 2000 h at rated power, +25 °C, 1.5 h "ON", 0.5 h "OFF" | ± (0.5 % + 0.05 Ω) ΔR ± (3.0 % + 0.05 Ω) ΔR |
| Terminal Strength | Pull test -5 s to 10 s, 5 lb (G001...80 thru G05C), 10 lb for all others; torsion test - 3 alternating directions, 360° each | ± (0.1 % + 0.05 Ω) ΔR ± (1.0 % + 0.05 Ω) ΔR |



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