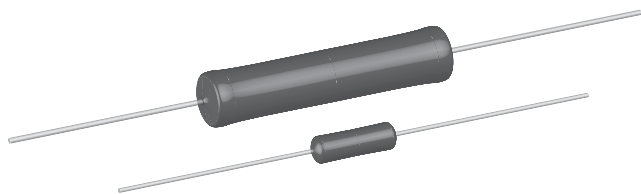




# Wirewound Resistors, Miniature, Industrial, Precision Power, Silicone Coated, Axial Lead



## 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](http://www.vishay.com/doc?30281)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS\***  
Available

**HALOGEN FREE**  
Available

**GREEN**  
(5-2008)  
Available

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HIST. MODEL | POWER RATING <sup>(1)</sup><br>$P_{25^{\circ}\text{C}}$ W<br>$U \pm 0.05\%$<br>to $\pm 5\%$ | POWER RATING <sup>(1)</sup><br>$P_{25^{\circ}\text{C}}$ W<br>$V \pm 3\%$<br>to $\pm 5\%$ | RESISTANCE RANGE $\Omega$<br>$\pm 0.05\%$ | RESISTANCE RANGE $\Omega$<br>$\pm 0.1\%$ | RESISTANCE RANGE $\Omega$<br>$\pm 0.25\%$ | RESISTANCE RANGE $\Omega$<br>$\pm 0.5\%, \pm 1\%,$<br>$\pm 3\%, \pm 5\%$ | 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...80, G001...380, G002, G003...80, and G003...380

## TECHNICAL SPECIFICATIONS

| PARAMETER                   | UNIT     | G RESISTOR CHARACTERISTICS                                                                                                                                                                                     |
|-----------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature Coefficient     | ppm/°C   | $\pm 20$ for 10 $\Omega$ and above; $\pm 50$ for 1 $\Omega$ to 9.9 $\Omega$ ; $\pm 90$ for 0.5 $\Omega$ to 0.99 $\Omega$                                                                                       |
| Maximum Working Voltage     | V        | $(P \times R)^{1/2}$                                                                                                                                                                                           |
| Insulation Resistance       | $\Omega$ | 1000 M $\Omega$ minimum dry, 100 M $\Omega$ 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, $\pm 0.5\%$ max. $\Delta R$ in 2000 h load life<br>Characteristic V = +350 °C max. hot spot temperature, $\pm 3.0\%$ max. $\Delta R$ in 2000 h load life |

## GLOBAL PART NUMBER INFORMATION

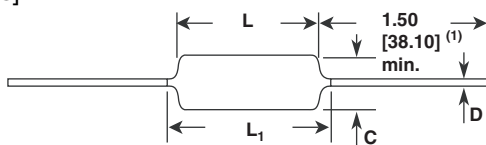
Global Part Numbering example: G00310R00FS7080

G 0 0 3 1 0 R 0 0 F S 7 0 8 0

| GLOBAL MODEL<br>(4 or 5 digits)                                          | RESISTANCE VALUE<br>(5 digits)                                              | TOLERANCE CODE<br>(1 digit)                                                                             | PACKAGING<br>(3 digits)                                                                                                                                                                                                                                  | SPECIAL<br>(up to 3 digits)               |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| (See Standard Electrical Specifications Global Model column for options) | R = Decimal<br>K = Thousand<br>15R00 = 15 $\Omega$<br>10K00 = 10 k $\Omega$ | A = 0.05 %<br>B = 0.1 %<br>C = 0.25 %<br>D = 0.5 %<br>F = 1.0 %<br>H = 3.0 %<br>J = 5.0 %<br>K = 10.0 % | E70 = Lead (Pb)-free, tape/reel (smaller than G010)<br>E73 = Lead (Pb)-free, tape/reel (500 pieces)<br>E12 = Lead (Pb)-free, bulk<br><br>S70 = Tin/lead, tape/reel (smaller than G010)<br>S73 = Tin/lead, tape/reel (500 pieces)<br>B12 = Tin/lead, bulk | (Dash Number) From 1 to 999 as applicable |

Historical Part Numbering example: G-3-80 10  $\Omega$  1 % S70

|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| G-3-80           | 10 $\Omega$      | 1 %            | S70       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

**DIMENSIONS** in inches [millimeters]


| GLOBAL MODEL            | DIMENSIONS in inches [millimeters] |                         |                                                 |                                  |
|-------------------------|------------------------------------|-------------------------|-------------------------------------------------|----------------------------------|
|                         | L                                  | L <sub>1</sub> max. (2) | C                                               | D                                |
| G001...80<br>G001...380 | 0.250 ± 0.031<br>[6.35 ± 0.787]    | 0.281<br>[7.14]         | 0.085 ± 0.020<br>[2.16 ± 0.508]                 | 0.020 ± 0.002<br>[0.508 ± 0.051] |
| G002                    | 0.312 ± 0.016<br>[7.92 ± 0.406]    | 0.328<br>[8.33]         | 0.078 ± 0.016 - 0.031<br>[1.98 ± 0.406 - 0.787] | 0.020 ± 0.002<br>[0.508 ± 0.051] |
| G003...80<br>G003...380 | 0.406 ± 0.031<br>[10.31 ± 0.787]   | 0.437<br>[11.10]        | 0.094 ± 0.031<br>[2.39 ± 0.787]                 | 0.020 ± 0.002<br>[0.508 ± 0.051] |
| G005                    | 0.562 ± 0.062<br>[14.27 ± 1.57]    | 0.622<br>[15.80]        | 0.188 ± 0.032<br>[4.78 ± 0.813]                 | 0.032 ± 0.002<br>[0.813 ± 0.051] |
| G05C                    | 0.500 ± 0.062<br>[12.70 ± 1.57]    | 0.593<br>[15.06]        | 0.218 ± 0.032<br>[5.54 ± 0.813]                 | 0.040 ± 0.002<br>[1.02 ± 0.051]  |
| G010                    | 0.875 ± 0.062<br>[22.23 ± 1.57]    | 1.0<br>[25.4]           | 0.312 ± 0.032<br>[7.92 ± 0.813]                 | 0.040 ± 0.002<br>[1.02 ± 0.051]  |

**Notes**

(1) On some standard reel pack methods, the leads may be trimmed to a shorter length than shown

(2) L<sub>1</sub> 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

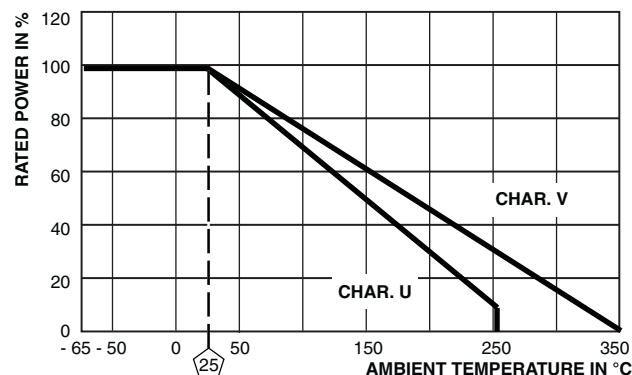
**Note**

(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 <sub>RMS</sub> minimum for G001...80 thru G003...380, 1000 V <sub>RMS</sub> 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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