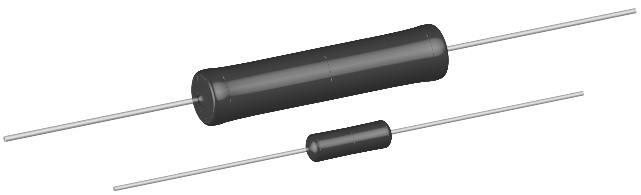
# Wirewound Resistors, Military, MIL-PRF-26 Qualified, Type RW, Precision Power, Silicone Coated



## 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 Aryton-Perry winding for lowest reactive components
- Excellent stability in operation (typical resistance shift < 0.5 %)
- Lead (Pb)-free version is RoHS compliant

Pb-free Available

RoHS* COMPLIANT

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HIST. MODEL | MIL-PRF-26 TYPE | POWER RATING**** $P_{25\ °C}$ W | | RESISTANCE RANGE MIL. RANGE SHOWN IN BOLD FACE Ω | | | | WEIGHT (Typical) |
|---|---|---|---|---|---|---|---|---|---|
| | | | U ± 0.05 % thru ± 5 % | V ± 3 % & ± 5 % | ± 0.05 % | ± 0.1 % | ± 0.25 % | ± 0.5 %, ± 1 %, ± 3 %, ± 5 % | g |
| G001...80 | G-1-80 | - | 1.0 | - | 1.0 - 1K | 0.499 - 1K | 0.499 - 3.4K | 0.1 - 3.4K | 0.20 |
| G001...380 | G-1-380 | **RW81** | **1.0** | **-** | **-** | **0.499 - 1K** | **0.499 - 1K** | **0.1 - 1K** | **0.20** |
| G002 | G-2 | - | 1.5 | - | 1.0 - 1.3K | 0.499 - 1.3K | 0.499 - 4.9K | 0.1 - 4.9K | 0.21 |
| G003...80 | G-3-80 | - | 2.0 | - | 1.0 - 2.74K | 0.499 - 2.74K | 0.499 - 10.4K | 0.1 - 10.4K | 0.34 |
| G003...380 | G-3-380 | **RW80** | **2.0** | **-** | **-** | **0.499 - 2.74K** | **0.499 - 2.74K** | **0.1 - 2.74K** | **0.34** |
| G005 | G-5 | - | 4.0 | 5.0 | 0.499 - 6.5K | 0.499 - 6.5K | 0.1 - 24.5K | 0.1 - 24.5K | 0.80 |
| G05C | G-5C | - | 5.0 | 7.0 | 0.499 - 8.6K | 0.499 - 8.6K | 0.1 - 32.3K | 0.1 - 32.3K | 1.20 |
| G010 | G-10 | - | 7.0 | 10.0 | 0.499 - 25.7K | 0.499 - 25.7K | 0.1 - 95.2K | 0.1 - 95.2K | 3.60 |

** Vishay Dale G models have two power ratings, depending on operation temperature and stability requirements.
**NOTE:** Shaded area indicates most popular models.

## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | G RESISTOR CHARACTERISTICS |
|---|---|---|
| Temperature Coefficient | ppm/°C | ± 90 for below 1 Ω, ± 50 for 1 Ω to 9.9 Ω, ± 20 for 10 Ω and above |
| Dielectric Withstanding Voltage | $V_{AC}$ | 500 minimum for G-1-80 thru G-3-380, 1000 minimum for all others |
| Short Time Overload | - | 5 × rated power for 5 sec. for G-1-80 thru G-5C (Characteristic U),<br>10 × rated power for 5 sec. for G-10 |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Insulation Resistance | W | 1000 Megohm minimum dry, 100 Megohm minimum after moisture test |
| Terminal Strength | lb | 5 minimum for G-1-80 thru G-3-380, 10 minimum for all others |
| Solderability | - | MIL-PRF-26 type - Meets requirements of ANSI J-STD-002<br>Non Mil type - Terminals are 60/40 electro tin plated to facilitate soldering |
| Operating Temperature Range | °C | Characterisitic U = - 65/+ 250, Characteristic V = - 65/+ 350 |
| Power Rating | - | Characterisitic U - + 250 °C max. hot spot temperature, ± 0.5 % max. $\Delta R$ in 2000 hr. load life<br>Characterisitic V - + 350 °C max. hot spot temperature, ± 3.0 % max. $\Delta R$ in 2000 hr. load life |

## GLOBAL PART NUMBER INFORMATION

**New Global Part Numbering: G00310R00FS7080 (preferred part number format)**

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

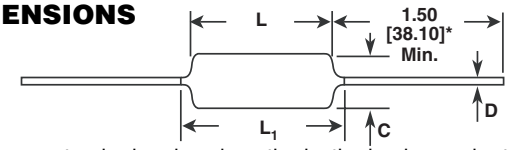
| GLOBAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING | SPECIAL |
|---|---|---|---|---|
| (See Standard Electrical Specifications Global Model column for options) | **R** = Decimal<br>**K** = Thousand<br>**15R00** = 15 Ω<br>**10K00** = 10 kΩ | **A** = 0.05 %<br>**B** = 0.1 %<br>**C** = 0.25 %<br>**D** = 0.5 %<br>**F** = 1.0 %<br>**J** = 5.0 %<br>**K** = 10.0 % | **E70** = Lead (Pb)-free, Tape/Reel (smaller than G010)<br>**E73** = Lead (Pb)-free, Tape/Reel (G010 & larger)<br>**E12** = Lead (Pb)-free, Bulk<br>**Lead (Pb)-free is not available on RW military type**<br>**S70** = Tin/Lead, Tape/Reel (smaller than G010)<br>**S73** = Tin/Lead, Tape/Reel (G010 & larger)<br>**B12** = Tin/Lead, Bulk | (Dash Number)<br>(up to 3 digits)<br>From **1 - 999**<br>as applicable |

**Historical Part Number example: G-3-80 10 Ω 1 % S70 (will continue to be accepted)**

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

* Pb containing terminations are not RoHS compliant, exemptions may apply

## DIMENSIONS




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

| GLOBAL MODEL | DIMENSIONS in inches [millimeters] | | | |
|---|---|---|---|---|
| | L | $L_1$** (Max.) | C | D |
| G-1-80<br>G-1-380 | 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] |
| G2 | 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] |
| G-3-80<br>G-3-380 | 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] |
| G-5 | 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] |
| G-5C | 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] |
| G-10 | 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] |

** $L_1$ (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

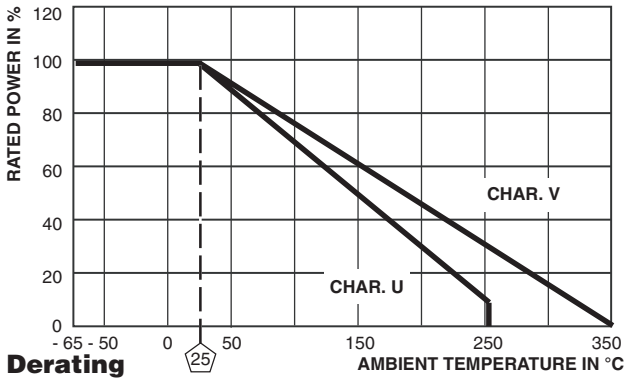
**Standard Terminals:** 100 % Sn, or 60/40 Sn/Pb coated Copperweld®

**NOTE:** Military (RW) parts are only available with 60/40 Sn/Pb finish

**End Caps:** Stainless steel

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

* Wattage marked on part will be "U" characteristic




## GN NON-INDUCTIVE

Models of equivalent physical and electrical specifications are available with non-inductive (Aryton-Perry) winding. They are identified by inserting the letter N after G in the model number (GN-5, for example). Two conditions apply:

1. For GN models, divide maximum resistance values by two

2. Body O.D. on GN-5C may exceed that of the G-5C by 0.010"

## 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 inch from end of resistor body.

## PERFORMANCE

| TEST | CONDITIONS OF TEST | TEST LIMITS (CHARACTERISTIC U) |
|---|---|---|
| Thermal Shock | Rated power applied until thermally stable, then a min. of 15 minutes at - 55 °C | ± (0.2 % + 0.05 Ω) $\Delta R$ |
| Short Time Overload | 5 x power (G-1-80 thru G-5C), 10 x power (G-10) for 5 sec. | ± (0.2 % + 0.05 Ω) $\Delta R$ |
| Dielectric Withstanding Voltage | 1000 $V_{rms}$, one minute | ± (0.1 % + 0.05 Ω) $\Delta R$ |
| Low Temperature Storage | - 65 °C for 24 hours | ± (0.2 % + 0.05 Ω) $\Delta R$ |
| High Temperature Exposure | 250 hours at + 250 °C (Characteristic U) | ± (0.5 % + 0.05 Ω) $\Delta R$ |
| Moisture Resistance | MIL-STD-202 Method 106, 7b not applicable | ± (0.2 % + 0.05 Ω) $\Delta R$ |
| Shock, Specified Pulse | MIL-STD-202 Method 213, 100 g's for 6 milliseconds, 10 shocks | ± (0.1 % + 0.05 Ω) $\Delta R$ |
| Vibration, High Frequency | Frequency varied 10 to 2000 Hz, 20 g peak, 2 directions 6 hours each | ± (0.1 % + 0.05 Ω) $\Delta R$ |
| Load Life | 2000 hours at rated power, + 25 °C, 1.5 hours “ON”, 0.5 hours “OFF” | ± (0.5 % + 0.05 Ω) $\Delta R$ |
| Terminal Strength | 5 to 10 sec., 5 or 10 lb pull test (depending on size), torsion test - 3 alternating directions, 360° each | ± (0.1 % + 0.05 Ω) $\Delta R$ |

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