

G, GN

Vishay Dale



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 ($> 350^{\circ}\text{C}$)
- 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 $< 0.5\%$)
- Lead (Pb)-free version is RoHS compliant

RoHS*
COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HIST. MODEL	MIL-PRF-26 TYPE	POWER RATING ⁽¹⁾ $P_{25^{\circ}\text{C}} \text{ W}$		RESISTANCE RANGE MIL. RANGE SHOWN IN BOLD FACE Ω				WEIGHT (typical) g
			$U \pm 0.05\%$ thru $\pm 5\%$	$V \pm 3\%$ thru $\pm 5\%$	$\pm 0.05\%$	$\pm 0.1\%$	$\pm 0.25\%$	$\pm 0.5\%, \pm 1\%$, $\pm 3\%, \pm 5\%$	
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
G005C	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

Notes

- (1) Vishay Dale G models have two power ratings, depending on operation temperature and stability requirements
- Shaded area indicates most popular models

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	G RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/ $^{\circ}\text{C}$	± 90 for below 1Ω , ± 50 for 1Ω to 9.9Ω , ± 20 for 10Ω 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 x rated power for 5 s for G-1-80 thru G-5C (Characteristic U), 10 x rated power for 5 s for G-10
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Insulation Resistance	W	1000 M Ω minimum dry, 100 M Ω 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 Non Mil type - terminals are 60/40 electro tin plated to facilitate soldering
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

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 K = Thousand 15R00 = 15 Ω 10K00 = 10 kΩ	A = 0.05 % B = 0.1 % C = 0.25 % D = 0.5 % F = 1.0 % J = 5.0 % K = 10.0 %	E70 = Lead (Pb)-free, tape/reel (smaller than G010) E73 = Lead (Pb)-free, Tape/Reel (G010 and larger) E12 = Lead (Pb)-free, bulk Lead (Pb)-free is not available on RW military type S70 = Tin/lead, tape/reel (smaller than G010) S73 = Tin/lead, tape/reel (G010 and larger) B12 = Tin/lead, bulk	(Dash Number) (up to 3 digits) From 1 - 999 as applicable

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

G-3-80

HISTORICAL MODEL

10 Ω

RESISTANCE VALUE

1 %

TOLERANCE CODE

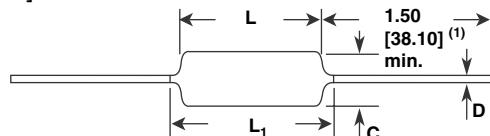
S70

PACKAGING

Pb containing terminations are not RoHS compliant, exemptions may apply

**G, GN**Wirewound Resistors, Military, MIL-PRF-26 Qualified,
Type RW, Precision Power, Silicone Coated

Vishay Dale

DIMENSIONS in inches [millimeters]

GLOBAL MODEL	DIMENSIONS in inches [millimeters]			
	L	L ₁ max. ⁽²⁾	C	D
G-1-80	0.250 ± 0.031	0.281	0.085 ± 0.020	0.020 ± 0.002
G-1-380	[6.35 ± 0.787]	[7.14]	[2.16 ± 0.508]	[0.508 ± 0.051]
G2	0.312 ± 0.016	0.328	0.078 + 0.016 - 0.031	0.020 ± 0.002
	[7.92 ± 0.406]	[8.33]	[1.98 + 0.406 - 0.787]	[0.508 ± 0.051]
G-3-80	0.406 ± 0.031	0.437	0.094 ± 0.031	0.020 ± 0.002
G-3-380	[10.31 ± 0.787]	[11.10]	[2.39 ± 0.787]	[0.508 ± 0.051]
G-5	0.562 ± 0.062	0.622	0.188 ± 0.032	0.032 ± 0.002
	[14.27 ± 1.57]	[15.80]	[4.78 ± 0.813]	[0.813 ± 0.051]
G-5C	0.500 ± 0.062	0.593	0.218 ± 0.032	0.040 ± 0.002
	[12.70 ± 1.57]	[15.06]	[5.54 ± 0.813]	[1.02 ± 0.051]
G-10	0.875 ± 0.062	1.0	0.312 ± 0.032	0.040 ± 0.002
	[22.23 ± 1.57]	[25.4]	[7.92 ± 0.813]	[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 ⁽¹⁾, value, tolerance, date code**Notes**

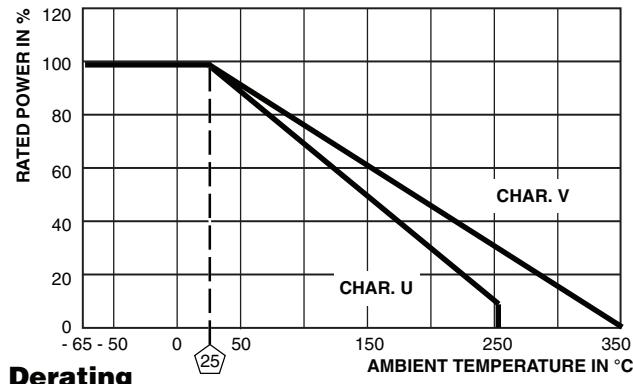
(1) Wattage marked on part will be "U" characteristic

• Military (RW) parts are only available with 60/40 Sn/Pb finish

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" 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 min at - 55 °C	± (0.2 % + 0.05 Ω) ΔR
Short Time Overload	5 x power (G-1-80 thru G-5C), 10 x power (G-10) for 5 s	± (0.2 % + 0.05 Ω) ΔR
Dielectric Withstanding Voltage	1000 V _{rms} , 1 min	± (0.1 % + 0.05 Ω) ΔR
Low Temperature Storage	- 65 °C for 24 h	± (0.2 % + 0.05 Ω) ΔR
High Temperature Exposure	250 h at + 250 °C (Characteristic U)	± (0.5 % + 0.05 Ω) ΔR
Moisture Resistance	MIL-STD-202 Method 106, 7b not applicable	± (0.2 % + 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
Vibration, High Frequency	Frequency varied 10 to 2000 Hz, 20 g peak, 2 directions 6 h each	± (0.1 % + 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
Terminal Strength	5 to 10 s, 5 or 10 lb pull test (depending on size), torsion test - 3 alternating directions, 360° each	± (0.1 % + 0.05 Ω) ΔR



Legal Disclaimer Notice

Vishay

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.