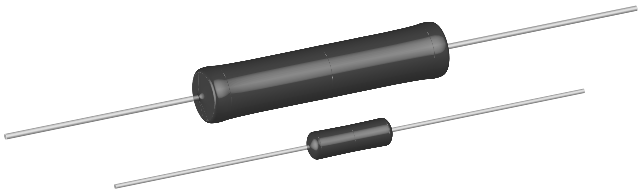
# Wirewound Resistors, Industrial, Precision Power, Silicone Coated, Axial Lead



## FEATURES

- High temperature coating (> 350 °C)
- Complete welded construction
- Meets applicable requirements of MIL-PRF-26
- Available in non-inductive styles (type NS) with Aryton-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
- Compliant to RoHS Directive 2002/95/EC

Pb-free Available

e3

RoHS* COMPLIANT

GREEN (5-2008)** Available

**Notes**

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

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HIST. MODEL | POWER RATING (1) $P_{25\,°C}$ W U ± 0.05 % to ± 5 % | POWER RATING (1) $P_{25\,°C}$ W V ± 3 % to ± 10 % | RESISTANCE RANGE Ω ± 0.05 % | RESISTANCE RANGE Ω ± 0.1 % | RESISTANCE RANGE Ω ± 0.25 % | RESISTANCE RANGE Ω ± 0.5 %, ± 1 % | RESISTANCE RANGE Ω ± 3 %, ± 5 %, ± 10 % | WEIGHT (typical) g |
|---|---|---|---|---|---|---|---|---|---|
| RS1/4 | RS-1/4 | 0.4 | - | 1 to 1K | 0.499 to 1K | 0.499 to 3.4K | 0.1 to 3.4K | 0.1 to 3.4K | 0.21 |
| RS1/2 | RS-1/2 | 0.75 | - | 1 to 1.3K | 0.499 to 1.3K | 0.499 to 4.9K | 0.1 to 4.9K | 0.1 to 4.9K | 0.23 |
| RS01A | RS-1A | 1.0 | - | 1 to 2.74K | 0.499 to 2.74K | 0.499 to 10.4K | 0.1 to 10.4K | 0.1 to 10.4K | 0.34 |
| RS01A...300 | RS-1A-300 | 1.0 | - | - | 0.499 to 2.74K | 0.499 to 10.4K | 0.1 to 10.4K | 0.1 to 10.4K | 0.34 |
| RS01M | RS-1M | 1.0 | - | 1 to 1.32K | 0.499 to 1.67K | 0.499 to 6.85K | 0.1 to 6.85K | 0.1 to 6.85K | 0.30 |
| RS002 | RS-2 | 4.0 | 5.5 | 0.499 to 12.7K | 0.499 to 12.7K | 0.1 to 47.1K | 0.1 to 47.1K | 0.1 to 47.1K | 2.10 |
| RS02M | RS-2M | 3.0 | - | 0.499 to 4.49K | 0.499 to 4.49K | 0.1 to 18.74K | 0.1 to 18.74K | 0.1 to 18.74K | 0.65 |
| RS02B | RS-2B | 3.0 | 3.75 | 0.499 to 6.5K | 0.499 to 6.5K | 0.1 to 24.5K | 0.1 to 24.5K | 0.1 to 24.5K | 0.70 |
| RS02B...300 | RS-2B-300 | 3.0 | - | - | 0.499 to 6.5K | 0.1 to 24.5K | 0.1 to 24.5K | 0.1 to 24.5K | 0.70 |
| RS02C | RS-2C | 2.5 | 3.25 | 0.499 to 8.6K | 0.499 to 8.6K | 0.1 to 32.3K | 0.1 to 32.3K | 0.1 to 32.3K | 1.6 |
| RS02C...17 | RS-2C-17 | 2.5 | 3.25 | 0.499 to 8.6K | 0.499 to 8.6K | 0.1 to 32.3K | 0.1 to 32.3K | 0.1 to 32.3K | 1.6 |
| RS02C...23 | RS-2C-23 | - | 3.25 | - | - | - | - | 0.1 to 32.3K | 1.6 |
| RS005 | RS-5 | 5.0 | 6.5 | 0.499 to 25.7K | 0.499 to 25.7K | 0.1 to 95.2K | 0.1 to 95.2K | 0.1 to 95.2K | 4.2 |
| RS005...69 | RS-5-69 | 5.0 | - | - | 0.499 to 25.7K | 0.1 to 95.2K | 0.1 to 95.2K | 0.1 to 95.2K | 4.2 |
| RS005...70 | RS-5-70 | - | 6.5 | - | - | - | - | 0.1 to 95.2K | 4.2 |
| RS007 | RS-7 | 7.0 | 9.0 | 0.499 to 41.4K | 0.499 to 41.4K | 0.1 to 154K | 0.1 to 154K | 0.1 to 154K | 4.7 |
| RS010 | RS-10 | 10.0 | 13.0 | 0.499 to 73.4K | 0.499 to 73.4K | 0.1 to 273K | 0.1 to 273K | 0.1 to 273K | 9.0 |
| RS010...38 | RS-10-38 | 10.0 | - | - | 0.499 to 73.4K | 0.1 to 273K | 0.1 to 273K | 0.1 to 273K | 9.0 |
| RS010...39 | RS-10-39 | - | 13.0 | - | - | - | - | 0.1 to 273K | 9.0 |

**Notes**

- Models not available as lead (Pb)-free: RS01A...300, RS02B...300, RS02C...23, RS005...69, RS005...70, RS010...38, RS010...39
- Shaded area indicates most popular models

(1) Vishay Dale RS models have two power ratings depending on operation temperature and stability requirements. Models not available for characteristic V are: RS1/4, RS1/2, RS01A, RS01A…300, RS01M, RS02M, RS02B…300, RS005…69, and RS010…38

## GLOBAL PART NUMBER INFORMATION

**Global Part Numbering example: RS02C10K00FS7017**

| R | S | 0 | 2 | C | 1 | 0 | K | 0 | 0 | F | S | 7 | 0 | 1 | 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| 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 RS005)<br>**E73** = Lead (Pb)-free, tape/reel (RS005 and larger)<br>**E12** = Lead (Pb)-free, bulk<br>**S70** = Tin/lead, tape/reel (smaller than RS005)<br>**S73** = Tin/lead, tape/reel (RS005 and larger)<br>**B12** = Tin/lead, bulk | (Dash Number)<br>(up to 3 digits)<br>From **1 to 999**<br>as applicable |

**Historical Part Numbering example: RS-2C-17 10 kΩ 1 % S70**

| RS-2C-17 | 10 kΩ | 1 % | S70 |
|---|---|---|---|
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |



For technical questions, contact: ww2bresistors@vishay.com

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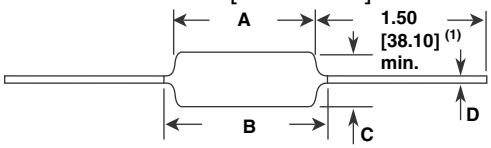
## DIMENSIONS in inches [millimeters]




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

## MATERIAL SPECIFICATIONS

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

**Core:** Ceramic, steatite or alumina, depending on physical size

**Coating:** Special high temperature silicone

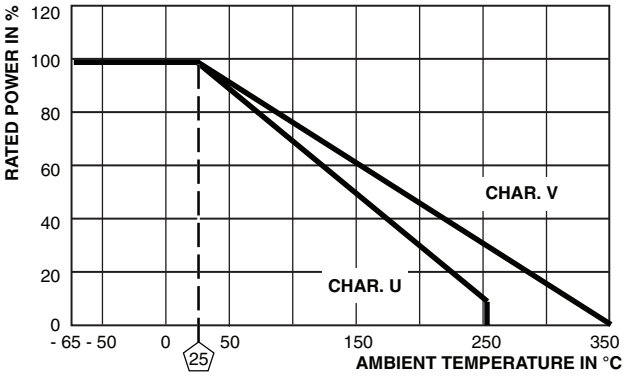
**Standard Terminals:** 100 % Sn, or 60/40 Sn/Pb coated Copperweld®

**End Caps:** Stainless steel

**Part Marking:** DALE, model, wattage (2), value, tolerance, date code

**Note**
(2) Wattage marked on part will be "U" characteristic

## DERATING




| GLOBAL MODEL | DIMENSIONS in inches [millimeters] | | | |
|---|---|---|---|---|
| | A | B (3) (max.) | C | D |
| RS1/4 | 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] |
| RS1/2 | 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] |
| RS01A RS01A...300 | 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] |
| RS01M | 0.285 ± 0.025 [7.24 ± 0.635] | 0.311 [7.90] | 0.110 ± 0.015 [2.79 ± 0.381] | 0.020 ± 0.002 [0.508 ± 0.051] |
| RS002 | 0.625 ± 0.062 [15.88 ± 1.57] | 0.765 [19.43] | 0.250 ± 0.031 [6.35 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |
| RS02M | 0.500 ± 0.062 [12.70 ± 1.57] | 0.562 [14.27] | 0.185 ± 0.015 [4.70 ± 0.381] | 0.032 ± 0.002 [0.813 ± 0.051] |
| RS02B RS02B...300 | 0.560 ± 0.062 [14.22 ± 1.57] | 0.622 [15.80] | 0.187 ± 0.031 [4.75 ± 0.787] | 0.032 ± 0.002 [0.813 ± 0.051] |
| RS02C | 0.500 ± 0.062 [12.70 ± 1.57] | 0.593 [15.06] | 0.218 ± 0.031 [5.54 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |
| RS02C...17 RS02C...23 | 0.500 ± 0.062 [12.70 ± 1.57] | 0.593 [15.06] | 0.218 ± 0.031 [5.54 ± 0.787] | 0.032 ± 0.002 [0.813 ± 0.051] |
| RS005 RS005...69 RS005...70 | 0.875 ± 0.062 [22.23 ± 1.57] | 1.0 [25.4] | 0.312 ± 0.031 [7.92 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |
| RS007 | 1.22 ± 0.062 [30.99 ± 1.57] | 1.28 [32.51] | 0.312 ± 0.031 [7.92 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |
| RS010 RS010...39 | 1.78 ± 0.062 [45.21 ± 1.57] | 1.87 [47.50] | 0.375 ± 0.031 [9.53 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |
| RS010...38 | 1.78 ± 0.062 [45.21 ± 1.57] | 1.84 [46.74] | 0.375 ± 0.031 [9.53 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |

**Note**
(3) B (max.) dimension is clean lead to clean lead

## NS NON-INDUCTIVE

Models of equivalent physical and electrical specifications are available with non-inductive (Aryton-Perry) winding. They are identified by substituting the letter N for R in the model number (NS005, for example).

Two conditions apply:

1. For NS models, divide maximum resistance values by two
2. Body O.D. on NS02C may exceed that of the RS02C by 0.010"

## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | RS 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 |
| Operating Temperature Range | °C | Characterisitic U = - 65 to + 250, characteristic V = - 65 to + 350 |

## PERFORMANCE

| TEST | CONDITIONS OF TEST | TEST LIMITS | |
|---|---|---|---|
| | | CHARACTERISTIC U | CHARACTERISTIC V |
| Thermal Shock | Rated power applied until thermally stable, then a minimum of 15 min at - 55 °C | ± (0.2 % + 0.05 Ω) Δ*R* | ± (2.0 % + 0.05 Ω) Δ*R* |
| Short Time Overload | 5 x rated power (3.75 W and smaller), 10 x rated power (4 W and larger) for 5 s | ± (0.2 % + 0.05 Ω) Δ*R* | ± (2.0 % + 0.05 Ω) Δ*R* |
| Dielectric Withstanding Voltage | 500 $V_{RMS}$ min. for RS1/4 thru RS01A, 1000 $V_{RMS}$ for all others, duration of 1 min | ± (0.1 % + 0.05 Ω) Δ*R* | ± (0.1 % + 0.05 Ω) Δ*R* |
| Low Temperature Storage | - 65 °C for 24 h | ± (0.2 % + 0.05 Ω) Δ*R* | ± (2.0 % + 0.05 Ω) Δ*R* |
| High Temperature Exposure | 250 h at: U = + 250 °C, V = + 350 °C | ± (0.5 % + 0.05 Ω) Δ*R* | ± (2.0 % + 0.05 Ω) Δ*R* |
| Moisture Resistance | MIL-STD-202 Method 106, 7b not applicable | ± (0.2 % + 0.05 Ω) Δ*R* | ± (2.0 % + 0.05 Ω) Δ*R* |
| Shock, Specified Pulse | MIL-STD-202 Method 213, 100 *g*'s for 6 ms, 10 shocks | ± (0.1 % + 0.05 Ω) Δ*R* | ± (0.2 % + 0.05 Ω) Δ*R* |
| Vibration, High Frequency | Frequency varied 10 Hz to 2000 Hz, 20 *g* peak, 2 directions 6 h each | ± (0.1 % + 0.05 Ω) Δ*R* | ± (0.2 % + 0.05 Ω) Δ*R* |
| Load Life | 2000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF" | ± (0.5 % + 0.05 Ω) Δ*R* | ± (3.0 % + 0.05 Ω) Δ*R* |
| Terminal Strength | Pull test 5 s to 10 s, 5 lb (RS1/4 thru RS01A), 10 lb for all others; torsion test - 3 alternating directions, 360° each | ± (0.1 % + 0.05 Ω) Δ*R* | ± (1.0 % + 0.05 Ω) Δ*R* |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