



## 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 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)
- Compliant to RoHS Directive 2002/95/EC



**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](http://www.vishay.com/doc?99902)

### 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 $\pm 10\%$ | RESISTANCE RANGE<br>$\Omega$<br>$\pm 0.05\%$ | RESISTANCE RANGE<br>$\Omega$<br>$\pm 0.1\%$ | RESISTANCE RANGE<br>$\Omega$<br>$\pm 0.25\%$ | RESISTANCE RANGE<br>$\Omega$<br>$\pm 0.5\%$ ,<br>$\pm 1\%$ | RESISTANCE RANGE<br>$\Omega$<br>$\pm 3\%$ , $\pm 5\%$ ,<br>$\pm 10\%$ | WEIGHT (typical)<br>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 $\Omega$<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>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><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) (up to 3 digits) From 1 to 999 as applicable |

Historical Part Numbering example: RS-2C-17 10 k $\Omega$  1 % S70

|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| RS-2C-17         | 10 k $\Omega$    | 1 %            | S70       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

**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 <sup>(2)</sup>, value, tolerance, date code

**Note**

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

**DERATING**


| GLOBAL MODEL                      | DIMENSIONS in inches [millimeters] |                         |                                                 |                                  |
|-----------------------------------|------------------------------------|-------------------------|-------------------------------------------------|----------------------------------|
|                                   | A                                  | B <sup>(3)</sup> (max.) | C                                               | D                                |
| RS1/4                             | 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] |
| RS1/2                             | 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] |
| RS01A<br>RS01A...300              | 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] |
| RS01M                             | 0.285 ± 0.025<br>[7.24 ± 0.635]    | 0.311<br>[7.90]         | 0.110 ± 0.015<br>[2.79 ± 0.381]                 | 0.020 ± 0.002<br>[0.508 ± 0.051] |
| RS002                             | 0.625 ± 0.062<br>[15.88 ± 1.57]    | 0.765<br>[19.43]        | 0.250 ± 0.031<br>[6.35 ± 0.787]                 | 0.040 ± 0.002<br>[1.02 ± 0.051]  |
| RS02M                             | 0.500 ± 0.062<br>[12.70 ± 1.57]    | 0.562<br>[14.27]        | 0.185 ± 0.015<br>[4.70 ± 0.381]                 | 0.032 ± 0.002<br>[0.813 ± 0.051] |
| RS02B<br>RS02B...300              | 0.560 ± 0.062<br>[14.22 ± 1.57]    | 0.622<br>[15.80]        | 0.187 ± 0.031<br>[4.75 ± 0.787]                 | 0.032 ± 0.002<br>[0.813 ± 0.051] |
| RS02C                             | 0.500 ± 0.062<br>[12.70 ± 1.57]    | 0.593<br>[15.06]        | 0.218 ± 0.031<br>[5.54 ± 0.787]                 | 0.040 ± 0.002<br>[1.02 ± 0.051]  |
| RS02C...17<br>RS02C...23          | 0.500 ± 0.062<br>[12.70 ± 1.57]    | 0.593<br>[15.06]        | 0.218 ± 0.031<br>[5.54 ± 0.787]                 | 0.032 ± 0.002<br>[0.813 ± 0.051] |
| RS005<br>RS005...69<br>RS005...70 | 0.875 ± 0.062<br>[22.23 ± 1.57]    | 1.0<br>[25.4]           | 0.312 ± 0.031<br>[7.92 ± 0.787]                 | 0.040 ± 0.002<br>[1.02 ± 0.051]  |
| RS007                             | 1.22 ± 0.062<br>[30.99 ± 1.57]     | 1.28<br>[32.51]         | 0.312 ± 0.031<br>[7.92 ± 0.787]                 | 0.040 ± 0.002<br>[1.02 ± 0.051]  |
| RS010<br>RS010...39               | 1.78 ± 0.062<br>[45.21 ± 1.57]     | 1.87<br>[47.50]         | 0.375 ± 0.031<br>[9.53 ± 0.787]                 | 0.040 ± 0.002<br>[1.02 ± 0.051]  |
| RS010...38                        | 1.78 ± 0.062<br>[45.21 ± 1.57]     | 1.84<br>[46.74]         | 0.375 ± 0.031<br>[9.53 ± 0.787]                 | 0.040 ± 0.002<br>[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     | Characteristic 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) ΔR | ± (2.0 % + 0.05 Ω) ΔR |
| 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) ΔR | ± (2.0 % + 0.05 Ω) ΔR |
| Dielectric Withstanding Voltage | 500 V <sub>RMS</sub> min. for RS1/4 thru RS01A, 1000 V <sub>RMS</sub> 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: U = + 250 °C, V = + 350 °C                                                                                     | ± (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 (RS1/4 thru RS01A), 10 lb for all others; torsion test - 3 alternating directions, 360° each | ± (0.1 % + 0.05 Ω) ΔR | ± (1.0 % + 0.05 Ω) ΔR |



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9