

# 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 (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<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 |



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## JONHON

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Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А