

## Enamelled Wirewound Power Resistors Axial Leads



### FEATURES

- High dissipation up to 30 W (25 °C)
- Fire proof
- Excellent endurance typical drift  $\pm 1.5\%$  after 1000 h
- Conformal vitreous enamel
- All welded construction
- Low ohmic values 0.1  $\Omega$  available
- Termination: Sn/Ag/Cu
- Compliant to RoHS Directive 2002/95/EC



As a result of more than 50 years of experience and continuous improvements the RWM Series of resistors features proven reliability in AC or DC applications.

The high quality of the RWM resides mainly in the use of a proprietary Vishay Sfernice enamel fired at high temperature and free from any compound liable to corrode the resistive wire.

The performance of this series of professional resistors fully meets the requirements of the following specifications:

- NF C 83-210-001
- CECC 40201-001
- BS - CECC 40201-002

### DIMENSIONS in millimeters



### TECHNICAL SPECIFICATIONS

| VISHAY SFERNICE SERIES AND STYLE                          |   | RWM 4 x 10                    | RWM 4 x 22                     | RWM 5 x 26                     | RWM 6 x 22                     | RWM 8 x 26                    | RWM 6 x 34                     | RWM 8 x 34                     | RWM 8 x 45                     | RWM 10 x 45                    | RWM 10 x 64                     | RWM 10 x 65                     |
|---|---|-------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|
| Designations  | CECC 40201-001                            | RB59                          | RB61                           | RB57                           | RB57                           | RB60                          | RB60                           | RB58                           | RB58                           | -                              | -                               | -                               |
|   | CECC 40201-002                            | JB                            | HB                             | -                              | KB                             | -                             | LB                             | -                              | MB                             | -                              | -                               | -                               |
| Power Rating  | at + 70 °C                                | 2.6 W                         | 4.5 W                          | 6 W                            | 6 W                            | 7 W                           | 7 W                            | 9.5 W                          | 9.5 W                          | 21 W                           | 21 W                            | 25.8 W                          |
|   | at + 25 °C                                | 3 W                           | 5 W                            | 7 W                            | 7 W                            | 8 W                           | 8 W                            | 11 W                           | 11 W                           | 25 W                           | 25 W                            | 30 W                            |
|   | With Surface Temp. $\leq + 450\text{ °C}$ | 5.5 W                         | 7 W                            | 10 W                           | 10 W                           | 10 W                          | 12 W                           | 14 W                           | 20 W                           | 25 W                           | 25 W                            | 30 W                            |
| Ohmic Range in Relation to Tolerance $\pm 5\%$ E24 Series |   | 0.1 $\Omega$<br>10 k $\Omega$ | 0.1 $\Omega$<br>16 k $\Omega$  | 0.1 $\Omega$<br>27 k $\Omega$  | 0.1 $\Omega$<br>39 k $\Omega$  | 0.1 $\Omega$<br>27 k $\Omega$ | 0.33 $\Omega$<br>36 k $\Omega$ | 0.33 $\Omega$<br>36 k $\Omega$ | 0.47 $\Omega$<br>62 k $\Omega$ | 0.47 $\Omega$<br>62 k $\Omega$ | 0.68 $\Omega$<br>100 k $\Omega$ | 0.68 $\Omega$<br>100 k $\Omega$ |
| Qualified Ohmic Range NF C 83-210                         |   | 0.1 $\Omega$<br>10 k $\Omega$ | 0.1 $\Omega$<br>6.8 k $\Omega$ | 0.15 $\Omega$<br>10 k $\Omega$ | 0.15 $\Omega$<br>39 k $\Omega$ | -                             | 0.33 $\Omega$<br>15 k $\Omega$ | -                              | 0.47 $\Omega$<br>33 k $\Omega$ | -                              | -                               | -                               |
| Limiting Element Voltage                                  |   | 120 V                         | 300 V                          | 350 V                          | 350 V                          | 500 V                         | 500 V                          | 650 V                          | 650 V                          | 800 V                          | 800 V                           | 800 V                           |
| Critical Resistance                                       |   | 4.8 k $\Omega$                | -                              | 18.8 k $\Omega$                | 17.5 k $\Omega$                | -                             | 31 k $\Omega$                  | -                              | 38 k $\Omega$                  | 25.6 k $\Omega$                | 25.6 k $\Omega$                 | 21.3 k $\Omega$                 |
| Dimensions in mm  | A   | 12 $\pm$ 1                    | 22.1 $\pm$ 1                   | 24.7 $\pm$ 1                   | 18 $\pm$ 1                     | 24.7 $\pm$ 1                  | 33.7 $\pm$ 1                   | 33.7 $\pm$ 1                   | 45.8 $\pm$ 2                   | 45.8 $\pm$ 2                   | 63.8 $\pm$ 1                    | 63.8 $\pm$ 1                    |
|   | Ø B                                       | 5.5 $\pm$ 1                   | 5.5 $\pm$ 1                    | 7.4 $\pm$ 1.5                  | 6.5 $\pm$ 1                    | 7.4 $\pm$ 1.5                 | 7.4 $\pm$ 1.5                  | 7.4 $\pm$ 1.5                  | 9.4 $\pm$ 1.5                  | 9.4 $\pm$ 1.5                  | 9.4 $\pm$ 1.5                   | 9.4 $\pm$ 1.5                   |
| Weight in g   |   | 1                             | 2                              | 3                              | 2.2                            | 3                             | 4                              | 4                              | 8                              | 8                              | 14                              | 14                              |

**Note**

- Undergoes European Quality Insurance System (CECC)



| <b>PERFORMANCE</b>                        |  |                            |                              |
|---|--|----------------------------|------------------------------|
| <b>CECC 40201 - EN 140-201</b>            |  |                            | <b>TYPICAL DRIFTS</b>        |
| <b>TESTS</b>                              | <b>CONDITIONS</b>  | <b>REQUIREMENTS</b>        |                              |
| <b>Short Time Overload</b>                | 10 $P_r$ during 10 s<br>25 °C ambient                                  | $\pm (2 \% + 0.1 \Omega)$  | $\pm (0.5 \% + 0.05 \Omega)$ |
| <b>Temperature Cycling<br/>(5 cycles)</b> | - 55 °C + 200 °C   | $\pm (1 \% + 0.05 \Omega)$ | $\pm (0.5 \% + 0.05 \Omega)$ |
| <b>Humidity (Steady State)</b>            | 56 days<br>40 °C ambient - R.H. 95 %                                   | $\pm (5 \% + 0.1 \Omega)$  | $\pm (0.5 \% + 0.05 \Omega)$ |
| <b>Terminal Strength</b>                  | Tensile test: 20 N<br>2 successive bending<br>2 full rotations of 180° | $\pm (1 \% + 0.05 \Omega)$ | $\pm (0.1 \% + 0.05 \Omega)$ |
| <b>Load Life</b>                          | 1000 h at $P_r$<br>90'/30' cycle<br>25 °C ambient                      | $\pm (5 \% + 0.1 \Omega)$  | $\pm (1.5 \% + 0.05 \Omega)$ |

**OVERLOAD**

Heavy overloads can be endured in the form of short pulses < 0.1 s. Particular requirements should be submitted to Vishay Sfernice, specifying peak voltage, cycle and environmental conditions.

**RECOMMENDATIONS FOR USE**

Since these components are high dissipation power resistors, customers are advised to use a high melting point solder.

For low ohmic values, the measurement becomes critical and the connecting wires resistance is to be included. The value is measured at 5 mm from the resistor body.

**Group Mounting**

In a still atmosphere, a distance between axes equal to five times the resistor's diameter is recommended.

**Cabinet Mounting**

- Unventilated box: Dissipation should be reduced (see dimensional drawing).
- Forced ventilation: If conditions are appropriate, dissipation may be doubled or even trebled.
- In any case: The surface temperature at the hottest point should not exceed 450 °C.

These aspects should be considered by the end user.

| <b>ELECTRICAL SPECIFICATIONS</b>                   |                   |  |
|--|-------------------|--|
| <b>Tolerance</b>                                   | <b>Standard</b>   | $\pm 5 \%$                                     |
|  | <b>On request</b> | $\pm 1 \%$ and $\pm 2 \%$                      |
| <b>Temperature Coefficient + 75 ppm/°C typical</b> |                   |  |
| <b>Dielectric Withstanding Voltage NF EN140000</b> |                   |  |
|  |                   | 500 V <sub>RMS</sub> - 1 min - 10 mA           |
| <b>Inductance</b>                                  |                   |  |
|  |                   | Non inductive (Ayrton-Perry) winding available |

**POWER RATING**



**TYPICAL TEMPERATURE RISE**



**MARKING**

Vishay Sfernice trademark, model and style, CECC style, if applicable (except for the smallest model due to lack of space: (4 x 10 or RB 59), ohmic value, resistance tolerance, manufacturing date (year - month).

| ORDERING INFORMATION |        |                       |                    |  |           |           |                |
|----------------------|--------|-----------------------|--------------------|--|-----------|-----------|----------------|
| RWM                  | 4 x 10 |                       | XXX                | 1U2  | ± 5 %     | AM500     | e1             |
| MODEL                | STYLE  | NI OPTIONAL           | SPECIAL DESIGN     | OHMIC VALUE  | TOLERANCE | PACKAGING | LEAD (Pb)-FREE |
|                      |        | Non Inductive Winding | Method N° Optional | Custom items are subject to extra charge and minimum order. Please see price list. |           |           |                |

| GLOBAL PART NUMBER INFORMATION |  |   |  |   |   |   |  |                          |                                 |   |   |   |   |   |  |   |   |
|--------------------------------|--|---|--|---|---|---|--|--------------------------|---------------------------------|---|---|---|---|---|--|---|---|
| R                              | W  | M   | 0  | 4 | 1 | 0   | 1  | R                        | 2                               | 0 | J | R | 1 | 5 |  | E | 1 |
| GLOBAL MODEL                   | SIZE   | OPTION                                      | OHMIC VALUE  |   |   | TOLERANCE                                 | PACKAGING  | SPECIAL                  | LEAD (Pb)-FREE                  |   |   |   |   |   |  |   |   |
| RWM                            | d x L:<br>0410<br>0422<br>0526<br>0826<br>0634<br>0845<br>1045<br>1064<br>1065 | Blank<br>or<br>N<br>(Non inductive winding) | The first three digits are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point.<br><br>48R7 = 48.7 Ω<br>1R20 = 1.2 Ω<br>1002 = 10 000 Ω<br>R330 = 0.33 Ω<br>... |   |   | F = 1 %<br>G = 2 %<br>J = 5 %<br>K = 10 % | Size 0410, 0422, 0526, 0826, 0622:<br>R15 = Reel (1000 pieces)<br><br>Size 0845, 1045, 1064, 1065:<br>B25 = Box (50 pieces)<br><br>Size 0634:<br>S09 = Bag (50 pieces)<br><br>Other packaging existing | As applicable<br>Ex: AD7 | Sn(99), Ag(0.3), Cu(0.7):<br>E1 |   |   |   |   |   |  |   |   |



## 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.**