

## Molded Precision Wirewound Resistors Axial Leads



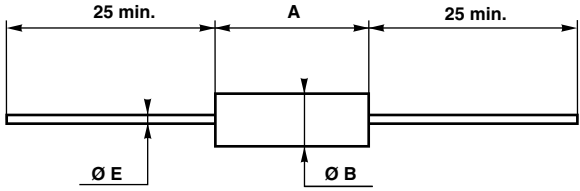
### FEATURES

- 0.75 W to 3 W at 25 °C
- NF C 83-210
- According to CECC 40201-005
- Low temperature coefficient  $\leq \pm 50$  ppm/°C
- Low ohmic values 15 mΩ available
- Excellent behavior against humidity
- Electrical insulation
- Mechanical strength
- Accurate sizes
- Termination = Sn / Ag / Cu or pure matte tin according to the ohmic value
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

High stability and low temperature coefficient are the main features of the precision wirewound resistors type RMB RMBS models just as maintenance parts. Their performances can be compared with those of the best film resistors but they have in addition a greater power rating. RMBS styles meet the more severe requirements of NF C 83-210 and characteristic U of MIL-R-26 E (approximate size of RW 70 and 79 resistors) specifications. The two models RMB and RMBS have a similar construction. RMBS are submitted, in addition to a process which further increases the stability. On request, non-inductive resistors are available under the reference RMB NI.

### DIMENSIONS in millimeters

|  | SERIES AND STYLE   | A max. | Ø B max. | E ± 0.1 | WEIGHT g |
|-------------------------------------------------------------------------------------|--------------------|--------|----------|---------|----------|
|                                                                                     | RMB0.75<br>RMBS0.5 | 7      | 2.5      | 0.6     | 0.3      |
|                                                                                     | RMB1.5<br>RMBS1    | 10.2   | 4        | 0.6     | 0.7      |
|                                                                                     | RMB3<br>RMBS2      | 16.2   | 6.4      | 0.8     | 1.5      |

### STANDARD ELECTRICAL SPECIFICATIONS

| MODEL   | SIZE | RESISTANCE RANGE<br>Ω | RATED POWER<br>P <sub>25 °C</sub><br>W | LIMITING ELEMENT VOLTAGE<br>V | TOLERANCE<br>± %  |
|---------|------|-----------------------|----------------------------------------|-------------------------------|-------------------|
| RMB0.75 | 075  | 0.1 to 2K             | 0.75                                   | n/a                           | 0.1, 0.5, 1, 2, 5 |
| RMB1.5  | 105  | 0.1 to 6.81K          | 1.5                                    | 120                           | 0.1, 0.5, 1, 2, 5 |
| RMB3    | 300  | 0.051 to 13K          | 3                                      | 200                           | 0.1, 0.5, 1, 2, 5 |
| RMBS0.5 | 05   | 0.1 to 2K             | 0.5                                    | n/a                           | 0.1, 0.5, 1, 2, 5 |
| RMBS1   | 10   | 0.1 to 6.81K          | 1                                      | 120                           | 0.1, 0.5, 1, 2, 5 |
| RMBS2   | 20   | 0.015 to 13K          | 2                                      | 200                           | 0.1, 0.5, 1, 2, 5 |

**TECHNICAL SPECIFICATIONS**

| VISHAY SFERNICE SERIES AND STYLE     |             | RMB0.75                        | RMB1.5           | RMB3              | RMBS0.5        | RMBS1            | RMBS2              |
|--------------------------------------|-------------|--------------------------------|------------------|-------------------|----------------|------------------|--------------------|
| NF C 83-210                          |             | -                              | -                | -                 | RP1            | RP2              | RP3                |
| CECC 40201-005                       |             | -                              | -                | -                 | A              | B                | C                  |
| Power Rating                         | at 25 °C    | 0.75 W                         | 1.5 W            | 3 W               | 0.5 W          | 1 W              | 2 W                |
|                                      | at 70 °C    | 0.6 W                          | 1.2 W            | 2.4 W             | 0.4 W          | 0.8 W            | 1.6 W              |
| Ohmic Range in Relation to Tolerance | ± 5 % E24   | 0.1 Ω to 2 kΩ                  | 0.1 Ω to 6.81 kΩ | 0.051 Ω to 13 kΩ  | 0.1 Ω to 2 kΩ  | 0.1 Ω to 6.81 kΩ | 0.015 Ω to 13 kΩ   |
|                                      | ± 2 % E48   | 0.1 Ω to 2 kΩ                  | 0.1 Ω to 6.81 kΩ | 0.08 Ω to 12.3 kΩ | 0.1 Ω to 2 kΩ  | 0.1 Ω to 6.81 kΩ | 0.078 Ω to 12.4 kΩ |
|                                      | ± 1 % E96   | 0.1 Ω to 2 kΩ                  | 0.1 Ω to 6.81 kΩ | 0.1 Ω to 12.4 kΩ  | 0.1 Ω to 2 kΩ  | 0.1 Ω to 6.81 kΩ | 0.1 Ω to 12.4 kΩ   |
|                                      | ± 0.5 % E96 | 0.4 Ω to 2 kΩ                  | 0.4 Ω to 6.81 kΩ | 0.3 Ω to 12.4 kΩ  | 0.4 Ω to 2 kΩ  | 0.4 Ω to 6.81 kΩ | 0.3 Ω to 12.4 kΩ   |
|                                      | ± 0.1 %     | Please consult Vishay Sfernice |                  |                   |                |                  |                    |
| Qualified Ohmic Range NF C 83-210    |             | -                              | -                | -                 | 1 Ω to 174 Ω   | 1 Ω to 590 Ω     | 1 Ω to 1.3 kΩ      |
| Limiting Element Voltage             |             | Not applicable                 | 120 V            | 200 V             | Not applicable | 120 V            | 200 V              |
| Critical Resistance                  |             | Out of nominal ohmic range     |                  |                   |                |                  |                    |

**PERFORMANCE**

| TESTS                   | CONDITIONS                                                | REQUIREMENTS                                         |                                            | TYPICAL VALUES AND DRIFTS                  |                                             |
|-------------------------|-----------------------------------------------------------|------------------------------------------------------|--------------------------------------------|--------------------------------------------|---------------------------------------------|
|                         |                                                           | MIL-R-26 E                                           | NF C 83-210                                | RMB                                        | RMBS                                        |
| Dielectric W/s Voltage  | 500 V <sub>RMS</sub>                                      | ± (0.1 % + 0.05 Ω)                                   | -                                          | ± (0.05 % + 0.01 Ω)                        | ± (0.05 % + 0.01 Ω)                         |
| Short Time Overload     | 5 P <sub>N</sub> at 25 °C/5 s                             | ± (0.2 % + 0.05 Ω)                                   | ± 0.25 % + 0.05 Ω                          | ± (0.1 % + 0.01 Ω)                         | ± (0.05 % + 0.01 Ω)                         |
| Climatic Sequence       | NF C 83-210<br>-55 °C / +200 °C<br>5 cycles               | -                                                    | ± 0.25 % + 0.05 Ω<br>Insulation R > 100 MΩ | ± (0.1 % + 0.01 Ω)<br>> 10 <sup>4</sup> MΩ | ± (0.05 % + 0.01 Ω)<br>> 10 <sup>4</sup> MΩ |
| Humidity (Steady State) | NF C 83-210<br>56 days 95 % RH                            | -                                                    | ± 0.25 % + 0.05 Ω<br>Insulation R > 100 MΩ | ± (0.1 % + 0.01 Ω)<br>> 10 <sup>4</sup> MΩ | ± (0.05 % + 0.01 Ω)<br>> 10 <sup>4</sup> MΩ |
| Thermal Shock           | Load at 100 % P followed by cold temp. exposure at -55 °C | ± (0.2 % + 0.05 Ω)                                   | -                                          | ± (0.2 % + 0.01 Ω)                         | (0.1 % + 0.01 Ω)                            |
| Vibration               | MIL-STD-202<br>Method 204 - Test D: 20 g<br>10/2000 Hz    | ± (0.2 % + 0.05 Ω)                                   | ± 0.25 % + 0.05 Ω                          | ± (0.01 % + 0.01 Ω)                        | ± (0.01 % + 0.01 Ω)                         |
| Load Life               | MIL-STD-202<br>Method 108 Pr 2000 h                       | ± (0.5 % + 0.05 Ω)                                   | ± 0.25 % + 0.05 Ω<br>1000 h at 25 °C       | ± (1 % + 0.01 Ω)                           | ± (0.15 % + 0.01 Ω)                         |
| Moisture Resistance     | MIL-STD-202<br>Method 106                                 | ± (0.2 % + 0.05 Ω)<br>Insulation resistance > 100 MΩ | -                                          | ± (0.1 % + 0.01 Ω)<br>> 10 <sup>3</sup> MΩ | ± (0.05 % + 0.01 Ω)<br>> 10 <sup>3</sup> MΩ |
| High Temperature        | 1000 h at +200 °C                                         | ± (0.5 % + 0.05 Ω)                                   | ± 0.5 % + 0.05 Ω<br>Insulation R > 1 GΩ    | ± (1 % + 0.05 Ω)                           | ± (0.3 % + 0.05 Ω)                          |
| Shock                   | MIL-STD-202<br>100 g Method 205 Test C                    | ± (0.1 % + 0.05 Ω)                                   | ± 0.25 % + 0.05 Ω                          | ± 0.05 %                                   | ± 0.05 %                                    |

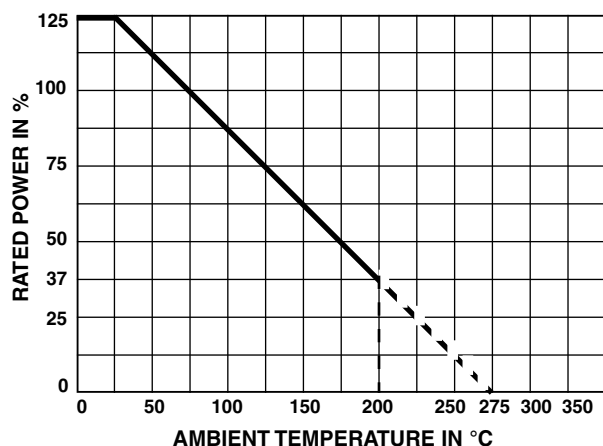
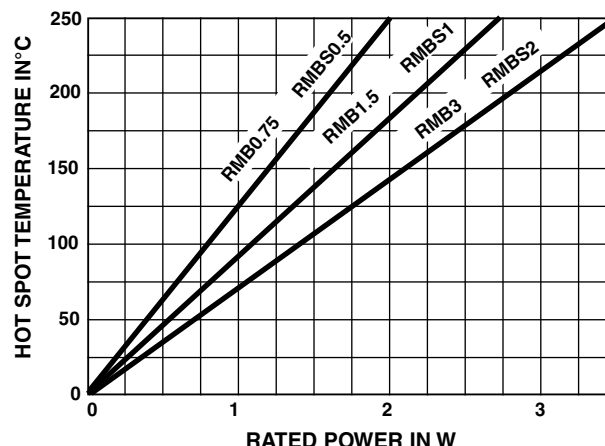
**TEMPERATURE COEFFICIENT IN THE RANGE -55 °C TO +200 °C**

| OHMIC RANGE       | REQUIREMENTS<br>NF C 83-210 MIL-R-26E | TYPICAL VALUES<br>SFERNICE |
|-------------------|---------------------------------------|----------------------------|
|                   | MIL                                   |                            |
| $R_n < 1$         | ≤ ± 100 ppm/°C                        | ± 50 ppm/°C                |
| $1 \leq R_n < 10$ | ≤ ± 50 ppm/°C                         |                            |
| $R_n \geq 10$     | ≤ ± 25 ppm/°C                         | +0 °C to -20 ppm/°C        |

**STABILITY AND POWER RATING**

Stability changes slightly according to power rating and ambient temperature. This fact is specially important for users needing a life drift lower than the initial resistance tolerance. Typical drifts, after 2000 h life test made under the 90°/30° conditions and at a 25 °C ambient temperature are:

| MODEL STYLE | RMBS 0.5 | RMBS 1 | RMBS 2 | R %/R % | MODEL STYLE | RMB 0.75 | RMB 1.5 | RMB 3 | R %/R % |
|-------------|----------|--------|--------|---------|-------------|----------|---------|-------|---------|
| $P_n$       | 0.5 W    | 1 W    | 2 W    | 0.15 %  | $P_{max.}$  | 1 W      | 2 W     | 3.5 W | 1 %     |
| $1/2 P_n$   | 0.25 W   | 0.5 W  | 1 W    | 0.075 % | $P_n$       | 0.75 W   | 1.5 W   | 3 W   | 0.5 %   |
|             |          |        |        |         | $1/3 P_n$   | 0.4 W    | 0.75 W  | 1.5 W | 0.3 %   |

**POWER RATING****TEMPERATURE RISE****MARKING**

Vishay Sfernice trademark, model, style, CECC style (if applicable) nominal resistance (in  $\Omega$ ), tolerance (in %), manufacturing date.

**ORDERING INFORMATION**

|       |       |             |           |           |
|-------|-------|-------------|-----------|-----------|
| RMB   | 105   | R5000       | J         | S00       |
| RMBS  | 05    | 22R00       | J         | S14       |
| MODEL | STYLE | OHMIC VALUE | TOLERANCE | PACKAGING |

**GLOBAL PART NUMBER INFORMATION**

|              |                                                      |                           |                                                                                                                                                                                                                                                      |   |   |   |                    |   |                                                                                                                                                                                                                                                                   |   |   |   |                           |   |
|--------------|------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|--------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---------------------------|---|
| R            | M                                                    | B                         | 1                                                                                                                                                                                                                                                    | 0 | 5 | 3 | 0                  | 0 | R                                                                                                                                                                                                                                                                 | 0 | J | S | 0                         | 0 |
| GLOBAL MODEL | SIZE                                                 | OPTION                    | OHMIC VALUE                                                                                                                                                                                                                                          |   |   |   | TOLERANCE          |   | PACKAGING                                                                                                                                                                                                                                                         |   |   |   | SPECIAL                   |   |
| RMB<br>RMBS  | RMB:<br>075<br>105<br>300<br>RMBS:<br>05<br>10<br>20 | N = non inductive winding | The first four digits are significant figures and the last digit specifies the number of zeros to follow.<br>R designates decimal point.<br>300R0 = 300 $\Omega$<br>680R0 = 680 $\Omega$<br>20301 = 20.3 k $\Omega$<br>88R88 = 88.88 $\Omega$<br>... |   |   |   | F = 1 %<br>J = 5 % |   | <b>Standard Packaging:</b><br><br><b>RMB:</b><br>size 075 and 105: S14 = Bag, 100 pieces<br>size 300: S09 = Bag, 50 pieces<br><br><b>RMBS:</b><br>size 05 and 10: S14 = Bag, 100 pieces<br>size 20: S09 = Bag, 50 pieces<br><br><b>Other packagings available</b> |   |   |   | As applicable<br>Ex = MEX |   |



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