

## Wirewound Resistors, Commercial Power, Silicone Coated, Axial Lead



### FEATURES

- High temperature coating (> 350 °C)
- Complete welded construction
- Available in non-inductive styles with Ayrton-Perry winding for lowest reactive components, special "NI"
- Higher power to size ratio as compared to equivalent sized resistors
- Material categorization:  
For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
**GREEN**  
(5-2008)

### STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	POWER RATING <sup>(1)</sup> $P_{25\text{ }^{\circ}\text{C}}$ W CHARACTERISTIC U + 250 °C	POWER RATING <sup>(1)</sup> $P_{25\text{ }^{\circ}\text{C}}$ W CHARACTERISTIC V + 350 °C	TOLERANCE <sup>(2)</sup> %	RESISTANCE RANGE $\Omega$	WEIGHT (typical) g
MRB01	1.0	1.5	0.5, 1, 5	0.085 to 5.0K	0.30
MRB02	1.5	2.2	0.5, 1, 5	0.05 to 6.85K	0.32
MRB03	2.25	3.0	0.5, 1, 5	0.05 to 10.4K	0.34
MRB05	4.0	5.0	0.5, 1, 5	0.015 to 24.5K	0.70
MRB06	5.0	6.0	0.5, 1, 5	0.02 to 32.3K	1.60
MRB10	7.0	10.0	0.5, 1, 5	0.03 to 90.9K	4.20
MRB12	10.0	12.0	0.5, 1, 5	0.04 to 144.9K	4.70

#### Notes

- (1) Vishay Mills MRB models have two power ratings depending on operation temperature and stability requirements.  
(2) Other tolerances may be available, contact factory

### TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	MRB RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/°C	± 30 for 10 $\Omega$ and above; ± 50 for 1.0 $\Omega$ to 9.9 $\Omega$ ; ± 90 for 0.5 $\Omega$ to 0.99 $\Omega$
Terminal Strength	lb	5 min (MRB01 thru MRB03) and 10 min (MRB05 and larger)
Dielectric Withstanding Voltage	V <sub>AC</sub>	500 for 3 W and smaller; 1000 for 4 W and larger
Operating Temperature Range	°C	Characteristic U = - 65 to + 250, Characteristic V = - 65 to + 350
Maximum Working Voltage	V	$(P \times R)^{1/2}$

### GLOBAL PART NUMBER INFORMATION

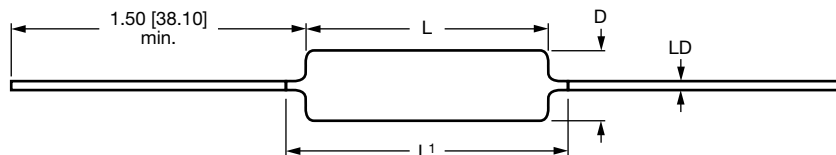
Global Part Numbering example: **MRB02250R0FE08** (visit [www.vishay.net](http://www.vishay.net) Vishay Dale parts numbering manual for all options)

**M** **R** **B** **0** **2** **2** **5** **0** **R** **0** **F** **E** **0** **8**

GLOBAL MODEL (5 digits)	VALUE (5 digits)	TOLERANCE (1 digit)	PACKAGING CODE (3 digits)	SPECIAL (up to 3 digits)
(See Standard Electrical Specifications Global Model column for options)	<b>R</b> = Decimal <b>K</b> = Thousand <b>1R500</b> = 1.5 $\Omega$ <b>1K500</b> = 1.5 k $\Omega$	<b>D</b> = ± 0.5 % <b>F</b> = ± 1.0 % <b>J</b> = ± 5.0 %	<b>E07</b> = Tape/reel (MRB10, MRB12) <b>E08</b> = Tape/reel (MRB01, MRB02, MRB03) <b>E48</b> = Tape/reel (MRB05, MRB06) <b>E12</b> = Bulk, up to 100 pc boxes	(Dash Number) From <b>1</b> to <b>999</b> as applicable <b>NI</b> = Non-inductive

Historical Part Number example: **MRB02W250R0F**

<b>MRB02</b>	<b>W = STANDARD</b>	<b>250 <math>\Omega</math></b>	<b>1 %</b>
HISTORICAL MODEL	TC	RESISTANCE VALUE	TOLERANCE

**DIMENSIONS** in inches [millimeters]


MODEL	DIMENSIONS in inches [millimeters]			
	L ± 0.062 [1.57]	L <sup>1</sup> Max.	D ± 0.031 [0.79]	LD ± 0.002 [0.051]
MRB01	0.285 [7.24]	0.375 [9.52]	0.110 [2.79]	0.020 [0.508]
MRB02	0.310 [7.87]	0.420 [10.67]	0.094 [2.39]	0.020 [0.508]
MRB03	0.406 [10.31]	0.500 [12.70]	0.110 [2.79]	0.020 [0.508]
MRB05	0.562 [14.27]	0.650 [16.51]	0.187 [4.75]	0.032 [0.813]
MRB06	0.500 [12.70]	0.600 [15.24]	0.218 [5.54]	0.032 [0.813]
MRB10	0.875 [22.22]	0.975 [24.76]	0.312 [7.92]	0.032 [0.813]
MRB12	1.188 [30.18]	1.280 [32.51]	0.312 [7.92]	0.032 [0.813]

**MATERIAL SPECIFICATIONS**

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

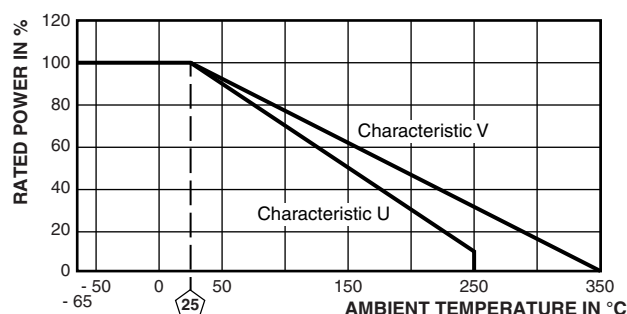
**Core:** Ceramic: Alumina

**Coating:** Special high temperature silicone

**Standard Terminals:** Tinned copper clad steel

**End Caps:** Stainless steel

**Part Marking:** MILLS, model, value, tolerance, date code

**DERATING**


PERFORMANCE			
TEST	CONDITIONS OF TEST	TEST LIMITS	
		(CHARACTERISTIC U)	(CHARACTERISTIC V)
Dielectric Withstanding Voltage	500 V <sub>RMS</sub> , 1 min (MRB01 thru MRB03); 1000 V <sub>RMS</sub> , 1 min for all others	± (0.1 % + 0.05 Ω) ΔR	± (0.1 % + 0.05 Ω) ΔR
High Frequency Vibration	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
High Temperature Exposure	250 h at + 250 °C for U Characteristic, + 350 °C for V Characteristic	± (0.5 % + 0.05 Ω) ΔR	± (4.0 % + 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
Low Temperature Storage	- 65 °C for 24 h	± (0.2 % + 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
Thermal Shock	Rated power applied until thermally stable, then 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 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
Terminal Strength	Pull test 5 s to 10 s, 5 lb (MRB01 thru MRB03), 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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