

## Wirewound Resistors, Non-Magnetic, Non-Inductive, Axial Lead


**FEATURES**

- High temperature coating (> 350 °C)
- Non-magnetic and all welded constructions greatly enhance frequency response. Combined with non-inductive Ayrton-Perry winding the inductive reactance and signal loss are almost totally eliminated.
- Ideal for Audio Industry
- 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	HISTORICAL 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 Ω	WEIGHT (typical) g
MRA-05	MRA05	4.0	5.0	1, 5, 10	0.01 to 15.0K	1.00
MRA-10	MRA10	7.0	10.0	1, 5, 10	0.05 to 35.0K	3.87
MRA-12	MRA12	10.0	12.0	1, 5, 10	0.05 to 85.0K	5.02

**Notes**

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

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	MRA RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/°C	± 30 for 10 Ω and above; ± 50 for 1.0 Ω to 9.9 Ω; ± 90 for 0.5 Ω to 0.99 Ω
Terminal Strength	lb	10 minimum
Dielectric Withstanding Voltage	V <sub>AC</sub>	500 for MRA-05 and 1000 for MRA-10 and MRA-12
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: <b>MRA-1225R00JE12</b> (visit <a href="http://www.vishay.net">www.vishay.net</a> Vishay Dale parts numbering manual for all options)																
M	R	A	-	1	2	2	5	R	0	0	J	E	1	2		
GLOBAL MODEL (6 digits)			VALUE (5 digits)			TOLERANCE (1 digit)		PACKAGING CODE (3 digits)			SPECIAL (up to 2 digits)					
(See Standard Electrical Specifications Global Model column for options)			R = Decimal K = Thousand 1R500 = 1.5 Ω 1K500 = 1.5 kΩ			F = ± 1.0 % J = ± 5.0 % K = ± 10.0 %		E07 = Tape/reel (MRA-10, MRA-12) E48 = Tape/reel (MRA-05) E12 = Bulk, up to 100 pc boxes			(Dash Number) From 1 to 99 as applicable					
Historical Part Number example: <b>MRA12W25R0J</b>																
MRA12			W = STANDARD			25 Ω			5 %							
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]
MRA-05	0.562 [14.27]	0.650 [16.51]	0.167 [4.24]	0.032 [0.813]
MRA-10	0.875 [22.22]	0.975 [24.76]	0.312 [7.92]	0.040 [1.016]
MRA-12	1.188 [30.18]	1.280 [32.51]	0.312 [7.92]	0.040 [1.016]

**MATERIAL SPECIFICATIONS**

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

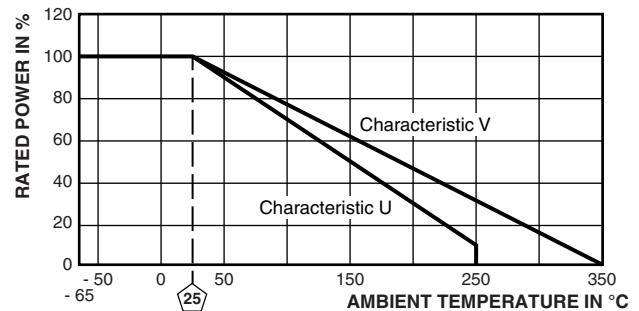
**Core:** Ceramic: Alumina

**Coating:** Special high temperature silicone

**Standard Terminals:** Tinned copper

**End Caps:** Copper alloy

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

**DERATING**


PERFORMANCE			
TEST	CONDITIONS OF TEST	TEST LIMITS	
		(CHARACTERISTIC U)	(CHARACTERISTIC V)
Dielectric Withstanding Voltage	1000 V <sub>RMS</sub> , 1 min	± (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	± (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 (5 W smaller), 10 x rated power (7 W and larger) for 5 s	± (0.2 % + 0.05 Ω) ΔR	± (2.0 % + 0.05 Ω) ΔR
Terminal Strength	5 s to 10 s 10 pound pull test; 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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.