

## 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 $\Omega$	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 $\Omega$ and above; ± 50 for 1.0 $\Omega$ to 9.9 $\Omega$ ; ± 90 for 0.5 $\Omega$ to 0.99 $\Omega$
Terminal Strength	lb	10 minimum
Dielectric Withstanding Voltage	$V_{AC}$	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 $\Omega$ 1K500 = 1.5 k $\Omega$			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 $\Omega$			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

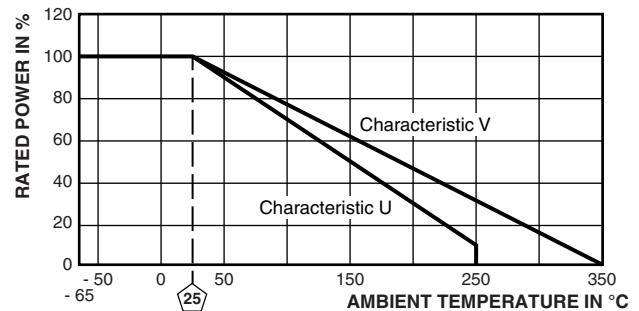
**Core:** Ceramic: Alumina

**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



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