



# 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.





COMPLIANT

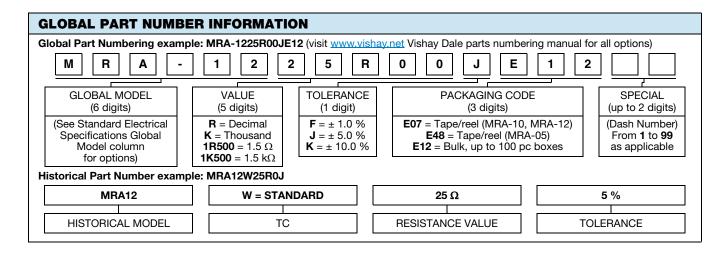
- Ideal for Audio Industry
- Material categorization: For definitions of compliance please see <a href="https://www.vishav.com/doc?99912">www.vishav.com/doc?99912</a>

STANDARD ELECTRICAL SPECIFICATIONS							
GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $^{(1)}$ $P_{25~{\rm ^{\circ}C}}$ W CHARACTERISTIC U + 250 $^{\circ}$ C	P <sub>25</sub> °C W	TOLERANCE (2)	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

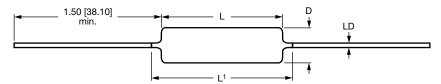
- (1) Vishay Mills MRA models have two power ratings depending on the operation temperature and stability requirements.
- (2) Other tolerances may be available, contact factory

TECHNICAL SPECIFICATIONS					
PARAMETER	UNIT	MRA RESISTOR CHARACTERISTICS			
Temperature Coefficient	ppm/°C	$\pm$ 30 for 10 $\Omega$ and above; $\pm$ 50 for 1.0 $\Omega$ to 9.9 $\Omega;$ $\pm$ 90 for 0.5 $\Omega$ to 0.99 $\Omega$			
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	$(P \times R)^{1/2}$			





### **DIMENSIONS** in inches [millimeters]



	DIMENSIONS in inches [millimeters]				
MODEL	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

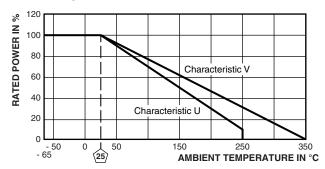
Core: Ceramic: Alumina

**Coating:** Special high temperature silicone **Standard Terminals:** Tinned copper

End Caps: Copper alloy

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

#### **DERATING**



PERFORMANCE					
TECT	CONDITIONS OF TEST	TEST LIMITS			
TEST	CONDITIONS OF TEST	(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"	$\pm$ (0.5 % + 0.05 Ω) ΔR	$\pm$ (3.0 % + 0.05 $\Omega$ ) $\Delta R$		
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	$\pm$ (2.0 % + 0.05 Ω) ΔR		
Shock, Specified Pulse	MIL-STD 202 Method 213, 100 g's for 6 ms, 10 shocks	$\pm$ (0.1 % + 0.05 Ω) ΔR	$\pm$ (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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