

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



RoHS
COMPLIANT
GREEN
(5-2008)

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | |
|------------------------------------|------------------|--|--|-------------------------------|-----------------------|-----------------------|
| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING ⁽¹⁾ $P_{25\text{ }^\circ\text{C W}}$ CHARACTERISTIC U + 250 °C | POWER RATING ⁽¹⁾ $P_{25\text{ }^\circ\text{C W}}$ CHARACTERISTIC V + 350 °C | 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 | ± 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 _{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: MRA-1225R00JE12 (visit www.vishay.net 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: MRA12W25R0J | | | | | | | | | | | | | | | | |
| 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 ¹ 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

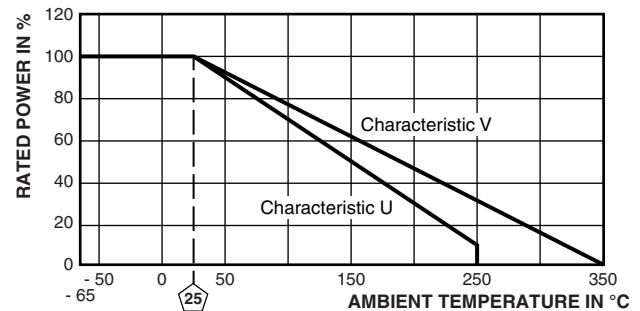
Core: Ceramic: Alumina

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 _{RMS} , 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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