Low Resistance Value Resistor - Molded 2 and 4 Leads

Resistive Product Solutions

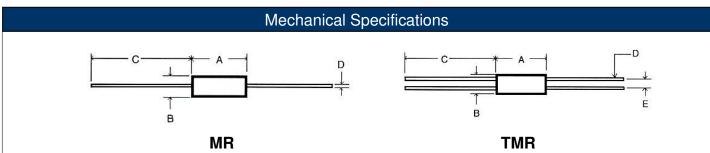
Features:

- Metal element resistors
- Tinned copper leads
- Low temperature coefficient
- Molded bodies
- TMR Kelvin Bridge Test
- MRS high stability version
- Cut and formed product is available on selected sizes contact Stackpole for details
- 100% RoHS compliant and lead free without exemption
- Halogen free
- REACH compliant



| Electrical Specifications | | | | | | | |
|---------------------------|----------------------------|---------------------------------|---------------------|------------------------------|-------------------------------|--|--|
| Type/Code | Power Rating (W) @ 70°C | Short Time Overload | Dielectric Strength | TCR (ppm/ºC) | Ohmic Range (Ω) and Tolerance | | |
| | | | | | 1%, 5% | | |
| MR1 ⁽²⁾ | 1 | 5 seconds at 5 X rated power | | | 0.01 - 0.1 | | |
| MR3 ⁽³⁾ | 3 | | | ± 50 to ± 400 ⁽¹⁾ | 0.005 - 0.2 | | |
| MR5 ⁽⁴⁾ | 5 | | 500 VAC | ± 50 t0 ± 400 \ / | 0.005 - 0.2 0.005 - 0.3 | | |
| MR10 ⁽⁵⁾ | 10 | | 000 1710 | | 0.01 - 0.5 | | |
| TMR3 | 3 | | | ± 40 | 0.005 - 0.2 | | |
| TMR5 | 5 | | | ± 40 | 0.005 - 0.3 | | |

- (1) TCR is value dependent. Contact Stackpole for specific data.
- (2) MR1 values 0.05Ω and below are non-magnetic and non-inductive. MR1 values ≥ 0.06Ω are ribbon element wound on ceramic core.
- (3) MR3 values 0.1Ω and below are non-magnetic and non-inductive. MR3 values $\geq 0.15\Omega$ are ribbon element wound on ceramic core.
- (4) MR5 values 0.15Ω and below are non-magnetic and non-inductive. MR5 values ≥ 0.15Ω are ribbon element wound on ceramic core.
- (5) MR10 all values are ribbon element wound on ceramic core.



| Type/Code | A Body Length | B Body Diameter | C Lead Length (Bulk) ⁽¹⁾ | D Lead Diameter | E Lead Spacing (Ref.) | Unit |
|-----------|------------------|--------------------|--|--------------------|-----------------------------|--------|
| MR1 | 0.385 ± 0.015 | 0.135 ± 0.015 | 1.375 ± 0.125 | 0.032 ± 0.002 | | inches |
| | 9.78 ± 0.38 | 3.43 ± 0.38 | 34.93 ± 3.18 | 0.81 ± 0.05 | | mm |
| MR3 | 0.560 ± 0.015 | 0.205 ± 0.015 | 1.375 ± 0.125 | 0.032 ± 0.002 | | inches |
| | 14.22 ± 0.38 | 5.21 ± 0.38 | 34.93 ± 3.18 | 0.81 ± 0.05 | | mm |
| MR5 | 0.925 ± 0.015 | 0.330 ± 0.015 | 1.375 ± 0.125 | 0.036 ± 0.002 | - | inches |
| | 23.50 ± 0.38 | 8.38 ± 0.38 | 34.93 ± 3.18 | 0.91 ± 0.05 | | mm |
| MR10 | 1.925 ± 0.015 | 0.475 ± 0.015 | 1.375 ± 0.125 | 0.036 ± 0.002 | | inches |
| | 48.90 ± 0.38 | 12.07 ± 0.38 | 34.93 ± 3.18 | 0.91 ± 0.05 | | mm |
| TMR3 | 0.625 ± 0.015 | 0.205 ± 0.015 | 1.375 ± 0.125 | 0.032 ± 0.002 | 0.125 | inches |
| | 15.88 ± 0.38 | 5.21 ± 0.38 | 34.93 ± 3.18 | 0.81 ± 0.05 | 3.18 | mm |
| TMR5 | 0.940 ± 0.015 | 0.330 ± 0.015 | 1.375 ± 0.125 | 0.036 ± 0.002 | 0.200 | inches |
| | 23.88 ± 0.38 | 8.38 ± 0.38 | 34.93 ± 3.18 | 0.91 ± 0.05 | 5.08 | mm |

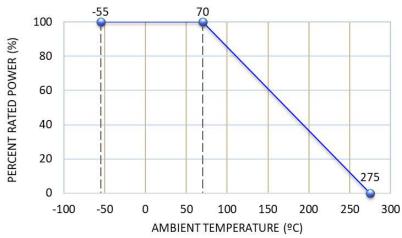
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(1) See Packaging Specification for lead length dimension for tape and reel packaged product.

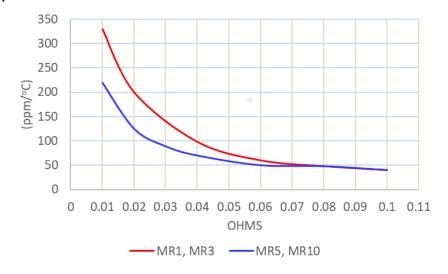
| Performance Characteristics | | | | | |
|---------------------------------|--------------|--|--|--|--|
| Test | Test Results | | | | |
| Moisture Resistance | ± 5% | | | | |
| Thermal Shock | ± 2% | | | | |
| Load Life @ 70°C - 1000 hours | ± 5% | | | | |
| Resistance to Soldering Heat | ± 2% | | | | |
| Short Time Overload | ± 2% | | | | |
| Dielectric Withstanding Voltage | ± 2% | | | | |

Operating Temperature Range: -55°C to +275°C

Power Derating Curve:



TCR X Resistance:



- Pre-heating: 110°C MAX

Flow Soldering:

Iron Soldering:

-- Dip duration 10s or 5s x2

Time

Resistive Product Solutions

Recommended Soldering Condition Temp. - Peak temperature/duration: 260°C 260°C within 10 seconds (1st, 2nd wave total) - Temperature profile (see chart on the right) Pre-heating 110°C - 380°C, 5 seconds, once/terminal Room

60s ~ 120s

Packaging Specifications Points are cut at dotted line for 10° (25mm) reel only В

Temp.

| Series | Code | A max ⁽¹⁾ | B max | С | D ⁽²⁾ | Tape | Unit |
|--------|------|----------------------|--------|---------------|------------------|-------|--------|
| | 1 | 3.311 | 13.504 | 0.197 ± 0.020 | 2.063 ± 0.079 | 0.250 | inches |
| | | 84.10 | 343.00 | 5.00 ± 0.50 | 52.40 ± 2.00 | 6.35 | mm |
| MR | 2 | 3.484 | 13.504 | 0.394 ± 0.020 | 2.063 ± 0.079 | 0.250 | inches |
| | 3 | 88.50 | 343.00 | 10.00 ± 0.50 | 52.40 ± 2.00 | 6.35 | mm |
| | 5 | 3.850 | 13.504 | 0.394 ± 0.020 | 2.875 ± 0.079 | 0.250 | inches |
| | 5 | 97.80 | 343.00 | 10.00 ± 0.50 | 73.03 ± 2.00 | 6.35 | mm |
| | 10 | 4.764 | 13.504 | 0.600 ± 0.020 | 4.375 ± 0.079 | 0.250 | inches |
| | 10 | 121.00 | 343.00 | 15.24 ± 0.50 | 111.13 ± 2.00 | 6.35 | mm |

Dimension "E": This is a non-critical dimension that does not have a tolerance in the standard. Range of diameters is from 0.547 inches (13.90 mm) to 1.500 inches (38.10 mm).

- Reference value only. The "A" dimension shall be governed by the overall length of the taped component. The distance between flanges shall be 0.059 inches (1.50 mm) to 0.315 (8.00 mm) greater than the overall component.
- The given dimension "D" expresses the standard width spacing. A 26 mm narrow spacing is available as option "N" packaging code.

RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

Resistive Product Solutions

| RoHS Compliance Status | | | | | | | | |
|-------------------------------|--|----------------------------------|--------------------------------------|--------------------------------------|--|--|--|--|
| Standard Product Series | Description | Package / Termination Type | Standard Series RoHS Compliant | Lead-Free Termination Composition | Lead-Free Mfg. Effective Date (Std Product Series) | Lead-Free Effective Date Code (YY/WW) | | |
| MR | Low Resistance Value Leaded Resistor - Molded 2 Leads | Axial Kelvin | YES | 100% Matte Sn | Jan-06 | 06/01 | | |
| TMR | Low Resistance Value Leaded Resistor - Molded 4 Leads | Axial Kelvin | YES | 100% Matte Sn | Jan-06 | 06/01 | | |

"Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the Eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

