

Features:

- Metal element resistors
- Tinned copper leads
- Low temperature coefficient
- Molded bodies
- TMR – Kelvin Bridge Test
- MRS high stability version
- Cut and formed products are available on selected sizes - contact Stackpole for details
- RoHS compliant, REACH compliant, halogen free and lead free without exemption



Electrical Specifications

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

(1) TCR is value dependent. Contact Stackpole for specific data.

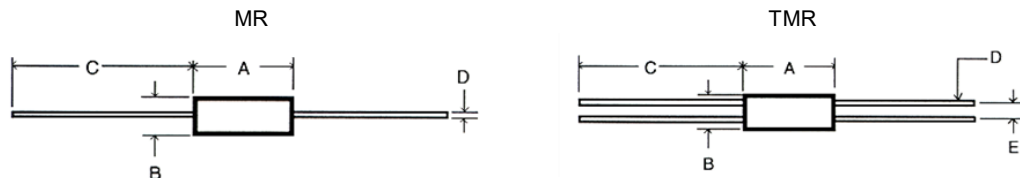
(2) MR1 values 0.05Ω and below are non-magnetic and non-inductive. MR1 values ≥ 0.06Ω are ribbon element wound on ceramic core.

(3) MR3 values 0.1Ω and below are non-magnetic and non-inductive. MR3 values ≥ 0.15Ω 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.

Mechanical Specifications



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 9.78 ± 0.38	0.135 ± 0.015 3.43 ± 0.38	1.375 ± 0.125 34.93 ± 3.18	0.032 ± 0.002 0.81 ± 0.05		inches mm
MR3	0.560 ± 0.015 14.22 ± 0.38	0.205 ± 0.015 5.21 ± 0.38	1.375 ± 0.125 34.93 ± 3.18	0.032 ± 0.002 0.81 ± 0.05		inches mm
MR5	0.925 ± 0.015 23.50 ± 0.38	0.330 ± 0.015 8.38 ± 0.38	1.375 ± 0.125 34.93 ± 3.18	0.036 ± 0.002 0.91 ± 0.05		inches mm
MR10	1.925 ± 0.015 48.90 ± 0.38	0.475 ± 0.015 12.07 ± 0.38	1.375 ± 0.125 34.93 ± 3.18	0.036 ± 0.002 0.91 ± 0.05		inches mm
TMR3	0.625 ± 0.015 15.88 ± 0.38	0.205 ± 0.015 5.21 ± 0.38	1.375 ± 0.125 34.93 ± 3.18	0.032 ± 0.002 0.81 ± 0.05	0.125 3.18	inches mm
TMR5	0.940 ± 0.015 23.88 ± 0.38	0.330 ± 0.015 8.38 ± 0.38	1.375 ± 0.125 34.93 ± 3.18	0.036 ± 0.002 0.91 ± 0.05	0.200 5.08	inches mm

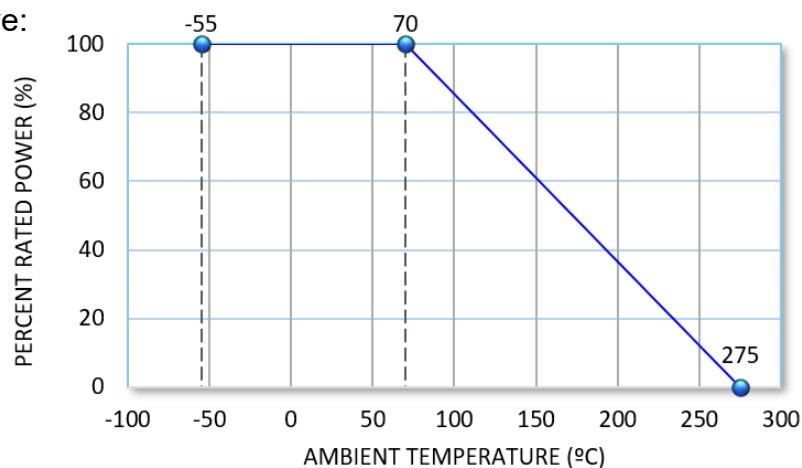
(1) See Packaging Specification for lead length dimension for tape and reel packaged product.

Performance Characteristics

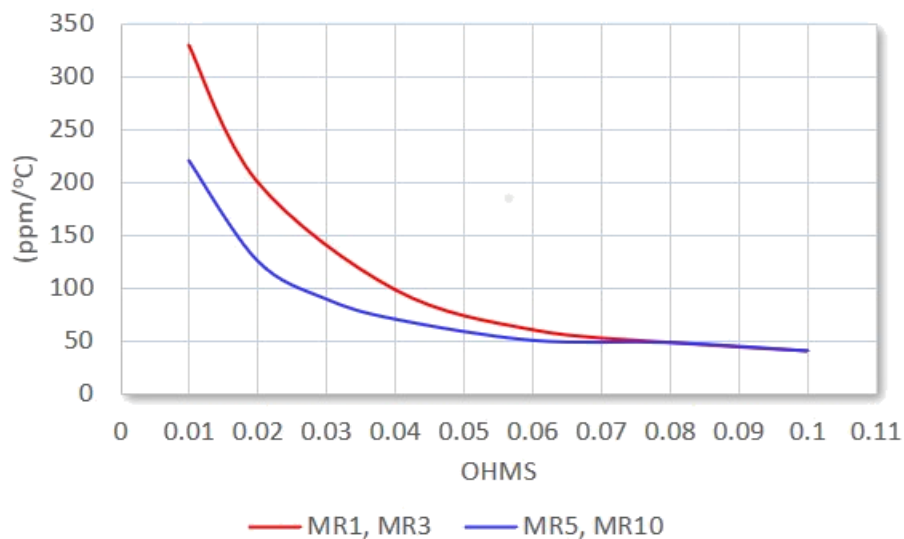
Test	Test Results
Moisture Resistance	$\Delta R \pm 5\%$
Thermal Shock	$\Delta R \pm 2\%$
Load Life @ 70°C - 1000 hours	$\Delta R \pm 5\%$
Resistance to Soldering Heat	$\Delta R \pm 2\%$
Short Time Overload	$\Delta R \pm 2\%$
Dielectric Withstanding Voltage	$\Delta R \pm 2\%$

Operating Temperature Range: -55 to +275°C

Power Derating Curve:



TCR X Resistance:



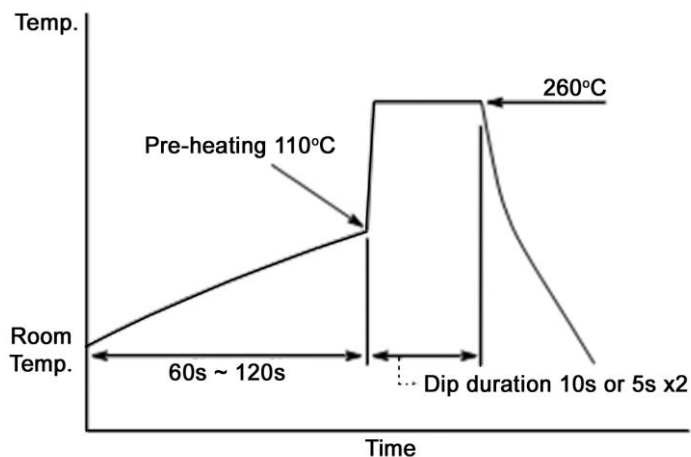
Recommended Solder Profile

Flow Soldering:

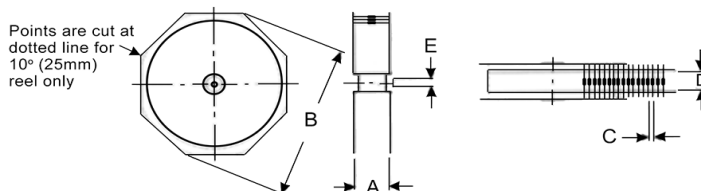
- Pre-heating: 110°C MAX
- Peak temperature/duration: 260°C within 10 seconds (1st, 2nd wave total)
- Temperature profile (see chart on the right)

Iron Soldering:

- 380°C, 5 seconds, once/terminal



Reel Specifications



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

- (1) 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.
- (2) The given dimension "D" expresses the standard width spacing.

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.

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.

How to Order

M		R		3		F		T		R		1		0		0	
Product Series		Power Rating		Tolerance		Packaging				Resistance Value							
Code	Description	Size	W	Code	Tol	Code	Description	Size	Quantity	Four characters with the multiplier used as the decimal holder. "L" used as multiplier of 10 ⁻³ for any value under 0.1 ohm.							
MR	2 Leads	1	1	F	1%	T	Tape and Reel	MR1	2500								
TMR	4 Leads	3	3	J	5%			MRS3	1000								
MRS	High Stability	5	5					MR3	750								
								MR5	500								
								MR10	250								
		10	10			B	Bulk	MR1, MR3, MR5	1000	0.005 ohm = 5L00							
								MR10	500	0.01 ohm = 10L0							
								TMR3, TMR5	100	0.2 ohm = R200							