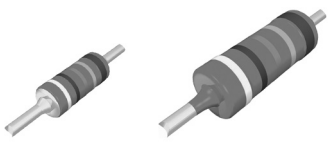
Professional Leaded Resistors



FEATURES

- Professional resistors in small outlines
- Low noise
- Lead (Pb)-free solder contacts
- Pure tin plating provides compatibility with lead (Pb)-free and lead containing soldering processes
- Compatible with “Restriction of the use of Hazardous Substances” (RoHS) directive 2002/95/EC (issue 2004)

DESCRIPTION

A homogeneous film of metal alloy is deposited on a high grade ceramic body. After a helical groove has been cut in the resistive layer, tinned connecting wires of electrolytic copper are welded to the end-caps. The resistors are coated with lacquer which provides electrical, mechanical, and climatic protection. Four or five colour code rings designate the resistance value and tolerance according to **IEC 60 062**. Suitable replacements for MRS16 and MRS25 are MBA/SMA 0204 and MBB/SMA 0207 professional.

APPLICATIONS

- All general purpose applications

TECHNICAL SPECIFICATIONS

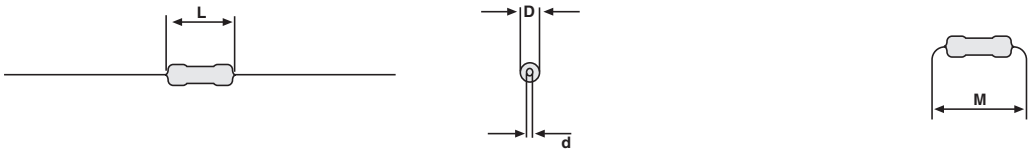
DESCRIPTION	VALUE	
	MRS16	MRS25
Resistance Range	4.99 Ω to 1 MΩ	1 Ω to 10 MΩ
Resistance Tolerance and Series	± 1 %; E24/E96 series	
Maximum Dissipation at T_{amb} = 70 °C	0.4 W	0.6 W
Thermal Resistance (R_{th})	170 K/W	150 K/W
Temperature Coefficient	± 50 ppm/K	
Maximum Permissible Voltage (DC or RMS)	200 V	350 V
Basic Specifications	IEC 60115-1 and 60115-2	
Climatic Category (IEC 60068)	55/155/56	
Max. Resistance Change for Resistance Range, ΔR max., After:		
Load:		
$R \leq 100$ kΩ	± (0.5 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
$R > 100$ kΩ	± (1 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
Climatic Tests:		
$R \leq 100$ kΩ	± (0.5 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
$R > 100$ kΩ	± (1 % R + 0.05 Ω)	± (0.5 % R + 0.05 Ω)
Soldering:		
$R \leq 100$ kΩ	± (0.1 % R + 0.05 Ω)	± (0.1 % R + 0.05 Ω)
$R > 100$ kΩ	± (0.25 % R + 0.05 Ω)	± (0.1 % R + 0.05 Ω)
Short Time Overload	± (0.25 % R + 0.05 Ω)	± (0.25 % R + 0.05 Ω)

PACKAGING

MODEL	REEL		BOX	
	PIECES/REEL	CODE	PIECES/BOX	CODE
MRS16	5000	RP	1000 5000	C1 CT
MRS25	5000	RP	1000 5000	C1 CT

For technical questions, contact: filmresistors.leaded@vishay.com
Document Number: 28724
Revision: 20-Feb-08

DIMENSIONS



DIMENSIONS - leaded resistor types, mass and relevant physical dimensions					
TYPE	$D_{max.}$ (mm)	$L_{max.}$ (mm)	$d_{nom.}$ (mm)	$M_{min.}$ (mm)	MASS (mg)
MRS16	1.6	3.6	0.5	5.0	125
MRS25	2.5	6.3	0.6	10.0	220

12NC INFORMATION

- The resistors have a 12-digit numeric code starting with 2322 15.
- The subsequent 2 digits indicate the resistor type and packaging; see the 12NC Ordering Code table.
- The remaining 4 digits indicate the resistance value:
  - The first 3 digits indicate the resistance value.
  - The last digit indicates the resistance decade in accordance with the 12NC Indicating Resistance Decade table.

Last Digit of 12NC Indicating Resistance Decade

RESISTANCE DECADE	LAST DIGIT
1 Ω to 9.76 Ω	8
10 Ω to 97.6 Ω	9
100 Ω to 976 Ω	1
1 kΩ to 9.76 kΩ	2
10 kΩ to 97.6 kΩ	3
100 kΩ to 976 kΩ	4
1 MΩ to 9.76 MΩ	5
10 MΩ	6

12NC Example

The 12NC of a MRS16 resistor, value 750 Ω, on a bandolier of 1000 units in ammopack is: 2322 157 17501.

12NC - resistors type and packaging			
TYPE	ORDERING CODE 2322 15.		
	BANDOLIER IN AMMOPACK		BANDOLIER ON REEL
	1000 UNITS	5000 UNITS	5000 UNITS
MRS16	7 1....	7 2....	7 3....
MRS25	6 1....	6 2....	6 3....

PART NUMBER AND PRODUCT DESCRIPTION

PART NUMBER: MRS16000C5119FCT

M	R	S	1	6	0	0	0	C	5	1	1	9	F	C	T	0	0

MODEL/SIZE	SPECIAL CHARACTER	TCR	VALUE	TOLERANCE	PACKAGING (1)	SPECIAL
MRS1600 **MRS2500**	**0** = Neutral	**C =** ± 50 ppm/K	**3 digit value** **1 digit multiplier** MULTIPLIER **7** = $*10^{-3}$ **2** = $*10^{2}$ **8** = $*10^{-2}$ **3** = $*10^{3}$ **9** = $*10^{-1}$ **4** = $*10^{4}$ **0** = $*10^{0}$ **5** = $*10^{5}$ **1** = $*10^{1}$ **6** = $*10^{6}$	**F** = ± 1 %	**RP** **CT** **C1**	Up to 2 digits **00** = Standard

PRODUCT DESCRIPTION: MRS 16-50 1 % CT 51R1

MRS16	50	1 %	CT	51R1
MODEL/SIZE	TCR	TOLERANCE	PACKAGING (1)	RESISTANCE VALUE
MRS16 **MRS25**	**± 50 ppm/K**	**± 1 %**	**RP** **CT** **C1**	**51R1** = 51.1 Ω **1K** = 1 kΩ

Notes:

(1) Please refer packaging table

- The PART NUMBER is shown to facilitate the introduction of a unified part numbering system for ordering products

Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.