

## Professional Thin Film Leaded Resistors



### 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 color code rings designate the resistance value and tolerance according to **IEC 60062**. Suitable replacements for MRS16 and MRS25 are MBA/SMA 0204 and MBB/SMA 0207 professional.

### FEATURES

- Technology: Metal film
- 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 to RoHS Directive 2002/95/EC



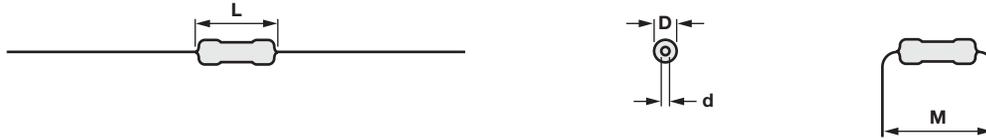
**RoHS**  
COMPLIANT

### APPLICATIONS

- All general purpose applications

TECHNICAL SPECIFICATIONS			
DESCRIPTION	UNIT	MRS16	MRS25
Resistance Range	$\Omega$	4.99 to 1M	1 to 10M
Resistance Tolerance	%	$\pm 1$	$\pm 1$
Resistance Series		E24, E96	E24, E96
Rated Dissipation, $P_{70}$	W	0.4	0.6
Thermal Resistance ( $R_{th}$ )	K/W	170	150
Temperature Coefficient	ppm/K	$\pm 50$	$\pm 50$
Operating Voltage, $U_{max}$ . AC/DC	V	200	350
Basic Specifications		IEC 60 115-1	IEC 60 115-1
Climatic Category (IEC 60068-1)		55/155/56	55/155/56
Max. Resistance Change for Resistance Range, $\Delta R$ max., after:			
Load (1000 h, $P_{70}$ )		$\pm (0.5 \% R + 0.05 \Omega)$	$\pm (0.5 \% R + 0.05 \Omega)$
Long Term Damp Heat Test (56 Days):			
MRS16: $4.99 \Omega \leq R \leq 332 \text{ k}\Omega$ ; MRS25: $1 \Omega \leq R \leq 1 \text{ M}\Omega$		$\pm (0.5 \% R + 0.05 \Omega)$	$\pm (0.5 \% R + 0.05 \Omega)$
MRS16: $R > 332 \text{ k}\Omega$ ; MRS25: $R > 1 \text{ M}\Omega$		$\pm (2 \% R + 0.05 \Omega)$	$\pm (2 \% R + 0.05 \Omega)$
Soldering (260 °C, 10 s):			
MRS16: $4.99 \Omega \leq R \leq 332 \text{ k}\Omega$ ; MRS25: $1 \Omega \leq R \leq 1 \text{ M}\Omega$		$\pm (0.1 \% R + 0.05 \Omega)$	$\pm (0.1 \% R + 0.05 \Omega)$
MRS16: $R > 332 \text{ k}\Omega$ ; MRS25: $R > 1 \text{ M}\Omega$		$\pm (0.5 \% R + 0.05 \Omega)$	$\pm (0.5 \% R + 0.05 \Omega)$
Short Time Overload:			
MRS16: $4.99 \Omega \leq R \leq 332 \text{ k}\Omega$ ; MRS25: $1 \Omega \leq R \leq 1 \text{ M}\Omega$		$\pm (0.1 \% R + 0.01 \Omega)$	$\pm (0.1 \% R + 0.01 \Omega)$
MRS16: $R > 332 \text{ k}\Omega$ ; MRS25: $R > 1 \text{ M}\Omega$		$\pm (0.5 \% R + 0.05 \Omega)$	$\pm (0.5 \% R + 0.05 \Omega)$

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

**DIMENSIONS**


<b>DIMENSIONS</b> (Leaded Resistor Types, Mass and Relevant Physical Dimensions)					
TYPE	D <sub>max.</sub> (mm)	L <sub>max.</sub> (mm)	d <sub>nom.</sub> (mm)	M <sub>min.</sub> (mm)	MASS (mg)
MRS16	1.6	3.6	0.5	5.0	125
MRS25	2.5	6.5	0.6	10.0	220

<b>PART NUMBER AND PRODUCT DESCRIPTION</b>							
<b>PART NUMBER: MRS16000C5119FCT00</b>							
M	R	S	1	6	0	0	
0	0	0	C	5	1	1	
9	F	C	T	0	0		
<b>MODEL/SIZE</b> MRS1600 MRS2500	<b>VARIANT</b> 0 = Neutral	<b>TCR</b> C = ± 50 ppm/K	<b>VALUE</b> 3 digit value 1 digit multiplier MULTIPLIER  7 = *10 <sup>-3</sup> 2 = *10 <sup>2</sup> 8 = *10 <sup>-2</sup> 3 = *10 <sup>3</sup> 9 = *10 <sup>-1</sup> 4 = *10 <sup>4</sup> 0 = *10 <sup>0</sup> 5 = *10 <sup>5</sup> 1 = *10 <sup>1</sup> 6 = *10 <sup>6</sup>		<b>TOLERANCE</b> F = ± 1 %	<b>PACKAGING (1)</b> RP CT C1	<b>SPECIAL</b> Up to 2 digits 00 = Standard
<b>PRODUCT DESCRIPTION: MRS16 50 1 % CT 51R1</b>							
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**

- The PART NUMBER is shown to facilitate the introduction of a unified part numbering system for ordering products
- (1) Please refer packaging table

**12NC INFORMATION FOR HISTORICAL CODING REFERENCE**

- 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 with value 750 Ω, supplied on a bandolier of 1000 units in ammpack is: 2322 157 17501.

<b>12NC</b> (Resistors Type and Packaging)			
TYPE	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....



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