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Vishay BCcomponents

## **Professional Thin Film Leaded Resistors**



www.vishay.com

#### 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
- · Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



All general purpose applications

TECHNICAL SPECIFICATIONS				
DESCRIPTION	MRS16	MRS25		
DIN size	0204	0207		
CECC size	A	В		
Resistance range	4.99 $\Omega$ to 1 M $\Omega$	1 Ω to 10 MΩ		
Resistance tolerance	±1%			
Temperature coefficient	± 50 ppm/K			
Rated dissipation, P <sub>70</sub> <sup>(1)</sup>	0.4 W	0.6 W		
Operating voltage, U <sub>max.</sub> AC/DC	200 V	350 V		
Operating temperature range (1)	-55 °C to 155 °C			
Peak permissible film temperature (1)	155 °C			
Insulation voltage:				
1 min; U <sub>ins</sub>	300 V	500 V		
continuous	75 V	75 V		

Note

<sup>(1)</sup> Please refer to APPLICATION INFORMATION below.

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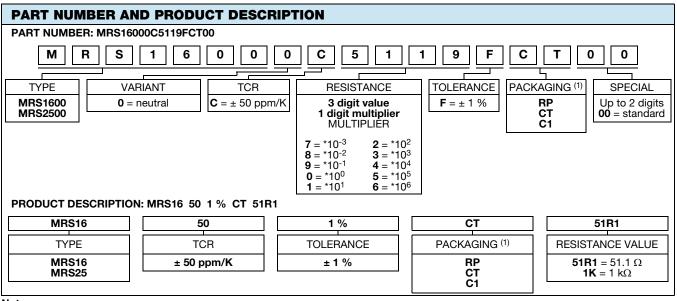
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### **APPLICATION INFORMATION**

The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature is not exceeded. Furthermore, a high level of ambient temperature or of power dissipation may raise the temperature of the solder joint, hence special solder alloys or board materials may be required to maintain the reliability of the assembly.

These resistors do not feature a limited lifetime when operated within the permissible limits. However, resistance value drift increasing over operating time may result in exceeding a limit acceptable to the specific application, thereby establishing a functional lifetime. The designer may estimate the performance of the particular resistor application or set certain load and temperature limits in order to maintain a desired stability.

MAXIMUM RESISTANCE CHANGE AT RATED DISSIPATION				
Operation mode		Power		
Climatic category		-55 °C / +155 °C / 56 days		
Rated dissipation, P <sub>70</sub>	MRS16	0.4 W		
	MRS25	0.6 W		
Applied maximum film temperature, $\mathcal{P}_{F max.}$		155 °C		
	MRS16	4.99 Ω to 1 MΩ		
Max. resistance change at rated dissipation $ \Delta R/R$ max. , after:	1000 h	± (0.5 % <i>R</i> + 0.05 Ω)		
	MRS25	1 $\Omega$ to 10 M $\Omega$		
	1000 h	± (0.5 % <i>R</i> + 0.05 Ω)		



Notes

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

<sup>(1)</sup> Please refer packaging table

PACKAGING						
ТҮРЕ	CODE	QUANTITY	PACKAGING STYLE	WIDTH	PITCH	DIMENSIONS
	C1	C1 1000 Taped acc. to IEC 60286-1			184 mm x 75 mm x 42 mm	
MRS16 MRS25	СТ	5000	fan-folded in a box	53 mm	5 mm	330 mm x 75 mm x 55 mm
	RP	5000	Taped acc. to IEC 60286-1 on a reel			242 mm x 76 mm x 86 mm

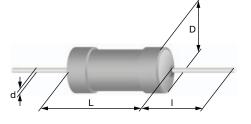
Revision: 07-Mar-16

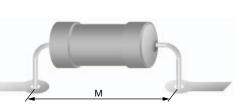
Document Number: 28724



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### DIMENSIONS





DIMENSIONS (Leaded Resistor Types, Mass and Relevant Physical Dimensions)						
TYPED_max. (mm)L_max. (mm)d_nom. (mm)I_min. (mm)M_min. (mm)						MASS (mg)
MRS16	1.6	3.6	0.5	29.0	5.0	125
MRS25	2.5	6.5	0.6	28.0	10.0	220

#### **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 $\Omega$ to 976 $\Omega$	1
1 kΩ to 9.76 kΩ	2
10 kΩ to 97.6 kΩ	3
100 kΩ to 976 kΩ	4
1 M $\Omega$ to 9.76 M $\Omega$	5
10 MΩ	6

#### 12NC Example

The 12NC of a MRS16 resistor with value 750  $\Omega$ , supplied on a bandolier of 1000 units in ammopack is: 2322 157 17501.

12NC (Resistors Type and Packaging)				
	2322 15			
ТҮРЕ	BANDOLIER II	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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# **Mouser Electronics**

Authorized Distributor

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# Vishay:

MRS25000C6808FC10	0 MRS25000C2003FRP00	) MRS25000C2550FRP00	) MRS25000C3323FRP00
MRS25000C4750FRP00	MRS25000C6812FRP00	MRS25000C1002FC100	MRS16000C4701FRP00
MRS25000C1101FRP00	MRS25000C3922FRP00	MRS25000C6801FRP00	MRS25000C1003FRP00
MRS16000C2261FRP00	MRS16000C2701FRP00	MRS25000C1301FRP00	MRS25000C4992FRP00
MRS25000C1501FRP00	MRS16000C3300FRP00	MRS25000C1002FRP00	MRS16000C3303FC100
MRS25000C1000FRP00	MRS25000C1001FCT00	MRS25000C3902FC100	MRS25000C3308FC100
MRS25000C7503FRP00	MRS25000C9761FRP00	MRS25000C3301FC100	MRS25000C1502FRP00
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MRS25000C1503FC100	MRS25000C1004FRP00	MRS25000C2212FRP00	MRS25000C2433FRP00
MRS16000C1003FRP00	MRS16000C6800FRP00	MRS16000C2202FRP00	MRS16000C1002FRP00
MRS16000C2201FRP00	MRS16000C8201FRP00	MRS16000C3302FRP00	MRS16000C1201FRP00
MRS16000C1001FRP00	MRS16000C6812FRP00	MRS16000C1502FRP00	MRS16000C3303FCT00
MRS16000C4702FRP00	MRS25000C1829FRP00	MRS25000C2211FRP00	MRS25000C1020FRP00
MRS25000C1100FRP00	MRS25000C1104FRP00	MRS25000C1132FRP00	MRS25000C1210FRP00
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MRS25000C1249FRP00	MRS25000C1400FRP00	MRS25000C1401FRP00	MRS25000C1430FRP00
MRS25000C1432FRP00	MRS25000C1500FRP00	MRS25000C1540FRP00	MRS25000C1651FRP00
MRS25000C1691FRP00	MRS25000C1804FRP00	MRS25000C1821FRP00	MRS25000C1823FRP00
MRS25000C1912FRP00	MRS25000C2002FRP00	MRS25000C2004FRP00	MRS25000C2009FRP00
MRS25000C2102FRP00	MRS25000C2210FRP00	MRS25000C2431FRP00	MRS25000C2492FRP00
MRS25000C2671FRP00	MRS25000C2672FRP00	MRS25000C2742FRP00	MRS25000C2749FRP00
MRS25000C2803FRP00	MRS25000C2943FRP00	MRS25000C3010FRP00	MRS25000C3011FRP00
MRS25000C3012FRP00	MRS25000C3013FRP00	MRS25000C3160FRP00	MRS25000C3161FRP00
MRS25000C3320FRP00	MRS25000C3321FRP00	MRS25000C3329FRP00	MRS25000C3401FRP00
MRS25000C3579FRP00	MRS25000C3743FRP00	MRS25000C4122FRP00	MRS25000C4220FRP00
MRS25000C4221FRP00	MRS25000C4320FRP00	MRS25000C4321FRP00	MRS25000C4422FRP00