

# Metal Film Precision Resistors

## Precision Metal-Film Resistors for Low-Cost Uses

### ▶ Preview

Token offers a low-cost alternative commercial metal film resistor for precision applications. The MF series offers tight tolerances and low TCRs over a wide resistance range and are suitable for applications where long-term stability is paramount.

The MF is available in a resistance range of  $10\Omega$  to  $1M\Omega$  with a standard resistance tolerance of  $\pm 1\%$  and a temperature coefficient of resistance (TCR) of  $+15/-25\text{ppm}/^\circ\text{C}$ , although other tolerances and TCRs are available.

The resistance element in these devices is a precisely controlled thin film of metal alloy deposited on a high quality alumina rod. Plated caps are force-fitted before the assembly is trimmed using advanced trimming techniques to ensure excellent performance and low electrical noise.

Leads are welded to the end caps prior to the resistor being coated with epoxy, and colour band marking applied. A variety of standard lead forms are available for use where auto-insertion is not available or practical. This gives the advantage of the value being shown, even if the resistor is machine preformed or auto-inserted.

The MF is RoHS compliant with 100% lead free, Contact us with your specific needs.



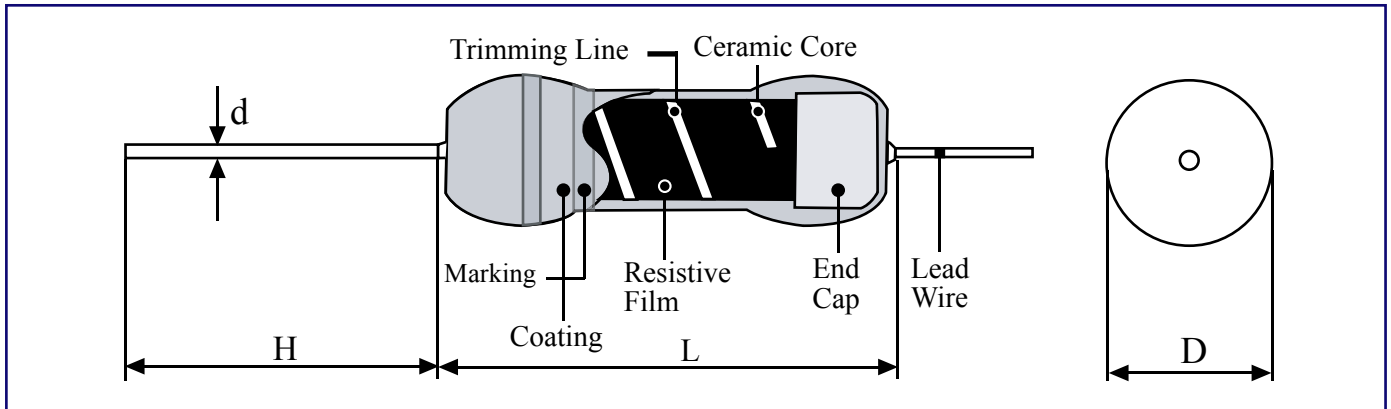
### ▶ Features

- Low cost, low noise, operating temperature range  $-55^\circ\text{C} \sim 155^\circ\text{C}$
- Precision tight tolerance available in  $\pm 0.1\%$ ,  $\pm 0.25\%$ ,  $\pm 0.5\%$ ,  $\pm 1\%$
- Pure tin plating provides compatibility with lead (Pb)-free and lead containing soldering processes

### ▶ Applications

- Telecom
- Test and measurement
- All general purpose applications

## ► Dimensions & Specifications (Unit: mm)



STYLE	MIL STYLE	POWER RATING(W)		DIMENSION (mm)				MAX WORKING VOLTAGE		MAX OVERLOAD VOLTAGE	
		RN	RNS	L	D	H	d ± 0.05	RN	RNS	RN	RNS
MF - 12	RN-50	1/8W	1/4W	3.2 ± 0.2	1.5 ± 0.2	26 ± 1.0	0.40~0.45	200	150	400	300
MF - 25	RN-55	1/4W	1/2W	6.0 ± 0.3	2.3 ± 0.3	26 ± 1.0	0.40~0.50	250	200	500	400
MF - 50	RN-60	1/2W	1W	9.0 ± 0.5	3.0 ± 0.5	26 ± 1.0	0.50~0.55	350	250	700	500
MF - 100	RN-65	1W	2W	11 ± 1.0	4.0 ± 0.5	35 ± 3.0	0.75~0.80	500	300	1000	600
MF - 200	RN-70	2W	3W	15 ± 1.0	5.0 ± 0.5	35 ± 3.0	0.75~0.80	500	350	1000	700

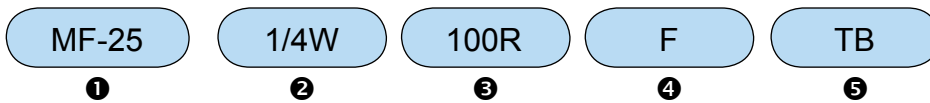
## ► Resistance Range

STYLE	MIL STYLE	TOLERANCE	TC+15-25PPM	TC+50PPM	TC+100PPM	REMARK
MF-12	RN-50	±1% ±0.5% ±0.25%	100Ω-100KΩ 100Ω-100KΩ 100Ω-100KΩ	10Ω-1MΩ	10Ω-1MΩ	*Standard resistance is 10Ω-1MΩ, below or over this resistance on request.
MF-25	RN-55	±1% ±0.5% ±0.25% ±0.1%	51.1Ω-511KΩ 51.1Ω-511KΩ 100Ω-300KΩ 100Ω-300KΩ	10Ω-1MΩ	10Ω-1MΩ	
MF-50	RN-60	±1% ±0.5% ±0.25% ±0.1%	51.1Ω-1KΩ 51.1Ω-1KΩ 100Ω-551KΩ 100Ω-330KΩ	10Ω-1MΩ	10Ω-1MΩ	
MF-100	RN-65	±1% ±0.5% ±0.25% ±0.1%	51.1Ω-1KΩ 51.1Ω-1KΩ 100Ω-551KΩ 100Ω-330KΩ	10Ω-1MΩ	10Ω-1MΩ	
MF-200	RN-70	±1% ±0.5% ±0.25% ±0.1%	51.1Ω-1KΩ 51.1Ω-1KΩ 100Ω-551KΩ 100Ω-330KΩ	10Ω-1MΩ	10Ω-1MΩ	

## Electrical Performance

REQUIREMENTS	CHARACTERISTICS	JIS C 5202	MIL-R-10509F
Operating Temp.Range	-55°C ~ 155°C		
Temp Coefficient (°C )	±25 ±50 ±100	5.2	4.6.12
Short Time Overload	±(0.5%+0.05Ω)	5.5 A	4.6.6
Dielectric Withstanding V	±(0.5%+0.05Ω)	5.7 A	4.6.8
Effect of Soldering	±(0.5%+0.05Ω)	6.4 350°C 3 sec	4.6.10
Temperature Cycling	±(0.5%+0.05Ω)	7.4	4.6.4
Low Temp Operation	±(0.5%+0.05Ω)		4.6.5
Terminal Strength	±(0.5%+0.05Ω)	6.1	4.6.7
Moisture Resistance	±(1%+0.05Ω)	7.9 1,000hr	MIL R-22684 4.6.10
Load Life	±(1%+0.05Ω)	7.10 1,000hr	4.6.13
Storage	±(0.2%+0.05Ω)	Shelved one year in a room of normal temperature and humidity	

## How to Order



❶ Part Number: MF

❷ Rated Power (W)

❸ Resistance Value (Ω)

Code	Resistance Value
10R	10Ω
100R	100Ω
1K	1KΩ
1M	1MΩ

❹ Resistance Tolerance (%)

Code	Resistance Tolerance
B	±0.10%
C	±0.25%
D	±0.5%
F	±1.0%

❺ Package

Code	Package
P	Bulk
TB	Taping Box

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