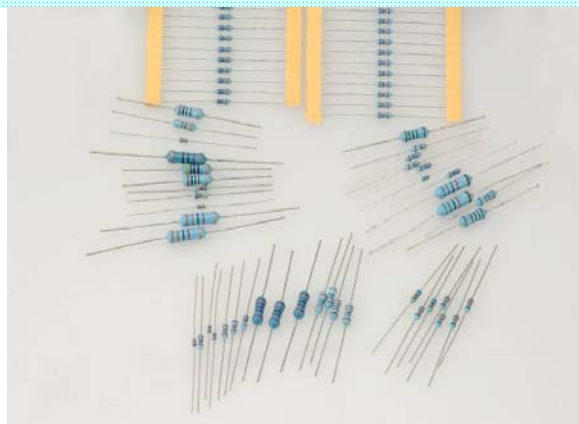


METAL FILM RESISTORS

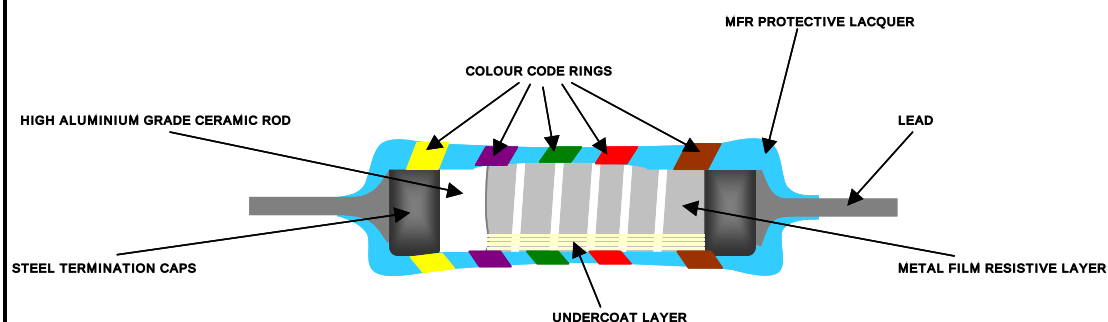
Series : **MF & MFS**

Features:

- Meet performance requirements of JSS Std. & MIL Std.
- Flameproof Coating available on request.
- Miniature Size available for Space savings.
- TCR Available **10,25,50,100,200 ppm/° C.**
- Available ranges from **1 Ohm ~ 10 MOhms.**
- **RoHS** Compliant directive 2002/95/EC
- Lead (Pb)-free solder contacts.
- Low cost & miniature size



Construction :

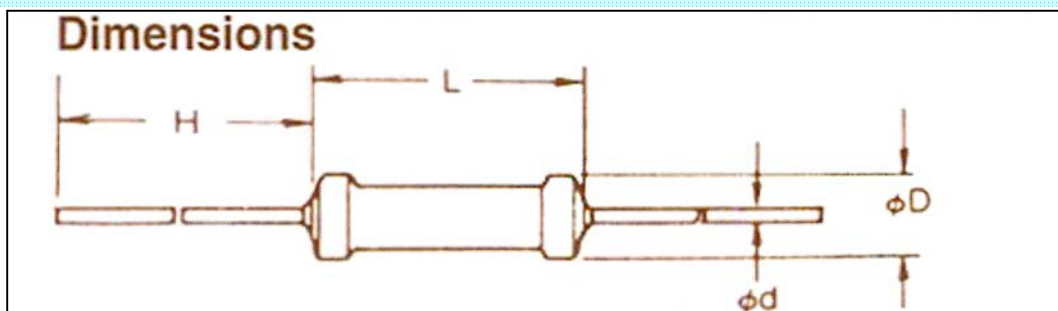


Technical specification:

DESCRIPTION	GENERAL SERIES					MINIATURE SERIES				
	MF125	MF25	MF50	MF100	MF200	MFS40	MFS60	MFS100	MFS200	MFS300
Resistance range	±1% ;1Ω ~ 10MΩ									
Resistance tolerance	±1%, E24/E96 series; ±2% & ±5%, E24 series									
Temperature coefficient*	10 ppm/°C ~ 200 ppm/°C									
Maximum dissipation @ 70°C	0.125W	0.25W	0.5W	1W	2W	0.4W	0.6W	1W	2W	3W
Maximum permissible voltage	200 V	250V	350V	500V	500V	250	300	350	500	500
Climatic category	55/155/56									
Stability, R max.	$\Delta R \pm (2\% + 0.05\Omega)$ $\Delta R \pm (1\% + 0.05\Omega)$ $\Delta R \pm (0.5\% + 0.05\Omega)$ $\Delta R \pm (0.5\% + 0.05\Omega)$									
Load										
Climatic test										
Soldering										
Short time overload										

* NOTE:- Low TCR available on request.

Dimensions :



Physical Data:

1.0 GENERAL SERIES SPECIFICATION :

TYPE	WATT. @ 70°C	TOL.	TCR	DIMENSIONS (mm)				RESISTANCE RANGE	MAX. WORKING VOLTAGE	MAX. OVERLOAD VOLTAGE
			PPM/°C	L	D	d ± 0.05	H			
MF125	0.125W	±1%, ±2% & ±5%	10 ~ 200	3.3± 0.2	1.7 ±0.2	0.45	28 min	10 Ω ~ 1MΩ	200V	400 V
MF25	0.25W	±1%, ±2% & ±5%	10 ~ 200	6.5± 0.5	2.3 ±0.2	0.6	25 min	1 Ω ~ 10MΩ	250V	500 V
MF50	0.5W	±1%, ±2% & ±5%	10 ~ 200	9.5± 1	3.5 ±0.5	0.6	25 min	1 Ω ~ 10MΩ	350V	700 V
MF100	1W	±1%, ±2% & ±5%	10 ~ 200	12± 1	4.5 ±0.5	0.8	24 min	1 Ω ~ 10MΩ	500V	1000 V
MF200	2W	±1%, ±2% & ±5%	10 ~ 200	16± 1	5.5 ±0.5	0.8	25 min	1 Ω ~ 10MΩ	500V	1000 V

Note : Working voltage is $\sqrt{P \times R}$ where P is power & R is resistance in Ohms

2.0 MINITURE SERIES SPECIFICATION:

TYPE	WATT. @ 70°C	TOL.	TCR	DIMENSIONS (mm)				RESISTANCE RANGE	MAX. WORKING VOLTAGE	MAX. OVERLOAD VOLTAGE
			PPM/°C	L	D	d ± 0.05	H			
MFS40	0.4W	±1%, ±2% & ±5%	10 ~ 200	3.3± 0.2	1.7 ±0.2	0.45	28 min	10 Ω ~ 1MΩ	250V	500 V
MFS60	0.6W	±1%, ±2% & ±5%	10 ~ 200	6.5± 0.5	2.3 ±0.2	0.6	25 min	1 Ω ~ 10MΩ	300V	700 V
MFS100	1W	±1%, ±2% & ±5%	10 ~ 200	9.5± 1	3.5 ±0.5	0.6	25 min	1 Ω ~ 10MΩ	350V	700 V
MFS200	2W	±1%, ±2% & ±5%	10 ~ 200	12± 1	4.5 ±0.5	0.8	24 min	1 Ω ~ 10MΩ	500V	1000 V
MFS300	3W	±1%, ±2% & ±5%	10 ~ 200	16± 1	5.5 ±0.5	0.8	25 min	1 Ω ~ 10MΩ	500V	1000 V

Note : Working voltage is $\sqrt{P \times R}$ where P is power & R is resistance in Ohms

Marking:

The MF & MFS series / type, the nominal resistance & tolerance are marked on the resistor body using four or five coloured bands in accordance with IEC publication 60062 "color codes for fixed resistors"

Material Specifications:

Element : Vacuum-deposited nickel-chrome alloy

Core : Fire cleaned high purity ceramic

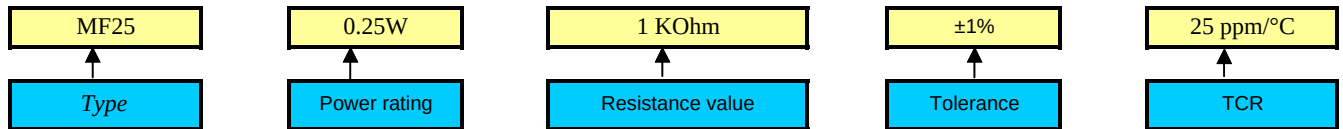
End caps : Steel caps

Coating : Specially formulated epoxy compound

Standard Terminals : Solderable - tinplated copper

Part Numbering Information:

Part Number : Type number, power rating, resistance value, tolerance, tcr.



Examples: PART NO. : MF25, 0.25W, 1 KOhm, ±1%, 25ppm/°C

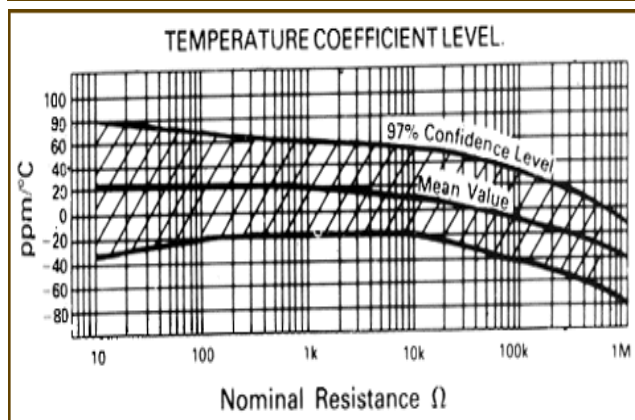
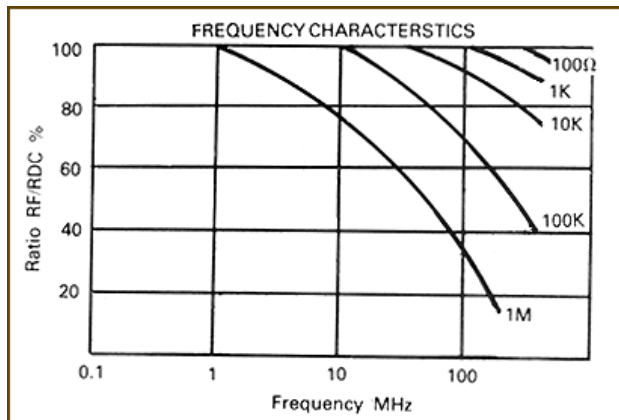
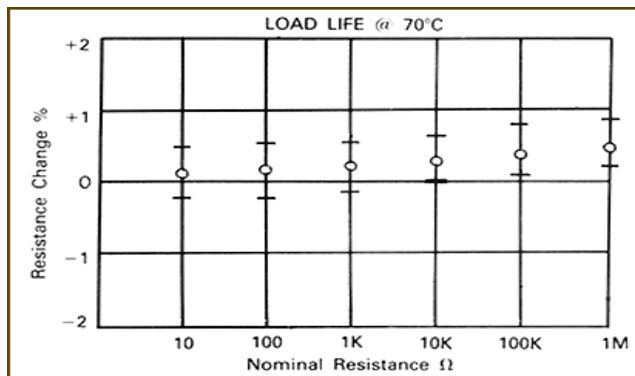
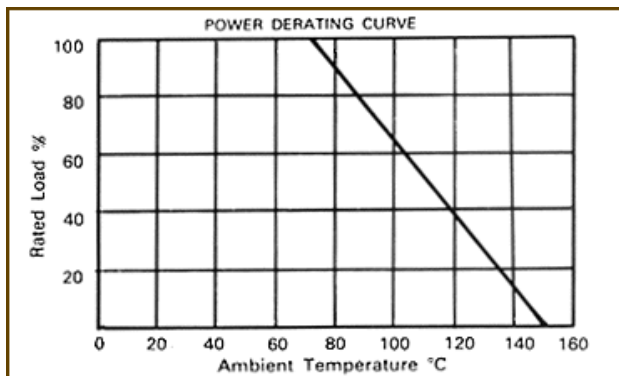
Packing Information:

TYPE	Pcs Per Poly Bag/ Blue box	Pcs Per Brown Box		Pcs Per Real
MF125 / MFS40	1,000	1,000	7,000	7000
MF25 / MFS60	1,000	1,000	5,000	5000
MF50 / MFS100	500	500	2,500	2500
MF100 / MFS200	---	---	1,500	2500
MF200 / MFS300	---	---	1,000	2500

Performance Data (Procedure & Requirements):

TEST	PROCEDURE	REQUIREMENTS
Robustness Of Termination 1. Tensile Test 2. Bend Test 3. Torsion Test	Load 10 N for 10 sec. Load 5 N 90°, 180°, 90° 3 X 360° in opposite directions	No visual damage No visual damage No visual damage $\Delta R/R$ max.: $\pm(0.25\% + 0.05 \Omega)$
Solderability Test	16 hrs steam or 16 hrs. at 155°C 2 sec. ± 0.5 sec. in solder at 235° $\pm 5^\circ\text{C}$ Using flux	>95% coverage covered (good tinning) & no damage
Resistance To Soldering Heat	at 260°C $\pm 5^\circ\text{C}$ for 10 sec., 6mm from the body	$\Delta R/R$ max.: $\pm(0.25\% + 0.05 \Omega)$
Temperature Cycling	30 minutes at -55°C & 30 minutes at 150°C Total 5 number of cycles.	No visual damage $\Delta R/R$ max.: $\pm(1.0\% + 0.05 \Omega)$
Dry Heat Test	16 hrs at 150°C	$\Delta R/R$ max.: $\pm(1.0\% + 0.05 \Omega)$
Cold Test	2 hrs at -55°C	$\Delta R/R$ max.: $\pm(0.25\% + 0.05 \Omega)$
Short Time Overload	2.5 X Rated voltage for 5 sec. @ 25°C	$\Delta R/R$ max.: $\pm(0.25 + 0.05 \Omega)$
Endurance @ 70°C	2000 hrs. load with Pn (power nominal) 1.5 hr. ON & 0.5 hr. OFF	No visual damage $\Delta R/R$ max.: $\pm(2.0\% + 0.05 \Omega)$
Endurance @ Upper Category Temperature	1000 hrs. at 150°C with no load	No visual damage $\Delta R/R$ max.: $\pm(2.0\% + 0.05 \Omega)$
Temperature Rise Test	Horizontally mounted, loaded with Pn	Hot spot temperature less than maximum body temperature
Damp Heat Steady State	56 days, 40°C; 90 to 95% Rh; dissipation $\leq 0.01\text{Pn}$	No visual damage $\Delta R/R$ max.: $\pm(1\% + 0.05 \Omega)$
Temperature Coefficient	At 25/-55/25 °C & 25/150/25 °C	Within specified limits
Insulation Resistance	V- Block method for 1 minute duration At 500 V dc	> $10^3 \text{ M}\Omega$
Voltage proof test	V- Block method for 1 minute duration At 500 V	No flash over or break down should observed

Thermal Performance Data:



MFR reserves the right to make changes in product specification without notice or liability.

All information is subject to MFR's own data & is considered accurate at the time of going to print.

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