

# PRECISION METAL FILM FIXED RESISTORS

## Features

- EIA standard color coding
- Non - Flame type available
- Low noise & voltage coefficient
- Low temperature coefficient range
- Wide precision range in small package
- Too low or too high ohmic value can be supplied on a case to case basis
- Nichrome resistor element provides stable performance in various environment
- Multiple epoxy coating on vacuum deposited metal film provides superior moisture protection



### Ordering Procedure: (Ex.: MFR 1/2W, +/-5%, 200PPM, 10Ω, T/B-1000)

<b>M</b>	<b>F</b>	<b>0</b>	<b>W 2</b>	<b>J</b>	<b>J</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>A</b>	<b>1</b>	<b>0</b>
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**Resistor Type:**  
MF = Metal Film Fixed Resistors

**Special Feature:**  
0 = Standard Product  
F = Non-Flame  
I = Non-Inductive

**Wattage:**  
Normal size:  
W8=1/8W  
W4=1/4W  
W2=1/2W  
1W=1W  
2W=2W  
3W=3W

Small size:  
S4=1/4W-S  
S2=1/2W-S  
O6=0.6W-S

Extra small size:  
U2=1/2W-SS  
O4=0.4W-SS

**Resistance Value:**

- E-24 series: the 1<sup>st</sup> digit is "0", the 2<sup>nd</sup> & 3<sup>rd</sup> digits are for the significant figures of the resistance and the 4<sup>th</sup> indicate the number of zeros:  
"J" ~ 0.1, "K" ~ 0.01  
**Ex.** 4.7Ω ~ 47J, 4.7KΩ ~ 472
- E-96 series: The 1<sup>st</sup> to 3<sup>rd</sup> digits are significant figures of resistance and the fourth one denotes number of zeros.  
**Ex.** 1.33 KΩ = 1331

**Tolerance:**  
B = ±0.1%  
C = ±0.25%  
D = ±0.5%  
F = ±1%  
G = ±2%  
J = ±5%

**PPM requirement:**  
B = 15PPM  
C = 25PPM  
F = 50PPM  
G = 100PPM  
J = 200PPM

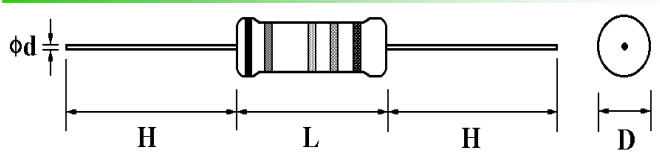
**Packing Type:**  
A = Tape/Box  
T = Tape/Reel  
B = Bulk/Box  
P = Tape/Box of PT-26 product

**Packing Qty:**  
1 = 1,000 pcs, 2 = 2,000 pcs, 5 = 5,000 pcs,  
A = 500 pcs, 0 = for Bulk/Box packing

**Additional Information:**  
P = Panasert type  
1 = Avisert type 1  
2 = Avisert type 2  
3 = Avisert type 3  
0 = PT-52 mm, NIL for PT-26  
8 = PT-58 mm  
9 = PT-64 mm

\* More explanation on part no, please see details on pages 79-80.

## Dimension (mm)



**Remark:** 0.1%, 0.25%, 0.5%, 1% : 5 Color Band  
2% & 5% E24 Series : 4 Color Band

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### Normal Size

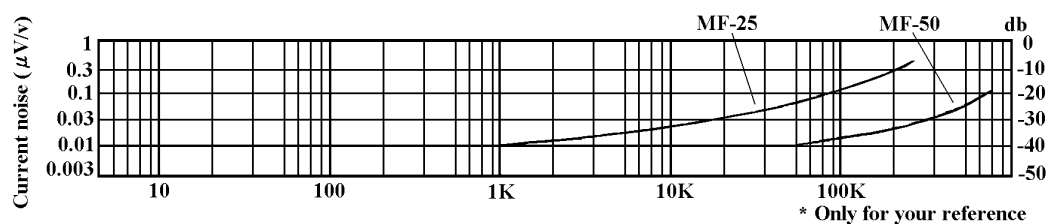
Part No.	Style	Power Rating at 70°C	Dimension (mm)			
			D Max.	L Max.	d ± 0.05	H ± 3
MF0W8	MF-12	1/8W (0.125W)	1.85	3.5	0.45	28
MF0W4	MF-25	1/4W (0.25W)	2.5	6.8	0.54	28
MF0W2	MF-50	1/2W (0.5W)	3.5	10.0	0.54	28
MF01W	MF-100	1W	5.0	12.0	0.70	28
MF02W	MF-200	2W	5.5	16.0	0.70	28
MF03W	MF-300	3W	6.5	17.5	0.75	28

### Small Size

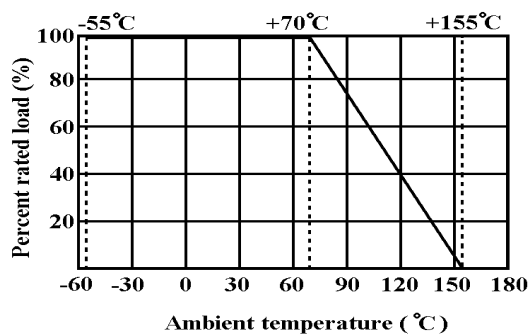
Part No.	Style	Power Rating at 70°C	Dimension (mm)			
			D Max.	L Max.	d ± 0.05	H ± 3
MF0S4	MF-25-S	1/4W (0.25W)	1.85	3.5	0.45	28
MFF04	MF-40-SS	0.4W	1.9	3.7	0.45	28
MFFU2	MF-50-SS	1/2W (0.5W)	2.5	6.8	0.54	28
MF0S2	MF-50-S	1/2W (0.5W)	3.0	9.0	0.54	28
MF006	MF-60-S	0.6W	2.5	6.8	0.54	28

**Note:** Extra Small size types (-SS) are Non-Flame Coated.

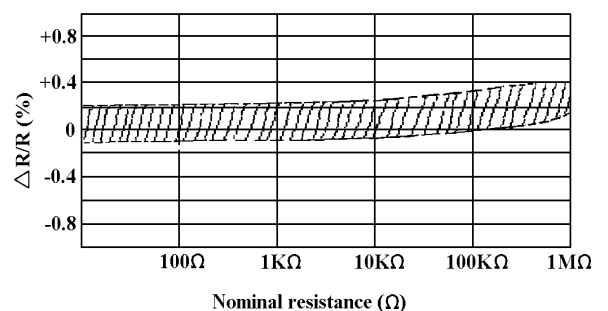
### Current Noise Level



### Derating Curve



### Load Life



## PRECISION METAL FILM FIXED RESISTORS

### General Specifications

Part No.	Style	Max. Working Voltage	Max. Overload Voltage	Dielectric With-standing Voltage	Resistance Tolerance	T.C.R.	Resistance Range	Special Order		
								Resistance Tolerance	T. C. R.	Resistance Range
MF0W8 MF0S4	MF-12 MF-25-S	200V	400V	400V	± 5%	±200PPM/°C	1Ω - 1MΩ	±0.25%	±15PPM/°C	51.1Ω-200KΩ
					± 2%	±100PPM/°C	10Ω - 1MΩ	±0.5%	±25PPM/°C	51.1Ω-511KΩ
MFF04	MF-40SS	200V	400V	200V	± 1%	±50PPM/°C	10Ω - 1MΩ			
MF0W4 MF006	MF-25 MF-60-S	250V	500V	500V	± 5%	±200PPM/°C	1Ω - 1MΩ	±0.1%	±15PPM/°C	100Ω-100KΩ
					± 2%	±100PPM/°C	10Ω - 1MΩ	±0.25%	±25PPM/°C	51.1Ω-330KΩ
MFFU2	MF-50-SS	250V	500V	250V	± 1%	±50PPM/°C	10Ω - 1MΩ	±0.5%	±50PPM/°C	10Ω-1MΩ
MF0W2 MF0S2	MF-50 MF-50S	350V	700V	700V	± 5%	±200PPM/°C	1Ω - 1MΩ	±0.1%	±15PPM/°C	100Ω-330KΩ
					± 2%	±100PPM/°C	10Ω - 1MΩ	±0.25%	±25PPM/°C	51.1Ω-511KΩ
					± 1%	±50PPM/°C	10Ω - 1MΩ	±0.5%	±50PPM/°C	10Ω-1MΩ
MF01W MF02W MF03W	MF-100 MF-200 MF-300	500V	1000V	1000V	± 5%	±200PPM/°C	10Ω - 1MΩ	±0.1%	±15PPM/°C	100Ω-330KΩ
					± 2%	±100PPM/°C	51.1Ω - 1MΩ	±0.25%	±25PPM/°C	51.1Ω-511KΩ
					± 1%	±50PPM/°C	51.1Ω - 1MΩ	±0.5%	±50PPM/°C	51.1Ω-1MΩ

**Note:** MF - xx - ss is Non-Flame coating.

### Performance Specifications

<b>Temperature coefficient</b>	Within the maximum temperature coefficient specified
<b>Short-time overload</b>	$\Delta R/R \leq \pm(0.5\% + 0.05\Omega)$ , with no evidence of mechanical damage.
<b>Dielectric withstanding voltage</b>	No evidence of flashover, mechanical damage, arcing or insulation breakdown.
<b>Pulse overload</b>	$\Delta R/R \leq \pm(1.0\% + 0.05\Omega)$ , with no evidence of mechanical damage.
<b>Terminal strength</b>	No evidence of mechanical damage.
<b>Resistance to soldering heat</b>	$\Delta R/R \leq \pm(1.0\% + 0.05\Omega)$ , with no evidence of mechanical damage.
<b>Solderability</b>	Min. 95% coverage
<b>Resistance to solvent</b>	No deterioration of protective coating and markings.
<b>Temperature cycling</b>	$\Delta R/R \leq \pm(1.0\% + 0.05\Omega)$ , with no evidence of mechanical damage.
<b>Load life in humidity</b>	Normal type: $\Delta R/R \leq \pm 1.5\%$ ; Non-Flame type: $\Delta R/R \leq \pm 5\%$
<b>Load life</b>	Normal type: $\Delta R/R \leq \pm 1.5\%$ ; Non-Flame type: $\Delta R/R \leq \pm 5\%$

*\*More details, please see pages 77-78.*