

# MFD series

## Metal Film High Precision Resistors



### ◆ Features

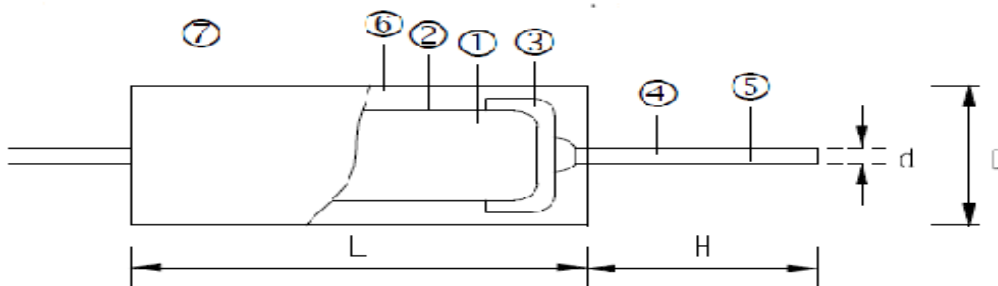
- » Power Rating: 0.25W-0.5W
- » Resistance Tolerance:  $\pm 0.02\%$ ,  $\pm 0.05\%$ ,  $\pm 0.1\%$ ,  $\pm 1\%$
- » T.C.R.:  $\pm 5\text{ppm}$ ,  $\pm 10\text{ppm}$ ,  $\pm 15\text{ppm}$ ,  $\pm 25\text{ppm}$
- » Lead (Pb)-Free and RoHS compliant

### ◆ Applications

- » Telecom
- » High gain feedback applications
- » Medical Electronics
- » Measuring and Calibration equipment
- » Precision Instruments, Avionics

### ◆ DIMENSIONS

STYLE	DIMENSION (mm)				POWER RATING (Watt)
	L	ØD	H	Ød	
MFD-50	10.2 $\pm$ 0.3	4.0 $\pm$ 0.4	25 $\pm$ 3	0.60 $\pm$ 0.05	1/2W
MFD-25	7.0 $\pm$ 0.3	2.7 $\pm$ 0.4	26 $\pm$ 3	0.60 $\pm$ 0.05	1/4W



### ◆ Construction

①	Ceramic Core (Alumina Ceramic)
②	Resistor Element (Nickel Alloy)
③	Terminal (Tinned Iron Cap)
④	Connection
⑤	Lead Wire (Tinned annealed copper wire)
⑥	Molding (Epoxy)
⑦	Laser Marking (Epoxy)

### ◆ Part Number

MFD	50	Q	499K	B	C
Type	Watt	Tolerance	R value	Packing	TCR Value
MFD	1/4W = 25	Q = ± 0.02%	10R=10 ohm	T = Taping Box	C=±25ppm
	1/2W = 50	A = ± 0.05%	12R1=12.1 ohm	B = Bulk	N=±15ppm
		B = ± 0.1%	1K=1000 ohm		B=±10ppm
		F = 1%	2K3=2.3K ohm		S=±5ppm
			499K=499K ohm		

### ◆ Electrical Characteristics

Style	MFD25	MFD50
Power Rating 70°C	1/4W	1/2W
Operating Temp. Range	-55°C ~ ±125°C	
Max. Working Voltage	250V	300V
Max. Overload Voltage	500V	600V
Value Range ±0.02%, ±0.05%, ±0.1%	10Ω ~ 1MΩ	
TCR(PPM/°C)	±5ppm, ±10ppm, ±15ppm, ±25ppm,	

■ Operating Voltage  $V = \sqrt{P \cdot R}$

## ◆ Environmental Characteristics

Performance Test	Test Method	Appraise
SHORT TIME OVERLOAD	RCWV*2.5 or Max overload voltage for 5 seconds	$\pm(0.15\%+0.05\Omega)$
TEMPERATURE COEFFICIENT(T.C.R.)	Resistance value at room Temperature and room Temperature+60°C	By Type
RESISTANCE TO SOLDERING HEAT	350 $\pm$ 10°C for 3 seconds after test leave for 3 hours	$\pm(0.1\%+0.01\Omega)$
PULSE OVERLOAD	4 times RCWV for 10000cycles(1sec.on · 25secs.off)	$\pm(0.1\%+0.01\Omega)$
TEMPERATURE CYCLE	Low side: -55 °C/30 High side: 85 °C/30 5 cycles	$\pm(0.5\%+0.05\Omega)$
INSULATION RESISTANCE	Apply 500VDC for 1min.	> 1000M $\Omega$
Endurance	70°C $\pm$ 2°C Max. working voltage for 1000hrs. (1.5hrs. on · 0.5hrs.off)	$\pm(0.5\%+0.05\Omega)$
Damp Heat with Load	40 $\pm$ 2°C 90~95% R.H. Max. working voltage for 1000hrs. (1.5hrs. on · 0.5hrs.off)	$\pm(0.5\%+0.05\Omega)$
SOLDER ABILITY	245 $\pm$ 5°C for 5 seconds	95% min. Coverage
RESISTANCE TO SOLVENT	Trichroethane for 3 min. with ultrasonic	No deterioration of coatings and markings
TERMINAL STRENGTH	Tensile strength for 10 sec. Torsional strength: Rotated through 360°, 5 rotations	Tensile: $\geq$ 2.5kg

Reference Standards: MIL-STD-202, JIS-C 5201-1  
Storage Temperature: 25 $\pm$ 3°C; Humidity < 80% RH

## ◆ Derating Curve

