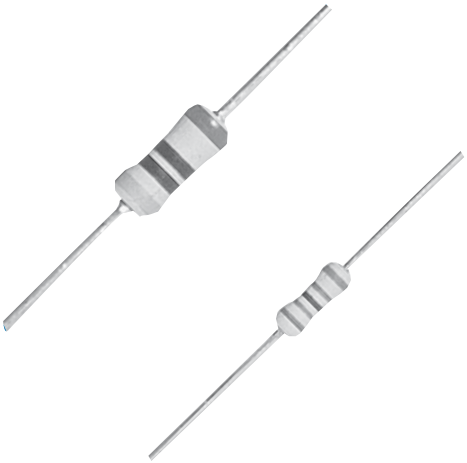
Resistors

Flameproof Power Metal Film Resistors

MFP Series

- Smallest size for power rating
- Resistance range 0.1 ohms to 1M ohms
- Flameproof protection
- Surface mount ZI-form option



✓ All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

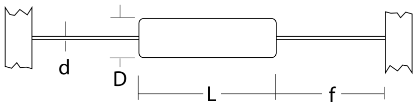
Electrical Data

		MFP1	**MFP2**
Power rating at 70°C	watts	<1 Ω: 0.7 >=1 Ω: 1.0	2
Resistance range	ohms	0R1 – 1M	1R0 – 1M
Limiting element voltage	volts	350	
TCR	ppm/°C	< 1 Ω: 300 1 Ω - 9.1 Ω: 200 ≥10 Ω: 100	100
Resistance tolerance	%	1, 2, 5	
Standard values		E24 preferred	
Thermal impedance	°C/watt	120	82
Ambient temperature range	°C	-55 to 155	

Physical Data

Dimensions (mm) & Weight (g)

Type	L Max	D Max	f min	d nom	PCB mounting centres	Min. bend radius	Wt.nom
MFP1	6.2	2.5	21.0	0.6	10.2	0.6	0.3
MFP2	10.0	4.0	27.0	0.8	18.4	1.2	0.55



Construction

The resistance element is a precisely controlled thin film of metal alloy on a high purity ceramic core, protected by a cement coating applied so that terminations remain completely clear. This permits a well defined body length (clean lead to clean lead dimension L).

Terminations

Material Solder-coated copper wire.

Strength The terminations meet the requirements of IEC 68.2.21

Solderability The terminations meet the requirements of IEC 115-1, Clause 4.17.3.2

Marking

Resistors are colour coded with 4 or 5 bands depending on value and tolerance. IEC 62 colours are used.

Solvent Resistance

The body protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuits.

Flammability

The resistor coating will not burn or emit incandescent particles under any condition of applied temperature or power overload.

Performance Data

		Maximum
Load at rated power : 1000 hours at 70°C	ΔR %	5
Shelf life : 12 months at room temperature	ΔR %	2
Derating from rated power at 70°C	ΔR %	zero at 155°C
Climatic	ΔR %	3
Climatic category		50/155/56
Temperature rapid change	ΔR %	0.5
Resistance to solder heat	ΔR %	0.5
Voltage proof	volts	500 min

Application Notes

1. If the resistors are to dissipate full rated power, it is recommended that the terminations should not be soldered closer than 4mm from the body.

2. Due to operating temperature limitations imposed by some pcb materials, derating may be necessary. An estimate of the temperature rise to be expected can be calculated using the thermal impedance figures given under Electrical Data.

Packaging

MFP resistors are normally supplied tape packed ready for loading onto automatic sequencing and insertion machines.

The standard taping method and critical dimensions are shown in Figure 1.

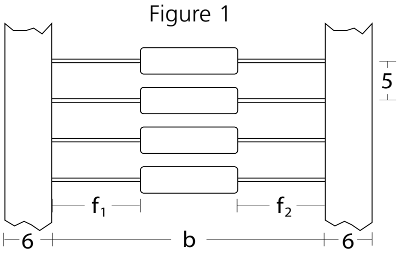
Component wires will not protrude beyond the outside edge of the tapes.

Alternative packaging available by request.

3. MFP2 resistors can also be supplied loose packed with radial, goalpost or lancet pre-formed leads- see https://www.ttelectronics.com/TTElectronics/media/ProductFiles/Resistors/ApplicationNotes/TN008-resistors-Leadform-Capability.pdf, or in ZI-form SMD format packed in blister tape- see https://www.ttelectronics.com/TTElectronics/media/ProductFiles/Resistors/Datasheets/ZI-form.pdf

Type	MFP1	MFP2
b (mm)	52	68

Figure 1

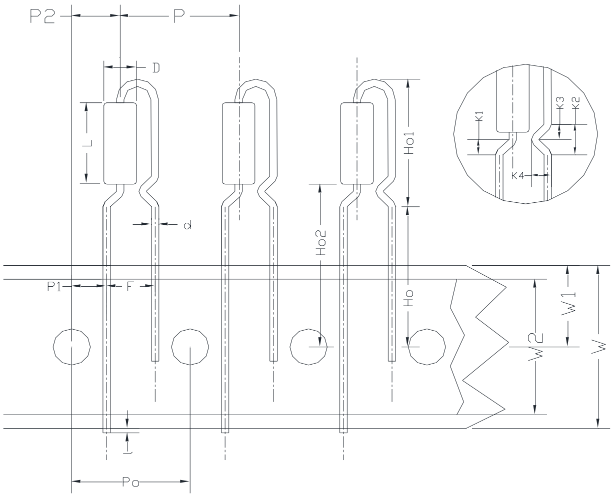


Body location $f_1 - f_2 \leq 1.4$ mm

MFP Series

Also a 2W radial taped version is available as shown below

MFP2R Radial Taped Dimensions (mm)			
Dimension	Notation	Nominal	Tolerance
Component Body Length	L	10.0 Max	
Component Body Diameter	D	4.0 Max	
Terminal Lead Diameter	d	0.8 Nom	
Component Pitch	P	12.7	±0.5
Pitch of Holes	Po	12.7	±0.2
Distance between Hole & Component	P1	3.85	±0.3
	P2	5.85	±0.5
Lead Pitch	F	5.0	+0.75 -0.34
Width of Backing Strip	W	18.0	±0.3
Position of Hole	W1	9.0	±0.25
Diameter of Hole	Do	4.0	±0.3
Height to Lead Form	Ho	16.0	±0.3
Height from Lead Form	Ho1	21.7 Max	
Height to Resistor	Ho2	18.0 Max	
Width of Adhesive Tape	W2	15.0	±0.5
Length of protrusion	l	<2.5	
Form Dimensions	K1	2.0	±0.3
	K2	3.0	±0.5
	K3	1.5	±0.25
	K4	1.0	±0.2



Ordering Procedure

Example: MFP2-4K7FI (MFP2, 4.7 kilohms ±1%, Pb-free)

M	F	P	2		-	4	K	7	F	I		
1				2		3			4	5		

1 Type	2 Leadforming	3 Value	4 Tolerance	5 Packing			
MFP1	Blank = Axial	3/4 characters	F = ±1%	I	MFP1	Ammo	5000/box
MFP2	R = Radial taped (MFP2 only)	R = ohms	G = ±2%		MFP2		2000/box
		K = kilohms	J = ±5%	T15	MFP2R	Reel	1500/reel
		M = megohms					