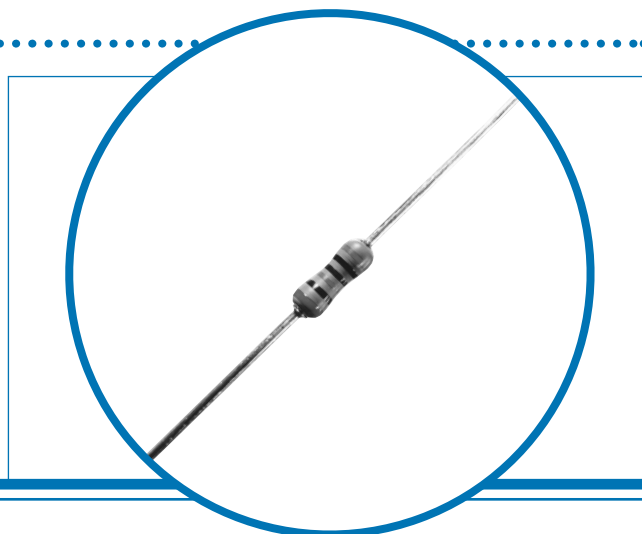


# Metal Film Resistors

## MFR4P Series

- **Smallest size for power rating**
- **Resistance range: 1 ohm to 1M ohms**
- **Temperature coefficient down to 50ppm/°C**



## Electrical Data

|                           |         | MFR4P             |
|---------------------------|---------|-------------------|
| Power rating at 70°C      | watts   | 0.6               |
| Resistance range          | ohms    | 0R22 to 1M        |
| Limiting element voltage  | volts   | 250               |
| TCR                       | ppm/°C  | <1R: 300 >=1R: 50 |
| Resistance tolerance      | %       | 0.5, 1, 2, 5*     |
| Standard values           |         | E24 preferred     |
| Thermal impedance         | °C/watt | 130               |
| Ambient temperature range | °C      | -55 to 155        |

\*Below 1 ohm 5% preferred

## Physical Data

| Dimensions (mm) & Weight (g) |       |       |       |       |                      |                  |        |  |
|------------------------------|-------|-------|-------|-------|----------------------|------------------|--------|--|
| Type                         | L Max | D Max | f min | d nom | PCB mounting centres | Min. bend radius | Wt.nom |  |
| MFR4P                        | 6.2   | 2.5   | 21.0  | 0.6   | 10.2                 | 0.6              | 0.3    |  |

### Construction

The resistance element is a precisely controlled thin film of metal alloy sputtered on to a high purity ceramic core, protected by a moisture-resistant, high dielectric strength 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 6 bands. IEC 62 colours are used.

### Solvent Resistance

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

### General Note

Welwyn Components reserves the right to make changes in product specification without notice or liability. All information is subject to Welwyn's own data and is considered accurate at time of going to print.

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Issue D · 03.06

Performance Data

|                                            |       | Maximum       |
|--------------------------------------------|-------|---------------|
| Load at rated power : 1000 hours at 70°C   | ΔR %  | 0.5           |
| Shelf life : 12 months at room temperature | ΔR %  | 0.1           |
| Derating                                   |       | Zero at 155°C |
| Short term overload                        | ΔR %  | 0.5           |
| Climatic                                   | ΔR %  | 0.5           |
| Climatic category                          |       | 55/125/56     |
| Long term damp heat                        | ΔR %  | 1             |
| Temperature rapid change                   | ΔR %  | 0.5           |
| Resistance to solder heat                  | ΔR %  | 0.5           |
| Vibration and bump                         | ΔR %  | 0.5           |
| Noise. (in a decade of frequency)          | μV/V  | 0.1           |
| Insulation resistance                      | ohms  | >1G           |
| Voltage proof                              | volts | 500 min       |

Packaging

MFR4P resistors are 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.

Standard Quantities Per Package

| Type            | MFR4P |
|-----------------|-------|
| Large ammo pack | 5000  |

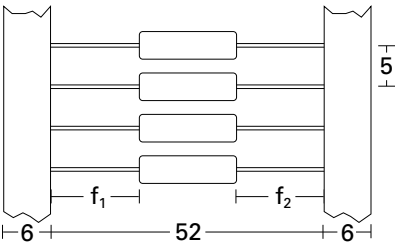


Figure 1

Lead Formed resistors can also be supplied. Standard options of Lancet, Radial and Goalpost forming are available by request.