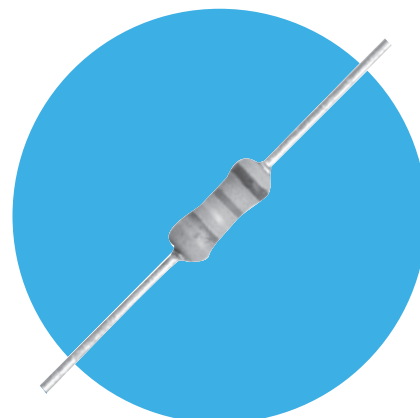


# High Voltage Metal Film Resistors

## MH Series

OBSOLETE

- MH37 meets requirements of BSEN 60065 in value range 680K to 3M
- High working voltage to 3.5kV
- Small size
- High pulse load capability
- Robust cement coating
- Value up to 10M

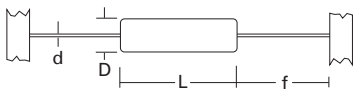


All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## Electrical Data

|                           |                     | MH25                  | MH37      |
|---------------------------|---------------------|-----------------------|-----------|
| Power rating at 70°C max  | watts               | 0.25                  | 0.5       |
| Resistance range          | ohms                | 100K - 10M            | 100K - 3M |
| Limiting element voltage  | volts dc or ac peak | 1,600                 | 3,500     |
| Isolation voltage         | volts               | 700                   |           |
| TCR                       | ppm/°C              | 100                   |           |
| Resistance tolerance      | %                   | 1, 2, 5               |           |
| Standard values           |                     | E24 and E96 preferred |           |
| Thermal impedance         | °C/watt             | 140                   | 112       |
| Ambient temperature range | °C                  | - 55 to 155           |           |

## Physical Data

| Dimensions (mm) and Weight (g) |       |       |       |       |                      |                 |        |  |
|--------------------------------|-------|-------|-------|-------|----------------------|-----------------|--------|--------------------------------------------------------------------------------------|
| Type                           | L max | D max | f min | d nom | PCB mounting centres | Min Bend Radius | Wt.nom |                                                                                      |
| MH25                           | 6.2   | 2.5   | 21.0  | 0.6   | 10.2                 | 0.6             | 0.3    |                                                                                      |
| MH37                           | 9.0   | 3.7   | 19.6  | 0.8   | 12.7                 | 1.2             | 0.5    |                                                                                      |

## Construction

Thin film material is sputtered on to high grade ceramic rods. Nickel plated steel caps are force fitted and the termination wires are welded to the caps. The value is obtained by a helical cut in the film and finally the resistor body is protected by a cement protection applied so that the terminations remain completely clear.

## Marking

1% tolerance resistors are colour coded with 5 bands.  
2% and 5% tolerance have 4. Band IEC 62 colours are used.

## Terminations

- Material** Solder-coated copper wire.
- Strength** The terminations satisfy the requirements of IEC 68.2.21.
- Solderability** The terminations meet the requirements of IEC 115-1, Clause 4.17.3.2

## Solvent resistance

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

## General Note

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

## Performance Data

|                                          |       | Maximum       | Typical |
|------------------------------------------|-------|---------------|---------|
| Load at rated voltage : 1000 hrs at 70°C | Δ R % | 1.5           | 0.4     |
| Derating from rated power at 70°C        |       | Zero at 155°C |         |
| Overload                                 | Δ R % | 1.0           | 0.25    |
| 56 days at DHSS                          | Δ R % | 1.5           | 0.2     |
| Climatic                                 | Δ R % | 1.5           | 0.2     |
| Climatic category                        |       | 55/155/56     |         |
| Temperature rapid change                 | Δ R % | 0.5           | 0.05    |
| Resistance to solder heat                | Δ R % | 0.5           | 0.05    |
| Vibration and bump                       | Δ R % | 0.5           | 0.05    |
| Voltage proof                            | volts | 700 min       |         |

### Application Notes

To ensure reliable performance at high voltages care should be taken to avoid potential sources of ionic contamination contacting the resistor body, for example, flux applied by spraying, encapsulation materials or contaminants from the environment of use.

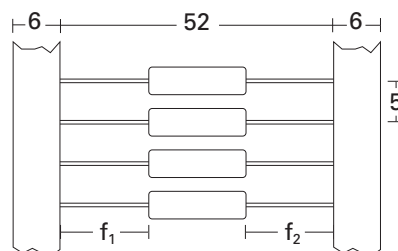
### Packaging

All MH series resistors are supplied tape packed ready for loading on automatic sequencing and insertion machines.

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

Alternative packing available by request.

Lead Formed Resistors can also be supplied. Standard options of Lancet, Radial and Goal Post forming are shown in the Lead Form information sheet.



Body Location  $f_1 - f_2 \leq 1.4 \text{ mm}$

## Ordering Procedure

Example: MH25 at 4.7 megohms and 1% tolerance in ammo pack box of 5000 pieces –

**M H 2 5 – 4 M 7 F I**

Type \_\_\_\_\_

Value (use IEC62 code) \_\_\_\_\_

Tolerance (use IEC62 code) \_\_\_\_\_

|   |    |
|---|----|
| F | 1% |
| G | 2% |
| J | 5% |

Packing \_\_\_\_\_

|   |      |      |          |          |
|---|------|------|----------|----------|
| I | Ammo | MH25 | 5000/box | Standard |
|   |      | MH37 | 2500/box |          |

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