

Pulse Withstanding Fusible Flameproof Metal Film Resistors

EMC Series

- UL1412 recognised*
- Failsafe 240V mains fusing
- Good pulse handling capability
- Small size for power rating
- UL94-V0 flameproof protection
- Surface mount ZI-form option



* Values 22R and above. UL file number E234469

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

Electrical Data

| | | EMC2 |
|---------------------------|---------|-------------|
| Power rating at 70°C | Watts | 2 |
| Resistance range | Ohms | 4R7 – 68R |
| TCR (25 to 75°C) | ppm/°C | 100 |
| Isolation Voltage | Volts | 500 |
| Resistance Tolerance | % | 10, 20 |
| Standard Values | | E12 |
| Thermal Impedance | °C/Watt | 82 |
| Ambient temperature range | °C | -55 to +155 |

Physical Data

| Dimensions (mm) & Weight (g) | | | | | | | | |
|------------------------------|-------|-------|-------|-------|-------------------|-----------------|---------|--|
| Type | L max | D max | f min | d nom | PCB mount centres | Min bend radius | Wt. nom | |
| EMC2 | 10 | 4 | 27 | 0.8 | 18.4 | 1.2 | 0.55 | |

Construction

The metal film is deposited onto a high purity ceramic rod. End caps are force fitted and termination wires are welded to the end caps. Finally, a cement protection is applied to the resistor body prior to marking with indelible ink. The cement protection is applied in a manner that leaves the terminations 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

Solvent Resistance

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

General Note

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Flammability

The resistor coating is UL94-V0 rated and will not burn or emit incandescent particles under any condition of applied temperature or power overload.

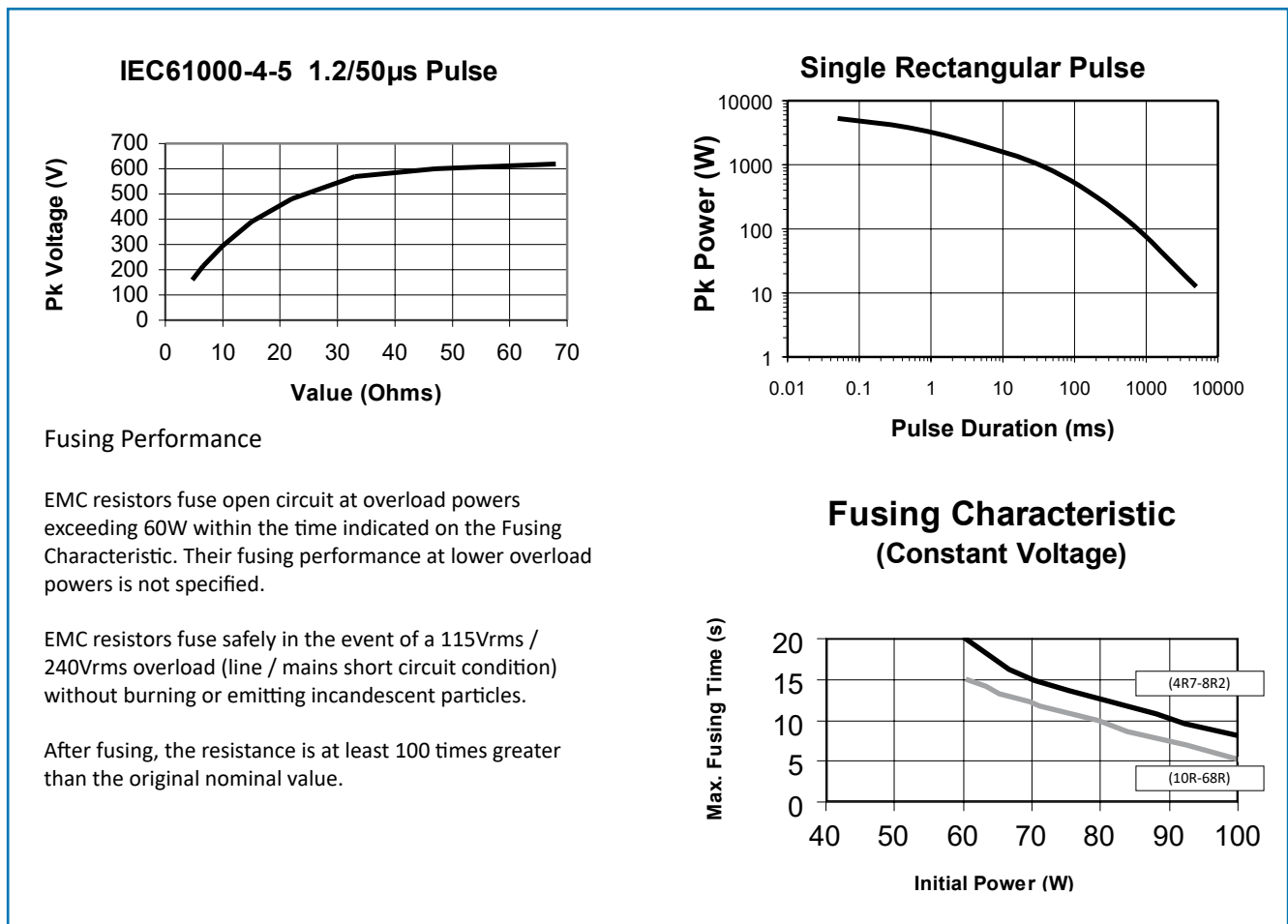
Marking

EMC resistors are colour coded with five bands. Four of the bands indicate value and tolerance in accordance with IEC62. Parts with 20% tolerance have no fourth band. A fifth yellow band denotes constant voltage fusibility.

Performance Data

| | | Maximum |
|---|-----|---------------|
| Load at Rated Power: 1000hrs @ 70°C | ΔR% | 5 |
| Shelf life: 12 months at room temperature | ΔR% | 2 |
| Derating from rated power at 70°C | | 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 |

Pulse Performance



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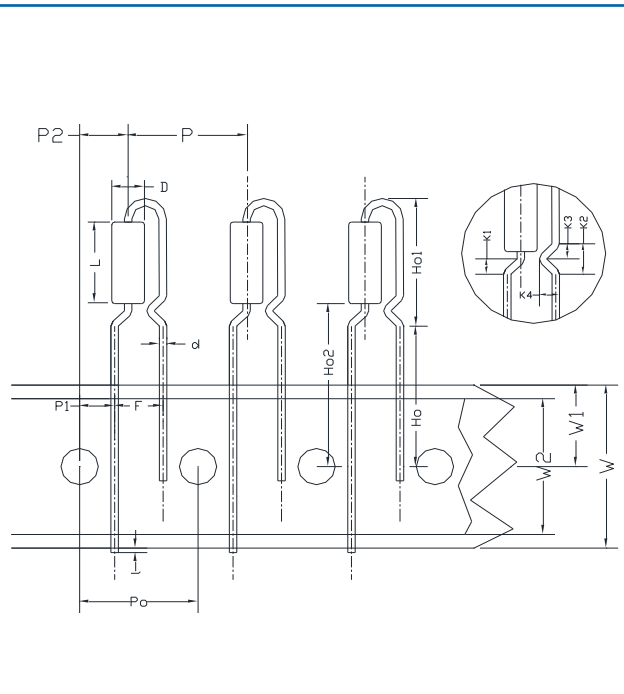
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Application Notes

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 limits 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.
3. To protect against fire under all conditions of overload, a positive clearance of at least 13mm should be provided between the body of the resistor and any combustible materials.
4. EMC 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>
Also a 2W radial taped version is available as shown below

| EMC2R 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 |



Packaging

Our standard packaging for EMC is taped and boxed. The critical dimensions are shown in Figure 1. The component wires will not protrude beyond the outside edge of the tapes. Alternative packaging is available by request.

| | | |
|----|------|---|
| mm | EMC2 | <p>Figure 1</p> <p>Body location $f_1 - f_2 \leq 1.4 \text{ mm}$</p> |
| b | 68 | |

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Ordering Procedure

Example: EMC2-33RMI (EMC2, 33 ohms $\pm 20\%$, Pb-free)



| 1 | 2 | 3 | 4 | 5 | | | |
|------|------------------|----------------|----------------|---------|-------|------|-----------|
| Type | Leadforming | Value | Tolerance | Packing | | | |
| EMC2 | Blank = Axial | 3/4 characters | K = $\pm 10\%$ | I | EMC2 | Ammo | 2000/box |
| | R = Radial taped | R = ohms | M = $\pm 20\%$ | T15 | EMC2R | Reel | 1500/reel |

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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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