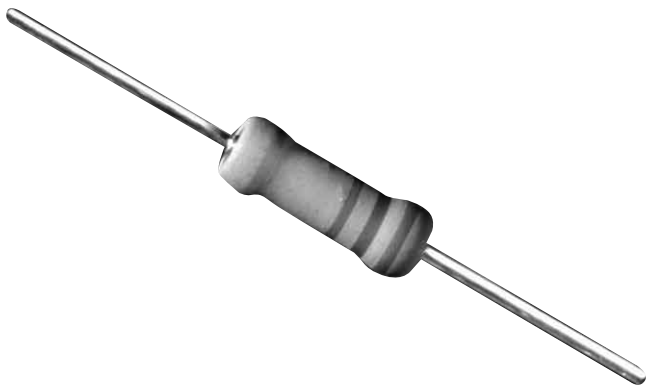
Resistors

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

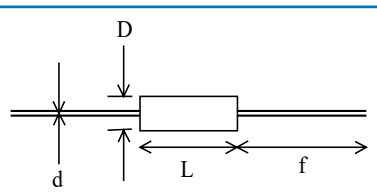
All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

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.

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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.

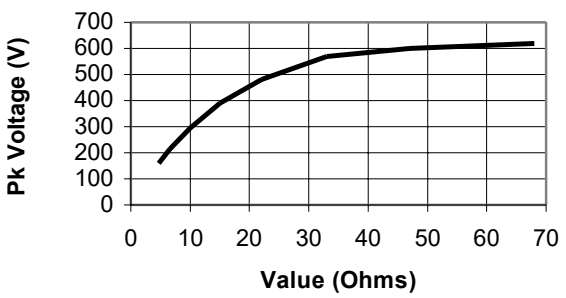
Marking
EMC resistors are colour coded with five bands. Four of the bands indicate value and tolerance in accordance with IEC62. Parts with 20% tolerance have no fourth band. A fifth yellow band denotes constant voltage fusibility.

Performance Data

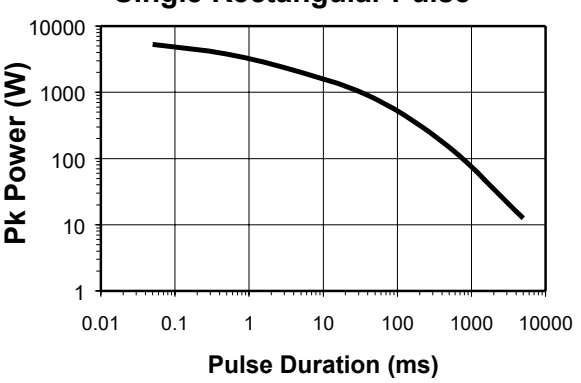
		Maximum
Load at Rated Power: 1000hrs @ 70°C	ΔR%	5
Shelf life: 12 months at room temperature	ΔR%	2
Derating from rated power at 70°C		Zero at 155°C
Climatic	ΔR%	3
Climatic Category		50/155/56
Temperature rapid change	ΔR%	0.5
Resistance to solder heat	ΔR%	0.5

Pulse Performance

IEC61000-4-5 1.2/50µs Pulse



Single Rectangular Pulse



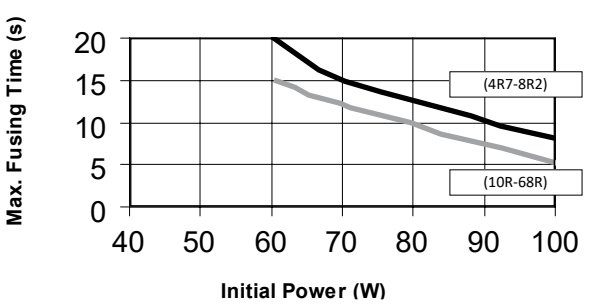
Fusing Performance

EMC resistors fuse open circuit at overload powers exceeding 60W within the time indicated on the Fusing Characteristic. Their fusing performance at lower overload powers is not specified.

EMC resistors fuse safely in the event of a 115Vrms / 240Vrms overload (line / mains short circuit condition) without burning or emitting incandescent particles.

After fusing, the resistance is at least 100 times greater than the original nominal value.

Fusing Characteristic
(Constant Voltage)



General Note
TT Electronics reserves the right to make changes in product specification without notice or liability.
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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.

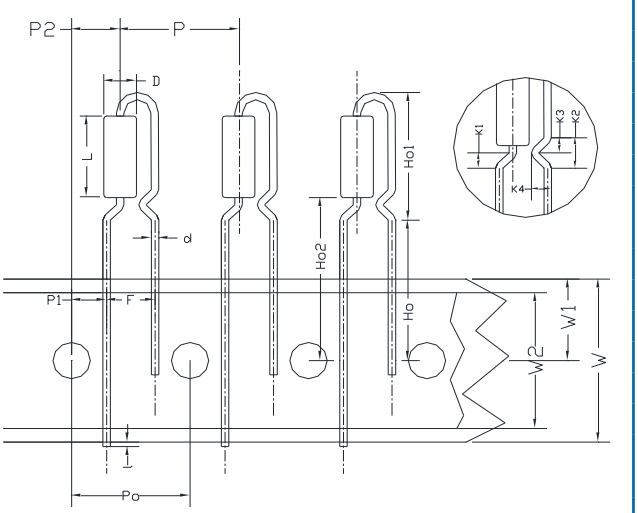
2. Due to operating temperature limits imposed by some PCB materials, derating may be necessary. An estimate of the temperature rise to be expected can be calculated using the thermal impedance figures given under Electrical Data.

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

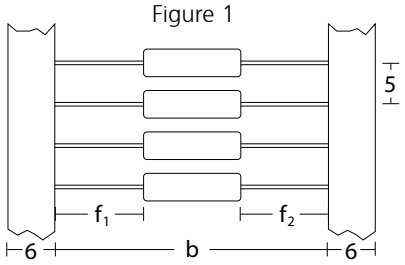


Packaging

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
b	68

Figure 1



Body location $f_1 - f_2 \leq 1.4$ mm

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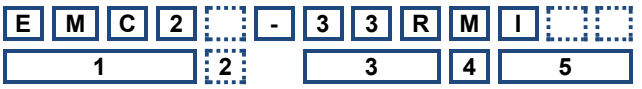
Ordering Procedure

Example: EMC2-33RMI (EMC2, 33 ohms ±20%, Pb-free)



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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

TT Electronics:

EMC2-10R0K EMC2-12R0K EMC2-15R0K EMC2-18R0K EMC2-22R0K EMC2-27R0K EMC2-33R0K EMC2-39R0K EMC2-47R0K EMC2-4R7K EMC2-56R0K EMC2-5R6K EMC2-68R0K EMC2-6R8K EMC2-8R2K EMC2-15R0KI EMC2-68R0KI EMC2-47R0KI EMC2-27RKI EMC2-56R0KI EMC2-68RKI EMC2-22RKI EMC2-47RKI EMC2-33RKI EMC2-10RKI