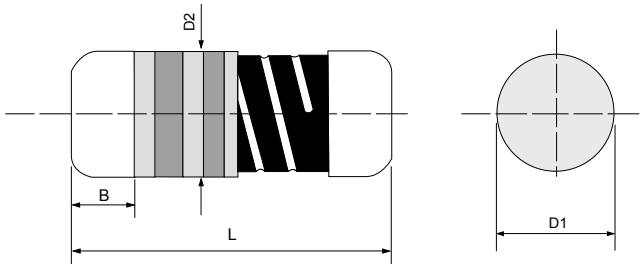
C3M100 – Composite Film-Type Ceramic Composition MELF Resistor

Safety • Quality • Reliability
Cost-Down via Innovation



Specifications Per

• IEC 600115-1

Features

• SMD-enabled structure
• Excellent in heat dissipation than chip resistor
• Stronger mechanical structure to seismic vibration and thermal shock
• Suitable replacement for ceramic composition resistors, which are requirement in most applications.
• Products meet RoHS requirements and do not contain substances of very high concern identified by European Chemicals Agency

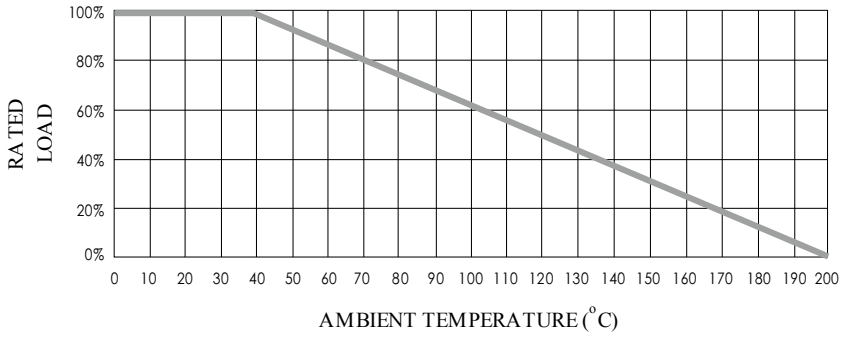
DIMENSIONS

Type	Body Length (L, mm)	Cap Diameter (D1, mm)	Body Diameter (D2, mm)	Soldering Spot (B, mm)	Net Weight Per 1000 pcs
C3M100	14.6 ± 0.6	4.6 ± 0.5	D1+0.05/ -0.5	2.0 Min.	1000 grams

GENERAL SPECIFICATIONS

Type	Power Rating (at 40°C)	Maximum Working Voltage	Maximum Permissible Surge Voltage	Minimum Resistance	Maximum Resistance	Resistance Tolerance	Available Resistance Values
C3M100	1W	400V	15KV	33Ω	22KΩ	±5%, ±10%, ±20%	E-6 / E-12 / E-24

POWER DERATING CURVE



TECHNICAL SUMMARY

Characteristics	Limits
Dielectric Withstanding Voltage, VAC or DC	800
Temperature Coefficient, PPM / °C*	-3000 (Typical)
Operating Temperature Range,°C	-55 ~ +200
Insulation Resistance, MΩ	$>10^4$
Failure Rate in Time, pcs / 10^9 device hours	<1

*** Not applicable to all resistance values. Please check with us regarding the PPM of specific resistance value(s).**

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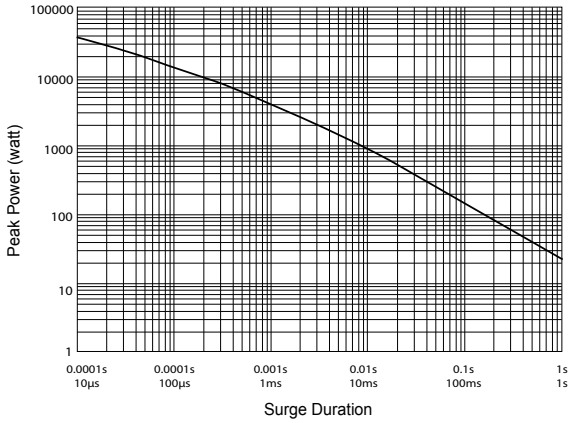
PART NUMBER

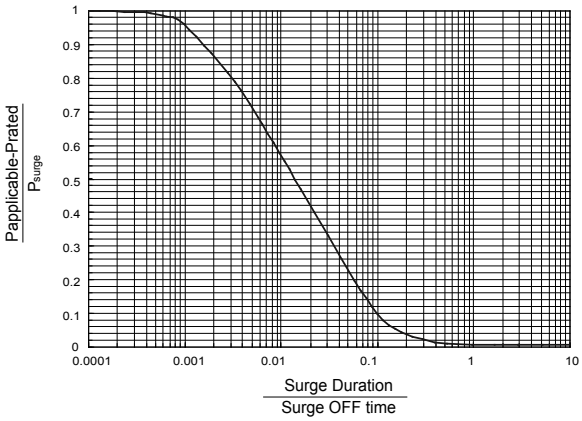
Example: C3M100K1K00TKZBK500

C3M100	K	1K00	TKZ	BK500
Type	Tolerance	Resistance	TCR	Packaging
	J (5%) K (10%) M (20%)	1KΩ **4-character code** containing - 3 significant digits 1 letter multiplier OHM MULTIPLIER R = 1 K = 10^3 M = 10^6 G = 10^9	**3-character code** TKZ = Default Product Temperature Coefficient. Information of typical product temperature coefficient can be found in the Technical Summary Section of the datasheet.	**5-character code** BK = Bulk BK + Quantity

SINGLE SURGE PERFORMANCE



SRUGE POWER DERATING CURVE



Notes:

• SINGLE SURGE PERFORMANCE graph is good for NON REPETITIVE applications operating in an ambient temperature of 40°C or less. For temperatures above 40°C, the graph power must be derated further linearly down to zero at 200°C.

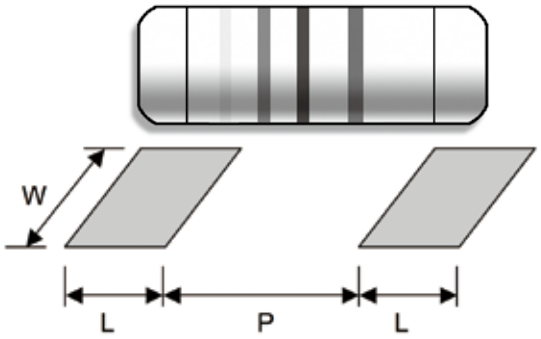
• To determine applicable surge power in continuous-surge applications:

1. Identify allowable duration and peak power P_{surge} of single surge;
2. Determine ratio of surge duration/surge OFF time in application;
3. Calculate $P_{applicable}$ backwardly according to Y-axis of SURGE POWER DERATING CURVE.

PERFORMANCE SPECIFICATIONS

Characteristics	Test Conditions	Limits	
Short Time Overload	**IEC 60115-1 4.13** 5 seconds 2.5x rated voltage (not over 2x max. working voltage)	±2%	
Load Life In Humidity	**IEC 60115-1 4.24** 56 days rated load (not over max. working voltage) at (40±2)°C and (93±3)% relative humidity	±5%	
Load Life	**IEC 60115-1 4.25.1** Rated load (not over max. working voltage) 1,000 hours with 1.5 hours ON, 0.5 hours OFF, at (40±2)°C	±5%	
Resistance To Soldering Heat	**IEC 60115-1 4.18.2** Dip the resistor into a solder bath measured (260±5)°C and hold it for a 10±1 seconds	±2.5%	
Solderability	**IEC 60115-1 4.17.2** Solder area covered after (235±3)°C / (2±0.2) seconds with flux applied	95% min.coverage	
Vibration	**IEC 60115-1 4.22** Six hours in each parallel and axial direction with a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±2%	
Thermal Endurance	**IEC 60115-1 4.25.3** 1,000 hours at 200°C without load	±5%	
Thermal Shock	**IEC 60115-1 4.19** -55°C 30minutes, +155°C 30minutes, 5 cycles	±3%	
Surge Test	**Surge voltage = $\sqrt{(40{,}000 \times P \times R)}$ DC** P is power rating, R is resistance value, surge voltage is not more than listed at right. Surge duration = 1.2/50μs Period = 60 sec Number of surge = 100	15KV	±5%

SUGGESTED PAD LAYOUT



Type	Soldering Mode	Pad Length (L, mm, Min.)	Pad Spacing (P, mm)	Pad Width (W, mm, Min.)
C3M100	Reflow	5.0	9.3 ± 0.4	6.5
	Wave	5.0	9.0 ± 0.4	6.0

For better heat dissipation / lower heat resistance, increase W & L.

COVER TAPE PEELING SPECIFICATION

Recommended peeling force:
C3M100: 80±10gf