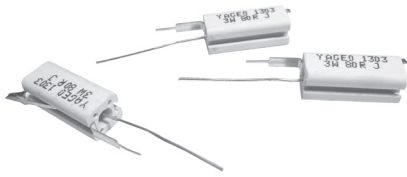


# Fiberglass Cement Resistors

# Circuit Breaker & Vertical Lead Type

## Normal Style [ FSM Series ]



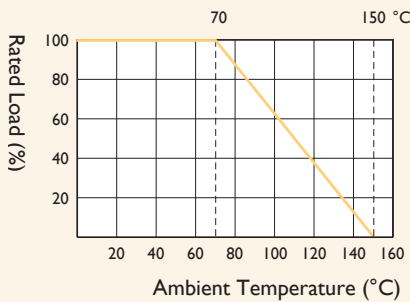
### INTRODUCTION

The FSM Series Fiberglass Cement Resistors are wound on fibre glass core, have a special internal direct contact to virtually eliminate resistance changes caused by varying, often high temperatures. It offers a circuit-breaker function when overload is applied.

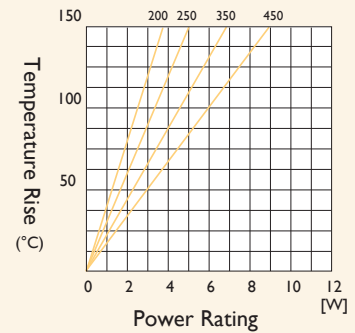
### FEATURES

Power Rating	2W, 2.5W, 3.5W, 4.5W
Resistance Tolerance	±5%, ±10%
T.C.R.	-80~+500ppm/°C

### DERATING CURVE

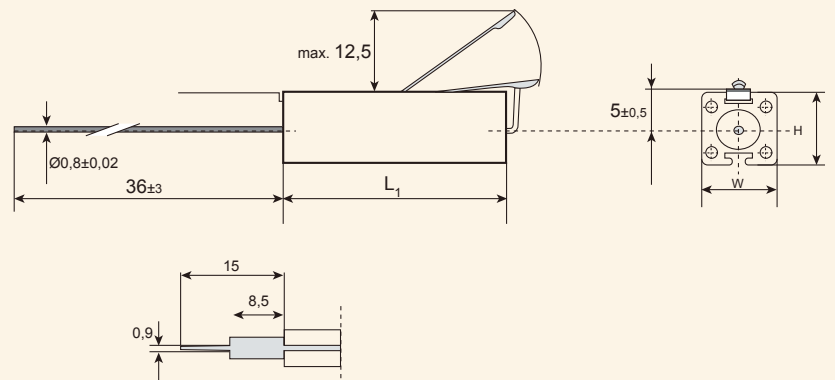
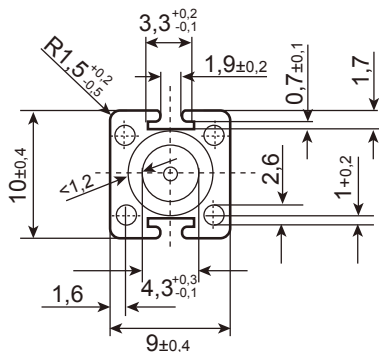


### TEMPERATURE RISE



### DIMENSIONS

Unit: mm



STYLE	DIMENSION		
	L <sub>1</sub>	W	H
Normal			
FSM200	25±1.0	9±0.4	10±0.4
FSM250	38±1.0	9±0.4	10±0.4
FSM350	50±1.0	9±0.4	10±0.4
FSM450	75±2.0	9±0.4	10±0.4

Note:

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### ELECTRICAL CHARACTERISTICS

STYLE	FSM200	FSM250	FSM350	FSM450
Power Rating at 70°C	2W	2.5W	3.5W	4.5W
Maximum Working Voltage	$\sqrt{P \times R}$			
Voltage Proof on Insulation	2000V			
Resistance Range	0.15Ω-15KΩ	0.33Ω-33KΩ	0.51Ω-47KΩ	0.91Ω-82KΩ
Operating Temp. Range	-55°C to +150°C			
Temperature Coefficient	-80~+500ppm/°C			

Note: Special value is available on request

### ENVIRONMENTAL CHARACTERISTICS

PERFORMANCE TEST	TEST METHOD	APPRAISE
Short Time Overload	IEC 60115-1 4.13 10 times rated power for 5 Sec.	±2.0%+0.05Ω
Voltage Proof on Insulation	IEC 60115-1 4.7 In V-Block for 60 sec., test voltage as above table	No Breakdown
Temperature Coefficient	IEC 60115-1 4.8 -55°C to +150°C	By type
Insulation Resistance	IEC 60115-1 4.6 in V-block for 60 Sec.	> 10,000M
Solderability	IEC 60115-1 4.17 245±5°C for 3±0.5 Sec.	95% Min. coverage
Solvent Resistance of Marking	IEC 60115-1 4.30 IPA for 5±0.5 Min. with ultrasonic	"No deterioration of coatings and markings"
Robustness of Terminations	IEC 60115-1 4.16 Direct load for 10 Sec. in the direction of the terminal leads	≥50N
Periodic-pulse Overload	IEC 60115-1 4.39 4 times RCWV 10,000 cycles (1 Sec. on, 25 Sec. off)	±2.0%+0.05Ω
Damp Heat Steady State	IEC 60115-1 4.24 40±2°C, 90-95% RH for 56 days, loaded with 0.1 times RCWV	±2.0%+0.05Ω
Endurance at 70°C	IEC 60115-1 4.25 70±2°C at RCWV (or Umax., Whichever less) for 1,000 Hr: (1.5Hr: on, 0.5Hr: Off)	±3.0%+0.05Ω
Temperature Cycling	IEC 60115-1 4.19 -55°C ⇌ Room Temp. ⇌ +155°C ⇌ Room Temp. (5 cycles)	±2.0%+0.05Ω
Resistance to Soldering Heat	IEC 60115-1 4.18 260±3°C for 10±1 Sec., immersed to a point 3±0.5mm from the body	±0.2%+0.05Ω

Note: RCWV(Rated Continuous Working Voltage) =  $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$  or Max. working voltage listed above, whichever less.

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