

## Thin Film Top-Contact Resistor



Product may not  
be to scale

The SFM series single-value resistor chips offer a small size, wide ohmic value range and excellent power capacity. The SFMs tantalum nitride resistor material offers excellent resistance to high moisture environments.

The SFMs are manufactured using Vishay Electro-Films (EFI) sophisticated thin film equipment and manufacturing technology. The SFMs are 100 % electrically tested and visually inspected to MIL-STD-883.

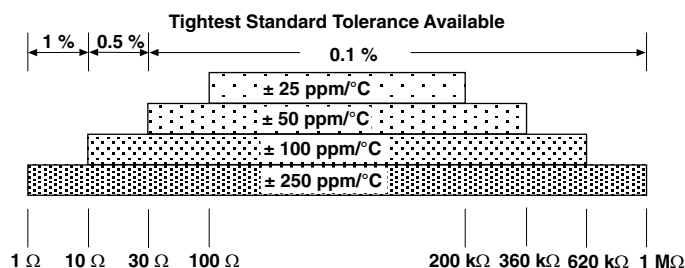
### FEATURES

- Wire bondable
- Small size: 0.020 inches square
- Resistance range: 1.0  $\Omega$  to 1 M $\Omega$
- DC power rating: 250 mW
- Oxidized silicon substrate for good power dissipation
- Resistor material tantalum nitride, self passivating
- Moisture resistant

### APPLICATIONS

Vishay EFI SFM top-contact resistor chips are designed to handle substantial power loads in many types of hybrid packages. They are ideally suited for this purpose because of their small size.

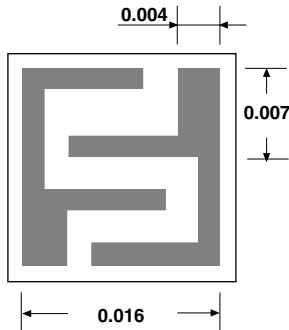
### TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES AND TOLERANCES



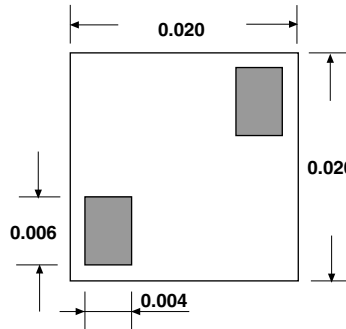
### STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	
Noise, MIL-STD-202, Method 308 100 $\Omega$ to 250 k $\Omega$ < 100 $\Omega$ or > 251 k $\Omega$	- 35 dB typ. - 20 dB typ.
Moisture Resistance, MIL-STD-202 Method 106	$\pm 0.5$ % max. $\Delta R/R$
Stability, 1000 h, + 125 °C, 125 mW	$\pm 0.25$ % max. $\Delta R/R$
Operating Temperature Range	- 55 °C to + 125 °C
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	$\pm 0.25$ % max. $\Delta R/R$
High Temperature Exposure, + 150 °C, 100 h	$\pm 0.5$ % max. $\Delta R/R$
Dielectric Voltage Breakdown	200 V
Insulation Resistance	10 <sup>12</sup> min.
Operating Voltage	100 V max.
DC Power Rating at + 70 °C (Derated to Zero at + 175 °C)	250 mW
5 x Rated Power Short-Time Overload, + 25 °C, 5 s	$\pm 0.25$ % max. $\Delta R/R$

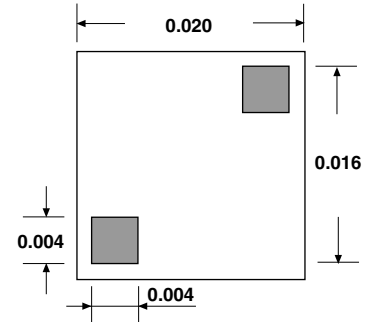
# CONFIGURATIONS in inches



TYPICAL RANGE  
1  $\Omega$  to 29  $\Omega$



TYPICAL RANGE  
30  $\Omega$  to 819  $\Omega$



TYPICAL RANGE  
820  $\Omega$  to 1 M $\Omega$

## SCHEMATIC



## MECHANICAL SPECIFICATIONS in inches

PARAMETER	
Chip Size	0.020 x 0.020 $\pm$ 0.003 (0.5 mm x 0.5 mm $\pm$ 0.076 mm)
Chip Thickness	0.010 $\pm$ 0.002 (0.254 mm $\pm$ 0.05 mm)
Chip Substrate Material	Oxidized silicon, 10 k $\text{\AA}$ minimum SiO <sub>2</sub>
Resistor Material	Tantalum nitride, self-passivating
Bonding Pad Size	0.004 x 0.004 (0.10 mm x 0.10 mm)
Number of Pads	2
Pad Material	25 k $\text{\AA}$ minimum aluminum
Backing	None, lapped semiconductor silicon

## GLOBAL PART NUMBER INFORMATION

Global Part Number: SFM50000FKANHWS

Global Part Number Description: SFM 5K 1 %, 100 ppm/ $^{\circ}\text{C}$ , Al, no back metal, class H, WS

MODEL	RESISTANCE	RESISTANCE MULTIPLIER CODE	TOLERANCE CODE (%)	TCR (ppm/ $^{\circ}\text{C}$ )	TERMINATION	BACK METAL	VISUAL CLASS	PACKAGING CODE
SFM	First 4 digits are significant figures of resistance	C = 0.001 B = 0.01 A = 0.1 0 = 1 1 = 10 2 = 100 3 = 1000	B = 0.1 C = 0.25 D = 0.5 F = 1.0 G = 2.0 H = 2.5 J = 5.0 K = 10	E = $\pm$ 25 C = $\pm$ 50 K = $\pm$ 100 M = $\pm$ 250 R = 0/- 250	G = Au A = Al	G = Au N = None	H = Class H K = Class K	WS = Waffle pack 100 min, 1 mult

Historical Part Number: WSFM04550000F (will continue to be accepted)



### Disclaimer

All product specifications and data are subject to change without notice.

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