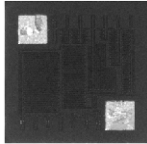


## Thin Film Top-Contact Resistor



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

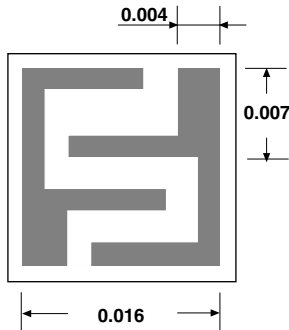
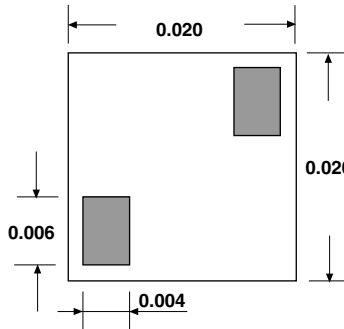
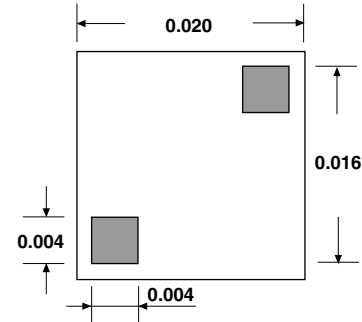
- Wire bondable
- Small size: 0.020 inches square
- Resistance range: 1.0 Ω to 1 MΩ
- DC power rating: 250 mW
- Oxidized silicon substrate for good power dissipation
- Resistor material tantalum nitride, self passivating
- Moisture resistant

### 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													
<p>Tightest Standard Tolerance Available</p>	<table border="1"> <thead> <tr> <th colspan="2">PROCESS CODE</th> </tr> <tr> <th>CLASS H*</th> <th>CLASS K*</th> </tr> </thead> <tbody> <tr> <td>050</td> <td>123</td> </tr> <tr> <td>051</td> <td>122</td> </tr> <tr> <td>045</td> <td>121</td> </tr> <tr> <td>040</td> <td>120</td> </tr> </tbody> </table>	PROCESS CODE		CLASS H*	CLASS K*	050	123	051	122	045	121	040	120
PROCESS CODE													
CLASS H*	CLASS K*												
050	123												
051	122												
045	121												
040	120												
*MIL-PRF-38534 inspection criteria													

STANDARD ELECTRICAL SPECIFICATIONS	
PARAMETER	
Noise, MIL-STD-202, Method 308 100 Ω - 250 kΩ < 100 Ω or > 251 kΩ	- 35 dB typ. - 20 dB typ.
Moisture Resistance, MIL-STD-202 Method 106	± 0.5 % max. ΔR/R
Stability, 1000 h, + 125 °C, 125 mW	± 0.25 % max. ΔR/R
Operating Temperature Range	- 55 °C to + 125 °C
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	± 0.25 % max. ΔR/R
High Temperature Exposure, + 150 °C, 100 h	± 0.5 % max. ΔR/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	± 0.25 % max. ΔR/R

**CONFIGURATIONS** in inches

**TYPICAL RANGE**  
 1 Ω - 29 Ω

**TYPICAL RANGE**  
 30 Ω - 819 Ω

**TYPICAL RANGE**  
 820 Ω - 1 MΩ

**SCHEMATIC**

**MECHANICAL SPECIFICATIONS** in inches

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

**Options:** Gold backing for eutectic die attach  
 Gold bonding pads, 15 kÅ minimum thickness  
 Consult Applications Engineer

**ORDERING INFORMATION**

Example: 100 % visual, 10 kΩ, ± 1 %, ± 100 ppm/°C TCR, aluminum pads, class H visual inspection

W INSPECTION/ PACKAGING	SFM PRODUCT FAMILY	045 PROCESS CODE	1000 RESISTANCE VALUE	1 MULTIPLIER CODE	F TOLERANCE CODE
W = 100 % visually inspected parts in matrix tray per MIL-STD-883		See Process Code table	Use first 4 digits of resistance	D = 0.0001 C = 0.001 B = 0.01 A = 0.1 0 = 1 1 = 10 2 = 100 3 = 1000 4 = 10 000	B = 0.1 % C = 0.2 % D = 0.5 % F = 1.0 % G = 2.0 % H = 2.5 % J = 5.0 % K = 10 % *Coating standard
X = Sample, commercial visually inspected parts loaded in matrix trays (4 % AQL)					



## Disclaimer

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