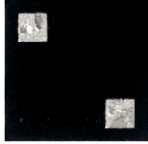


## Thin Film Top-Contact Resistor



Product may not be to scale

### FEATURES

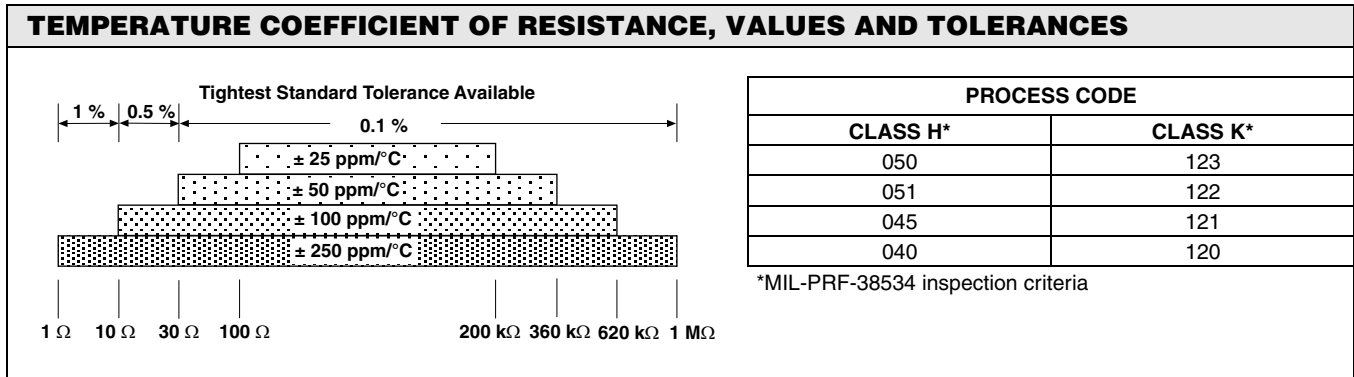
- Small size: 0.020 inches square
- Resistance range: 1.0 Ω to 1 MΩ
- DC power rating: 250 mW
- Oxidized silicon substrate for good power dissipation
- Resistor material tantalum nitride, self passivating
- Moisture resistant

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.

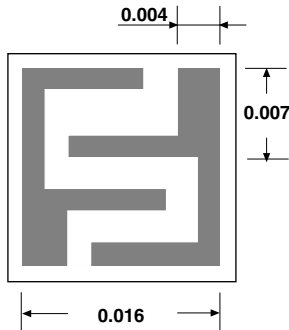
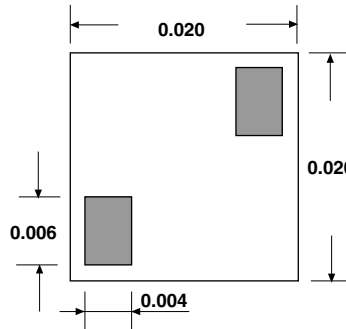
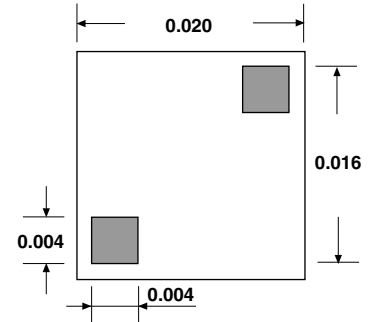
The SFMs are manufactured using Vishay Electro-Films (EFI) sophisticated thin film equipment and manufacturing technology. The SFMs are 100 % electrically tested and visually inspected to MIL-STD-883.

### 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.



STANDARD ELECTRICAL SPECIFICATIONS	
<b>PARAMETER</b>	
Noise, MIL-STD-202, Method 308 100 Ω - 250 kΩ < 100 Ω or > 251 kΩ	- 35 dB typical - 20 dB typical
Moisture resistance, MIL-STD-202 Method 106	± 0.5 % maximum ΔR/R
Stability, 1000 hours, + 125 °C, 125 mW	± 0.25 % maximum ΔR/R
Operating temperature range	- 55 °C to + 125 °C
Thermal shock, MIL-STD-202, Method 107, Test condition F	± 0.25 % maximum ΔR/R
High temperature exposure, + 150 °C, 100 hours	± 0.5 % maximum ΔR/R
Dielectric voltage breakdown	200 V
Insulation resistance	10 <sup>12</sup> minimum
Operating voltage	100 V maximum
DC power rating at + 70 °C (derated to zero at + 175 °C)	250 mW
5 x rated power short-time overload, + 25 °C, 5 seconds	± 0.25 % maximum ΔR/R

**CONFIGURATIONS** in inches

**TYPICAL RANGE**  
 $1 \Omega - 29 \Omega$ 

**TYPICAL RANGE**  
 $30 \Omega - 819 \Omega$ 

**TYPICAL RANGE**  
 $820 \Omega - 1 M\Omega$ 
**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	SFM	045	1000	1	F
INSPECTION/ PACKAGING	PRODUCT FAMILY	PROCESS CODE	RESISTANCE VALUE	MULTIPLIER CODE	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 %
X = Sample, commercial visually inspected parts loaded in matrix trays (4 % AQL)					



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