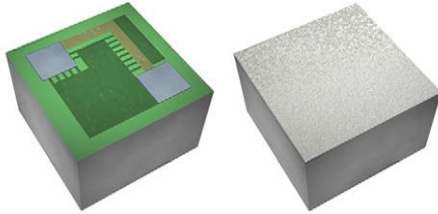


Thin Film, Top-Contact Miniature Resistor



Product may not be to scale

The MSFM series of single-value precision resistor chips offer a small size, wide ohmic value range and high power rating. The MSFM tantalum nitride resistor material offers excellent resistance to high moisture environments. The MSFMs are manufactured using Vishay Electro-Films (EFI) sophisticated thin-film equipment and manufacturing technology. The MSFMs are 100 % electrically tested and visually inspected to MIL-STD-883, method 2032, class H or K.

FEATURES

- Wire bondable
- Small size: 0.015" square
- Case: 0101
- Wide value range: 2.5 Ω to 400 k Ω
- DC power rating up to 125 mW
- Self passivating tantalum nitride film
- Oxidized silicon substrate
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

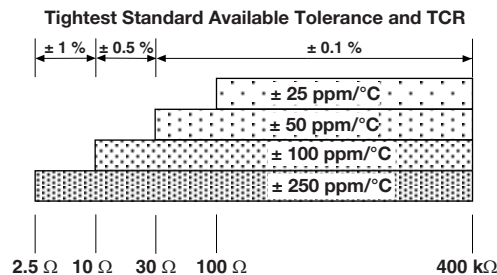


RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

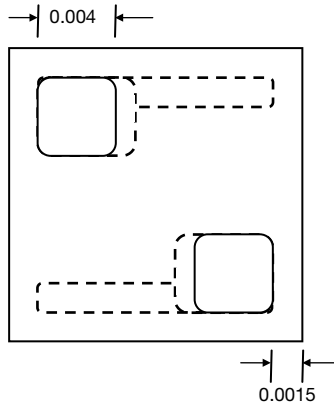
APPLICATIONS

Vishay EFI MSFM top-contact 0.015" square resistor chips are designed for hybrid (chip and wire) assemblies. They are ideally suited for compact designs due to their ultra small form factor.

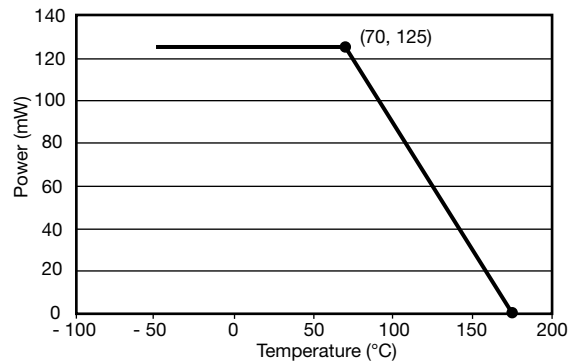
| TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES | | |
|---|---|-------------------|
| PARAMETER | VALUE | UNIT |
| Total Resistance Range | 2.5 to 400K | Ω |
| Standard Tolerances | ± 0.1 , ± 0.5 , ± 1 | % |
| TCR | ± 25 , ± 50 , ± 100 , ± 250 | ppm/ $^{\circ}$ C |



| STANDARD ELECTRICAL SPECIFICATIONS | | |
|---|------------------------------|--------------|
| PARAMETER | VALUE | UNIT |
| Noise, MIL-STD-202, Method 308 > 100 Ω < 100 Ω | -35 -20 | dB |
| Moisture Resistance, MIL-STD-202 Method 106 | ± 0.5 max. $\Delta R/R$ | % |
| Stability, 1000 h, +70 $^{\circ}$ C, 125 mW | ± 0.5 max. $\Delta R/R$ | % |
| Operating Temperature Range | -55 to +125 | $^{\circ}$ C |
| Thermal Shock, MIL-STD-202, Method 107, Test Condition F | ± 0.2 max. $\Delta R/R$ | % |
| High Temperature Exposure, +150 $^{\circ}$ C, 100 h | ± 0.5 max. $\Delta R/R$ | % |
| Dielectric Voltage Breakdown | 200 | V |
| Insulation Resistance e | 10^{12} min. | Ω |
| Operating Voltage | 100 max. | V |
| DC Power Rating up to +70 $^{\circ}$ C (Linear derated to zero at +175 $^{\circ}$ C) | 0.125 | W |
| 5x Rated Power Short-Time Overload, +25 $^{\circ}$ C, 5 s | ± 0.25 max. $\Delta R/R$ | % |

DIMENSIONS in inches


| MECHANICAL SPECIFICATIONS | |
|---------------------------|--|
| PARAMETER | VALUE |
| Chip Size | 0.015" x 0.015" ± 0.002" (0.381 mm x 0.381 mm ± 0.05 mm) |
| Chip Thickness | 0.010" ± 0.002" (0.254 mm ± 0.05 mm) |
| Chip Substrate Material | Oxidized silicon, 10 kÅ minimum oxide |
| Resistor Material | Tantalum nitride, self-passivating |
| Bonding Pad Size | 0.004" x 0.004" (0.1 mm x 0.1 mm) |
| Number of Pads | 2 |
| Pad Material | 10 kÅ minimum aluminum (Au optional) |
| Backing | None, lapped silicon |

POWER DERATING CURVE


| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | |
|--|--|--|--|--|--------------------------------|----------------------------------|--|---|----------|----------|----------|----------|----------|----------|----------|
| Global Part Number: MSFM10001FKANHWS | | | | | | | | | | | | | | | |
| Global Part Number Description: MSFM 10K 1%, 100 ppm/°C, Al, no back metal, class H, WS | | | | | | | | | | | | | | | |
| M | S | F | M | 1 | 0 | 0 | 0 | 1 | F | K | A | N | H | W | S |
| MODEL | RESISTANCE | RESISTANCE MULTIPLIER CODE | TOLERANCE CODE (%) | TCR (ppm/°C) | TERMINATION | BACK METAL | VISUAL CLASS | PACKAGING CODE | | | | | | | |
| MSFM 15 x 15 size Ta2N on silicon | First 4 digits are significant figures of resistance | C = 0.001 B = 0.01 A = 0.1 0 = 1 1 = 10 2 = 100 | B = 0.1 C = 0.25 D = 0.5 F = 1.0 G = 2.0 H = 2.5 J = 5.0 K = 10.0 | E = ± 25 C = ± 50 K = ± 100 M = ± 250 | G = Au A = Al | G = Au N = none | H = class H K = class K | WS = waffle pack 100 min., 1 mult | | | | | | | |



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