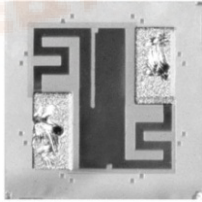


## NiCr Thin Film, Top-Contact Resistor



Product may not be to scale

### FEATURES

- Wire bondable
- Chip size: 0.020 inches square
- Resistance range: 10 Ω to 510 kΩ
- Resistor material: Nichrome
- Quartz substrate: < 0.1 pF shunt capacitance
- Power: 25 mW

The QFN series nichrome on quartz resistor chips offer a combination of nichrome stability, excellent frequency response and small size.

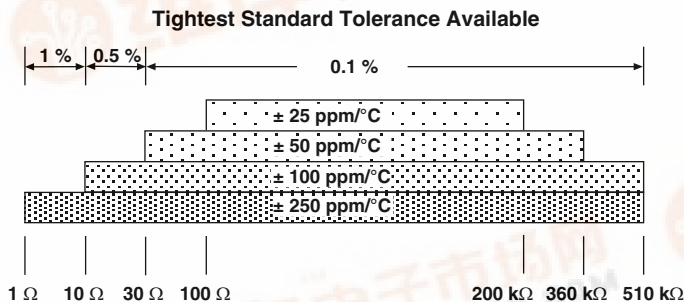
The QFNs are manufactured using Vishay Electro-Films (EFI) sophisticated thin film equipment and manufacturing technology. The QFNs are 100 % electrically tested and visually inspected to MIL-STD-883.

### APPLICATIONS

Vishay EFI QFN top-contact resistor chips are widely used in hybrid packages where space is limited. Designed with capacity to handle substantial power loads, they also have the benefit of nichrome stability.

Recommended for hermetic environments where die is not exposed to moisture.

### TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES AND TOLERANCES



PROCESS CODE	
CLASS H*	CLASS K*
203	207
201	205
202	206
200	204

Gold terminations

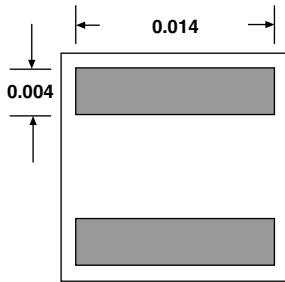
\*MIL-PRF-38534 inspection criteria

### STANDARD ELECTRICAL SPECIFICATIONS

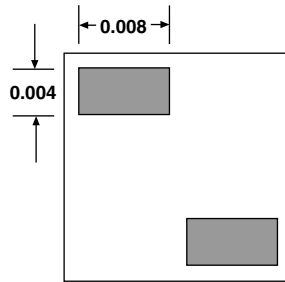
PARAMETER	
Noise, MIL-STD-202, Method 308 100 Ω - 250 kΩ < 100 Ω or > 251 kΩ	- 35 dB typ. - 20 dB typ.
Stability, 1000 h, + 125 °C, 50 mW	± 0.1 % max. ΔR/R
Operating Temperature Range	- 55 °C to + 125 °C
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	± 0.25 % max. ΔR/R
High Temperature Exposure, + 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)	25 mW
5 x Rated Power Short-Time Overload, + 25 °C, 5 s	± 0.25 % max. ΔR/R



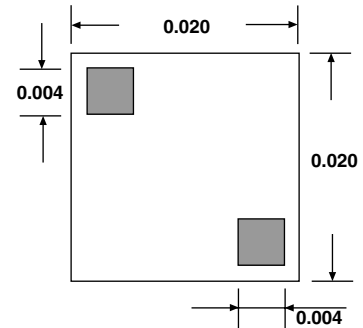
**DIMENSIONS** in inches



TYPICAL RANGE  
 10 Ω - 55 Ω



TYPICAL RANGE  
 56 Ω - 7.4 kΩ



TYPICAL RANGE  
 7.5 kΩ - 510 kΩ

**SCHEMATIC**



<b>MECHANICAL SPECIFICATIONS</b> in inches	
PARAMETER	
Chip Size	0.020 x 0.020 ± 0.003 (0.51 x 0.51 ± 0.05 mm)
Chip Thickness	0.010 ± 0.002 (0.254 ± 0.05 mm)
Chip substrate Material	Quartz
Resistor Material	Nichrome (passivation optional)
Bonding Pad Size	0.004 x 0.004 (0.10 x 0.10 mm)
Number of Pads	2
Pad Material	15 kÅ minimum gold
Backing	None, lapped quartz

**Options:** Aluminum bonding pads, 10 kÅ minimum thickness  
 Consult Applications Engineer

<b>ORDERING INFORMATION</b>					
Example: 100 % visual, 10 kΩ, ± 1 %, ± 50 ppm/°C TCR, gold pads, class H visual inspection					
W	QFN	202	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 the first 4 digits significant digits of the resistance	<b>B</b> = 0.01 <b>A</b> = 0.1 <b>0</b> = 1 <b>1</b> = 10 <b>2</b> = 100 <b>3</b> = 1000 <b>4</b> = 10 000	<b>B</b> = 0.1 % <b>C</b> = 0.2 % <b>D</b> = 0.5 % <b>F</b> = 1.0 % <b>G</b> = 2.0 % <b>H</b> = 2.5 % <b>J</b> = 5.0 % <b>K</b> = 10 %
Available alternatives: Aluminum pads or gold back Passivation (thermal set plastic)					

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