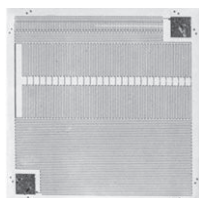


## Thin Film, Top-Contact Megohm Resistor



Product may not be to scale

The QFX series, tantalum nitride on quartz resistor chips combine high resistance with low shunt capacitance. These offer one of the best combinations of small size, frequency response and high value available.

The QFXs are manufactured using Vishay Electro-Films (EFI) sophisticated thin film equipment and manufacturing technology. The QFXs are 100 % electrically tested and visually inspected to MIL-STD-883, method 2032 class H or K.

### FEATURES

- Wire bondable
- Chip size: 0.050 inches square
- Case: 0505
- Resistance range: 500 k $\Omega$  to 10 M $\Omega$
- Quartz substrate: < 0.1 pF shunt capacitance
- Resistor material: Tantalum nitride, self-passivating
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



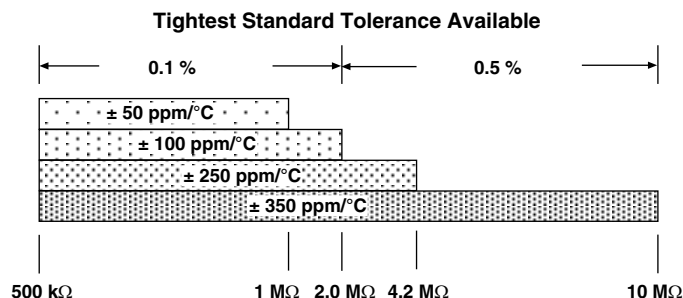
**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### APPLICATIONS

The QFX series resistor chips are designed for circuits requiring high values with lower shunt capacitance for higher frequency of operation.

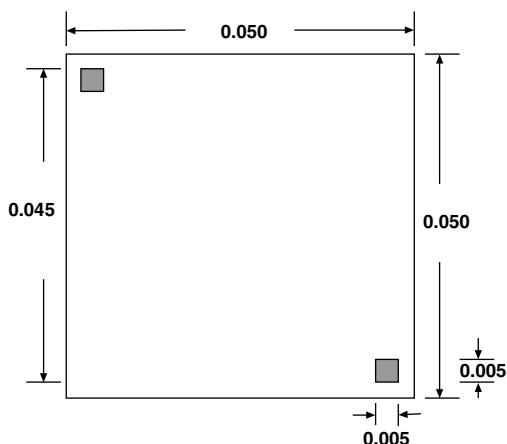
### TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES

PARAMETER	VALUE	UNIT
Total Resistance Range	500K to 10M	$\Omega$
Standard Tolerances	$\pm 0.1$ , $\pm 0.5$	%
TCR	$\pm 50$ , $\pm 100$ , $\pm 250$ , $\pm 350$	ppm/ $^{\circ}$ C



### STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	VALUE	UNIT
Noise, MIL-STD-202, Method 308	- 12 typ.	dB
Moisture Resistance, MIL-STD-202 Method 106	$\pm 0.5$ max. $\Delta R/R$	%
Stability, 1000 h, + 125 $^{\circ}$ C, 10 mW	$\pm 0.5$ max. $\Delta R/R$	%
Operating Temperature Range	- 55 to + 125	$^{\circ}$ C
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	$\pm 0.25$ max. $\Delta R/R$	%
High Temperature Exposure, + 150 $^{\circ}$ C, 100 h	$\pm 0.5$ max. $\Delta R/R$	%
Dielectric Voltage Breakdown	400	V
Insulation Resistance	$10^{12}$ min.	$\Omega$
Operating Voltage	400 max.	V
DC Power Rating at + 70 $^{\circ}$ C (Derated to zero at + 175 $^{\circ}$ C)	0.020	W
5 x Rated Power Short-Time Overload, + 25 $^{\circ}$ C, 5 s	$\pm 0.25$ max. $\Delta R/R$	%

**DIMENSIONS** in inches

**SCHEMATIC**


MECHANICAL SPECIFICATIONS	
PARAMETER	VALUE
Chip Size	0.050" x 0.050" $\pm$ 0.003" (1.25 mm x 1.25 mm $\pm$ 0.75 mm)
Chip Thickness	0.010" $\pm$ 0.002" (0.254 mm $\pm$ 0.05 mm)
Chip Substrate Material	Quartz
Resistor Material	Tantalum nitride, self-passivating
Bonding Pad size	0.005" x 0.005" (0.127 mm x 0.127 mm)
Number of Pads	2
Pad Material	10 kÅ minimum aluminum (Au optional)
Backing	None, lapped quartz

GLOBAL PART NUMBER INFORMATION															
Global Part Number: QFX25003KR4GGKWS															
Global Part Number Description: QFX 2.5M 10 % 0/- 250 ppm/°C 40 Au Au K WS															
Q	F	X	2	5	0	0	3	K	R	4	G	G	K	W	S
MODEL	RESISTANCE	RESISTANCE MULTIPLIER CODE	TOL. CODE (%)	TCR (ppm/°C)	SIZE	TERMINATION	BACK METAL	VISUAL CLASS	PACKAGING CODE						
QFX  High value TaN on Quartz	First 4 digits are significant figures of resistance	2 = 100 3 = 1000 4 = 10 000	B = 0.1 C = 0.25 D = 0.5 F = 1.0 G = 2.0 J = 5.0 K = 10.0	E = ± 25 C = ± 50 K = ± 100 M = ± 250 W = ± 350 R = 0/- 250 P = 0/- 350 I = 0/- 200	3 = 30 x 30 4 = 40 x 40 5 = 55 x 55	G = Au A = Al	G = Au N = None	H = Class H K = Class K	WS = Waffle pack 100 min., 1 mult						



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.