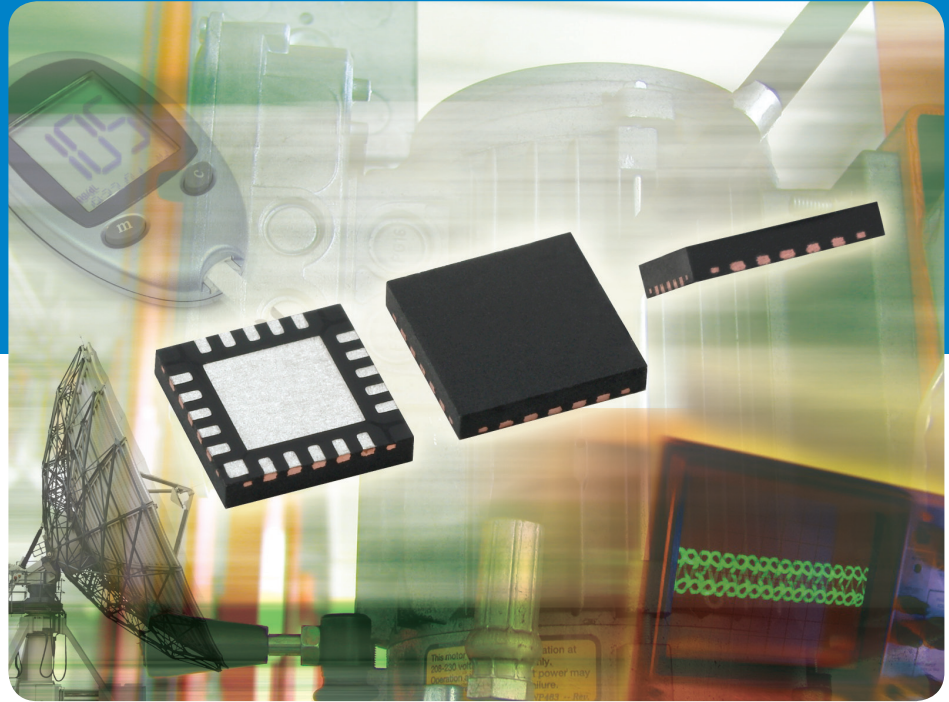




THIN FILM RESISTORS

QFN- Series



Quad Flat No-Lead Precision Thin Film Resistor SMD Network

KEY BENEFITS

- Custom schematics available
- Resistor range: 100 Ω to 500 k Ω total per package
- Ratio tolerance to $\pm 0.05\%$
- Small size: 5 mm x 5 mm
- Low profile: 1 mm max.
- 0.65 mm terminal pitch
- Stable film and performance characteristics: 500 ppm at 70 $^{\circ}\text{C}$, 2000 h
- Lead (Pb)-free terminations
- Compliant to RoHS directive 2002/95/EC

APPLICATIONS

- Industrial
- Instrumentation
- Telecommunications
- Medical

Quad Flat No-Lead Precision Thin Film Resistor SMD Network

FEATURES

- 0.65 mm lead pitch
- MSL level 1 per J-STD-020
- Low profile 1 mm seated height
- Small size 5 mm x 5 mm
- Low TCR ± 25 ppm, TCR tracking to ± 5 ppm
- Compliant to RoHS directive 2002/95/EC

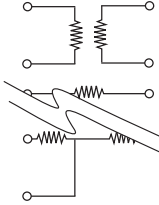


TYPICAL PERFORMANCE

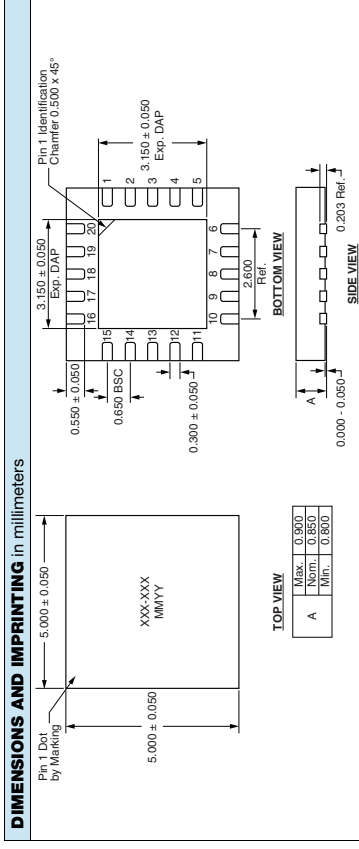
	ABSOLUTE	TRACKING
TCR	25	5
TOL.	0.1	0.05

The QFN- series features a standard 20 pins quad flat no lead 5 mm x 5 mm 0.65 mm pitch package. The quad flat no lead package saves board space over traditional SOIC packages. Additional pin counts available, consult factory.

SCHEMATIC



Custom schematics available
Please consult factory



Note

- Contact factory for package outlines for higher pin count or custom configurations

MECHANICAL SPECIFICATIONS

Resistive Element	Passivated nichrome
Substrate Material	Silicon
Body	Molded epoxy
Terminals	Copper alloy
Plating	100 % matte tin
Marking Resistance to Solvents	Per MIL-PRF-914

ORDERING INFORMATION CHECK LIST (Customs)

Special requirements should be identified in advance, but as a minimum, you should have the following information ready.

ELECTRICAL	MECHANICAL
<ol style="list-style-type: none"> 1. Resistors, by value and tolerance 2. Reference resistor(s) and matching of which resistors to which reference resistors 3. Power rating 4. Absolute temperature coefficient of resistivity 5. Temperature tracking of subordinate resistors to reference resistor(s) 6. Maximum operating voltage 7. Resistor power ratings 8. Operating temperature range 	<ol style="list-style-type: none"> 1. Maximum allowable seated height (from PC board to top of network) 2. Special marking concerns 3. Schematic pin out of package

GLOBAL PART NUMBER INFORMATION

Q	F	N	-	1	X	X	X	X	X	X	T	1
GLOBAL MODEL (4 digits)												
CUSTOM PART NUMBER (7 or 9 digits)												
1xx-xxx or 1xx-xxx-x												
PACKAGING												
TAPE AND REEL T0 = 100 min., 100 mult T1 = 1000 min., 1000 mult T3 = 300 min., 300 mult TF = Full reel, 500 mult TS = 100 min., 1 mult UF = TUBED												

Revision 25-Jan-10

TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Pin/Lead Number	20	-
Resistance Range	100 Ω (resistor) to 500 k Ω (total)	-55 °C to +125 °C
TCR: Absolute	± 25 ppm/ $^{\circ}$ C to ± 100 ppm/ $^{\circ}$ C	-55 °C to +125 °C
TCR: Tracking	± 5 ppm/ $^{\circ}$ C (typical)	+25 °C
Tolerance: Absolute	± 0.1 % to ± 1.0 %	+25 °C
Tolerance: Ratio	± 0.05 % to ± 0.1 %	+25 °C
Power Rating: Resistor	100 mW (per element)	Maximum at +70 °C
Power Rating: Package	500 mW	Maximum at +70 °C
Stability: Absolute	$\Delta R \pm 0.05$ %	2000 h at +70 °C
Stability: Ratio	$\Delta R \pm 0.015$ %	2000 h at +70 °C
Voltage Coefficient	0.1 ppm/V	-
Working Voltage	100 V max. not to exceed $\sqrt{P \times R}$	-
Operating Temperature Range	-55 °C to +125 °C	-
Storage Temperature Range	-55 °C to +150 °C	-
Noise	< -30 dB	-
Thermal EMF	0.08 μ V/ $^{\circ}$ C	-
Sheff Life Stability: Absolute	$\Delta R \pm 0.01$ %	1 year at +25 °C
Sheff Life Stability: Ratio	$\Delta R \pm 0.002$ %	1 year at +25 °C

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For technical questions, contact thinfilm@vishay.com

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