

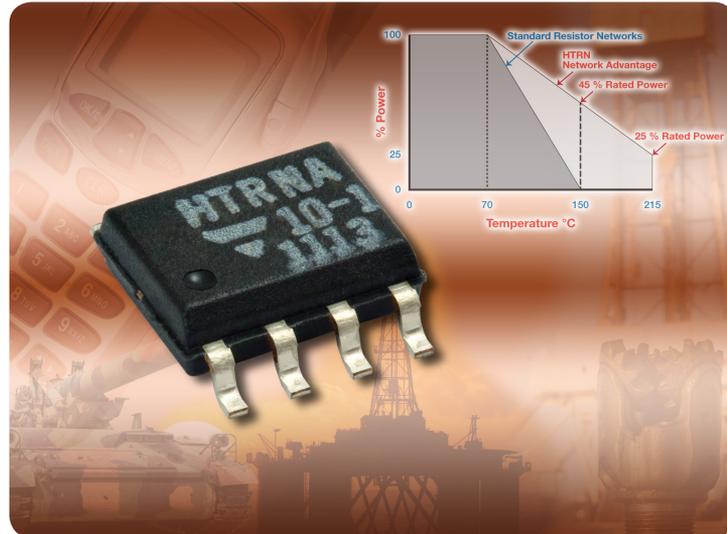


THIN FILM RESISTOR NETWORKS

HTRN

Resistors - High-Temperature Thin Film Networks

Molded, 50 mil Pitch, High-Temperature (up to 215 °C) Dual-In-Line Resistor, Thin Film Surface Mount Resistor Network



KEY BENEFITS

- Wide operating temperature range up to 215 °C
- Absolute TCR of ± 25 ppm/°C, TCR tracking 5 ppm/°C
- 0.1 % absolute tolerance with ratio tolerance to ± 0.05 %
- 1 k Ω to 100 k Ω resistance range, from 1:1 to 100:1 divider ratio
- Noise of < - 35 dB
- Voltage coefficients of 0.1 ppm/V
- Power rating 100 mW/element 400 mW/package

END PRODUCTS

- Oil exploration
- Down hole equipment
- High temperature stability applications

RESOURCES

- Datasheet: HTRN - <http://www.vishay.com/doc?60111>
- For technical questions, contact: thinfilm@vishay.com

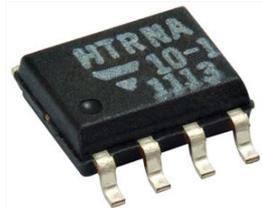
One of the World's Largest Manufacturers of
Discrete Semiconductors and Passive Components



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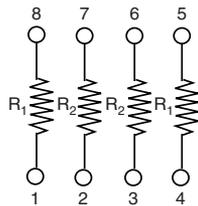
HTRN

Molded, 50 mil Pitch, High-Temperature (up to 215 °C) Dual-In-Line Resistor, Thin Film Surface Mount Resistor Network



HTRN series resistor networks feature four isolated resistors with standard 50 mil pitch lead spacing. HTRN is ideal to be used in oil/gas exploration industry, automotive under the hood applications, and aerospace engine control high temperature applications. The networks feature close TCR tracking and tight ratio tolerance and are ideally suited for unity gain operational amplifier circuitry. The standard resistance offering listed are available for immediate delivery.

SCHEMATIC



FEATURES

- Ratio tolerance to $\pm 0.05\%$
- Ratio stability $\pm 0.1\%$
- $-55\text{ }^{\circ}\text{C}$ to $215\text{ }^{\circ}\text{C}$ operating temperature range
- 0.068" (1.73 mm) maximum seated height
- Rugged molded case construction with no internal solder
- Low temperature coefficient ($\pm 25\text{ ppm}/^{\circ}\text{C}$)
- JEDEC MS-012 STD variation AA package
- Gold terminations for durable attach bonds
- Compliant to RoHS Directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL PERFORMANCE

TCR	ABSOLUTE	TRACKING
	25	5
TOL.	ABSOLUTE	RATIO
	0.1	0.05

STANDARD RESISTANCE OFFERING (R_1/R_2)

RATIO	R_1	R_2
100:1	100K	1K
50:1	50K	1K
25:1	25K	1K
20:1	20K	1K
10:1	10K	1K
5:1	10K	2K
2:1	10K	5K

Note

- Consult factory for additional values and schematics

STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Pin/Lead Number	8	-
Resistance Range	1000 Ω to 100 k Ω per resistor	-
TCR: Absolute	$\pm 25\text{ ppm}/^{\circ}\text{C}$	$-55\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$
TCR: Tracking	$\pm 5\text{ ppm}/^{\circ}\text{C}$	$-55\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$
Tolerance: Absolute	0.1 %	$+25\text{ }^{\circ}\text{C}$
Tolerance: Ratio	0.05 %	$+25\text{ }^{\circ}\text{C}$
Power Rating: Resistor	100 mW	Maximum at $+70\text{ }^{\circ}\text{C}$
Power Rating: Package	400 mW	Maximum at $+70\text{ }^{\circ}\text{C}$
Stability: Absolute	$\Delta R \pm 0.5\%$	2000 h at $+215\text{ }^{\circ}\text{C}$ at 25 % rated power
Stability: Ratio	$\Delta R \pm 0.1\%$	2000 h at $+215\text{ }^{\circ}\text{C}$ at 25 % rated power
Voltage Coefficient	0.1 ppm/V (typical)	-
Working Voltage	100 V max. not to exceed $\sqrt{P \times R}$	-
Operating Temperature Range	$-55\text{ }^{\circ}\text{C}$ to $+215\text{ }^{\circ}\text{C}$	-
Storage Temperature Range	$-55\text{ }^{\circ}\text{C}$ to $+215\text{ }^{\circ}\text{C}$	-
Noise	$< -30\text{ dB}$	-
Thermal EMF	0.08 $\mu\text{V}/^{\circ}\text{C}$	-
Shelf Life Stability: Absolute	$\Delta R \pm 0.01\%$	1 year at $+25\text{ }^{\circ}\text{C}$
Shelf Life Stability: Ratio	$\Delta R \pm 0.002\%$	1 year at $+25\text{ }^{\circ}\text{C}$

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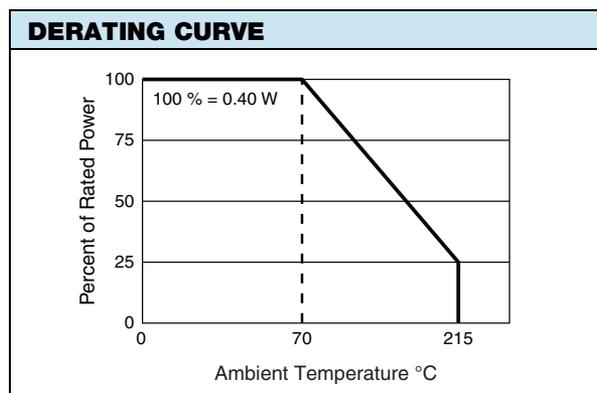
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DIMENSIONS AND IMPRINTING in inches and millimeters			
	DIMENSION	INCHES	MILLIMETERS
	A	0.157	3.99
	B	0.0165 ± 0.0025	0.4 ± 0.06
	C	0.050	1.27
	D	0.195 max.	4.93
	E	0.008 ± 0.001	0.20 ± 0.03
	F	0.028 ± 0.001	0.71 ± 0.02
	G	0.239 ± 0.005	6.07 ± 0.13
	H	0.068 max.	1.73
	I	0.008 ± 0.002	0.22 ± 0.06
∅	2° to 6°	2° to 6°	

Note

- Marking - Vishay symbol, part number from ordering information

MECHANICAL SPECIFICATIONS	
Resistive Element	Passivated nichrome
Substrate Material	Silicon
Body	Molded epoxy
Terminals	Copper
Termination Finish	Plated Ni/Pd/Au



GLOBAL PART NUMBER INFORMATION										
New Global Part Numbering: HTRN5-1UF										
<table border="1"> <tr> <td>H</td> <td>T</td> <td>R</td> <td>N</td> <td>5</td> <td>-</td> <td>1</td> <td>U</td> <td>F</td> </tr> </table>	H	T	R	N	5	-	1	U	F	
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