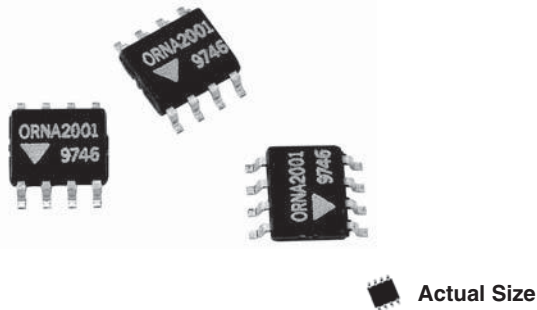
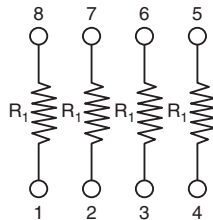


Molded, 50 mil Pitch, Dual-In-Line Thin Film Resistor, Surface Mount Network



ORN series resistor networks feature four isolated resistors with standard 50 mil pitch lead spacing. 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

- 0.068" (1.73 mm) maximum seated height
- Rugged molded case construction with no internal solder
- Low temperature coefficient (± 25 ppm/ $^{\circ}\text{C}$)
- JEDEC MS-012 STD variation AA package
- Compliant to RoHS Directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS*
COMPLIANT
HALOGEN
FREE

Note

* Pb containing terminations are not RoHS compliant, exemptions may apply

TYPICAL PERFORMANCE

	ABSOLUTE	TRACKING
TCR	25	5
	ABSOLUTE	RATIO
TOL.	0.1	0.05

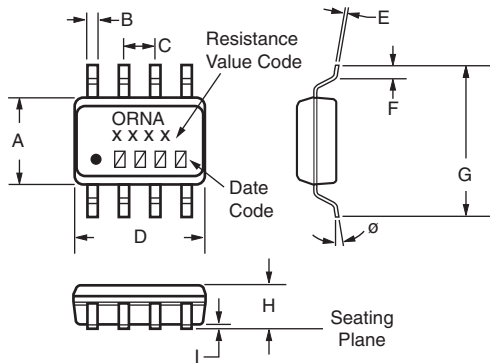
STANDARD RESISTANCE OFFERING ($R_1 =$)

49.9 Ω	10 k Ω
100 Ω	20 k Ω
500 Ω	50 k Ω
1 k Ω	100 k Ω
2 k Ω	200 k Ω
4.99 k Ω	500 k Ω
5 k Ω	

Note

- Consult factory for additional values and schematics

STANDARD ELECTRICAL SPECIFICATIONS		
TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Pin/Lead Number	8	-
Resistance Range	33 Ω to 500 k Ω per resistor	-
TCR: Absolute	± 25 ppm/ $^{\circ}\text{C}$	- 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$
TCR: Tracking	± 5 ppm/ $^{\circ}\text{C}$	- 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$
Tolerance: Absolute	± 0.05 % to ± 1.0 %	+ 25 $^{\circ}\text{C}$
Tolerance: Ratio	± 0.01 % to ± 0.5 %	+ 25 $^{\circ}\text{C}$
Power Rating: Resistor	100 mW	Maximum at + 70 $^{\circ}\text{C}$
Power Rating: Package	400 mW	Maximum at + 70 $^{\circ}\text{C}$
Stability: Absolute	$\Delta R \pm 0.05$ %	2000 h at + 70 $^{\circ}\text{C}$
Stability: Ratio	$\Delta R \pm 0.015$ %	2000 h at + 70 $^{\circ}\text{C}$
Voltage Coefficient	0.1 ppm/V (typical)	-
Working Voltage	100 V max. not to exceed $\sqrt{P \times R}$	-
Operating Temperature Range	- 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$	-
Storage Temperature Range	- 55 $^{\circ}\text{C}$ to + 150 $^{\circ}\text{C}$	-
Noise	< - 30 dB	-
Thermal EMF	0.08 $\mu\text{V}/^{\circ}\text{C}$	-
Shelf Life Stability: Absolute	$\Delta R \pm 0.01$ %	1 year at + 25 $^{\circ}\text{C}$
Shelf Life Stability: Ratio	$\Delta R \pm 0.002$ %	1 year at + 25 $^{\circ}\text{C}$

DIMENSIONS AND IMPRINTING in inches and millimeters


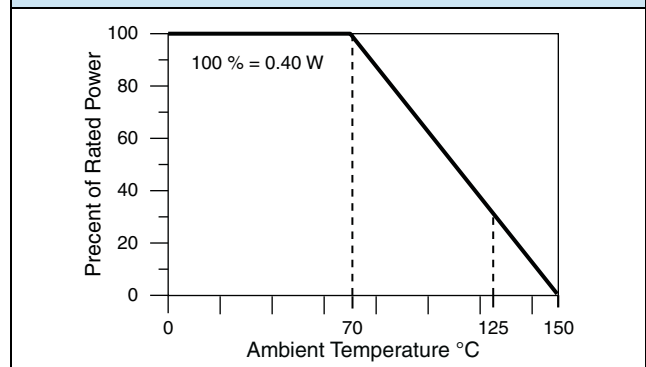
DIMENSION	INCHES	MILLIMETERS
A	0.157	3.99
B	0.0165 ± 0.0025	0.4 ± 0.06
C	0.050	1.27
D	0.195 max.	4.93
E	0.008 ± 0.001	0.20 ± 0.03
F	0.028 ± 0.001	0.71 ± 0.02
G	0.239 ± 0.005	6.07 ± 0.13
H	0.068 max.	1.73
I	0.008 ± 0.002	0.22 ± 0.06
Ø	2° to 6°	2° to 6°

Note

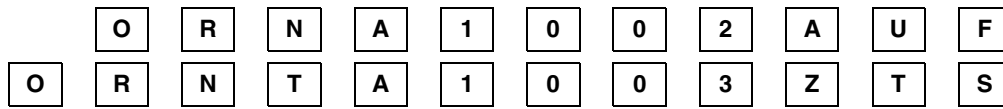
- Marking - Vishay symbol, part number from ordering information

MECHANICAL SPECIFICATIONS

Resistive Element	Passivated nichrome
Substrate Material	Silicon
Body	Molded epoxy
Terminals	Copper alloy
Lead (Pb)-free Option	100 % matte tin
Tin Lead Option	Sn90
Tin Lead and Lead (Pb)-free Finish	Plated

DERATING CURVE

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: ORNA1002AUF



GLOBAL MODEL (3 or 4 digits)	SCHEMATIC	RESISTANCE	TOLERANCE AND RATIO TOLERANCE	PACKAGING																
ORN (Tin lead) ORNT (Lead (Pb)-free) (e3)	A = 4 isolated equal resistors	The first 3 digits are significant figures and the last digit specifies the number of zeros to follow. R designates the decimal point. Example: 1002 = 10 kΩ 1003 = 100 kΩ 4991 = 4.99 kΩ 50R0 = 50 Ω	<table border="1"> <thead> <tr> <th>Abs. Tol.</th> <th>Ratio</th> </tr> </thead> <tbody> <tr> <td>A = ± 0.1 % ⁽³⁾</td> <td>± 0.05 %</td> </tr> <tr> <td>B = ± 0.1 %</td> <td>± 0.1 %</td> </tr> <tr> <td>C = ± 0.25 %</td> <td>± 0.1 %</td> </tr> <tr> <td>D = ± 0.5 %</td> <td>± 0.1 %</td> </tr> <tr> <td>F = ± 1 %</td> <td>± 0.5 %</td> </tr> <tr> <td>Q = ± 0.05 % ⁽¹⁾</td> <td>± 0.01 %</td> </tr> <tr> <td>Z = ± 0.1 % ⁽¹⁾</td> <td>± 0.025 %</td> </tr> </tbody> </table>	Abs. Tol.	Ratio	A = ± 0.1 % ⁽³⁾	± 0.05 %	B = ± 0.1 %	± 0.1 %	C = ± 0.25 %	± 0.1 %	D = ± 0.5 %	± 0.1 %	F = ± 1 %	± 0.5 %	Q = ± 0.05 % ⁽¹⁾	± 0.01 %	Z = ± 0.1 % ⁽¹⁾	± 0.025 %	TAPE AND REEL T0 = 100 min., 100 mult T1 = 1000 min., 1000 mult ⁽²⁾ T3 = 300 min., 300 mult T5 = 500 min., 500 mult TF = Full reel 3000 TS = 100 min., 1 mult UF = TUBED
Abs. Tol.	Ratio																			
A = ± 0.1 % ⁽³⁾	± 0.05 %																			
B = ± 0.1 %	± 0.1 %																			
C = ± 0.25 %	± 0.1 %																			
D = ± 0.5 %	± 0.1 %																			
F = ± 1 %	± 0.5 %																			
Q = ± 0.05 % ⁽¹⁾	± 0.01 %																			
Z = ± 0.1 % ⁽¹⁾	± 0.025 %																			
Historical Part Number example: ORNA1001F (for reference purposes only)																				
<table border="1"> <tr><td>ORN</td></tr> <tr><td>SERIES</td></tr> </table>	ORN	SERIES	<table border="1"> <tr><td>A</td></tr> <tr><td>SCHEMATIC</td></tr> </table>	A	SCHEMATIC	<table border="1"> <tr><td>1001</td></tr> <tr><td>RESISTANCE</td></tr> </table>	1001	RESISTANCE	<table border="1"> <tr><td>F</td></tr> <tr><td>TOLERANCE AND RATIO TOLERANCE</td></tr> </table>		F	TOLERANCE AND RATIO TOLERANCE								
ORN																				
SERIES																				
A																				
SCHEMATIC																				
1001																				
RESISTANCE																				
F																				
TOLERANCE AND RATIO TOLERANCE																				

Notes

- Tol. available 1K and up
- Preferred packaging code
- Ratio tolerance available 250 Ω and up



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.