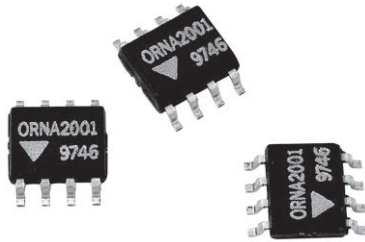


Molded, 50 mil Pitch, Dual-In-Line Thin Film Resistor, Surface-Mount Network



Actual Size

ORN series resistor networks feature 4 isolated resistors or 7 bussed 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.

FEATURES

- 0.068" (1.73 mm) maximum seated height
- Rugged molded case construction with no internal solder
- Low temperature coefficient (± 25 ppm/ $^{\circ}$ C)
- JEDEC[®] MS-012 STD variation AA package
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS*
Available
HALOGEN FREE

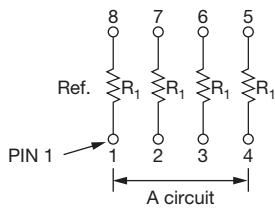
Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

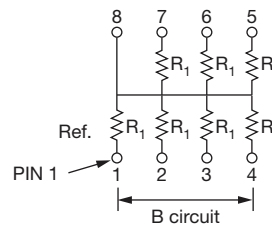
TYPICAL PERFORMANCE

	ABSOLUTE	TRACKING
TCR	25	5
	ABSOLUTE	RATIO
TOL.	0.1	0.05

SCHEMATIC



The A circuit provides a choice of 4 nominally equal resistors with each resistor isolated from all others and wired directly across.



The B circuit provides 7 nominally equal resistors, each connected between a common lead (8) and a discrete PC board pin.

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 (isolated) per resistor 33 Ω to 250 k Ω (bussed) per resistor	-
Resistance for Jumper	≤ 50 m Ω	-
TCR: Absolute	± 25 ppm/ $^{\circ}$ C	-55 $^{\circ}$ C to +125 $^{\circ}$ C
TCR: Tracking	± 5 ppm/ $^{\circ}$ C	-55 $^{\circ}$ C to +125 $^{\circ}$ C
Tolerance: Absolute	± 0.05 % to ± 1.0 %	+25 $^{\circ}$ C
Tolerance: Ratio	± 0.01 % to ± 0.5 %	+25 $^{\circ}$ C
Power Rating: Resistor	100 mW	Maximum at +70 $^{\circ}$ C
Power Rating: Package	400 mW	Maximum at +70 $^{\circ}$ C
Stability: Absolute	$\Delta R \pm 0.05$ %	2000 h at +70 $^{\circ}$ C
Stability: Ratio	$\Delta R \pm 0.015$ %	2000 h at +70 $^{\circ}$ C
Voltage Coefficient	0.1 ppm/V (typical)	-
Working Voltage	100 V max. not to exceed $\sqrt{P \times R}$	-
Operating Temperature Range	-55 $^{\circ}$ C to +125 $^{\circ}$ C	-
Storage Temperature Range	-55 $^{\circ}$ C to +150 $^{\circ}$ C	-
Noise	< -30 dB	-
Thermal EMF	0.08 μ V/ $^{\circ}$ C	-
Shelf Life Stability: Absolute	$\Delta R \pm 0.01$ %	1 year at +25 $^{\circ}$ C
Shelf Life Stability: Ratio	$\Delta R \pm 0.002$ %	1 year at +25 $^{\circ}$ C

Note

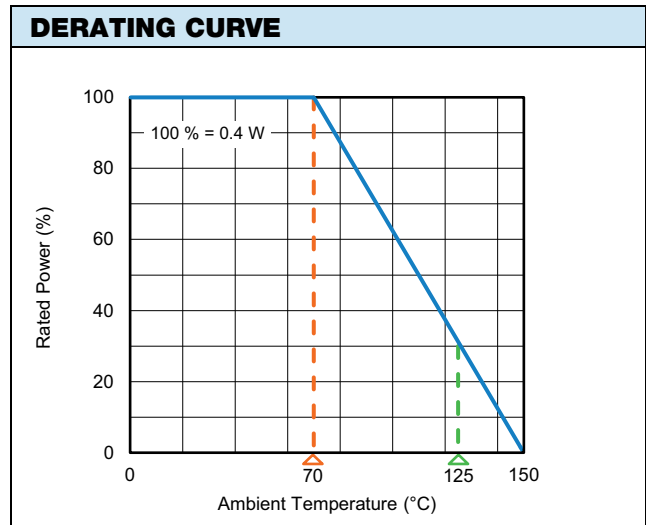
- TCR and TCR tracking are not available for parts with zero ohm jumpers

DIMENSIONS AND IMPRINTING in inches and millimeters			
	DIMENSION	INCHES	MILLIMETERS
	A	0.154 \pm 0.003	3.90 \pm 0.09
	B	0.016 \pm 0.002	0.4 \pm 0.06
	C	0.050	1.27
	D	0.193 \pm 0.004	4.90 \pm 0.1
	E	0.008 \pm 0.001	0.20 \pm 0.03
	F	0.032 \pm 0.016	0.81 \pm 0.4
	G	0.236 \pm 0.008	6.00 \pm 0.2
	H	0.068 max.	1.73
	I	0.007 \pm 0.003	0.18 \pm 0.07
	\emptyset	2 $^{\circ}$ to 6 $^{\circ}$	2 $^{\circ}$ to 6 $^{\circ}$

Notes

- Marking - Vishay symbol, part number from ordering information
- (1) A for isolated or B for bussed

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



GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: ORNA1002AUF

O	R	N	A	1	0	0	2	A	U	F	
O	R	N	T	B	1	0	0	3	Z	T	S
O	R	N	T	A	0	0	0	0	N	T	1

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 B = 7 bussed 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 0000 = 4 isolated jumpers ⁽⁴⁾	<table border="1" style="width: 100%; border-collapse: collapse;"> <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> <p>N = for jumpers only</p>	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 %	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>TAPE AND REEL</th> </tr> </thead> <tbody> <tr> <td>T0 = 100 min., 100 mult.</td> </tr> <tr> <td>T1 = 1000 min., 1000 mult. ⁽²⁾</td> </tr> <tr> <td>T3 = 300 min., 300 mult.</td> </tr> <tr> <td>T5 = 500 min., 500 mult.</td> </tr> <tr> <td>TF = full reel 3000</td> </tr> <tr> <td>TS = 100 min., 1 mult.</td> </tr> </tbody> </table> <p>UF = TUBED</p>	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.
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.																											

Historical Part Number Example: ORNA1001F (for reference purposes only)

ORN	A	1001	F
SERIES	SCHEMATIC	RESISTANCE	TOLERANCE AND RATIO TOLERANCE

Notes

- ⁽¹⁾ Tol. available 1K and up
- ⁽²⁾ Preferred packaging code
- ⁽³⁾ Ratio tolerance available 250 Ω and up
- ⁽⁴⁾ Jumpers only available in A schematic



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.