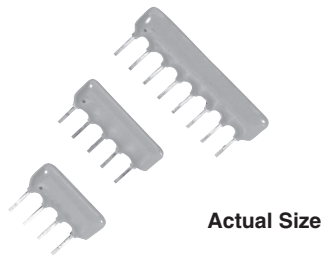


## Conformal, Single-In-Line Resistor Networks



These networks are designed to be used in analog circuits in conjunction with operational amplifiers. In addition to the standard models, Vishay also offers semi-custom or custom networks.

### FEATURES

- Standard design - no NRE
- Low TCR (10 ppm/°C)
- Excellent TCR tracking (< 2 ppm/°C)
- Low noise (< - 35 dB)
- High stability (0.005 % on ratio, after 2000 h at Pn at + 70 °C)



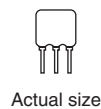
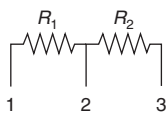
RoHS  
COMPLIANT

### TYPICAL PERFORMANCE

	ABS	TRACKING
TCR	10 ppm/°C	< 2 ppm/°C
	ABS	RATIO
TOL.	0.1 %	0.02 %

### SCHEMATIC

$$R_1 = R_2$$



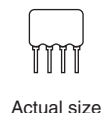
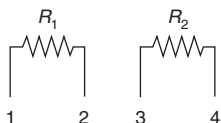
Actual size

### TWO EQUAL RESISTORS

#### ORDERING INFORMATION

$R_1 = 1\text{ k}\Omega$	TAS 209	50 k $\Omega$	TAS 214
2 k $\Omega$	TAS 210	100 k $\Omega$	TAS 215
5 k $\Omega$	TAS 211	200 k $\Omega$	TAS 216
10 k $\Omega$	TAS 212	500 k $\Omega$	TAS 217
20 k $\Omega$	TAS 213	1 M $\Omega$	TAS 218

$$R_1 = R_2$$



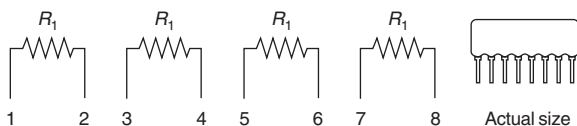
Actual size

### TWO EQUAL RESISTORS

#### ORDERING INFORMATION

$R_1 = 1\text{ k}\Omega$	TAS 365
10 k $\Omega$	TAS 363
100 k $\Omega$	TAS 348

$$R_1$$



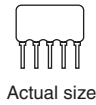
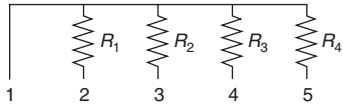
Actual size

### FOUR EQUAL RESISTORS

#### ORDERING INFORMATION

$R_1 = 1\text{ k}\Omega$	TAS 329
5 k $\Omega$	TAS 1002
10 k $\Omega$	TAS 158
100 k $\Omega$	TAS 288

$$R_1 = R_2 = R_3 = R_4$$



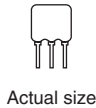
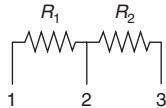
**FOUR EQUAL RESISTORS, ONE COMMON**

**ORDERING INFORMATION**

$R_1 = 10\text{ k}\Omega$	TAS 366
100 k $\Omega$	TAS 367

$$R_1 + R_2 = 10\text{ k}\Omega, 100\text{ k}\Omega, 1\text{ M}\Omega$$

$$\frac{R_1 + R_2}{R_2} = 10$$



**RATIO DIVIDER 10:1**

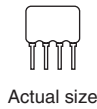
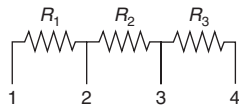
**ORDERING INFORMATION**

$R_1 + R_2 = 9\text{ k}\Omega + 1\text{ k}\Omega = 10\text{ k}\Omega$	TAS 280
90 k $\Omega + 10\text{ k}\Omega = 100\text{ k}\Omega$	TAS 193
900 k $\Omega + 100\text{ k}\Omega = 1\text{ M}\Omega$	TAS 281

$$R_1 + R_2 + R_3 = 10\text{ k}\Omega, 100\text{ k}\Omega$$

$$\frac{R_1 + R_2 + R_3}{R_3} = 100$$

$$\frac{R_1 + R_2 + R_3}{R_2 + R_3} = 10$$



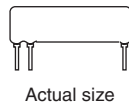
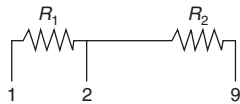
**RATIO DIVIDER 10:1, 100:1**

**ORDERING INFORMATION**

$R_1 + R_2 + R_3 = 100\text{ k}\Omega$	TAS 330
with $R_1 = 90\text{ k}\Omega$	
$R_2 = 9\text{ k}\Omega$	
$R_3 = 1\text{ k}\Omega$	

$$R_1 + R_2 = 10\text{ M}\Omega$$

$$\frac{R_1 + R_2}{R_1} = 100$$

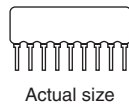
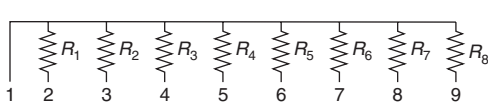


**RATIO DIVIDER 100:1**

**ORDERING INFORMATION**

$R_1 + R_2 = 10\text{ M}\Omega$	TAS 112
---------------------------------	---------

$$R_1 = R_2 = R_3 = R_4 = R_5 = R_6 = R_7 = R_8$$

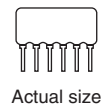
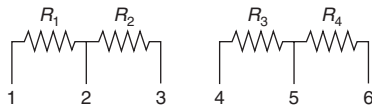


**FOUR EQUAL RESISTORS**

**ORDERING INFORMATION**

$R_1 = 10\text{ k}\Omega$	TAS 368
100 k $\Omega$	TAS 369

$$\frac{R_2}{R_1} = \frac{R_4}{R_3} = 10$$

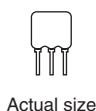
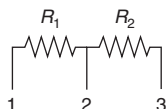


**DIVIDER NETWORK 10:1**

**ORDERING INFORMATION**

$R_1 = 10\text{ k}\Omega$	TAS 220
---------------------------	---------

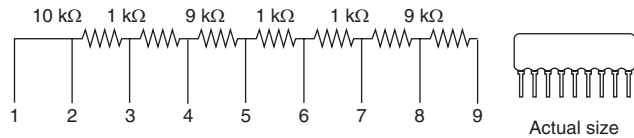
$$\frac{R_1}{R_2} = 10$$



**DIVIDER NETWORK 10:1**

**ORDERING INFORMATION**

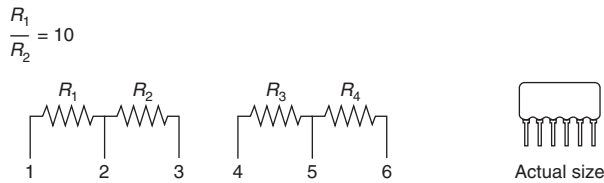
$R_1 = 100\text{ k}\Omega$	TAS 282
1 M $\Omega$	TAS 283



### EIGHT RESISTOR NETWORKS

#### ORDERING INFORMATION

TAS 272



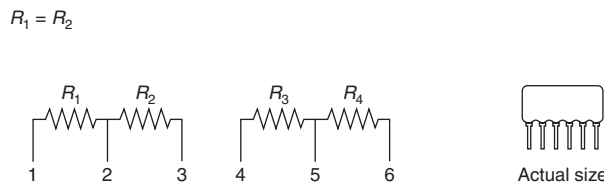
### DIVIDER NETWORK 10:1

#### ORDERING INFORMATION

$R_1 = 10 \text{ k}\Omega$  TAS 328

100  $\text{k}\Omega$  TAS 284

1  $\text{M}\Omega$  TAS 285



### DIVIDER NETWORK 1:1

#### ORDERING INFORMATION

$R_1 = 5 \text{ k}\Omega$  TAS 225

10  $\text{k}\Omega$  TAS 286

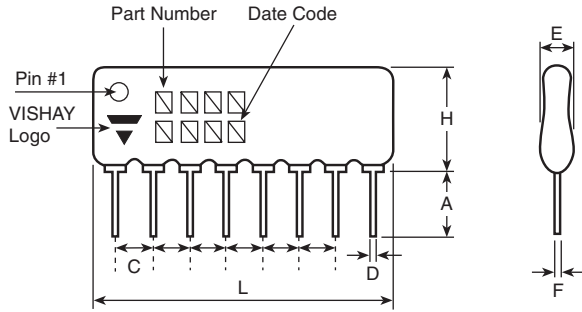
100  $\text{k}\Omega$  TAS 219

1  $\text{M}\Omega$  TAS 287

### STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
MATERIAL	PASSIVATED NICHROME	
TCR:	Tracking	< 2 ppm/°C
	Absolute	± 15 ppm/°C ± 10 ppm/°C
Tolerance:	Ratio	± 0.05 % (± 0.02 or ± 0.01 % on request)
	Absolute	± 0.1 %
Power rating:	Resistor	100 mW
	Package	Varies with size
Stability ( $\Delta R$ ratio)	0.005 %	2000 h at + 70 °C at Pn
Voltage coefficient	< 0.002 ppm/V	
Working voltage	100 V	
Operating temperature range	- 40 °C to + 125 °C	
Storage temperature range	- 55 °C to + 125 °C	
Noise	- 35 dB typical	
Thermal EMF	0.1 $\mu\text{V}/^\circ\text{C}$	
Shelf life stability	50 ppm maximum	1 year

**DIMENSIONS**



Marking: The pin 1, series and model, Vishay trademark, manufacturing date (year, week)

DIMENSION	INCHES	MILLIMETERS
A	0.124	3.17 minimum
C	0.100	2.54
D	0.020	0.51
H	0.260	6.62 maximum
E	0.100	2.54 maximum
F	0.010	0.25

PIN COUNT	3	4	5	6	7	8	9	10
L max. Inches	0.320	0.420	0.520	0.620	0.720	0.820	0.920	1.020
Millimeters	8.14	10.68	13.23	15.78	18.32	20.87	23.40	25.95

MECHANICAL SPECIFICATIONS	
Resistive element	Passivated Nichrome
Substrate material	Alumina
Body	Epoxy-conformal coating
Terminals	Tin/silver on Cu alloy
Marking resistance to solvents	Laser marking

**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: TAS214BW (preferred part number format)

T	A	S	2	1	4	B	W
GLOBAL MODEL	REFERENCE	ABS. TOLERANCE	RATIO TOLERANCE				
TAS	(see list)	B = 0.1 %	W = 0.05 % P = 0.02 %				

Custom Network: CNS 1128

CNS	1128
GLOBAL MODEL	REFERENCE

Historical Part Number example: TAS 214 50K 0.1 % 0.05 % e2 (will continue to be accepted)

TAS	214	50K	0.1 %	0.05 %	e2
HISTORICAL MODEL	REFERENCE	OHMIC VALUE	ABS. TOLERANCE	RATIO TOLERANCE	RoHS



## Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.