



VISHAY INTERTECHNOLOGY, INC.

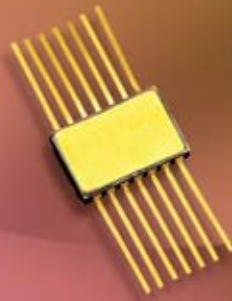
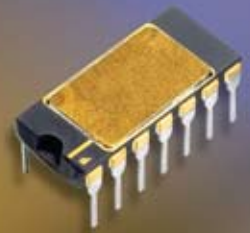
THIN FILM RESISTORS

QUICK-NET® PROTOTYPES

Thin Film Precision Resistor Networks

✓ **NO NRE**

✓ **EXPRESS
DELIVERY**



PRODUCT OVERVIEW



Prototype Quick-Net® Precision Resistor Networks

Vishay's Quick-Net® Precision Resistor Network Prototype Service Allows Designers to Specify Tight Ratio Tolerances of $\pm 0.01\%$, Absolute Tolerances of $\pm 0.1\%$, and TCR Tracking of $\pm 5\text{ ppm}/^\circ\text{C}$

Service Features Two-Week Turnaround and No NRE Charges

Quick-Net®, the industry's prototyping service for precision resistor networks to provide designers and manufacturers with a two-week turnaround without non-recurring engineering (NRE) charges. Quick-Net dramatically shortens the process of bringing end products requiring precision analog circuitry to market, while allowing designers to specify improved ratio and TCR tracking specifications.

Precision resistor networks, which integrate a number of resistive components in a single package in various configurations, are an increasingly popular solution for saving space and reducing assembly costs for a wide range of analog applications requiring precision performance.

While resistor network prototyping typically requires up to 10 weeks to produce a single sample, Quick-Net provides a two-week turnaround, with certain styles prototyped in just 72 hours, and no NRE charges.

To meet the requirements of their custom designs, an easy-to-complete fax form allows designers to specify the desired package format, schematic pin-out, and required electrical performance. Resistance ranges are package specific and typically range from $100\ \Omega$ to $100\ \text{k}\Omega$ for most formats, with values up to $1\ \text{M}\Omega$ available in single in-line formats. Available performance limits include ratio tolerances down to $\pm 0.01\%$ for values (over $1\ \text{k}\Omega$), absolute tolerances of $\pm 0.1\%$, TCR tracking of $\pm 5\ \text{ppm}/^\circ\text{C}$ at a temperature range of $-55\ ^\circ\text{C}$ to $+125\ ^\circ\text{C}$, and a maximum wattage of $100\ \text{mW}/\text{element}$.

Quick-Net offers designers a broad choice of network standards and package types, including SIP, DIP, flatpack, and leadless chip carriers. The networks are available with either Tantalum Nitride or passivated nichrome resistor film.

Electrical	
Absolute Tolerance	1.0 %, 0.5 %, 0.10 %
Ratio Tolerance	0.10 % to 0.01 %* (Value Limited)
Absolute TCR	$\pm 25\ \text{ppm}/^\circ\text{C}$
TC Track	$\pm 5\ \text{ppm}/^\circ\text{C}$
Power	100 mW / Element

*0.01 % ratio tolerance for R values > 1000 ohms



Design Guidelines

Network Resistance Range Limits by Film Resistivity										
	Single-In-Line 3 - 10 Pin				Dual-In-Line 8, 14, 16, 18, 20 Pin			Flat-Pack 14, 16 Lead		
Package Format										
Resistance Film (Ω per square)	50	125	250	125	50	125	250	50	125	250
# of R per Network	2 - 9				2- 10			2 - 12		
Network Resistance Range (Ω)	100 - 91.5 K Ω	200 - 210.5 K Ω	400 - 455 K Ω	455 - 1 M Ω **	200 - 68 K Ω	200 - 130 K Ω	400 - 290 K Ω	200 - 68 K Ω	200 - 130 K Ω	400 - 290 K Ω
Network Ratio Limit (\pm %)	0.01 *	0.025	0.03	0.025	0.01 *	0.01	0.02	0.01 *	0.02	0.05

*0.01 % ratio tolerance for R values > 1000 ohms

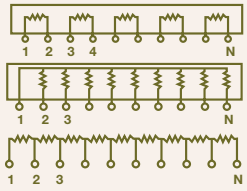
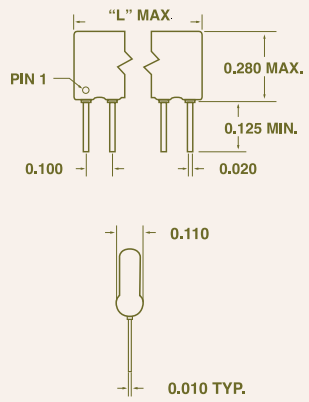
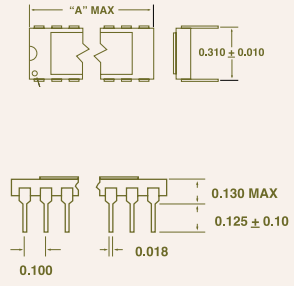
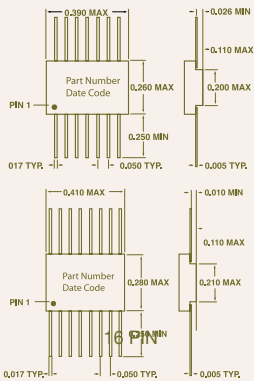
**Seated height 0.520"

Network resistance value is dictated by resistance film, available area, and geometry of the pattern. See network resistance range for limits on R values within a selected package.



Design Guidelines

Dimensions and Schematics Available


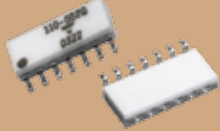
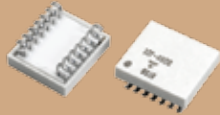
Single-In-Line 3 - 10 Pin	Dual-In-Line 8, 14, 16, 18, 20 Pin	Flat-Pack 14, 16 Lead
<p>Daisy Chained, Isolated, Pin One Common, Combinations Available</p> 	<p>Open to all combinations</p>	<p>Open to all combinations</p>
<p>Single in Line - Conformal Coated</p> 	<p>Dual in Line - Chip and Wire</p> 	<p>Flat Packs - Chip and Wire 14 PIN</p> 

Single-In-Line 3 - 10 Pin	
Number of Pins	Length "L" Dimension
3	0.320
4	0.420
5	0.520
6	0.620
7	0.720
8	0.820
9	0.920
10	1.020

Dual-In-Line 8, 14, 16, 18, 20 Pin	
Number of Pins	Length "L" Dimension
8	0.528
14	0.710
16	0.880
20	1.010



Design Guidelines

Network Resistance Range Limits by Film Resistivity								
	Leadless Chip Carrier 4, 16, 20, 24 Terminal			Surface Mount Gull Wing Gull Wing CSO (150 Mil SOIC) 6 - 20 Leads		Surface Mount J Lead J-Lead (220 Mil SOIC)		
Package Format								
Resistance Film (Ω per square)	50	125	250	50	125	50	125	250
# of R per Network	2 - 10			2 - 10		2 - 10		
Network Resistance Range (Ω)	200 - 68 K Ω	200 - 130 K Ω	400 - 290 K Ω	1000 - 42 K Ω	300 - 105 K Ω	200 - 68 K Ω	200 - 130 K Ω	400 - 290 K Ω
Network Ratio Limit (\pm %)	0.01 *	0.02	0.05	0.01 *	0.02	0.01 *	0.02	0.05

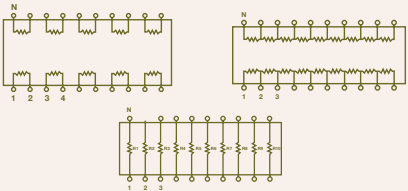
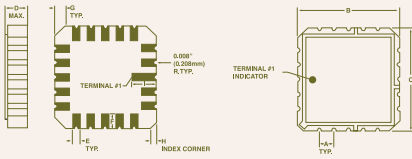
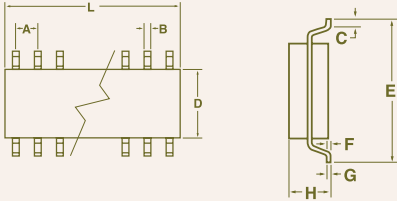
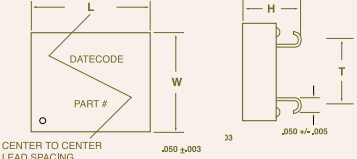
*0.01 % ratio tolerance for R values > 1000 ohms

Network resistance value is dictated by resistance film, available area, and geometry of the pattern. See network resistance range for limits on R values within a selected package.



Design Guidelines

Dimensions and Schematics Available

Leadless Chip Carrier 4, 16, 20, 24 Terminal	Surface Mount Gull Wing Gull Wing CSO (150 Mil SOIC) 6 - 20 Leads	Surface Mount J Lead J-Lead (220 Mil SOIC)
Isolated and Daisy Chained on Each Side, Customs	Isolated Straight Through or Daisy Chained/Isolated Each Side 	Open to all combinations
Leadless Chip Carrier - Chip and Wire 	Gull Wing CSO (150 Mil SOIC) 	J-Lead (220 Mil SOIC) 

Leadless Chip Carrier 4, 16, 20, 24 Terminal					
	A	B	C	D	E
16 Pin	0.050"	0.400"	0.300"	0.077"	0.025"
(mm)	1.27	7.62	7.62	1.96	0.635
20 Pin	0.050"	0.350"	0.350"	0.077"	0.025"
(mm)	1.27	8.89	8.89	1.96	0.635
24 Pin	0.050"	0.400"	0.400"	0.077"	0.025"
(mm)	1.27	10.16	10.16	1.96	0.635
	F	G	H	I	
16 Pin	0.050"	0.040"	0.020"	0.085"	
(mm)	1.27	1.02	0.508	2.16	
20 Pin	0.050"	0.040"	0.020"	0.085"	
(mm)	1.27	1.02	0.508	2.16	
24 Pin	0.050"	0.040"	0.020"	0.085"	
(mm)	1.27	1.02	0.508	2.16	

Dimension	Inches	Millimeters
A	0.050	1.27
B (Typ.)	0.015	0.38
C	0.017 - 0.005 + 0.010	0.432
D (Max.)	0.157	3.99
E	0.239	6.07
F (Min.)	0.005	0.13
G (Typ.)	0.006	0.15
H (Max)	0.070	1.72 MAX

Dual-In-Line 8, 14, 16, 18, 20 Pin				
LEADS	L	H	T	W
8	0.250	0.180	0.245	0.350
10	0.300	0.180	0.245	0.350
14	0.400	0.180	0.245	0.350
16	0.450	0.180	0.245	0.350
18	0.500	0.180	0.245	0.350

Number of Pins	Length "L" ± 0.01	Millimeters
6	0.150	3.81
8	0.200	5.08
10	0.250	6.35
12	0.300	7.62
14	0.350	8.89
16	0.400	10.16
18	0.450	11.43
20	0.500	12.70



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WORLDWIDE SALES CONTACTS

THE AMERICAS

UNITED STATES

VISHAY AMERICAS
ONE GREENWICH PLACE
SHELTON, CT 06484
UNITED STATES
PH: +1-402-563-6866
FAX: +1-402-563-6296

ASIA

SINGAPORE

VISHAY INTERTECHNOLOGY
ASIA PTE LTD.
25 TAMPINES STREET 92
KEPPEL BUILDING #02-00
SINGAPORE 528877
PH: +65-6788-6668
FAX: +65-6788-0988

P.R. CHINA

VISHAY TRADING (SHANGHAI) CO., LTD.
15D, SUN TONG INFOPORT PLAZA
55 HUAI HAI WEST ROAD
SHANGHAI 200030
P.R. CHINA
PH: +86-21-5258 5000
FAX: +86-21-5258 7979

JAPAN

VISHAY JAPAN CO., LTD.
MG IKENOHATA BLDG. 4F
1-2-18, IKENOHATA
TAITO-KU
TOKYO 110-0008
JAPAN
PH: +81-3-5832-6210
FAX: +81-3-5832-6260

EUROPE

GERMANY

VISHAY EUROPE SALES GMBH
GEHEIMRAT-ROSENTHAL-STR. 100
95100 SELB
GERMANY
PH: +49-9287-71-0
FAX: +49-9287-70435

FRANCE

VISHAY S.A.
199, BLVD DE LA MADELEINE
06003 NICE, CEDEX 1
FRANCE
PH: +33-4-9337-2920
FAX: +33-4-9337-2997

UNITED KINGDOM

VISHAY LTD.
PALLION INDUSTRIAL ESTATE
SUNDERLAND SR4 6SU
UNITED KINGDOM
PH: +44-191-514-4155
FAX: +44-191-567-8262