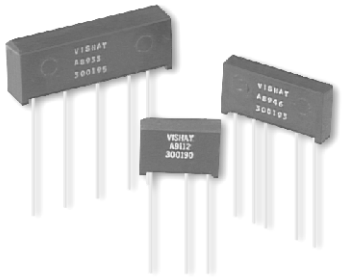
Ultra High Precision Z-Foil Voltage Divider and Network Resistor with TCR Tracking to 0.1 ppm/°C and Resistance Match to ± 0.005% (50 ppm)



Any value at any tolerance available within resistance range

INTRODUCTION

The 2R, 3R, 4R Resistor Networks are the designers first choice for ultra high precision, stable and reliable Voltage Divider or Network.

The Z-Foil Technology provides a significant reduction of the resistive components sensitivity to ambient temperature variations (TCR) and applied power changes, self-heating (PCR). 0.05 ppm/°C Absolute TCR removes errors due to temperature gradients.

The 2R, 3R, 4R provide a unique, inherent combination of performance characteristics resulting in excellent performance and high reliability, satisfying the needs of today's expanding requirements.

The availability of low absolute TCR and low PCR, provides a good cost solution for the variability of other components when compiling the total error budget.

Our Application Engineering Department is available to advise and to make recommendations for non-standard technical requirements and special applications, please do not hesitate to contact us.

FIGURE 1 - POWER DERATING CURVE

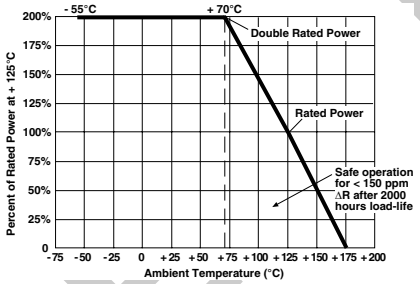
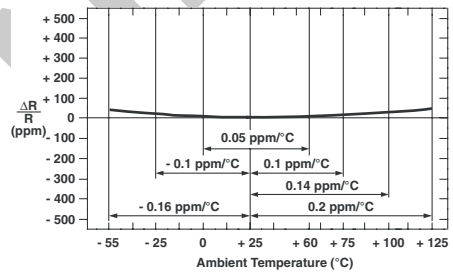


FIGURE 2 - TYPICAL TCR CURVE Z-FOIL



FEATURES

- Resistance Range each resistor: 1Ω to 150KΩ (Any ohmic value ratio is available within resistance range)
- Non Inductive/Capacitive design
- Low Temperature Coefficient of Resistance (TCR) Absolute:
  ± 0.05 ppm/°C (Industrial range)
  ± 0.2 ppm/°C (MIL range), Tracking 0.1 ppm/°C
- Power Coefficient "ΔR due to self heating": 5 ppm at rated power
- Tolerance: Absolute and Resistance Match to 0.005%
- Resistance Ratio Stability: at 0.05W @ + 25°C to 0.001%
- Electrostatic Discharge (ESD) above 25 000 Volts
- Short time overload ≤ 0.002%
- Power Rating at + 125°C: 0.3W
- Thermal EMF: 0.05µV/°C
- Non hot spot design
- Current Noise: < - 40dB
- Rise time: 1ns without ringing
- Non Inductive: < 0.08µH
- Voltage Coefficient < 0.1 ppm/V
- For better performances please contact us
- Terminal Finishes available:
  Lead (Pb)-free
  Tin/Lead Alloy

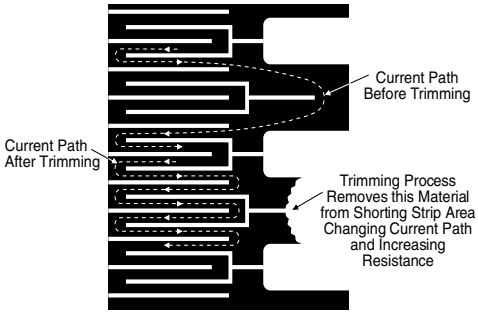
Pb-free

RoHS COMPLIANT

APPLICATIONS

- Instrumentation Amplifiers
- Bridge Networks
- Differential Amplifiers
- Military, Airborne and Space
- EB Applications
- Down-Hole (high temperature)
- Medical
- Automatic Test Equipment (ATE)

FIGURE 3 - TRIMMING TO VALUES CONCEPTUAL ILLUSTRATION)



NOTE: Foil shown in black, etched spaces in white

THIS PRODUCT

SALES

• AMERICAS: foilsales.usa@vishay.com • ASIA/JAPAN: foilsales.asia@vishay.com • UK/HOLLAND/SCANDINAVIA: foilsales.eunorth@vishay.com
• GERMANY/CZECH REPUBLIC/AUSTRIA: foilsales.eucentral@vishay.com • FRANCE/SWITZERLAND/SOUTHERN EUROPE: foilsales.eusouth@vishay.com • ISRAEL: foilsales.israel@vishay.com

TABLE 1 - TYPICAL PERFORMANCE CHARACTERISTICS*		
TCR Tracking between all resistors (Any ohmic value ratio is available within resistance range)	available to: typical maximum	 0.1 ppm/°C 0.5 ppm/°C depends on resistance value
Ratio Tolerance between all resistors	available to:	0.005 % (50 ppm) depends on resistance value
Max Ambient Temp. at Rated Wattage		+ 125°C
Max Ambient Temp. at Zero Power		+ 175°C
Thermal Shock	ΔR ΔRatio	0.002% (20 ppm) 0.002% (20 ppm)
Low Temperature Operation	ΔR ΔRatio	0.005% (50 ppm) 0.002% (20 ppm)
Short Time Overload	ΔR ΔRatio	0.002% (20 ppm) 0.002% (20 ppm)
Terminal Strength	ΔR ΔRatio	0.001% (10 ppm) 0.001% (10 ppm)
Resistance to Soldering Heat	ΔR ΔRatio	0.002% (20 ppm) 0.001% (10 ppm)
Moisture Resistance	ΔR ΔRatio	0.003% (30 ppm) 0.003% (30 ppm)
Shock	ΔR ΔRatio	0.001% (10 ppm) 0.001% (10 ppm)
Vibration High Frequency	ΔR ΔRatio	0.001% (10 ppm) 0.001% (10 ppm)
Life 0.3W at + 125°C 0.02W at + 60°C 0.05W at + 25°C	ΔR ΔRatio ΔR ΔRatio ΔR ΔRatio	0.01% (100 ppm) 0.01% (100 ppm) 0.003% (30 ppm) 0.001% (10 ppm) 0.002% (20 ppm) 0.001% (10 ppm)
High Temperature Exposure	ΔR ΔRatio	0.01% (100 ppm) 0.01% (100 ppm)
Low Temperature Storage	ΔR ΔRatio	0.002% (20 ppm) 0.002% (20 ppm)
Insulation Resistance		> 10^4MΩ
Dielectric Withstanding Voltage		No Change
Voltage Coefficient	ΔR ΔRatio	0.1ppm/V 0.1ppm/V
Noise	N/A	- 40dB
Inductance	N/A	0.08μH
Capacitance	N/A	0.5pF
Rise Time	N/A	1ns at 1kΩ
Thermal EMF lead to lead	N/A	0.04μV/°C
Thermal EMF air circulation	N/A	0.02μV/°C
Thermal EMF power	N/A	0.1μV for 20mW
Shelf Life	ΔR ΔRatio	25 ppm/year 10 ppm/year

* Measurement error 0.001 R

NEW PRODUCT

SALES
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FIGURE 4 - VISHAY MODEL 300198 NETWORK

APPLICATION EXAMPLE

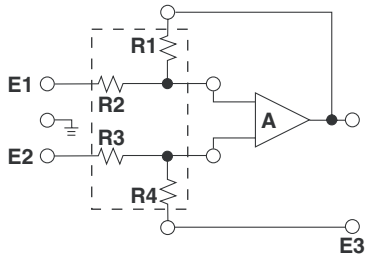
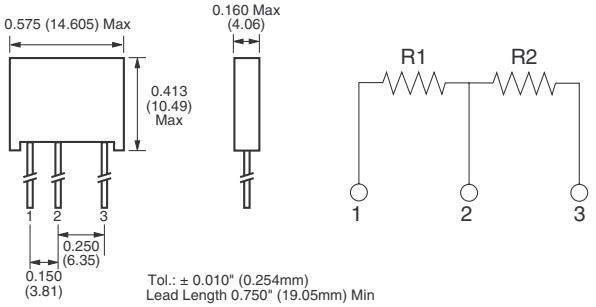
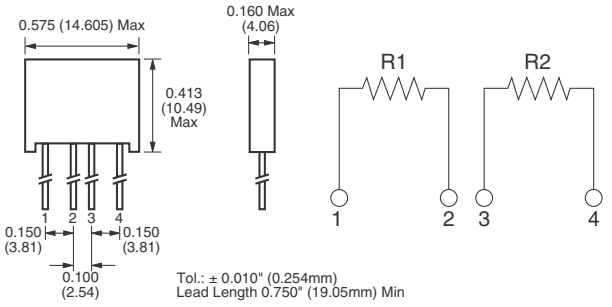


FIGURE 5 - MOLDED 2R, 3R, 4R RESISTOR NETWORK DIMENSIONS AND CIRCUIT DESIGN in inches (millimeters)

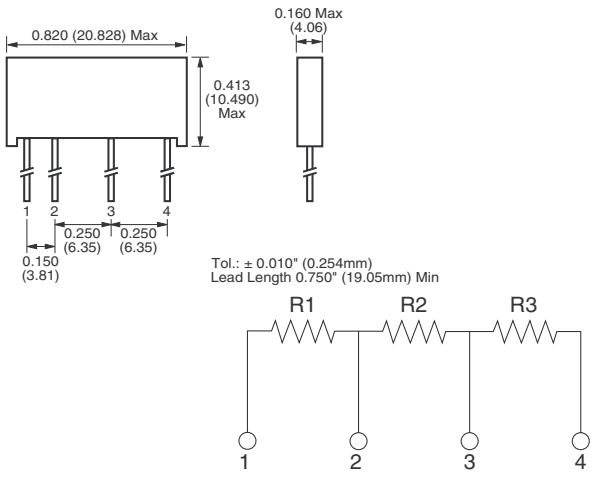
MODEL 300190Z (with Z-Foil Technology)



MODEL 300191Z (with Z-Foil Technology)



MODEL 300192Z (with Z-Foil Technology)



MODEL 300193Z (with Z-Foil Technology)

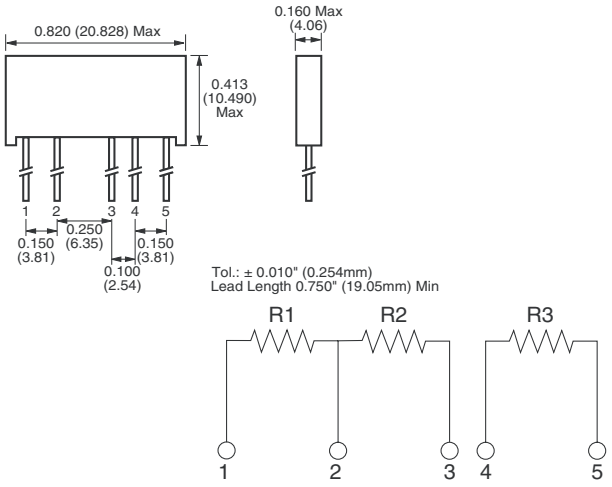
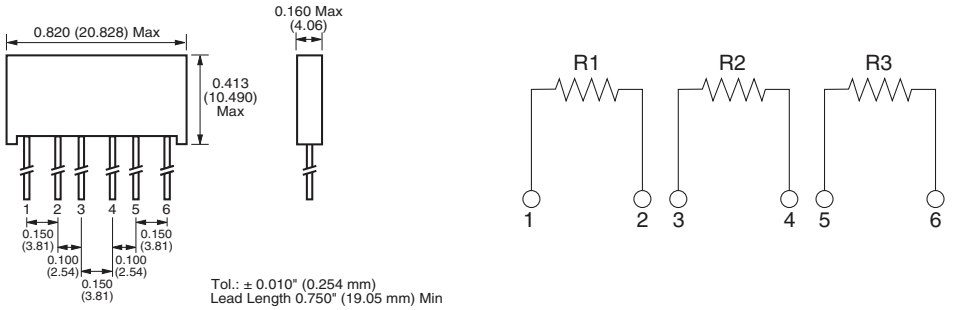


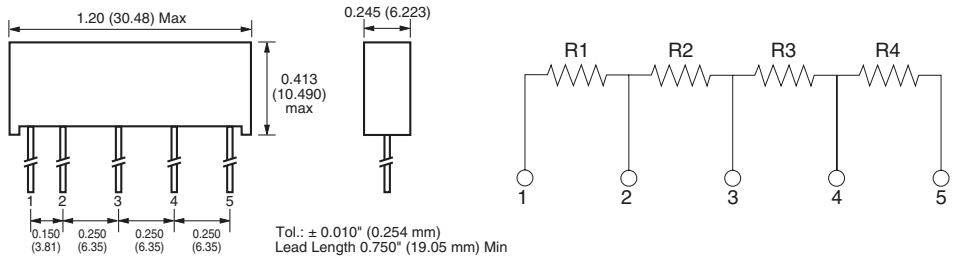
FIGURE 6 - MOLDED 2R, 3R, 4R RESISTOR NETWORK DIMENSIONS AND CIRCUIT DESIGN in inches (millimeters)

MODEL 300194Z (with Z-Foil Technology)



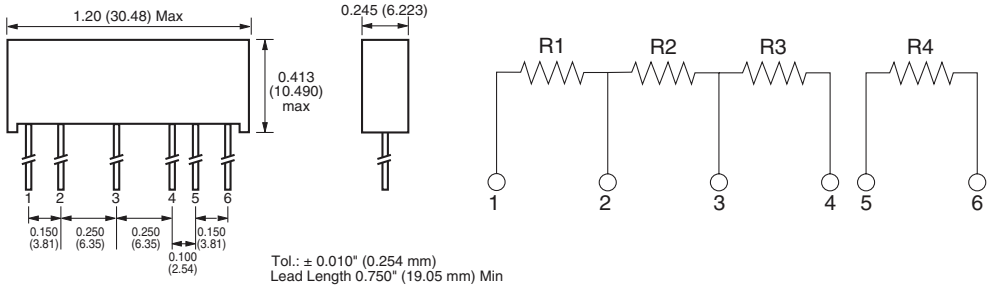
Tol.: ± 0.010" (0.254 mm)
Lead Length 0.750" (19.05 mm) Min

MODEL 300195Z (with Z-Foil Technology)



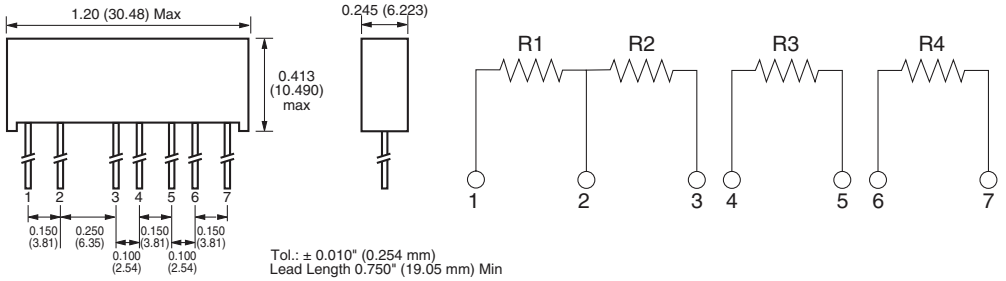
Tol.: ± 0.010" (0.254 mm)
Lead Length 0.750" (19.05 mm) Min

MODEL 300196Z (with Z-Foil Technology)



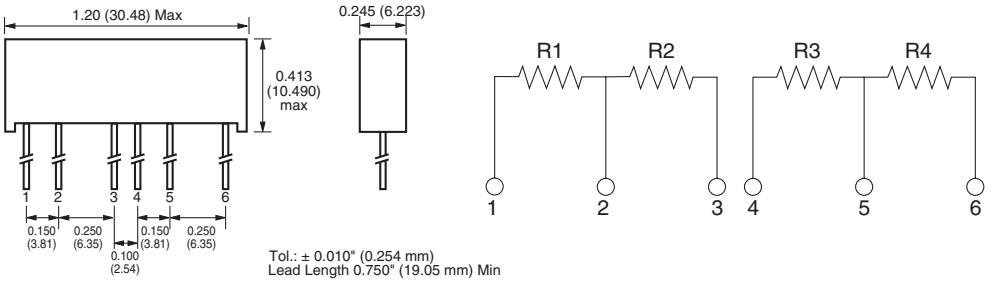
Tol.: ± 0.010" (0.254 mm)
Lead Length 0.750" (19.05 mm) Min

MODEL 300197Z (with Z-Foil Technology)



Tol.: ± 0.010" (0.254 mm)
Lead Length 0.750" (19.05 mm) Min

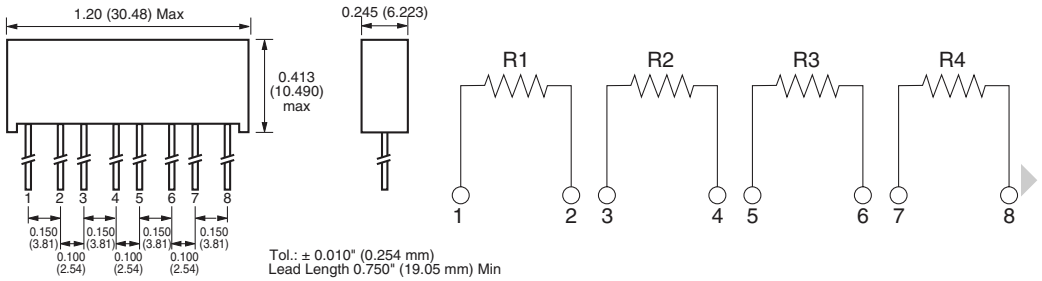
MODEL 300198Z (with Z-Foil Technology)



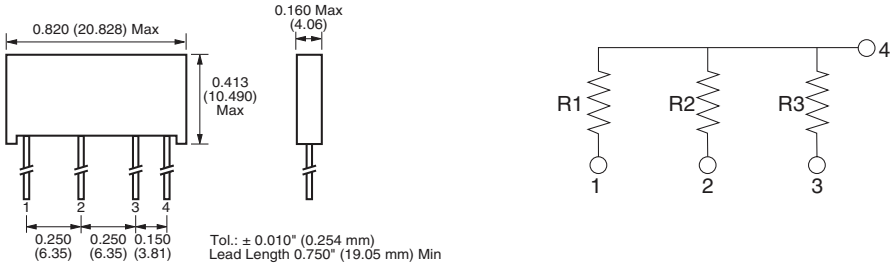
Tol.: ± 0.010" (0.254 mm)
Lead Length 0.750" (19.05 mm) Min

FIGURE 7 - MOLDED 2R, 3R, 4R RESISTOR NETWORK DIMENSIONS AND CIRCUIT DESIGN in inches (millimeters)

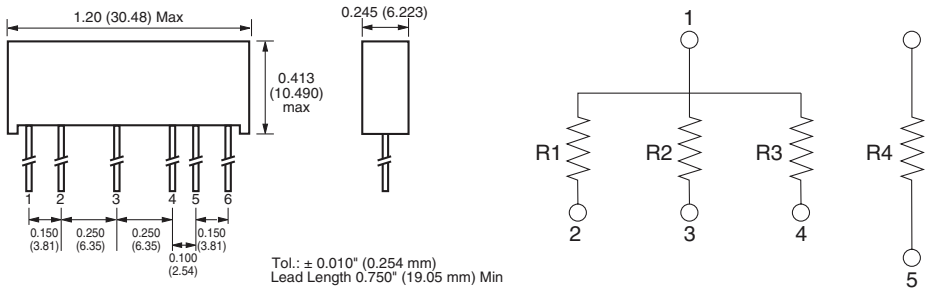
MODEL 300199Z (with Z-Foil Technology)



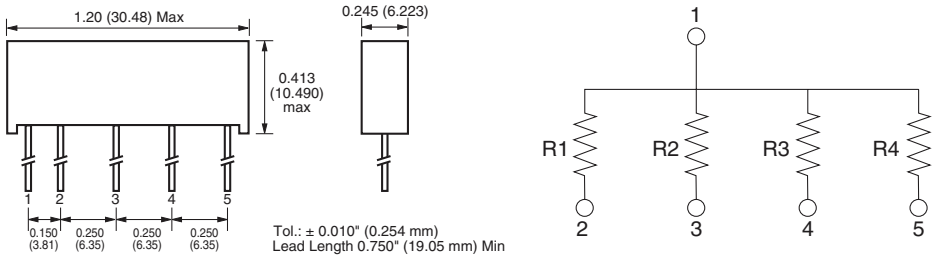
MODEL 300210Z (with Z-Foil Technology)



MODEL 300211Z (with Z-Foil Technology)



MODEL 300212Z (with Z-Foil Technology)



ORDERING INFORMATION - MOLDED 2R, 3R AND 4R RESISTOR NETWORKS WITH Z-FOIL TECHNOLOGY

Networks are built to your requirements. Send your schematic and electrical requirements to the Applications Engineering Department. (foil@vishay.com) A unique part number will be assigned which defines all aspects of your network.

Disclaimer

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

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