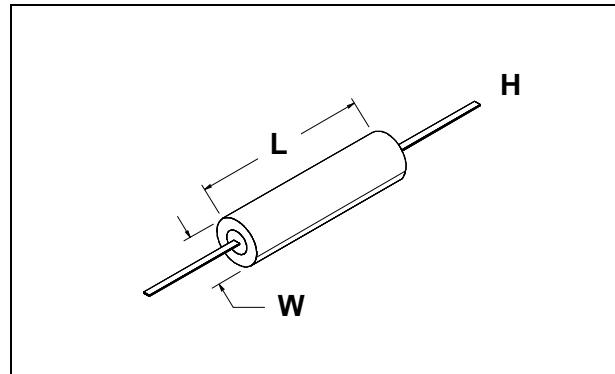


# Model 104M50 Model 104M50R (RoHS Compliant)

## High Megohm Tubular Resistor With Leads



**Model 104** incorporates an ELTEC Model 112M50 chip resistor element (with nickel ribbon leads) encapsulated within a ceramic sleeve with epoxy. Resistor performance is identical to leaded resistor Model 102M50 except shunt capacitance is slightly higher. The epoxy is highly moisture resistant and qualifies for use in a vacuum to  $10^{-7}$  torr (satisfactory operation at  $10^{-9}$  reported). The Model 104M50 is suggested in situations where its larger size makes it easier to handle.



### Applications:

- High Impedance Load Resistors
- Low Noise, High Gain Feedback Resistors
- Low Current Biological & Medical Instrumentation
- Photon Infrared Detectors
- Piezoelectric Accelerometers
- Hydrophone Preamplifiers
- Electret Microphones
- Telecommunications Line Station Monitoring

Resistor Dimensions	L(Max)	Dia(Max)	
Inches	0.265	0.070	
Millimeters	6.73	1.78	
Nickel Leads	L(Min)	W(Max)	H(Max)
Inches	0.500	0.012	0.004
Millimeters	12.7	0.305	0.102

### SPECIFICATIONS

Value / Tolerance: .....  $1 \times 10^6$  to  $9 \times 10^9 \Omega \pm 5\% \pm 10\% \pm 20\% \pm 30\%$   
 $1 \times 10^{10}$  to  $1 \times 10^{11} \Omega \pm 10\% \pm 20\% \pm 30\%$   
 $2 \times 10^{11}$  to  $1 \times 10^{12} \Omega \pm 20\% \pm 30\%$

*Tighter tolerances available on a "Best Efforts" basis*

Noise figure, 1V bias, noise above thermal (Johnson) noise level: ..... 0.5 dB  
 Operating Voltage Range (Recommended): ..... 0 to 1 Volt  
 Maximum Operating Voltage: ..... to 60 Volts  
 Operating Temperature: .....  $-25^\circ\text{C}$  to  $+170^\circ\text{C}$   
 (248K to 443K)

Resistors with intermediate values are available. Resistors below  $1 \times 10^6$  as well as resistors up to  $5 \times 10^{12}$  maximum are also available (special order).

RoHS compliant resistors (Model 104M50R) are available in certain values. Contact ELTEC for further information.

**Note 1:** Each resistor is measured at 1 VDC @  $25^\circ\text{C}$ . Testing at other voltages is available on special order.

**Note 2:** If user anticipates difficulty soldering nickel ribbon leads, tinned nickel ribbon leads are available on special order.

**NOTICE:** The information provided herein is believed to be reliable. However, ELTEC Instruments, Inc. assumes no responsibility for inaccuracies or omissions. Due to industry components being incorporated into ELTEC's devices and ELTEC continually striving for product improvement, specifications may change without notice.



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