

Manufacturing Process, Adjustment of Resistance Value Construction, and Temperature Characteristics of Resistance

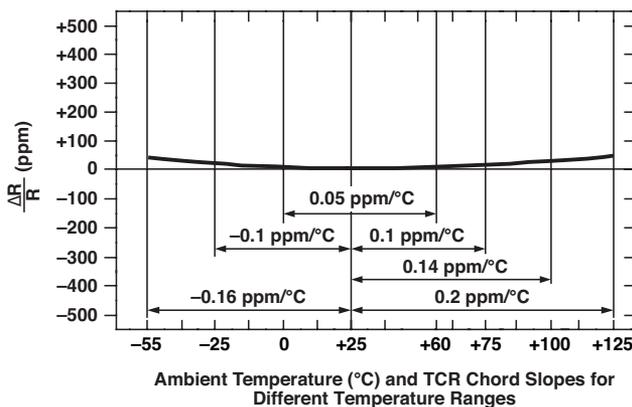
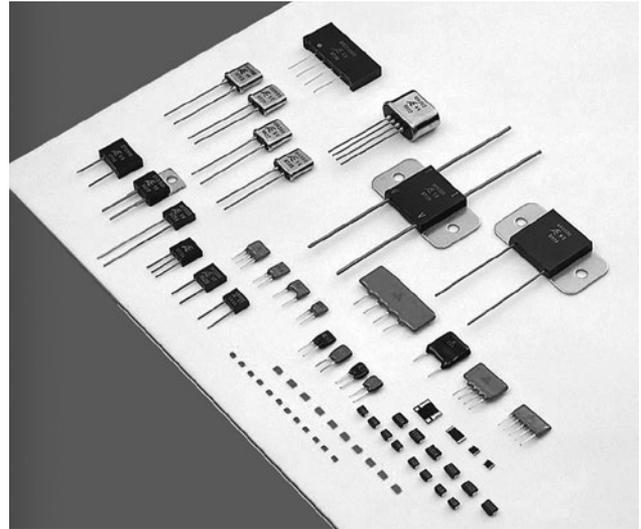
A Bulk Metal® foil high precision resistor, unlike a precision-class metal film resistor or wire-wound resistor, is an ultra precision resistor in which the primary resistance element is a special alloy foil several μm thick.

Use of this Bulk Metal® Foil as the resistance element gives superior performance not found in other resistors, satisfying military specification MIL-PRF-55182/9. In particular, the temperature coefficient of resistance has been reduced to an unprecedented, extremely low value by strict quality control of alloy composition and newly developed foil stabilization treatment technology. In addition, from the point of view of long-term stability, which is an important property of a resistor since the foil has a thickness of several μm instead of the extremely thin film of a metal film resistor, the natural stability of metal is preserved, resulting in very little resistance change over several years.

By developing our own original fine photo-etching technology, we have made it possible to form the complicated resistance pattern required for highly accurate resistance values.

MAIN APPLICATIONS

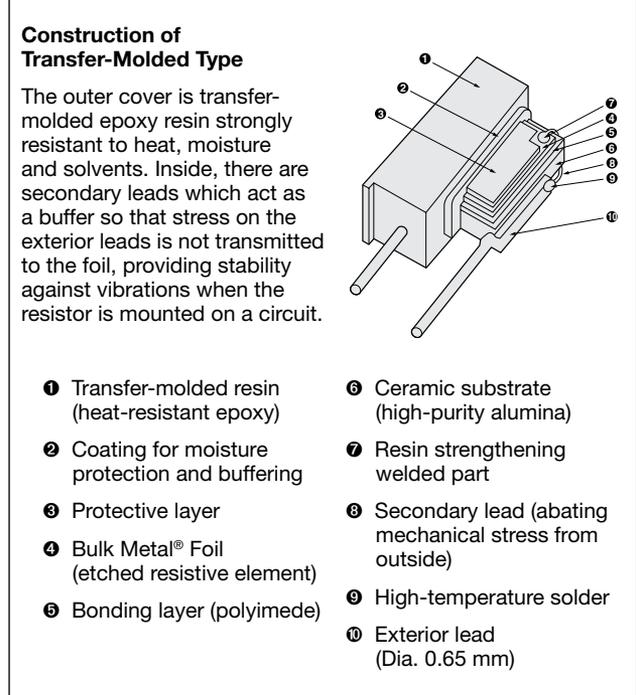
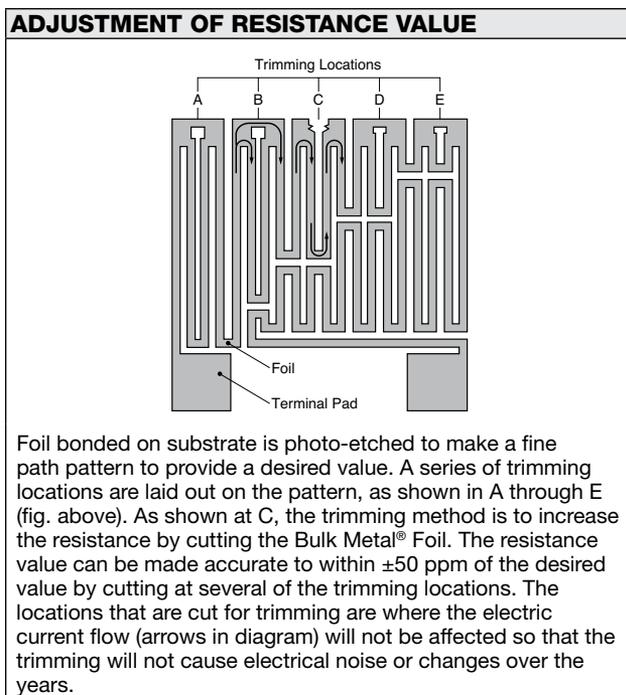
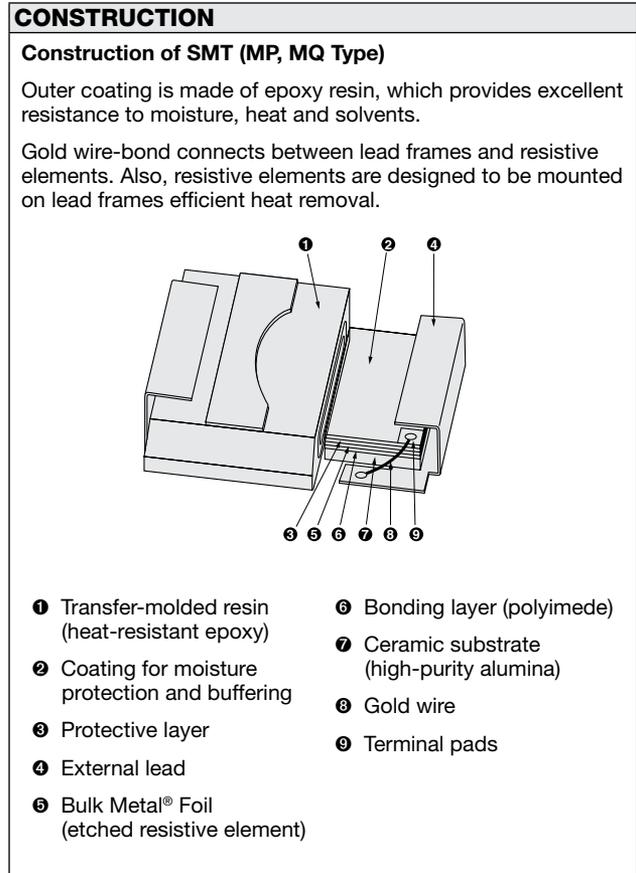
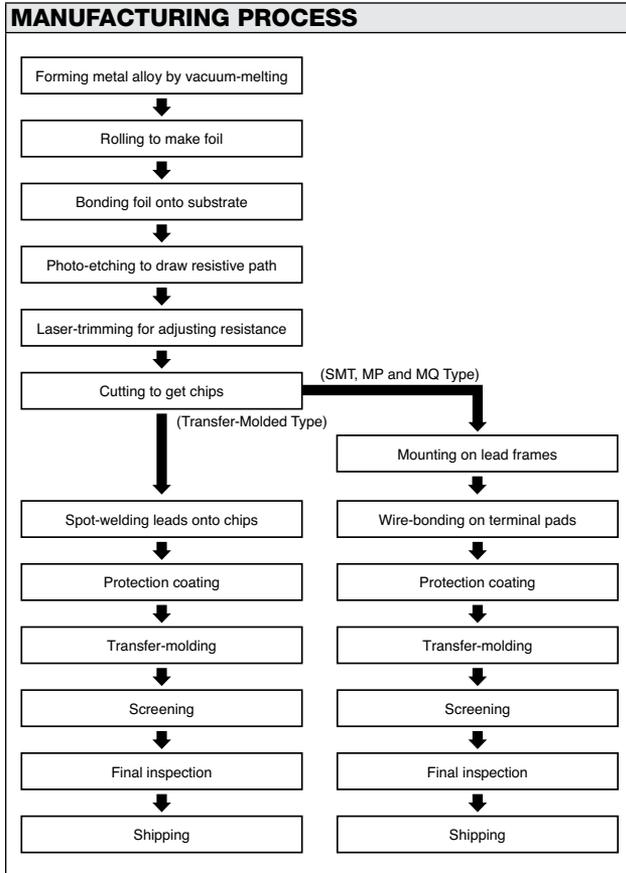
Precise amplifier circuitry and referential power supply in items such, as sophisticated electronic equipment, instrumentation and medical electronic apparatus.



CHARACTERISTICS

- ❶ Temperature Coefficient of Resistance:
0.05 ppm/°C (Typical, 0°C to +60°C)
- ❷ Resistance Tolerance: $\pm 0.005\%$
- ❸ Shelf Life:
25 ppm/year; 50 ppm/3 years
(Hermetically sealed: 5 ppm/year
10 ppm/3 years)
- ❹ Load Life:
0.005%/2,000 hours at Rated Power (typical)
- ❺ Thermal EMF: 0.1 $\mu\text{V}/^\circ\text{C}$ (between leads)
- ❻ Noise: -42 dB
- ❼ Voltage Coefficient: 0.3 ppm/V
- ❽ Frequency Characteristics:
Inductance: 0.08 μH
Capacitance: 0.5 pF

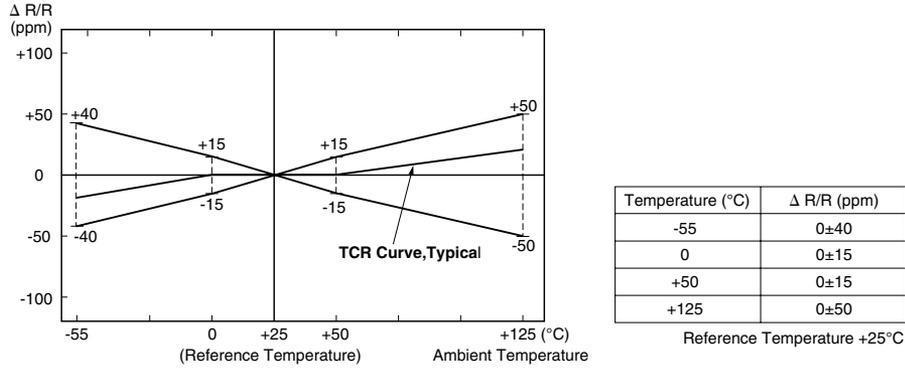
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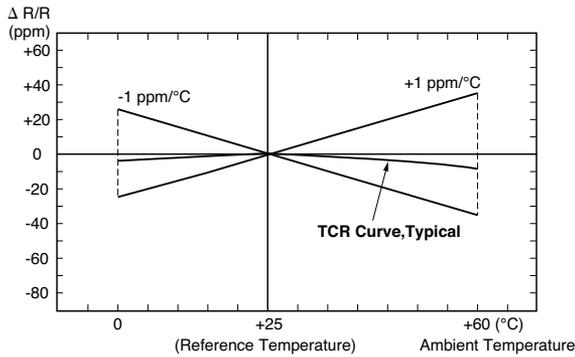
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TEMPERATURE CHARACTERISTICS OF RESISTANCE

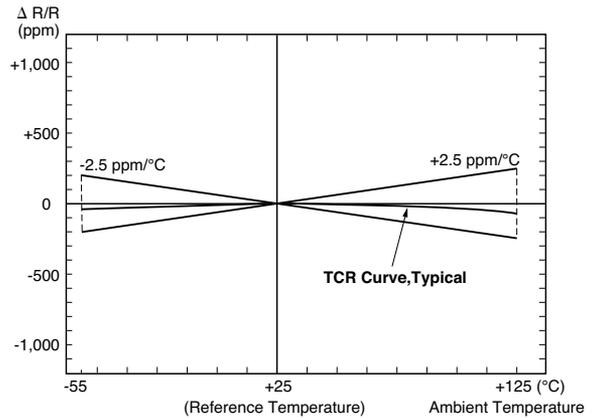
Char.S



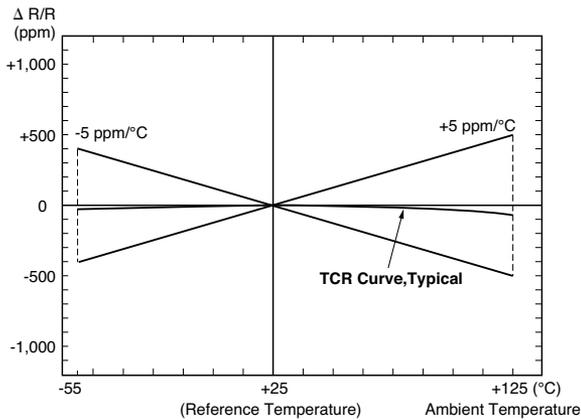
Char.Z (0 ± 1 ppm/°C)



Char.Y (0 ± 2.5 ppm/°C)



Char.X (0 ± 5 ppm/°C)



Char.W (0 ± 15 ppm/°C)

