brewer science
Where innovation takes flight!℠

InFlect™ Thermistor

Brewer Science InFlect™ thermistors utilize our revolutionary carbon-based nanotechnology to deliver and highly accurate and real-time response to small changes in temperature.

BENEFITS

- Millisecond data capture for enhanced yield and throughput
- Extends battery life due to low-power operation
- Improves decision-making capabilities through real-time data collection
- Easily interfaces to existing electronic systems

FEATURES

- Ultrafast response time (< 250 ms)
- Low power operation (< 30 pW)
- Wide operating voltage range (< 4 mV - 50 V)
- Hermetically sealed; environmentally stable
- Low drift; high accuracy
- Flexible form factor

APPLICATIONS

- Industrial tool optimization
- Temperature monitoring of electronic components
- Environmental monitoring
- Personal electronics/wearables
- Food/agricultural supply chain and storage
- Consumer appliances
- Power supply (heat sinks)
- Battery, displays, LED
- Robotics
- EV and HV batteries

SPECIFICATIONS

The specifications are for standard thermistors. The dimension, form factor, and performance specifications can be customized to meet application requirements.

Parameter	Performance	Unit
Resistance value (25°C)	500	kΩ
Resistance tolerance (25°C)	±10	%
Accuracy (20°C to 90°C, linear fit)	< 2.2	°C
Hysteresis	< 2.0	°C
Linearity (20°C to 90°C)	< 0.2	%
Temperature resolution	0.25	°C
Sensitivity (20°C to 90°C)*	-2.1 ± 0.21 (-2100 ± 210)	kΩ/°C (ppm)
Thermal time constant (1/e)	< 250	ms
Device stability (Drift in R): (25°C, 50% RH, 100 hours) (85°C, 85% RH, 100 hours)	< ± 0.7 < ± 1.0	%
Minimum operating power (< 4 mV, < 8 nA)	< 30	pW
I-V linearity	± 50	V
Operating temperature**	-20 to 100	°C
Operating humidity	0 to 85	%
RH dependency (25% to 85%, 25°C)	< 0.2	°C
Bend correction (25°C)	< 0.041	°C/degree bend

** Sensitivity= 2.1/1.9/2.3 kΩ/°C for 500/450/550 kΩ thermistors*

*** Hysteresis and accuracy values can be as high as 6°C and 4°C respectively in the (-20°C, +100°C) range, and 4°C and 3°C in the (-10°C, +100°C) range.*

THERMISTOR DIMENSIONS

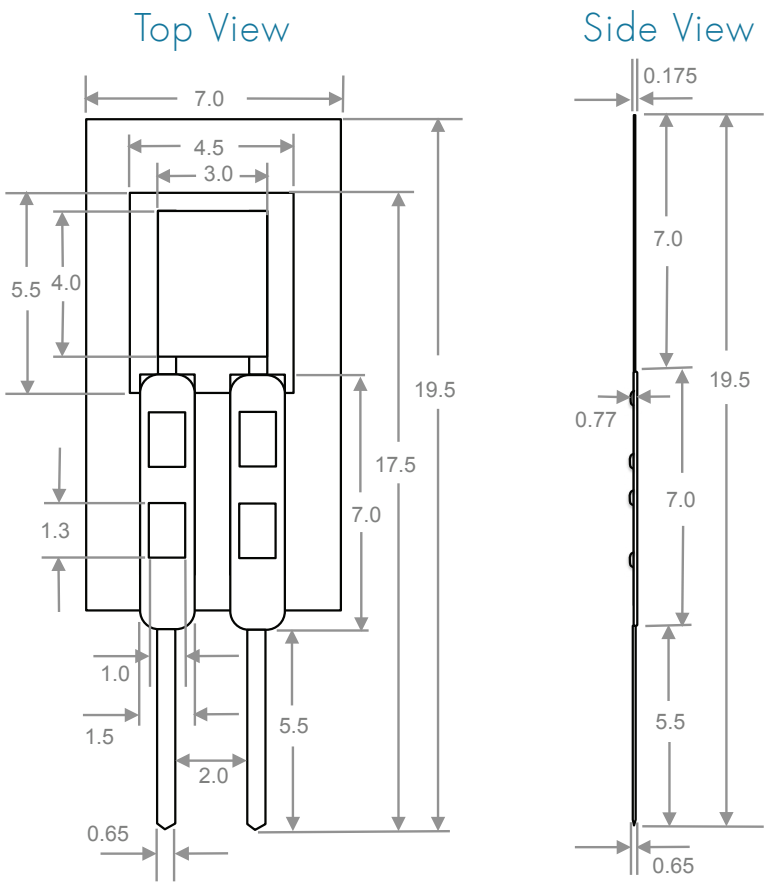

Figure: A schematic of Brewer Science's thermistor in millimeters

THERMISTOR OUTPUT CHARACTERISTICS

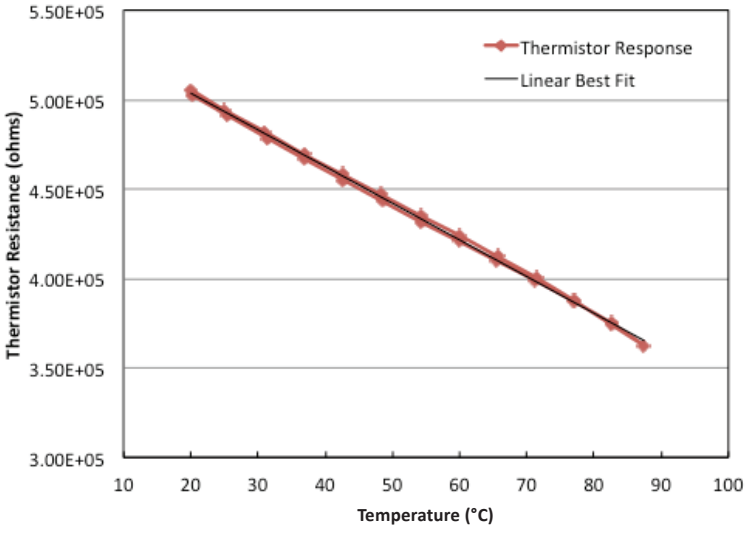

Figure: Thermistor resistance output vs. temperature curve (At 35% RH and V=0.5 V).

Parameter	Specification
Sensor dimension	7 x 19 mm
Sensing region dimension	2 x 3 mm
Weight including connecting pins	92 mg
Weight without connecting pins	17 mg
Storage temperature	10-35°C
Storage condition	10-55% RH
Shelf life	> 12 months

Mounting and Electrical

- The thermistor comes with 0.1″ (2.54 mm) pitch crimp pins
- The thermistor is available in FFC connection type for slide-in connection
- Maximum supply voltage = 50 V
- Maximum power dissipation (5 V, 25°C) = 50 µW

SENSOR CUSTOMIZATION

- Dimensions and form factor of the sensors can be customized to meet application requirements.
- The sensor can be fabricated on a large variety of substrates depending upon the applications requirements.

Effective Date: 6/8/2016