AA-RC Thermo Sensor family

Wires:
Black: GND
Red: + 5V DC-in
Green or Yellow : analog Output (to AA-RC)

Parameter Name	Value
Typical Accuracy (°)	1
Max Input/ Supply Current (µA)	6
Max. Accuracy @ 25° (°)	2
Temp. Range (°C)	-40 to +150
Operating Voltage Range (V)	+2.3 to +5.5
Device Description	Voltage Temp Sensor

• Wide Temperature Measurement Range:
-40°C to +125°C (Extended Temperature)
-40°C to +150°C (High Temperature)
• Accuracy: - ±2°C (max.), 0°C to +70°
• Optimized for Analog-to-Digital Converters (ADCs): - 10.0 mV/°C (typical)
• Wide Operating Voltage Range:
- VDD = 2.3V to 5.5V
• Low Operating Current: 6 µA (typical)
• Optimized to Drive Large Capacitive Loads
Typical Applications
• Hard Disk Drives and Other PC Peripherals
• Entertainment Systems
• Home Appliance
• Office Equipment
• Battery Packs and Portable Equipment
• General Purpose Temperature Monitoring

Description

The family of Linear Active Thermistor™ Intergrated Circuit (IC) is an analog temperature sensor that converts temperature to analog voltage. It's a low-cost, low-power sensor with an accuracy of ±2°C from 0°C to +70°C while consuming 6 µA (typical) of operating current.

Unlike resistive sensors (such as thermistors), the Linear Active Thermistor IC does not require an additional signal-conditioning circuit. Therefore, the biasing circuit development overhead for thermistor solutions can be avoided by implementing this low-cost device. The voltage output pin (VOUT) can be directly connected to the ADC input of a microcontroller. The temperature coefficients are scaled to provide a 1°C/bit resolution for an 8-bit ADC with a reference voltage of 2.5V and 5V, respectively.

The model provide a low-cost solution for applications that require measurement of a relative change of temperature.

When measuring relative change in temperature from +25°C, an accuracy of ±1°C (typical) can be realized from 0°C to +70°C. This accuracy can also be achieved by applying system calibration at +25°C.

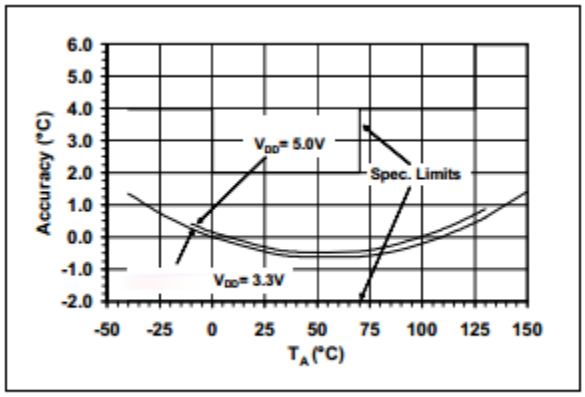
In addition, this family is immune to the effects of parasitic capacitance and can drive large capacitive loads. This provides Printed Circuit Board (PCB) layout design flexibility by enabling the device to be remotely located from the microcontroller. Adding some capacitance at the output also helps the output transient response by reducing overshoots or undershoots. However, capacitive load is not required for sensor output stability.

ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings †

VDD:..... 6.0V
Storage temperature: ..... -65°C to +150°C
Ambient Temp. with Power Applied:.. -40°C to +150°C
Output Current ..... ±30 mA
Junction Temperature (TJ): ..... 150°C
ESD Protection On All Pins (HBM:MM): ....(4 kV:200V)
Latch-Up Current at Each Pin: ..... ±200 mA

†Notice: Stresses above those listed under "Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at those or any other conditions above those indicated in the operational listings of this specification is not implied. Exposure to maximum rating conditions for extended periods may affect device reliability.



Accuracy vs. Ambient