



Atmel AT30TSE002B

A complete precision digital temperature sensing solution



The Atmel® AT30TSE002B is a precision $\pm 1^{\circ}\text{C}$ accurate digital temperature sensor with integrated 2-Kbit Serial EEPROM device available in the Atmel digital temperature sensor family.

The world's most versatile digital temperature sensing solutions, featuring industry-standard and feature-rich, integrated non-volatile memory products to address almost every application

The AT30TSE002B temperature sensor is a complete, fully calibrated, real-time temperature monitoring solution. It outputs digitized temperature data via a standard I2C/SMBus compatible serial interface, eliminating the need for any external circuitry or A/D converters. The AT30TSE002B is a $\pm 1^{\circ}\text{C}$ accurate digital temperature sensor with 11-bit resolution with a wide temperature monitoring range of -20°C to $+125^{\circ}\text{C}$, three programmable temperature limits, programmable hysteresis thresholds, permanent and software write protect features. In addition, it contains an integrated 2-Kbit Serial EEPROM for storing vital customer product data. The AT30TSE002B offers an ideal solution for any application that sets high safety and reliability as a top concern to reduce overheating liability with the added benefit of containing a robust 2-Kbit nonvolatile memory to store customer preference data. In many cases, the AT30TSE002B can drop in and replace an existing low-density 2-wire serial EEPROM and provide the value-added security of delivering realtime temperature monitoring to enhance the safety and reliability of the product.

Key Features and Benefits

- 11-bit A/D converter (temperature-to-digital converter) with 0.125°C resolution
- Highly accurate temperature sensing
- $\pm 1^{\circ}\text{C}$ (max.) over the $+75^{\circ}\text{C}$ to $+95^{\circ}\text{C}$ temperature range
- $\pm 2^{\circ}\text{C}$ (max.) over the $+40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ temperature range
- $\pm 3^{\circ}\text{C}$ (max.) over the -20°C to $+125^{\circ}\text{C}$ temperature range
- Integrated 2-kbits (256 bytes) of Serial EEPROM data memory
- I2C/SMBus™ compatible serial interface
- SMBus timeout supported
- Programmable critical, upper, and lower temperature alarms
- Programmable hysteresis threshold (off, 0°C , 1.5°C , 3°C , or 6°C)
- EEPROM permanent and reversible software write-protect features
- Very low current consumption
- $1.6\mu\text{A}$ (typ.) standby current
- 0.2mA (typ.) EEPROM read current
- 1.5mA (typ.) EEPROM write current
- Available in an 8-pad very very thin DFN ($2 \times 3 \times 0.8\text{mm}$) package search key



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Application Examples

- **Industrial** – Industrial control, HVAC, PLCs, fire alarms, test equipment, medical diagnostics
- **Consumer** – Portable, fan control – STB and wired audio/video, game consoles, white goods, climate control thermostats
- **Communications** – Telecom equipment fan control and power supplies – fan trays, BTS, 48V PDU, call servers, gateways
- **Computers** – Fan control, – desktops, laptops, servers, netbooks, HDD

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