



## Atmel AT30TS750 Family

The world's most versatile digital temperature sensing solutions



The Atmel® AT30TS750 digital temperature sensor family is a group of five high-precision devices based on the industry-standard xx75 functionality. The device family offers designers a choice of available integrated nonvolatile registers and serial EEPROM for optimal flexibility and increased system performance.

*The world's most versatile, real-time, digital temperature sensing solutions, featuring industry-standard and feature-rich, integrated, nonvolatile memory products to address almost every application.*

The AT30TS750 digital temperature sensor family is a complete, fully factory calibrated, real-time temperature monitoring solution with  $\pm 0.5^{\circ}\text{C}$  typical accuracy over an operating temperature range of  $0^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ . The devices output digitized temperature data via a standard I<sup>2</sup>C/SMBus-compatible serial interface, eliminating the need for any external A/D converters and data post processing. The AT30TS750 family offers user-selectable temperature resolution from 9 to 12 bits, user-programmable high and low temperature limits, power-saving shutdown and one-shot modes, and I<sup>2</sup>C high-speed mode compatibility. The AT30TS750 device contains nonvolatile registers to allow user configuration settings to be permanently retained across power cycles for improved system reliability. In addition, the AT30TSE752 / 4 / 8 devices offer 2-, 4-, or 8-Kbits, respectively, of integrated serial EEPROM for storing critical customer product data, and are also drop-in replacements for standalone 2-, 4-, or 8-Kbit I<sup>2</sup>C serial EEPROMs.

The AT30TS750 family provides an ideal solution for any consumer, industrial, computer, or medical application requiring a high level of system performance and product safety and reliability.

### Key Features and Benefits

- Pin and software compatible with industry standard LM75-type devices
- Up to 12-bit resolution A/D converter, user-configurable (temperature-to-digital converter)
- Highly accurate temperature sensing
  - $\pm 1^{\circ}\text{C}$  (max.) over the  $0^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  temperature range
  - $\pm 2^{\circ}\text{C}$  (max.) over the  $-20^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$  temperature range
  - $\pm 3^{\circ}\text{C}$  (max.) over the  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  temperature range
- Integrated nonvolatile registers
- Integrated serial EEPROM data memory (2-, 4-, or 8-Kbits)
- I<sup>2</sup>C/SMBus™-compatible serial interface
- I<sup>2</sup>C high speed mode compatible (3.4MHz maximum clock frequency)
- SMBus time-out supported
- Programmable high and low temperature limits
- Power-saving shutdown and one-shot modes
- Alert output pin to indicate temperature alarms
- Available in 8-lead MSOP, 8-lead SOIC, and 8-pad UDFN plastic packages



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## Application Examples

- **Industrial** – Industrial controls, smart meters, HVAC, lighting ballast, fire alarms, test equipment, and medical devices
- **Consumer** – Li-ion batteries, set-top boxes, audio/video equipment, game consoles, white goods, and thermostats
- **Communications** – Telecom equipment, smartphones, gateways, routers, headsets, call servers, and power supplies
- **Computers** – Desktops, laptops, netbooks, tablets, servers, and HDDs

## Product Availability and Ordering Information

| Atmel ordering code | Voltage range | Interface              | Nonvolatile registers | Integrated EEPROM | Package | Availability |
|---------------------|---------------|------------------------|-----------------------|-------------------|---------|--------------|
| AT30TS75-XM8-T      | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | No                    | No                | MSOP 8  | Now          |
| AT30TS75-SS8-T      | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | No                    | No                | SOIC 8  | Now          |
| AT30TS75-MA8-T      | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | No                    | No                | UDFN 8  | Now          |
| AT30TS750-XM8-T     | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | No                | MSOP 8  | Now          |
| AT30TS750-SS8-T     | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | No                | SOIC 8  | Now          |
| AT30TS750-MA8-T     | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | No                | UDFN 8  | Now          |
| AT30TSE752-XM8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 2-Kbits           | MSOP 8  | Now          |
| AT30TSE752-SS8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 2-Kbits           | SOIC 8  | Now          |
| AT30TSE752-MA8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 2-Kbits           | UDFN 8  | Now          |
| AT30TSE754-XM8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 4-Kbits           | MSOP 8  | Now          |
| AT30TSE754-SS8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 4-Kbits           | SOIC 8  | Now          |
| AT30TSE754-MA8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 4-Kbits           | UDFN 8  | Now          |
| AT30TSE758-XM8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 8-Kbits           | MSOP 8  | Now          |
| AT30TSE758-SS8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 8-Kbits           | SOIC 8  | Now          |
| AT30TSE758-MA8-T    | 2.7 – 5.5V    | I <sup>2</sup> C/SMBus | Yes                   | 8-Kbits           | UDFN 8  | Now          |



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