DDR Memory Module Temp Sensor with Integrated SPD

SE97BTP

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Meets JEDEC Specification 42.4 TSE2002B1, 3 Jun 2009. The NXP® Semiconductors SE97B measures temperature from -40 °C to +125 °C with JEDEC Grade B ±1 °C maximum accuracy between +75 °C and +95 °C critical zone and also provide 256 bytes of EEPROM memory communicating via the I²C-bus/SMBus. It is typically mounted on a DDR3 Dual In-Line Memory Module (DIMM) measuring the DRAM temperature in accordance with the new JEDEC (JC-42.4) Mobile Platform Memory Module Temperature Sensor Component specification and also replacing the Serial Presence Detect (SPD) which is used to store memory module and vendor information.

The SE97B thermal sensor and EEPROM operates over the VDD range of 3.0 V to 3.6 V.

The TS consists of a ΔΣ Analog to Digital Converter (ADC) that monitors and updates its own temperature readings 10 times per second, converts the reading to a digital data, and latches them into the data temperature register. User-programmable registers, the specification of upper/lower alarm and critical temperature trip points, EVENT output control, and temperature shutdown, provide flexibility for DIMM temperature-sensing applications.

When the temperature changes beyond the specified boundary limits, the SE97B outputs an EVENT signal using an open-drain output that can be pulled up between 0.9 V and 3.6 V. The user has the option of setting the EVENT output signal polarity as either an active LOW or active HIGH comparator output for thermostat operation, or as a temperature event interrupt output for microprocessor-based systems. The EVENT output can also be configured as only a critical temperature output.

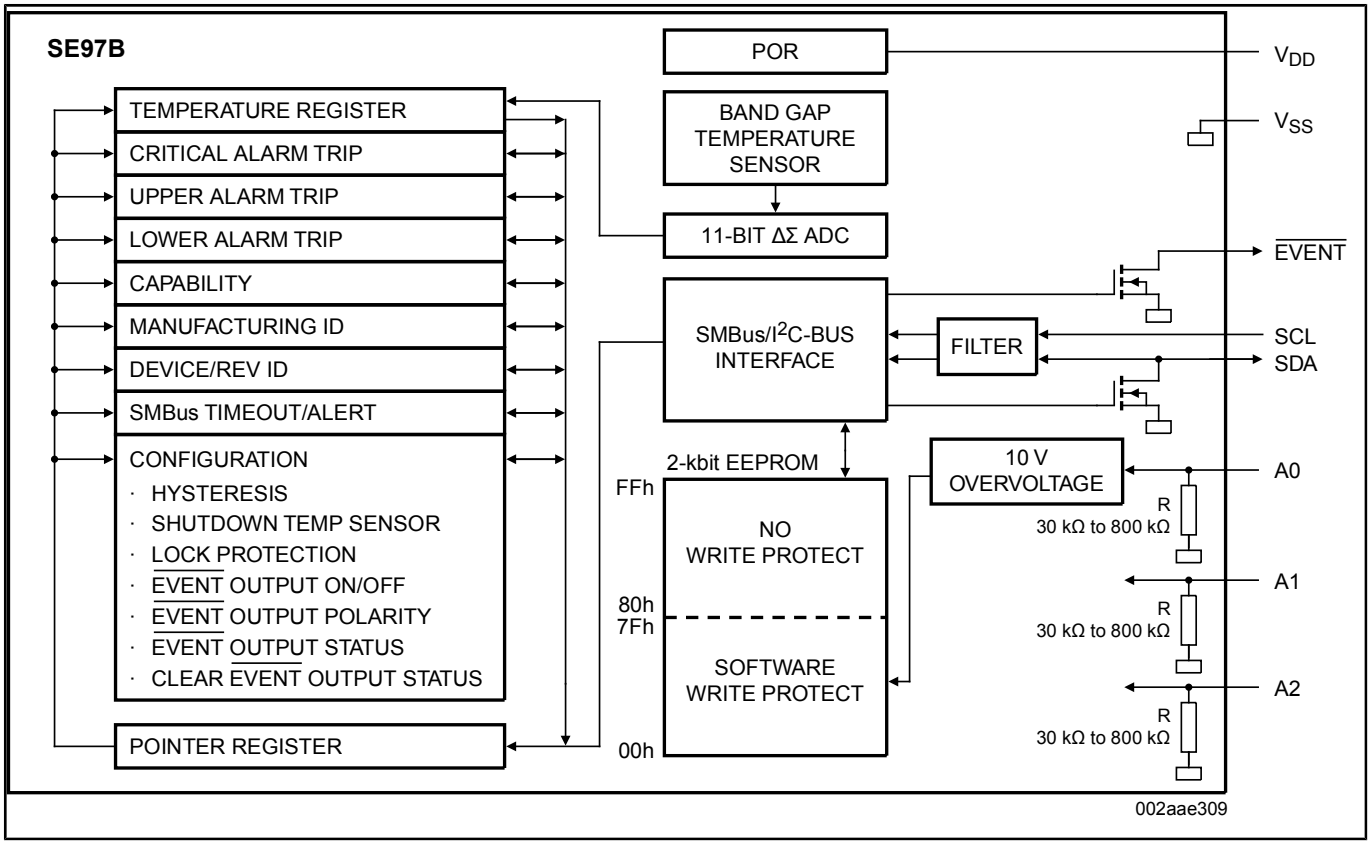
The EEPROM is designed specifically for DRAM DIMMs SPD. The lower 128 bytes (address 00h to 7Fh) can be Permanent Write Protected (PWP) or Reversible Write Protected (RWP) by software. This allows DRAM vendor and product information to be stored and write protected.

The upper 128 bytes (address 80h to FFh) are not write protected and can be used for general purpose data storage.

The SE97B has a single die for both the temp sensor and EEPROM for higher reliability and supports the industry-standard 2-wire I²C-bus/SMBus serial interface. The SMBus TIMEOUT function is supported to prevent system lock-ups. Manufacturer and Device ID registers provide the ability to confirm the identity of the device. Three address pins allow up to eight devices to be controlled on a single bus.

The SE98B is available as the SE97B thermal sensor only.

SE97B -BD Block Diagram



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Note: The information on this document is subject to change without notice.

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