

1°C Temperature Sensor with Hardware Thermal Shutdown

PRODUCT FEATURES

Data Brief

General Description

The EMC1423 and EMC1424 are high accuracy, low cost, System Management Bus (SMBus) temperature sensors. Advanced features such as Resistance Error Correction (REC), Beta Compensation (to support CPU diodes requiring the BJT/transistor model including 45nm, 65nm and 90nm processors) and automatic diode type detection combine to provide a robust solution for complex environmental monitoring applications.

Additionally, the EMC1423 and EMC1424 provide a hardware programmable system shutdown feature that is programmed at part power-up via two pull-up resistor values and that cannot be masked or corrupted through the SMBus.

Each device provides $\pm 1^\circ$ accuracy for external diode temperatures and $\pm 2^\circ$ accuracy for the internal diode temperature. The EMC1423 monitors three temperature channels (two external and one internal). The EMC1424 monitors four temperature channels (three external and one internal).

Resistance Error Correction automatically eliminates the temperature error caused by series resistance allowing greater flexibility in routing thermal diodes. Beta Compensation eliminates temperature errors caused by low, variable beta transistors common in today's fine geometry processors. The automatic beta detection feature monitors each external diode/transistor and determines the optimum sensor settings for accurate temperature measurements regardless of processor technology. This frees the user from providing unique sensor configurations for each temperature monitoring application. These advanced features plus $\pm 1^\circ$ C measurement accuracy provide a low-cost, highly flexible and accurate solution for critical temperature monitoring applications.

Applications

- Notebook Computers
- Desktop Computers
- Industrial
- Embedded applications

Features

- Hardware Thermal Shutdown
 - triggers dedicated SYS_SHDN pin
 - hardware configured range 77°C to 112°C in 1°C steps
 - cannot be disabled or modified by software
- Support for diodes requiring the BJT/transistor model
 - supports 45nm, 65nm, and 90nm CPU thermal diodes.
- Automatically determines external diode type and optimal settings
- Resistance Error Correction
- External Temperature Monitors
 - $\pm 1^\circ\text{C}$ Accuracy ($60^\circ\text{C} < T_{\text{DIODE}} < 100^\circ\text{C}$)
 - 0.125°C Resolution
 - Supports up to 2.2nF diode filter capacitor
 - Anti-parallel diodes for extra diode support
- Internal Temperature Monitor
 - $\pm 2^\circ\text{C}$ accuracy
- 3.3V Supply Voltage
- Programmable temperature limits for ALERT
- Available in Small 10-pin MSOP Lead-free RoHS Compliant Package

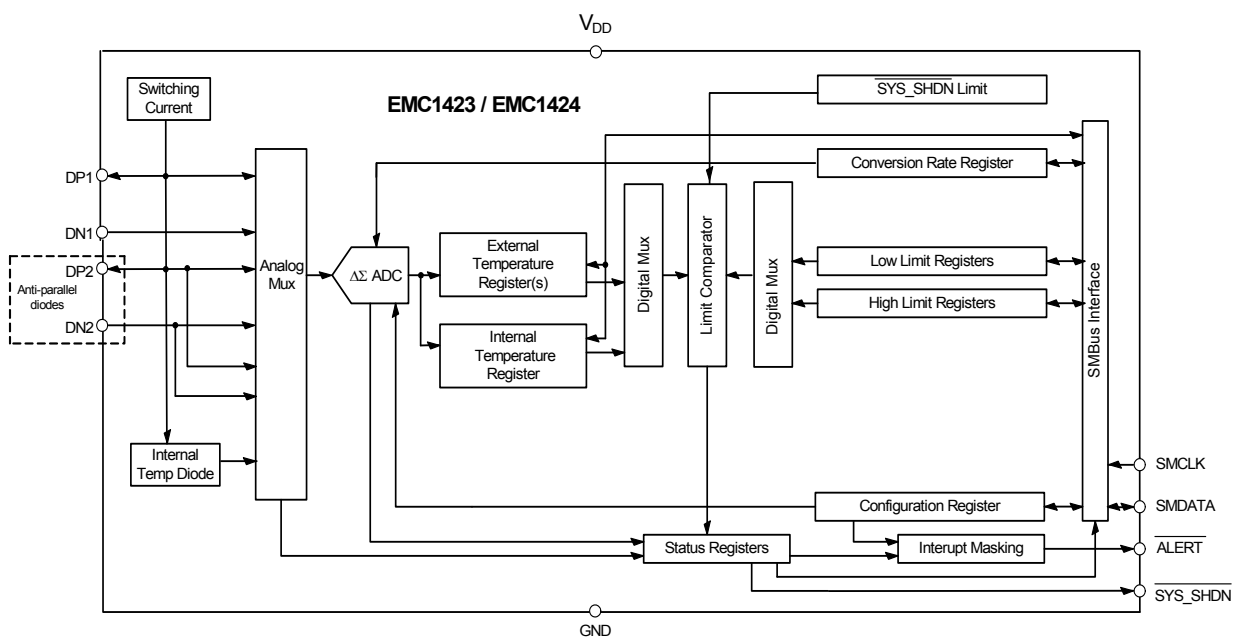
Order Numbers:**EMC1423-1-AIZL-TR for 10 pin, MSOP Lead-Free RoHS Compliant Package****EMC1424-1-AIZL-TR for 10 pin, MSOP Lead-Free RoHS Compliant package****Reel size is 4,000 pieces****This product meets the halogen maximum concentration values per IEC61249-2-21****For RoHS compliance and environmental information, please visit www.smSC.com/rohs**

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Block Diagram



Pin Diagram

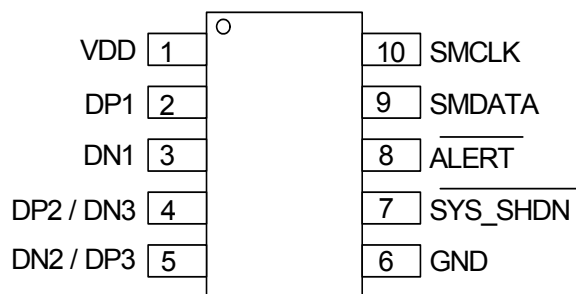


Figure 0.1 EMC1423/EMC1424 Pin Diagram

Package Outline

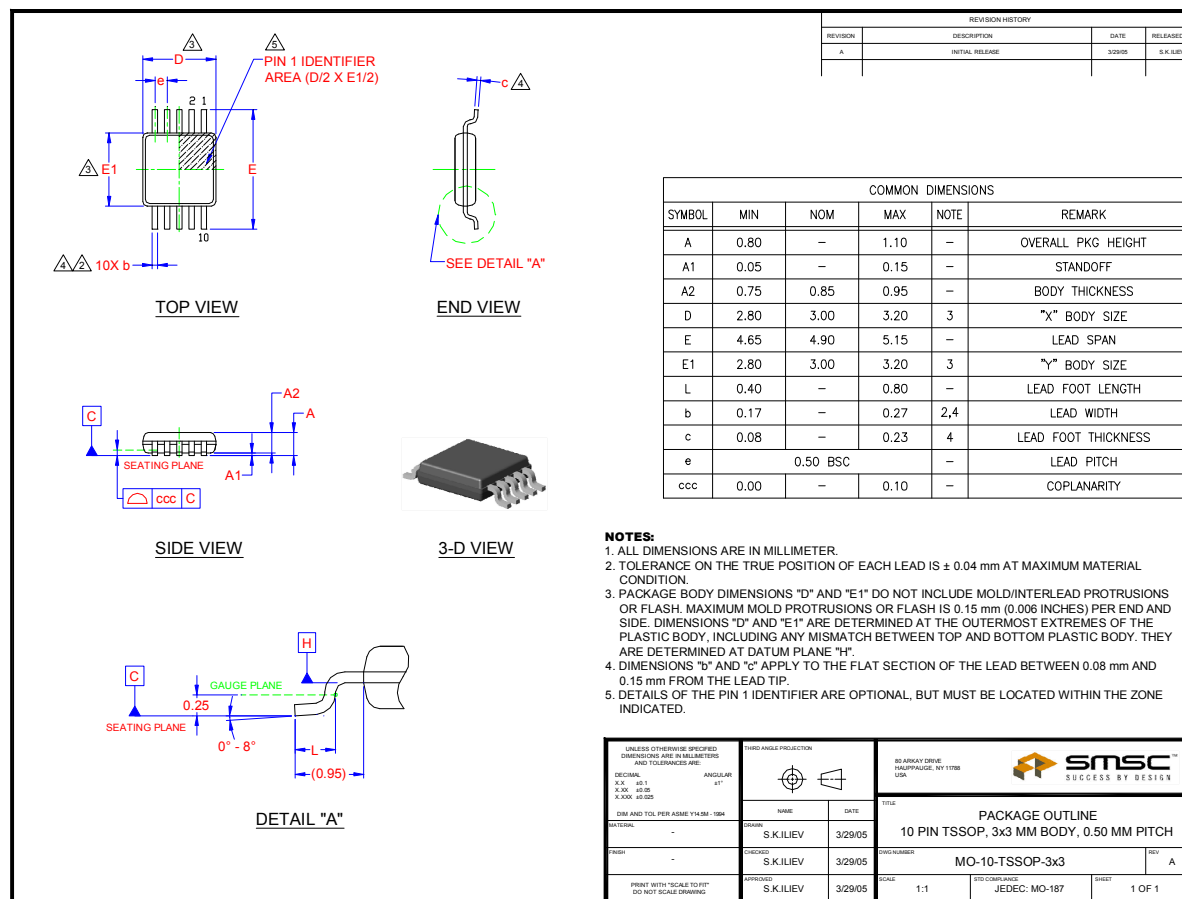


Figure 1 10 Pin MSOP / TSSOP Package

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