



1°C Temperature Sensor with Beta Compensation

PRODUCT FEATURES

Data Brief

General Description

The EMC1402 is a high accuracy, low cost, System Management Bus (SMBus) temperature sensor. 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.

Each device provides $\pm 1^\circ$ accuracy for external diode temperatures and $\pm 2^\circ\text{C}$ accuracy for the internal diode temperature. The EMC1402 monitors two temperature channels (one 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 the 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 $\pm 1^\circ\text{C}$ 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

- Support for diodes requiring the BJT/transistor model
 - supports 45nm, 65nm, and 90nm CPU thermal diodes.
- Pin compatible with ADM1032, MAX6649, and LM99
- 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
- Internal Temperature Monitor
 - $\pm 2^\circ\text{C}$ accuracy
- 3.3V Supply Voltage
- Programmable temperature limits for $\overline{\text{ALERT}}$ and $\overline{\text{THERM}}$
- Available in Small 8-pin MSOP Lead-free RoHS Compliant Package

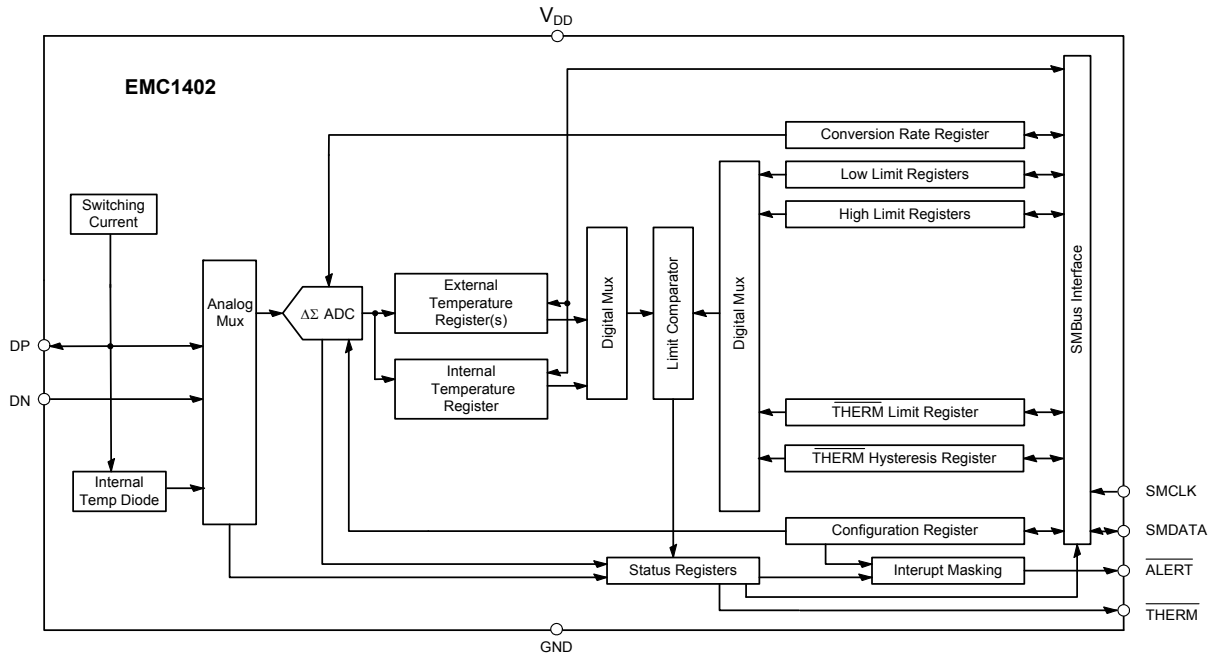
Order Numbers:**EMC1402-1-ACZL-TR for 8 pin, MSOP Lead-Free RoHS Compliant package****EMC1402-2-ACZL-TR for 8 pin, MSOP Lead-Free RoHS Compliant package****EMC1402-3-ACZL-TR for 8 pin, MSOP Lead-Free RoHS Compliant package****EMC1402-4-ACZL-TR for 8 pin, MSOP Lead-Free RoHS Compliant package****Reel 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

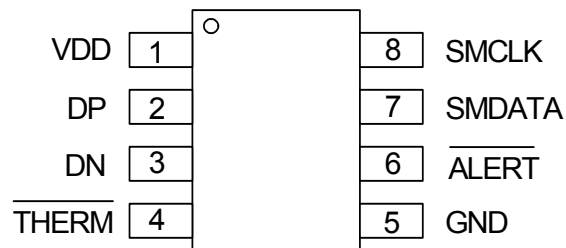


Figure 1 EMC1402 Pin Diagram

Package Outline

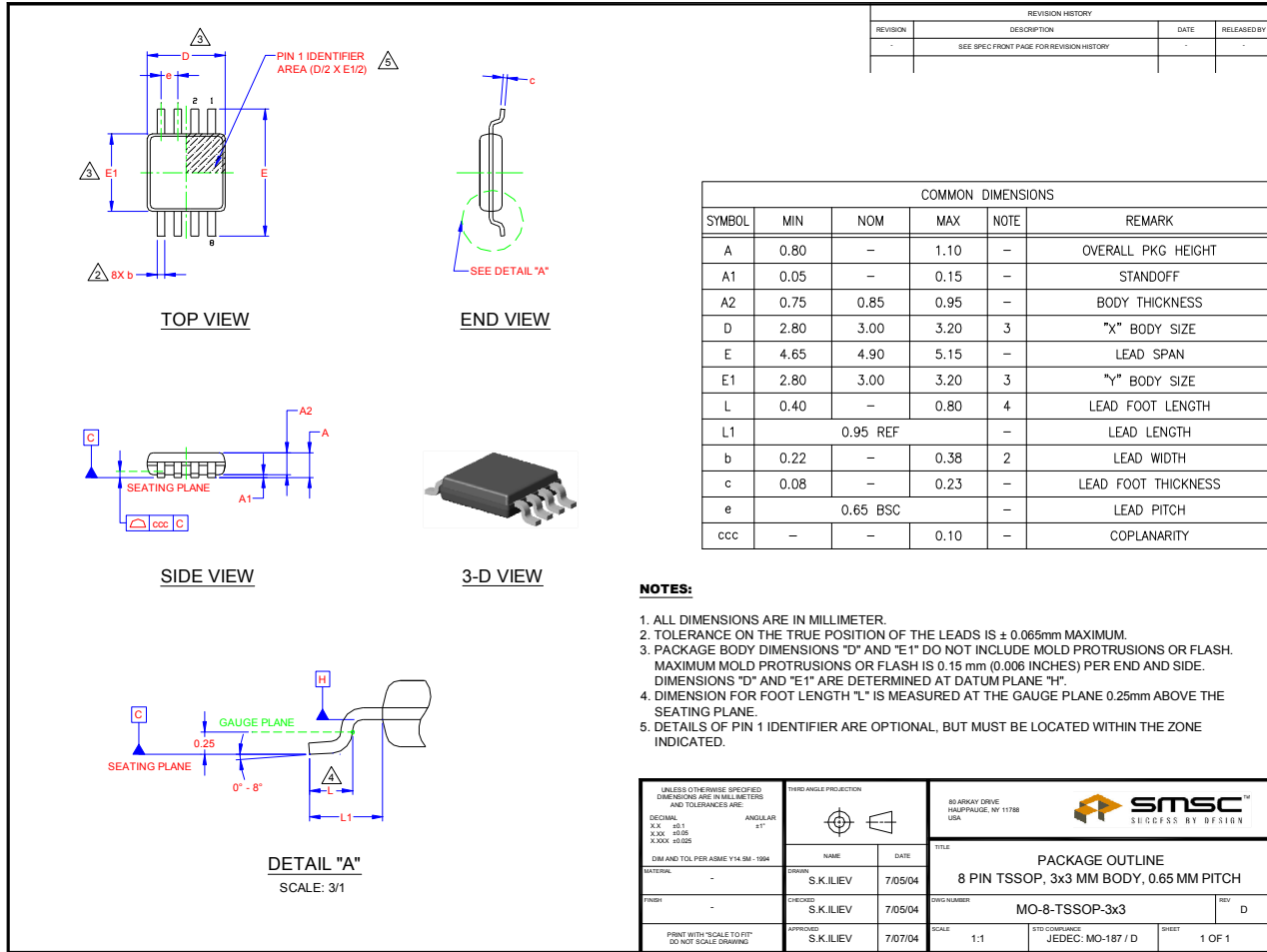


Figure 2 8 Pin MSOP / TSSOP Package