EMC1422

1°C Temperature Sensor with Hardware Thermal Shutdown

PRODUCT FEATURES

Data Brief

General Description

The EMC1422 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.

Additionally, the EMC1422 provides 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 ±1° accuracy for external diode temperatures and ±2°C accuracy for the internal diode temperature. The EMC1422 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 ±1°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 $\overline{\text{SYS_SHDN}}$ 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.
- Pin compatible with ADM1032, MAX6649, and LM99
- Automatically determines external diode type and optimal settings
- Resistance Error Correction
- External Temperature Monitors
  - ±1°C Accuracy (60°C < T_{DIODE} < 100°C)
  - 0.125°C Resolution
  - Supports up to 2.2nF diode filter capacitor
- Internal Temperature Monitor
  - ±2°C accuracy
- 3.3V Supply Voltage
- Programmable temperature limits for $\overline{\text{ALERT}}$
- Available in Small 8-pin MSOP Lead-free RoHS Compliant Package

Order Numbers:

EMC1422-1-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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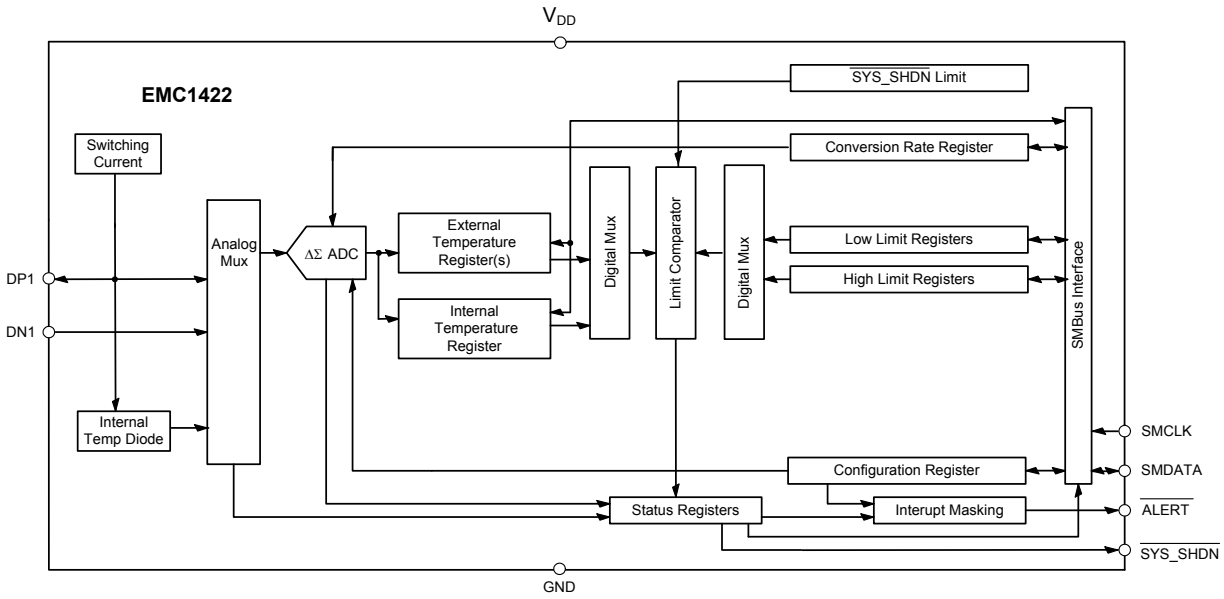
Block Diagram



Pin Diagram

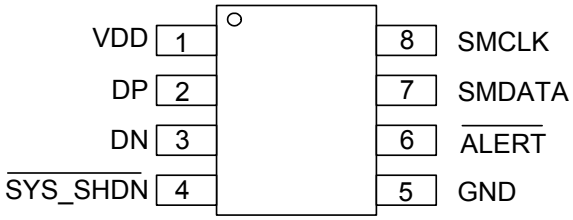
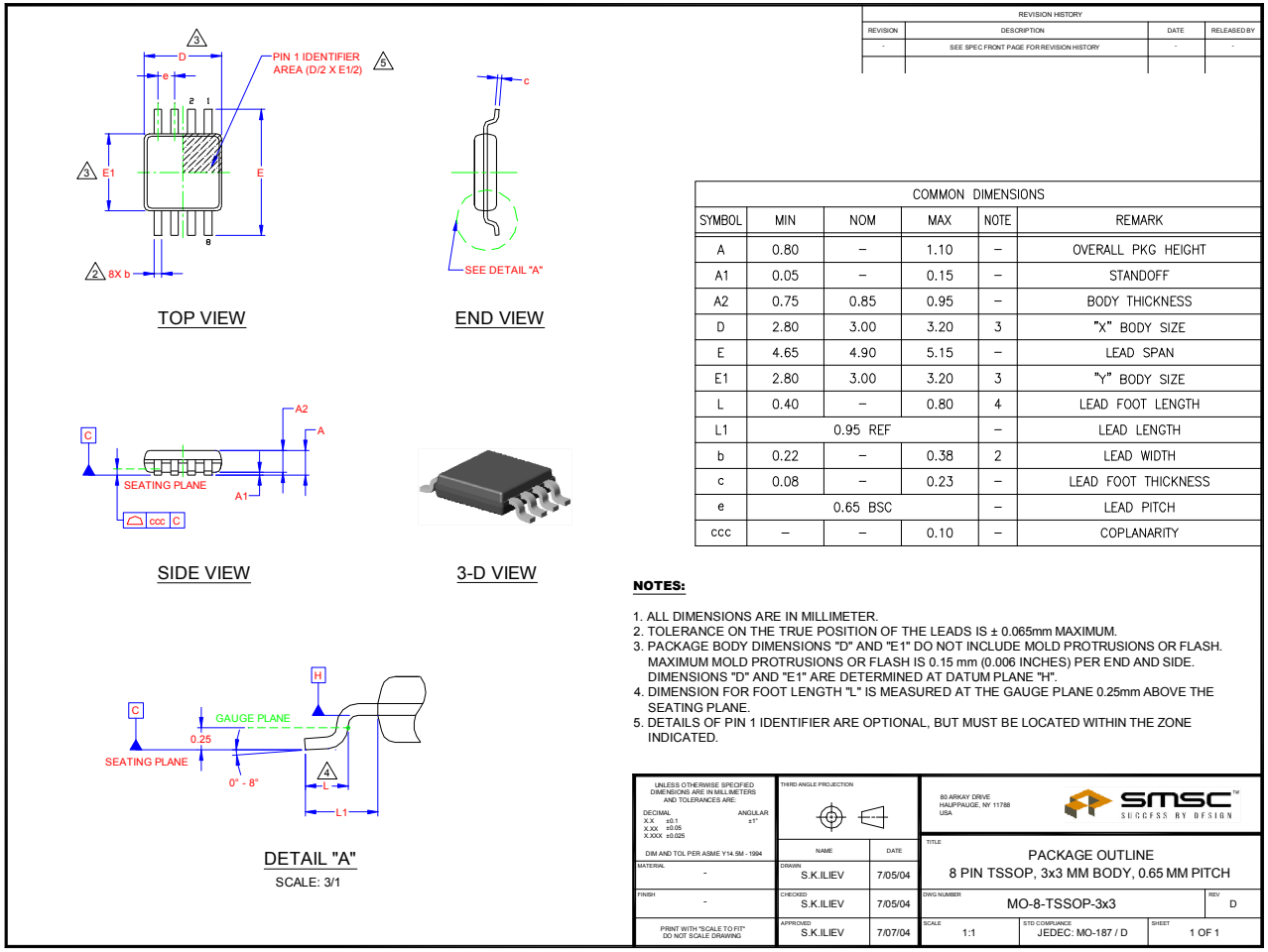


Figure 0.1 EMC1422 Pin Diagram

Package Outline



REVISION HISTORY			
REVISION	DESCRIPTION	DATE	RELEASED BY
-	SEE SPEC FRONT PAGE FOR REVISION HISTORY	-	-

COMMON DIMENSIONS					
SYMBOL	MIN	NOM	MAX	NOTE	REMARK
A	0.80	–	1.10	–	OVERALL PKG HEIGHT
A1	0.05	–	0.15	–	STANDOFF
A2	0.75	0.85	0.95	–	BODY THICKNESS
D	2.80	3.00	3.20	3	"X" BODY SIZE
E	4.65	4.90	5.15	–	LEAD SPAN
E1	2.80	3.00	3.20	3	"Y" BODY SIZE
L	0.40	–	0.80	4	LEAD FOOT LENGTH
L1	0.95 REF			–	LEAD LENGTH
b	0.22	–	0.38	2	LEAD WIDTH
c	0.08	–	0.23	–	LEAD FOOT THICKNESS
e	0.65 BSC			–	LEAD PITCH
ccc	–	–	0.10	–	COPLANARITY

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETER.
2. TOLERANCE ON THE TRUE POSITION OF THE LEADS IS ± 0.065mm MAXIMUM.
3. PACKAGE BODY DIMENSIONS "D" AND "E1" DO NOT INCLUDE MOLD PROTRUSIONS OR FLASH. MAXIMUM MOLD PROTRUSIONS OR FLASH IS 0.15 mm (0.006 INCHES) PER END AND SIDE. DIMENSIONS "D" AND "E1" ARE DETERMINED AT DATUM PLANE "H".
4. DIMENSION FOR FOOT LENGTH "L" IS MEASURED AT THE GAUGE PLANE 0.25mm ABOVE THE SEATING PLANE.
5. DETAILS OF PIN 1 IDENTIFIER ARE OPTIONAL, BUT MUST BE LOCATED WITHIN THE ZONE INDICATED.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS AND TOLERANCES ARE:
DECIMAL X.X ±0.1 X.XX ±0.05 X.XXX ±0.025 ANGULAR ±1°
DIM AND TOL PER ASME Y14.5M - 1994
MATERIAL -
FINISH -
PRINT WITH "SCALE TO FIT" DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

	NAME	DATE
DRAWN	S.K.ILIEV	7/05/04
CHECKED	S.K.ILIEV	7/05/04
APPROVED	S.K.ILIEV	7/07/04

80 ARKAY DRIVE
HAUPPAUGE, NY 11788
USA

TITLE: PACKAGE OUTLINE
8 PIN TSSOP, 3x3 MM BODY, 0.65 MM PITCH

DWG NUMBER: MO-8-TSSOP-3x3 REV: D
SCALE: 1:1 STD COMPLIANCE: JEDEC: MO-187 / D SHEET: 1 OF 1

Figure 1 8 Pin MSOP / TSSOP Package