



# 1°C Dual SMBus Sensor with Resistance Error Correction

## PRODUCT FEATURES

Data Brief

### General Description

The EMC1002 is an SMBus temperature sensor that monitors up to two temperature zones and can generate two system interrupts. With  $\pm 1^\circ\text{C}$  measurement accuracy, the EMC1002 provides a low-cost solution for critical temperature monitoring applications. Extended features include automatic resistance error correction and programmable ideality factor configuration eliminating both major sources of temperature measurement error.<sup>1</sup> The 11-bit sigma delta temperature-to-digital converter provides superb linearity, excellent noise immunity and repeatable temperature readings.

The EMC1002 generates two separate interrupts with programmable thermal trip points. The THERM output operates as a thermostat with programmable threshold and hysteresis. The ALERT output can be configured as a maskable SMBus alert with programmable window comparator limits, or a second THERM output.

The EMC1002 is pin compatible with the ADT7461, ADM1032, LM99, and the MAX6649.

<sup>1</sup> Patents pending.

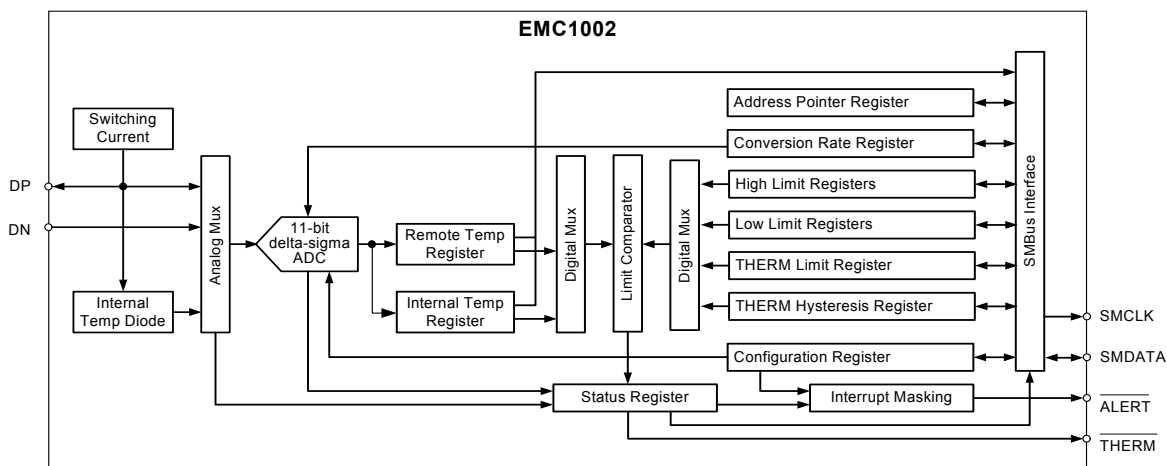
### Features

- Resistance Error Correction
- Ideality Factor Configuration
- Select 1 of 4 SMBus addresses with external resistor
- Remote Thermal Zones
  - $\pm 1^\circ\text{C}$  Accuracy (40°C to 80°C)
  - 0.125°C resolution
- Internal Thermal Zone
  - $\pm 3^\circ\text{C}$  Accuracy (0°C to 85°C)
- Maskable Interrupt using ALERT
- One-shot Command during standby
- Programmable temperature conversion rate
- Extended temperature (-64°C to 191°C) available
- Over-limit filtering with consecutive counter
- Small 8-lead SOIC or MSOP package; lead-free also available

### Applications

- Desktop and Notebook Computers
- Smart batteries
- Industrial/Automotive
- Other Electronic Systems

### Simplified Block Diagram



**ORDER NUMBER(S):**

**EMC1002-1-ACM-TR FOR 8 PIN, SOIC PACKAGE (Fixed Address, Tape and Reel)**  
**EMC1002-2-ACM-TR FOR 8 PIN, SOIC PACKAGE (Variable Address, Tape and Reel)**  
**EMC1002-1-ACZT-TR FOR 8 PIN, SOIC GREEN, LEAD-FREE PACKAGE (Fixed Address, Tape and Reel)**  
**EMC1002-2-ACZT-TR FOR 8 PIN, SOIC GREEN, LEAD-FREE PACKAGE (Variable Address, Tape and Reel)**  
**EMC1002-1-ACZB-TR FOR 8 PIN, MSOP PACKAGE (Fixed Address, Tape and Reel)**  
**EMC1002-2-ACZB-TR FOR 8 PIN, MSOP PACKAGE (Variable Address, Tape and Reel)**  
**EMC1002-1-ACZL-TR FOR 8 PIN, MSOP GREEN, LEAD-FREE PACKAGE (Fixed Address, Tape and Reel)**  
**EMC1002-2-ACZL-TR FOR 8 PIN, MSOP GREEN, LEAD-FREE PACKAGE (Variable Address, Tape and Reel)**

Reel size is 4,000 pieces.

Evaluation Board available upon request. (EVB-EMC1002)



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## Package Outlines

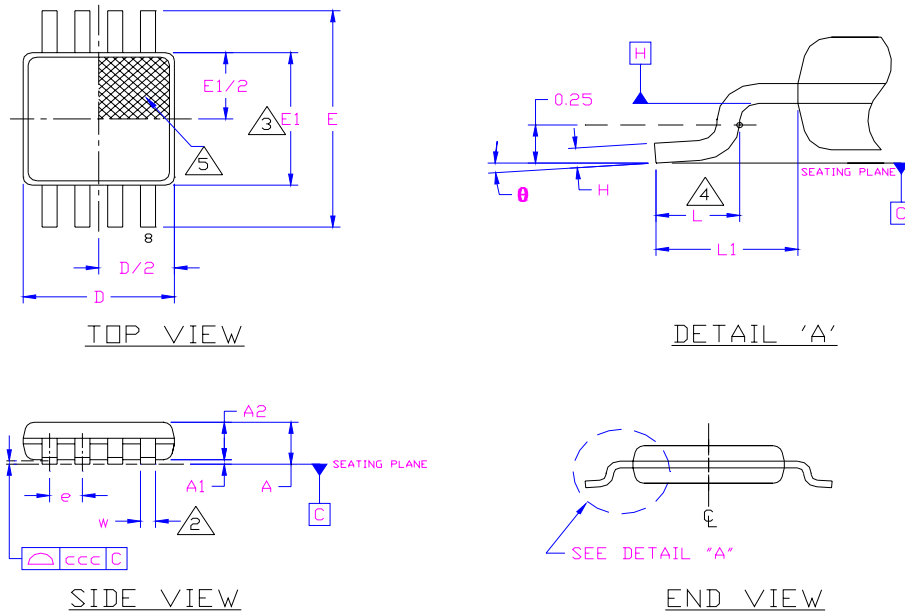


Figure 1 8-Pin MSOP and 8-Pin MSOP (Lead-Free) Package Outline - 3x3mm Body 0.65mm Pitch

Table 1 8-Pin MSOP and 8-Pin MSOP (Lead-Free) Package Parameters

	MIN	NOMINAL	MAX	REMARKS
A	0.80	~	1.10	Overall Package Height
A1	0.05	~	0.15	Standoff
A2	0.75	0.85	0.95	Body Thickness
D	2.80	3.00	3.20	X Body Size
E	4.65	4.90	5.15	Y Span
E1	2.80	~	3.20	Y body Size
H	0.08	~	0.23	Lead Foot Thickness
L	0.40	~	0.80	Lead Foot Length
L1	0.95 REF			Lead Length
e	0.65 BSC			Lead Pitch
$\theta$	0°	~	8°	Lead Foot Angle
W	0.22	~	0.38	Lead Width
ccc	~	~	0.10	Coplanarity

### Notes:

- Controlling Unit: millimeters.
- Tolerance on the true position of the leads is  $\pm 0.065$  mm maximum.
- Package body dimensions D and E1 do not include mold protrusion or flash. Dimensions D and E1 to be determined at datum plane H. Maximum mold protrusion or flash is 0.15mm (0.006 inches) per end, and 0.15mm (0.006 inches) per side.
- Dimension for foot length L measured at the gauge plane 0.25 mm above the seating plane.
- Details of pin 1 identifier are optional but must be located within the zone indicated.

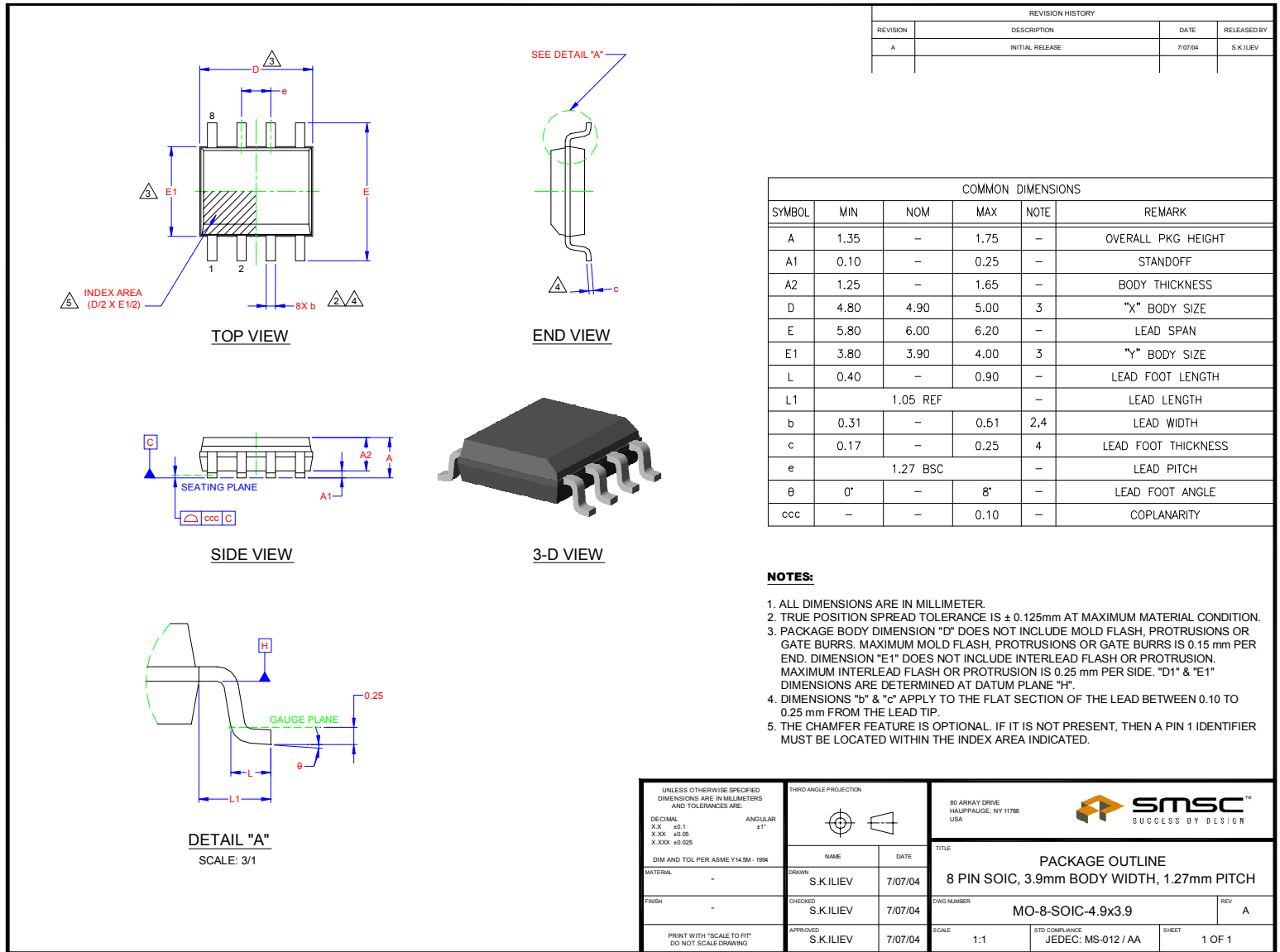


Figure 2 8-Pin SOIC and 8-Pin SOIC (Lead-Free) Package Outline and Parameters - 3.9mm Body 1.27 mm Pitch