SUCCESS BY DESIGN

EMC1002

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 ±1°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.[1] 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.

1.Patents pending.

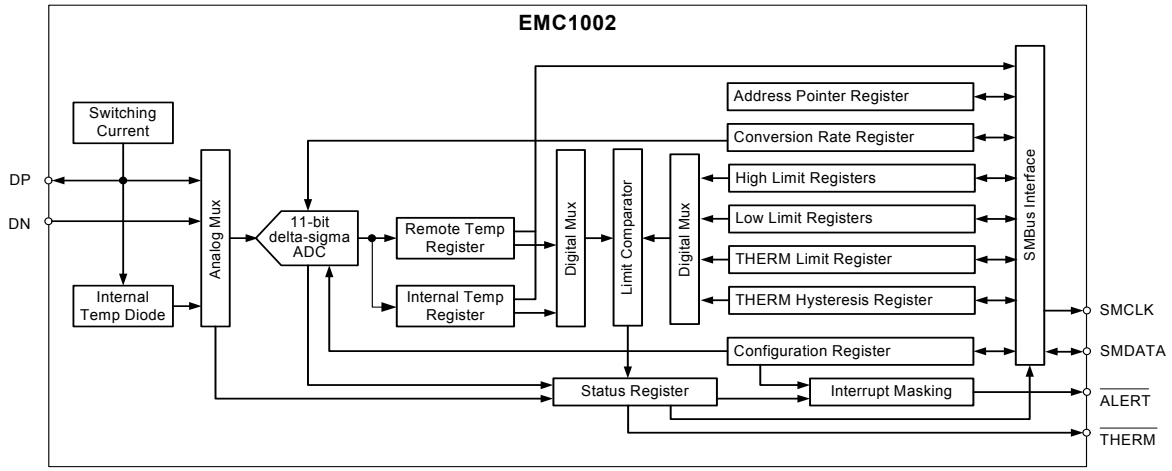
Features

- Resistance Error Correction
- Ideality Factor Configuration
- Select 1 of 4 SMBus addresses with external resistor
- Remote Thermal Zones
  - ±1°C Accuracy (40°C to 80°C)
  - 0.125°C resolution
- Internal Thermal Zone
  - ±3°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)

80 Arkay Drive
Hauppauge, NY 11788
(631) 435-6000
FAX (631) 273-3123

Package Outlines

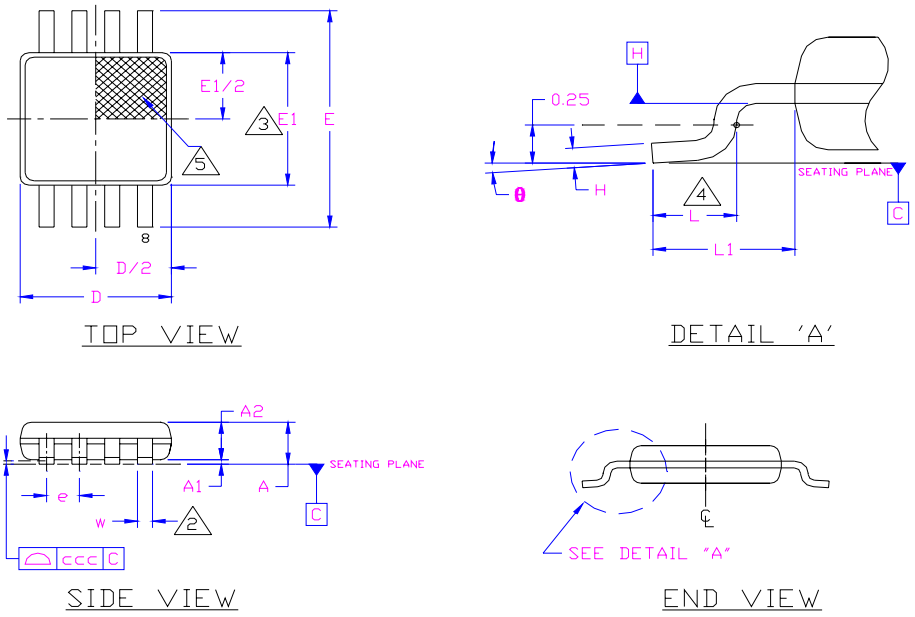


Figure 1 8-Pin MSOP and 8-Pin MSOP (Lead-Free) Package Outline - 3x3mm Body 0.65mm Pitch

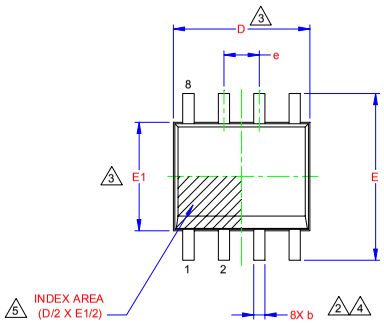
Table 1 8-Pin MSOP and 8-Pin MSOP (Lead-Free) Package Parameters

	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
θ	0^o	~	8^o	Lead Foot Angle
W	0.22	~	0.38	Lead Width
ccc	~	~	0.10	Coplanarity

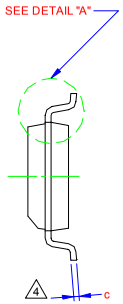
Notes:

1. Controlling Unit: millimeters.
2. Tolerance on the true position of the leads is ± 0.065 mm maximum.
3. 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.
4. Dimension for foot length L measured at the gauge plane 0.25 mm above the seating plane.
5. Details of pin 1 identifier are optional but must be located within the zone indicated.

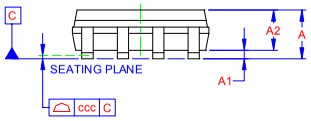
REVISION HISTORY			
REVISION	DESCRIPTION	DATE	RELEASED BY
A	INITIAL RELEASE	7/07/04	S.K.ILIEV



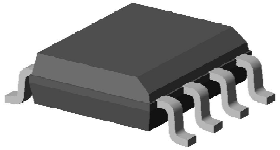
TOP VIEW



END VIEW

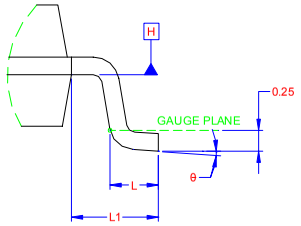


SIDE VIEW



3-D VIEW

COMMON DIMENSIONS					
SYMBOL	MIN	NOM	MAX	NOTE	REMARK
A	1.35	–	1.75	–	OVERALL PKG HEIGHT
A1	0.10	–	0.25	–	STANDOFF
A2	1.25	–	1.65	–	BODY THICKNESS
D	4.80	4.90	5.00	3	"X" BODY SIZE
E	5.80	6.00	6.20	–	LEAD SPAN
E1	3.80	3.90	4.00	3	"Y" BODY SIZE
L	0.40	–	0.90	–	LEAD FOOT LENGTH
L1		1.05 REF		–	LEAD LENGTH
b	0.31	–	0.51	2,4	LEAD WIDTH
c	0.17	–	0.25	4	LEAD FOOT THICKNESS
e		1.27 BSC		–	LEAD PITCH
θ	0°	–	8°	–	LEAD FOOT ANGLE
ccc	–	–	0.10	–	COPLANARITY



DETAIL "A"
SCALE: 3/1

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETER.
2. TRUE POSITION SPREAD TOLERANCE IS ± 0.125mm AT MAXIMUM MATERIAL CONDITION.
3. PACKAGE BODY DIMENSION "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MAXIMUM MOLD FLASH, PROTRUSIONS OR GATE BURRS IS 0.15 mm PER END. DIMENSION "E1" DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. MAXIMUM INTERLEAD FLASH OR PROTRUSION IS 0.25 mm PER SIDE. "D1" & "E1" DIMENSIONS ARE DETERMINED AT DATUM PLANE "H".
4. DIMENSIONS "b" & "c" APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.10 TO 0.25 mm FROM THE LEAD TIP.
5. THE CHAMFER FEATURE IS OPTIONAL. IF IT IS NOT PRESENT, THEN A PIN 1 IDENTIFIER MUST BE LOCATED WITHIN THE INDEX AREA 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	7/07/04
CHECKED	S.K.ILIEV	7/07/04
APPROVED	S.K.ILIEV	7/07/04

80 ARKAY DRIVE
HAUPPAUGE, NY 11788
USA

SMSC™ SUCCESS BY DESIGN

TITLE
PACKAGE OUTLINE
8 PIN SOIC, 3.9mm BODY WIDTH, 1.27mm PITCH

DWG NUMBER	REV
MO-8-SOIC-4.9x3.9	A

SCALE	STD COMPLIANCE	SHEET
1:1	JEDEC: MS-012 / AA	1 OF 1

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