

## 1°C Triple Temperature Sensor with Beta Compensation and Hotter of Two Zones

### PRODUCT FEATURES

Data Brief

#### General Description

The EMC1043 is a family of System Management Bus (SMBus) temperature sensors that monitors three temperature zones, one internal diode and two externally connected diodes, for PC and embedded environments. The EMC1043 includes beta compensation circuitry to correct for variation in the beta of measurement transistors. Other extended features include resistance error correction and ideality factor configuration to eliminate major sources of temperature measurement error.<sup>1</sup>

An added feature to the EMC1043 is a function that automatically compares the two external temperature zones and reports the hotter of the two temperatures. Selectable conversion rates and standby mode support low-power operation. The temperature measurement ranges support two data ranges (and formats), -64°C to +127°C and -64°C to +191°C.

#### Applications

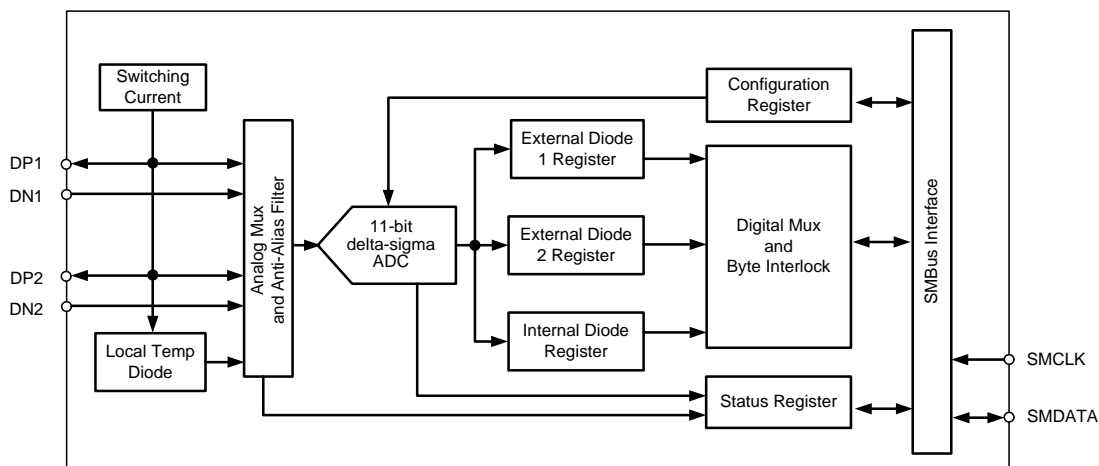
- Desktop and Notebook Computers
- Hardware Management
- Servers
- Embedded Applications

#### Features

- Supports two External Temperature Diodes
  - ±1°C Accuracy (40°C to 80°C)
  - 0.125°C Resolution
  - Ideality Factor Configuration
  - Accepts 2200pF Cap Across External Diodes for Noise Suppression
  - Optional Resistive Error Correction on External Diode 2
  - Resistance Error Correction (up to 100 Ohms)
  - Beta Compensation
- Internal Temperature Diode
  - ±3°C Accuracy (0°C to 85°C)
  - 0.125°C Resolution
- Low Power Operation
  - 4uA Standby Current
- 3.0V to 3.6V Supply
- Programmable Conversion Rate
- SMBus 2.0 Compliant
  - Four SMBus Address Available
- Reports Hotter of Two Diodes with Dual-core CPU

1. Patents pending

#### Simplified Block Diagram



**ORDER NUMBERS:**

ORDERING NUMBER	PACKAGE	FEATURES	SMBUS ADDRESS
EMC1043-1-ACZL-TR	8 pin MSOP Lead-Free RoHS Compliant package	Two external diodes with REC and Beta Compensation and Hottest Of Comparison	1001_100x
EMC1043-2-ACZL-TR			1001_101x
EMC1043-3-ACZL-TR			1001_000x
EMC1043-4-ACZL-TR			1001_001x
EMC1043-5-ACZL-TR		Two external diodes with REC. Beta Compensation on External Diode 1 only. Hottest of Comparison	1001_100x

Reel size is 4,000 pieces.

Evaluation Boards available upon request. (EVB-EMC1043, EVB-EMC1043C)



80 ARKAY DRIVE, HAUPPAUGE, NY 11788 (631) 435-6000, FAX (631) 273-3123

Copyright © 2008 SMSC or its subsidiaries. All rights reserved.

Circuit diagrams and other information relating to SMSC products are included as a means of illustrating typical applications. Consequently, complete information sufficient for construction purposes is not necessarily given. Although the information has been checked and is believed to be accurate, no responsibility is assumed for inaccuracies. SMSC reserves the right to make changes to specifications and product descriptions at any time without notice. Contact your local SMSC sales office to obtain the latest specifications before placing your product order. The provision of this information does not convey to the purchaser of the described semiconductor devices any licenses under any patent rights or other intellectual property rights of SMSC or others. All sales are expressly conditional on your agreement to the terms and conditions of the most recently dated version of SMSC's standard Terms of Sale Agreement dated before the date of your order (the "Terms of Sale Agreement"). The product may contain design defects or errors known as anomalies which may cause the product's functions to deviate from published specifications. Anomaly sheets are available upon request. SMSC products are not designed, intended, authorized or warranted for use in any life support or other application where product failure could cause or contribute to personal injury or severe property damage. Any and all such uses without prior written approval of an Officer of SMSC and further testing and/or modification will be fully at the risk of the customer. Copies of this document or other SMSC literature, as well as the Terms of Sale Agreement, may be obtained by visiting SMSC's website at <http://www.smssc.com>. SMSC is a registered trademark of Standard Microsystems Corporation ("SMSC"). Product names and company names are the trademarks of their respective holders.

**SMSC DISCLAIMS AND EXCLUDES ANY AND ALL WARRANTIES, INCLUDING WITHOUT LIMITATION ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND AGAINST INFRINGEMENT AND THE LIKE, AND ANY AND ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR USAGE OF TRADE. IN NO EVENT SHALL SMSC BE LIABLE FOR ANY DIRECT, INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES; OR FOR LOST DATA, PROFITS, SAVINGS OR REVENUES OF ANY KIND; REGARDLESS OF THE FORM OF ACTION, WHETHER BASED ON CONTRACT; TORT; NEGLIGENCE OF SMSC OR OTHERS; STRICT LIABILITY; BREACH OF WARRANTY; OR OTHERWISE; WHETHER OR NOT ANY REMEDY OF BUYER IS HELD TO HAVE FAILED OF ITS ESSENTIAL PURPOSE, AND WHETHER OR NOT SMSC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.**

## Package Outline

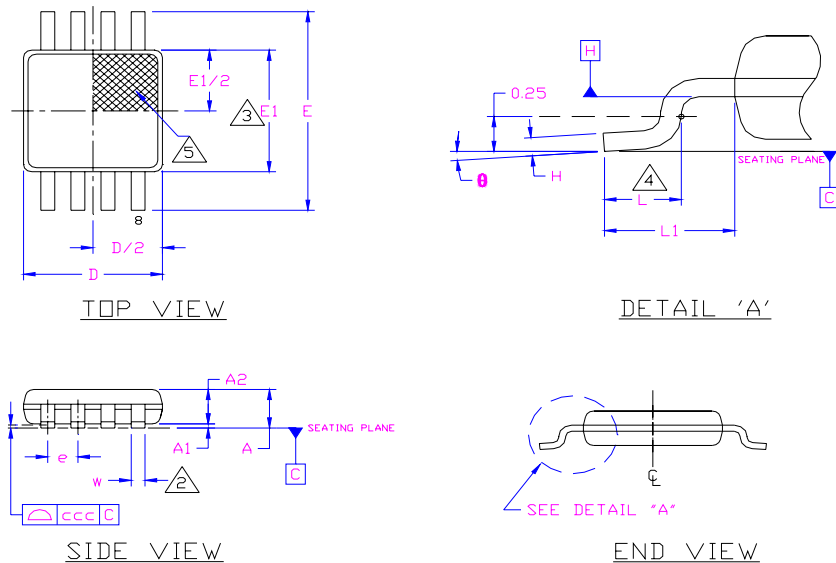


Figure 1 8-Pin MSOP Package Outline - 3x3mm Body 0.65mm Pitch

Table 1 8-Pin MSOP 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.