

## 1°C Triple SMBus Sensor with Resistance Error Correction

### PRODUCT FEATURES

Data Brief

#### General Description

The EMC1033 is an SMBus temperature sensor that monitors up to three temperature zones and can generate two system interrupts. With  $\pm 1^\circ\text{C}$  measurement accuracy, the EMC1033 provides a low-cost solution for critical temperature monitoring applications. Features include automatic resistance error correction and programmable ideality factor configuration eliminating both major sources of temperature measurement error.<sup>1</sup>

The EMC1033 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 as a second THERM output. Both interrupts are maintained in an 8-pin package while a third temperature zone is added with the anti-parallel diode technique. This allows the EMC1033 to be pin compatible with the ADT7461, ADM1032, LM99, and the MAX6649 with the advantage of a third temperature zone.

#### Features

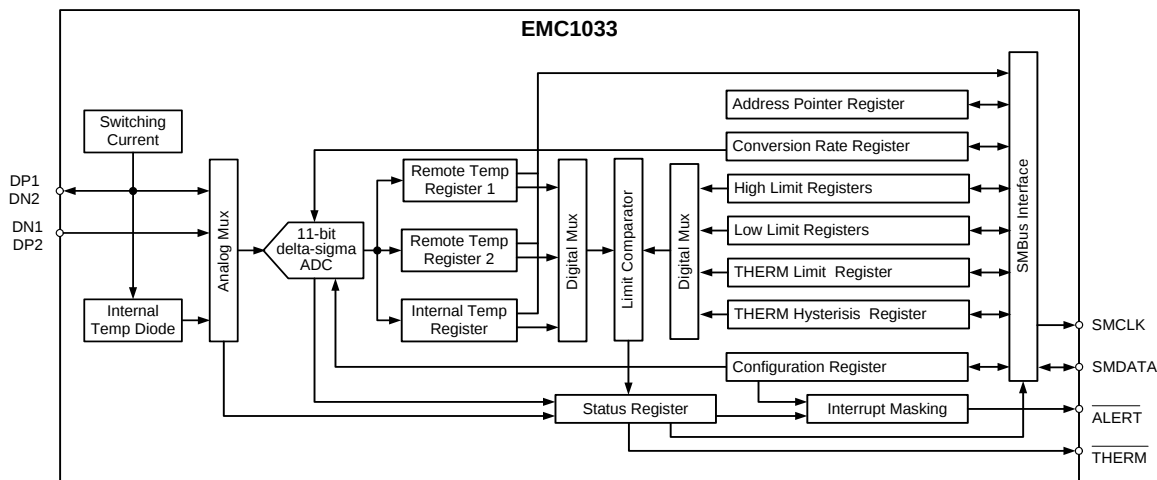
- Resistance Error Correction
- Ideality Factor Configuration
- Select 1 of 4 SMBus addresses with external resistor
- Remote Thermal Zones
  - $\pm 1.0^\circ\text{C}$  Accuracy ( $40^\circ\text{C}$  to  $80^\circ\text{C}$ )
  - $0.125^\circ\text{C}$  resolution
- Internal Thermal Zone
  - $\pm 3.0^\circ\text{C}$  Accuracy ( $0^\circ\text{C}$  to  $85^\circ\text{C}$ )
- Maskable Interrupt using ALERT
- One-shot Command during standby
- Programmable temperature conversion rate
- Extended temperature ( $-64^\circ\text{C}$  to  $191^\circ\text{C}$ ) available
- Over-limit filtering with consecutive counter
- Small 8-pin TSSOP lead-free RoHS compliant package

#### Applications

- Desktop and Notebook Computers
- Thermostats
- Smart batteries
- Industrial/Automotive

1. Patents pending.

#### Simplified Block Diagram



**ORDER NUMBER:****EMC1033-ACZL-TR FOR 8 PIN, TSSOP (TAPE AND REEL), LEAD-FREE ROHS COMPLIANT PACKAGE****Reel size is 4,000 pieces.****Evaluation Board available upon request. (EVB-EMC1033)**

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

Copyright © 2007 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

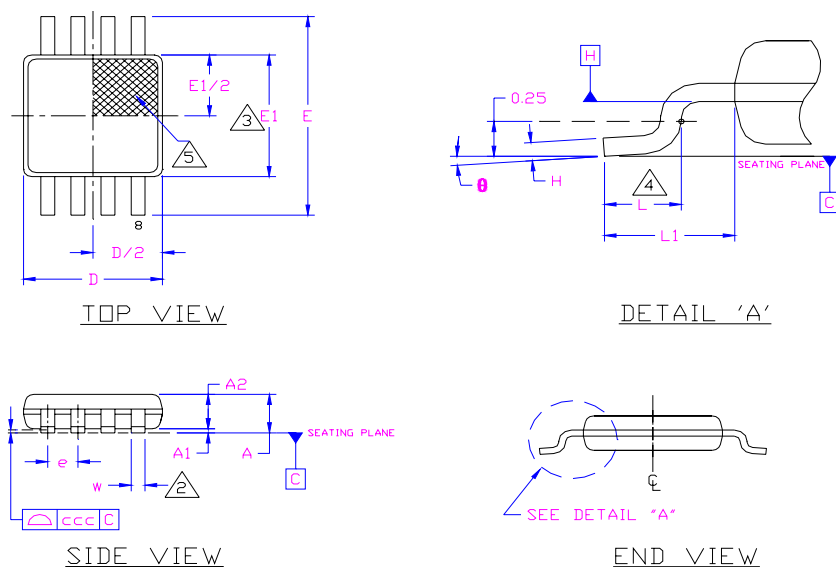


Figure 1 8-Pin TSSOP Package Outline - 3x3mm Body 0.65mm Pitch

Table 1 8-Pin TSSOP 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°       | ~       | 8°   | 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  $\pm 0.065$  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.