EMC2102

RPM-Based Fan Controller with HW Thermal Shutdown

PRODUCT FEATURES

Data Brief

General Description

The EMC2102 is an SMBus, closed-loop, RPM-based fan controller/driver with hardware (HW) thermal shutdown and reset controller. The EMC2102 is packaged in a thermally enhanced, compact, 5x5, 28-pin lead-free RoHS compliant QFN package.

The EMC2102 utilizes Beta Compensation (an implementation of the BJT or transistor model for thermal diodes) and Resistance Error Correction (REC) to accurately monitor three external temperature zones. These features allow great accuracy for CPU substrate thermal diodes on multiple process geometries as well as with discrete diode-connected transistors. Both Beta Compensation and REC can be disabled on the EMC2102 to maintain accuracy when monitoring AMD thermal diodes.

The EMC2102 includes a closed-loop RPM based Fan Control Algorithm that integrates a linear fan driver capable of sourcing 600mA of current. The fan control algorithm is designed to work with fans that operate up to 16,000 RPMs.

The EMC2102 provides a stand-alone HW thermal shutdown block. The HW thermal shutdown logic can be configured for a few common configurations based on the strapping level of the SHDN_SEL pin on the PCB. The HW thermal shutdown point can be set in 1°C increments by using a discrete resistor divider implemented on the TRIP_SET pin.

The EMC2102 also provides 5V supply 'power good' function with a threshold of 4.5V. This function is provided on the RESET# pin.

Features

- Designed to support 45nm, 65nm, and 90nm CPU Diodes
- Supports BJT and transistor models for diode channels
- Closed-Loop RPM Based Fan Controller
  - Accepts External Clock Source To Achieve 2% Accuracy
- Integrated Linear Fan Driver
  - 600mA Drive Capability
- HW Thermal Shutdown (SYS_SHDN#)
  - 1°C Incremental Set Points For Thermal Shutdown
  - Cannot be disabled by software
- Provides Reset Function (RESET#) On 5V Supply
- Three Remote Thermal Zones
  - ±1°C Accuracy (60°C to 100°C)
  - 1°C Resolution
- Resistance Error Correction On Thermal Diode Channels
  - Eliminates Temperature Offset Due To Series Resistance From PCB Traces And Thermal 'Diode'
- Thermally Enhanced, 28-pin, 5x5 QFN Lead-free RoHS Compliant Package
- Operates From Single 3.0 - 3.6V Supply
  - 5V Supply For Linear Fan Driver
- Software Configurable ALERT# Signal For Diode Fault, Fan Stall Or System Warning

Applications

- Notebook Computers
- Desktop Computers
- Embedded Applications

ORDER NUMBER:

EMC2102-DZK FOR 28-PIN QFN PACKAGE (LEAD-FREE ROHS COMPLIANT) (ADDRESS - 011_1101)

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

Block Diagram

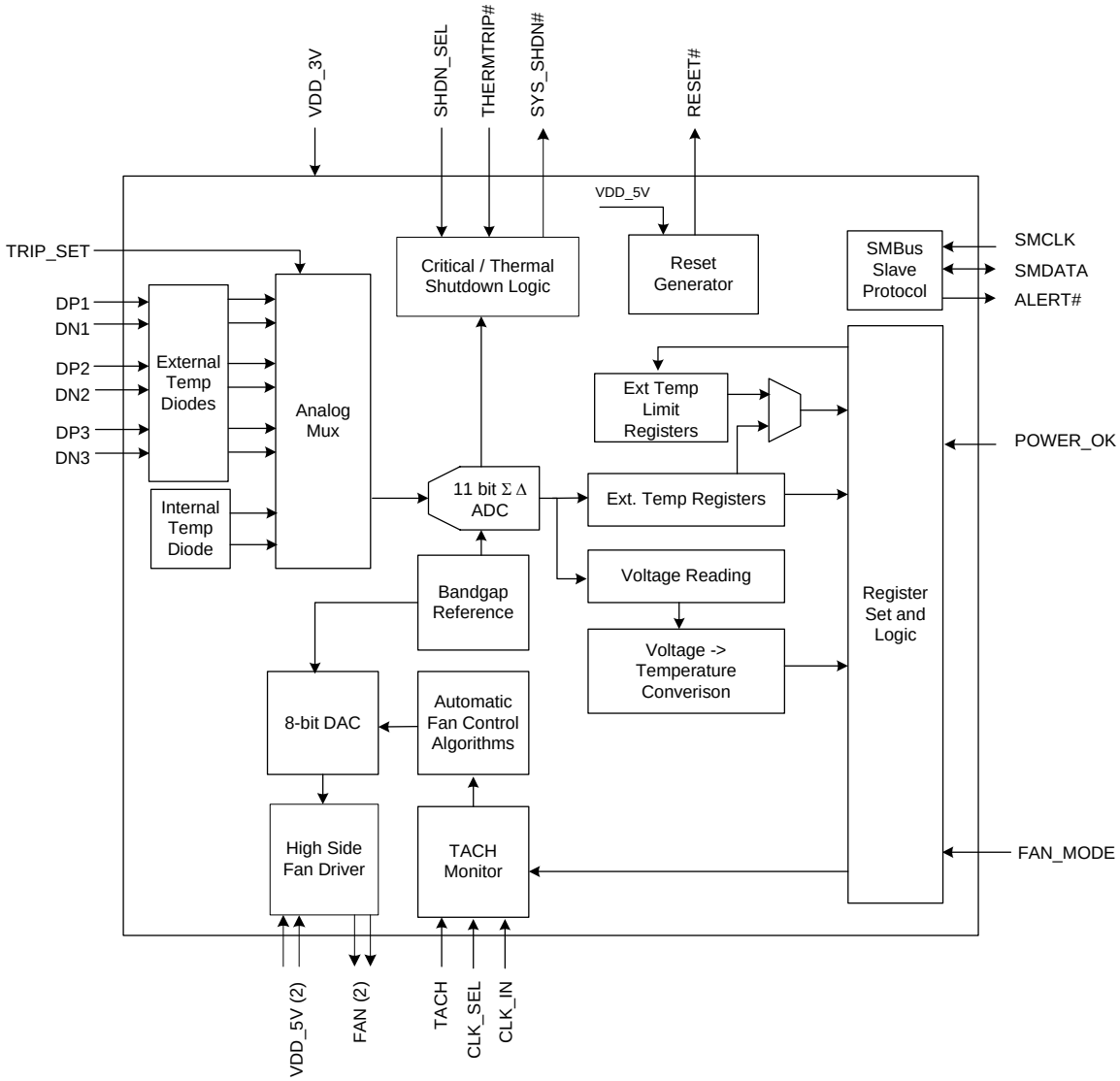
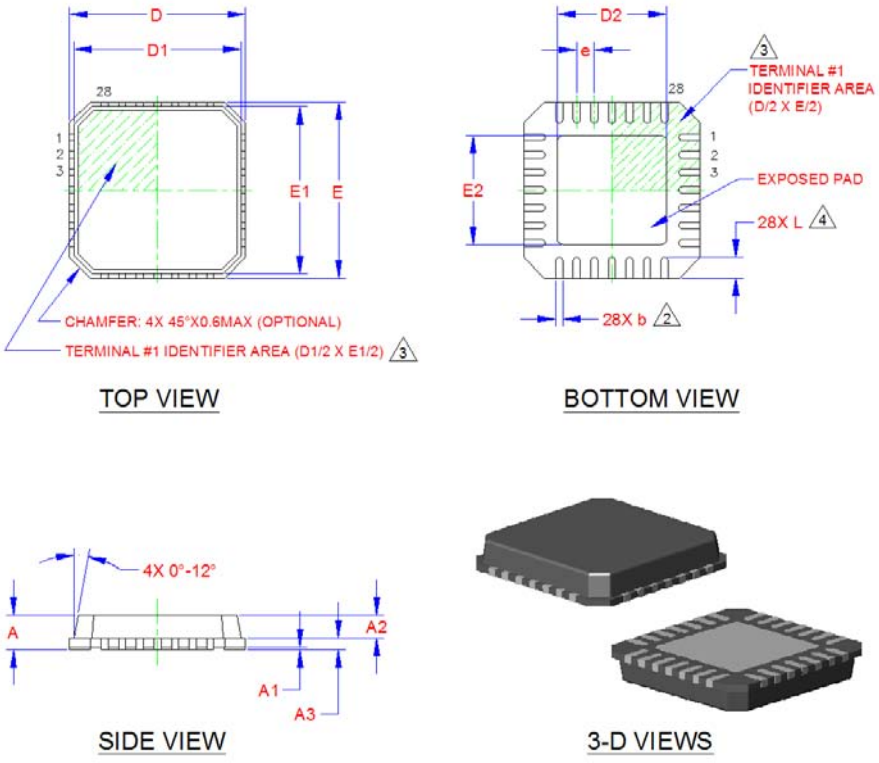


Figure 1 EMC2102 Block Diagram

PRODUCT PREVIEW

Package Outline



COMMON DIMENSIONS					
SYMBOL	MIN	NOM	MAX	NOTE	REMARK
A	0.80	-	1.00	-	OVERALL PACKAGE HEIGHT
A1	0	0.02	0.05	-	STANDOFF
A2	0.60	-	0.80	-	MOLD CAP THICKNESS
A3	0.20			-	LEADFRAME THICKNESS
D/E	4.85	5.00	5.15	-	X/Y BODY SIZE
D1/E1	4.55	-	4.95	-	X/Y MOLD CAP SIZE
D2/E2	SEE VARIATIONS			2	X/Y EXPOSED PAD SIZE
L	0.50	-	0.75	4	TERMINAL LENGTH
b	0.18	-	0.30	2	TERMINAL WIDTH
e	0.50 BSC			-	TERMINAL PITCH

D2/E2 VARIATIONS				
MIN	NOM	MAX	NOTE	CATALOG PART #
2.95	3.10	3.25	2	EMC2102

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETER.
2. POSITION TOLERANCE OF EACH TERMINAL AND EXPOSED PAD IS ± 0.05mm AT MAXIMUM MATERIAL CONDITION. DIMENSIONS "b" APPLIES TO PLATED TERMINALS AND IT IS MEASURED BETWEEN 0.15 AND 0.30 mm FROM THE TERMINAL TIP.
3. DETAILS OF TERMINAL #1 IDENTIFIER ARE OPTIONAL BUT MUST BE LOCATED WITHIN THE AREA INDICATED.
4. ROUNDED INNER TIPS ON TERMINALS ARE OPTIONAL.

Figure 2 EMC2102 28-Pin 5x5mm QFN Package Outline and Parameters

PRODUCT PREVIEW