EMC2105

RPM-Based High Side Fan Controller with Hardware Thermal Shutdown

PRODUCT FEATURES

Data Brief

General Description

The EMC2105 is an SMBus compliant fan controller with up to five (up to 4 external and 1 internal) temperature channels. The fan driver can be operated using two methods each with two modes. The methods include an RPM based Fan Speed Control Algorithm and a direct drive setting. The modes include manually programming the desired settings or using the internal programmable temperature look-up table to select the desired setting based on measured temperature.

The temperature monitors offer 1°C accuracy (for external diodes) with sophisticated features to reduce errors introduced by series resistance and beta variation of substrate thermal diode transistors commonly found in processors.

The EMC2105 also includes a hardware programmable temperature limit and dedicated system shutdown output for thermal protection of critical circuitry.

Applications

- Notebook Computers
- Embedded Applications
- Projectors
- Industrial and Networking Equipment

Features

- Programmable Fan Control circuit
  - 600mA, 5V, High Side Fan Driver
  - Optional detection of aging fans
- RPM based fan control algorithm
  - 2% accuracy from 500RPM to 16k RPM
- Temperature Look-Up Table
  - Allows programmed fan response to temperature
  - 1 to 4 thermal zones to control fan driver
  - Controls fan speed or drive setting
  - Allows externally generated temperature data to control fan drivers including two DTS channels
- Up to Four External Temperature Channels
  - Designed to support 45nm, 60nm, and 90nm CPUs
  - Automatically detects and supports CPUs requiring the BJT or Transistor models
  - Resistance error correction
  - 1°C accurate (60°C to 100°C)
  - 0.125°C resolution
  - Detects fan aging and variation
- Up to three thermistor compatible voltage inputs
- Hardware Programmable Thermal Shutdown Temperature
  - Cannot be altered by software
  - 60°C to 122°C Range or 92°C to 154°C Range
- Programmable High and Low Limits for all channels
- 3.3V Supply Voltage
- SMBus 2.0 Compliant
  - SMBus Alert compatible
- Available in 20-pin QFN Package - Lead Free RoHS compliant (4mm x 4mm)

ORDER NUMBER:

ORDERING NUMBER	PACKAGE	FEATURES
EMC2105-BP	20 pin QFN (Lead-Free RoHS compliant)	Single High Side Fan driver, up to 4 external diode measurement channels, one Critical / Thermal Shutdown input

REEL SIZE IS 4,000 PIECES

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

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Block Diagram

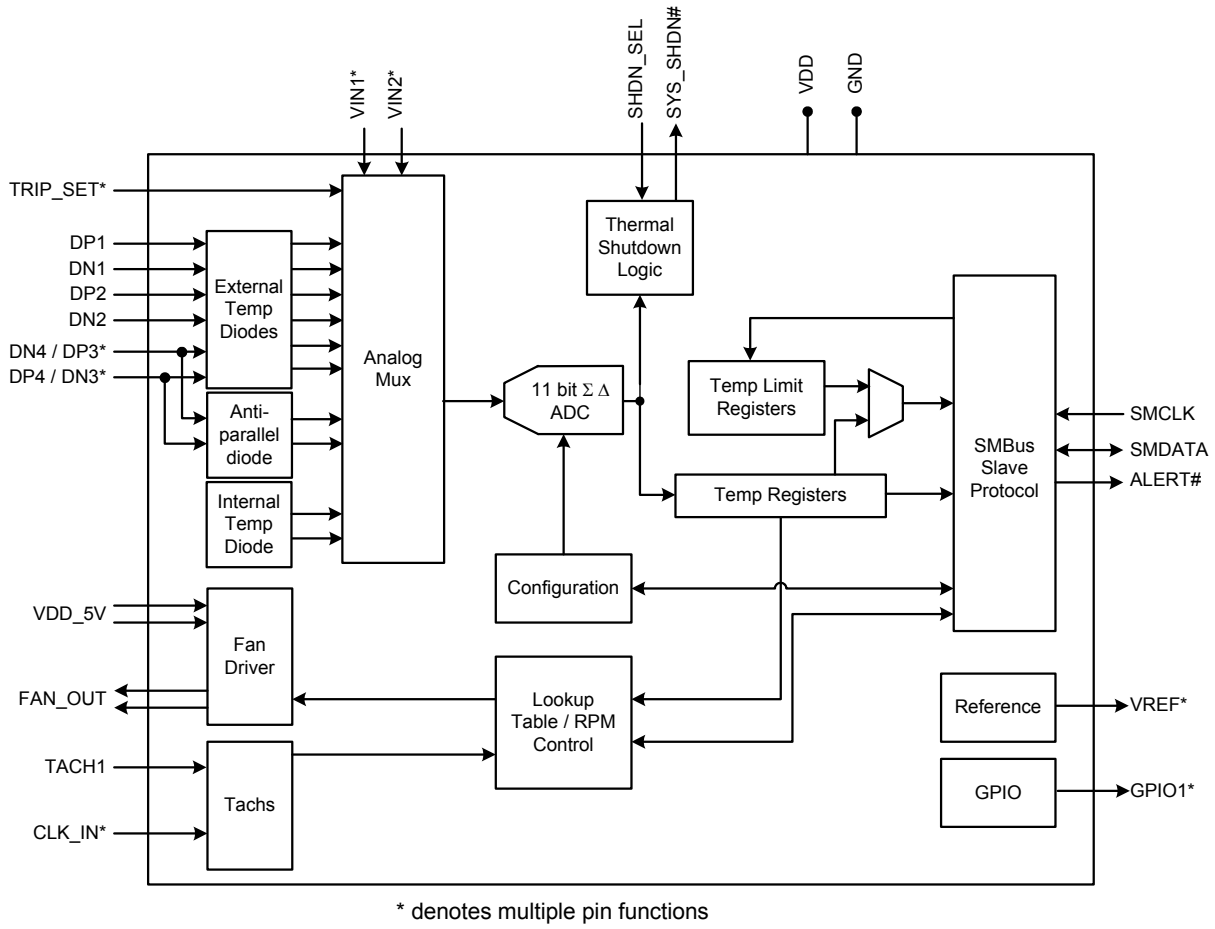
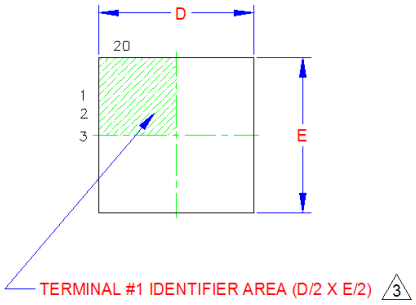


Figure 1 EMC2105 Block Diagram

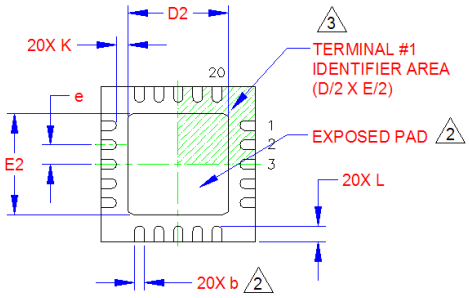
PRODUCT PREVIEW

Package Outline

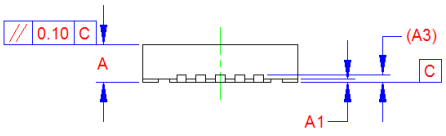
QFN 20-Pin 4mm x 4mm



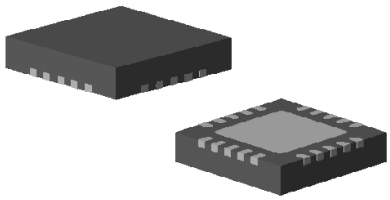
TOP VIEW



BOTTOM VIEW



SIDE VIEW



3-D VIEWS

COMMON DIMENSIONS					
SYMBOL	MIN	NOM	MAX	NOTE	REMARK
A	0.80	0.85	0.90	-	OVERALL PACKAGE HEIGHT
A1	0	0.02	0.05	-	STANDOFF
A3		0.20 REF		-	LEAD-FRAME THICKNESS
D/E	3.90	4.00	4.10	-	X/Y BODY SIZE
D2/E2	2.50	2.60	2.70	2	X/Y EXPOSED PAD SIZE
L	0.35	0.40	0.45	-	TERMINAL LENGTH
b	0.18	0.25	0.30	2	TERMINAL WIDTH
K	0.20	-	-	-	TERMINAL TO PAD DISTANCE
e		0.50 BSC		-	TERMINAL PITCH

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
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.

Figure 2 EMC2105 20-Pin 4x4mm QFN Package Outline and Parameters