# EMC2305

# Multiple RPM-Based PWM Fan Controller for Five Fans

## PRODUCT FEATURES

**Data Brief**

### General Description

The EMC2305 is an SMBus compliant fan controller with up to five independently controlled PWM fan drivers. Each fan driver is controlled by a programmable frequency PWM driver and Fan Speed Control algorithm that operates in either a closed loop fashion or as a directly PWM-controlled device.

The closed loop Fan Speed Control algorithm (FSC) has the capability to detect aging fans and alert the system. It will likewise detect stalled or locked fans and trigger an interrupt.

Additionally, the EMC2305 offers a clock output so that multiple devices may be chained and slaved to the same clock source for optimal performance in large distributed systems.

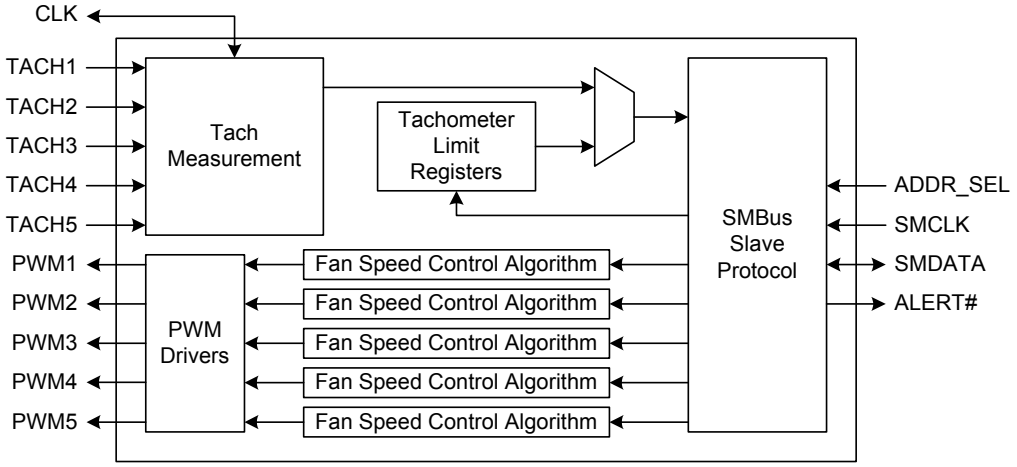
### Applications

- Servers
- Projectors
- Industrial and Networking Equipment
- Notebook Computers

### Features

- Five Programmable Fan Control circuits (EMC2305)
  - 4-wire fan compatible
  - High speed PWM (26 kHz)
  - Low speed PWM (9.5Hz - 2240 Hz)
  - Optional detection of aging fans
  - Fan Spin Up Control and Ramp Rate Control
  - Alert on Fan Stall
  - Up to 3 Selectable Default Fan Speeds
- Watchdog Timer
- RPM-based fan control algorithm
  - 0.5% accuracy from 500 RPM to 16k RPM (external crystal oscillator)
  - 1% accuracy from 500 RPM to 16k RPM (internal clock)
- SMBus 2.0 Compliant
  - Up to 6 selectable SMBus addresses
  - SMBus Alert compatible
- CLK Pin can provide a clock source output
- Available in a 16-pin 4mm x 4mm QFN Lead-free RoHS Compliant package

### Block Diagram



**Order Number:**

| ORDERING NUMBER | PACKAGE | FEATURES |
|---|---|---|
| EMC2305-1-AP-TR | 16-pin QFN (Lead-free RoHS compliant) | Five RPM-based fan speed control algorithms |

**This product meets the halogen maximum concentration values per IEC61249-2-21**

**For RoHS compliance and environmental information, please visit www.smsc.com/rohs**

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# Package Outline

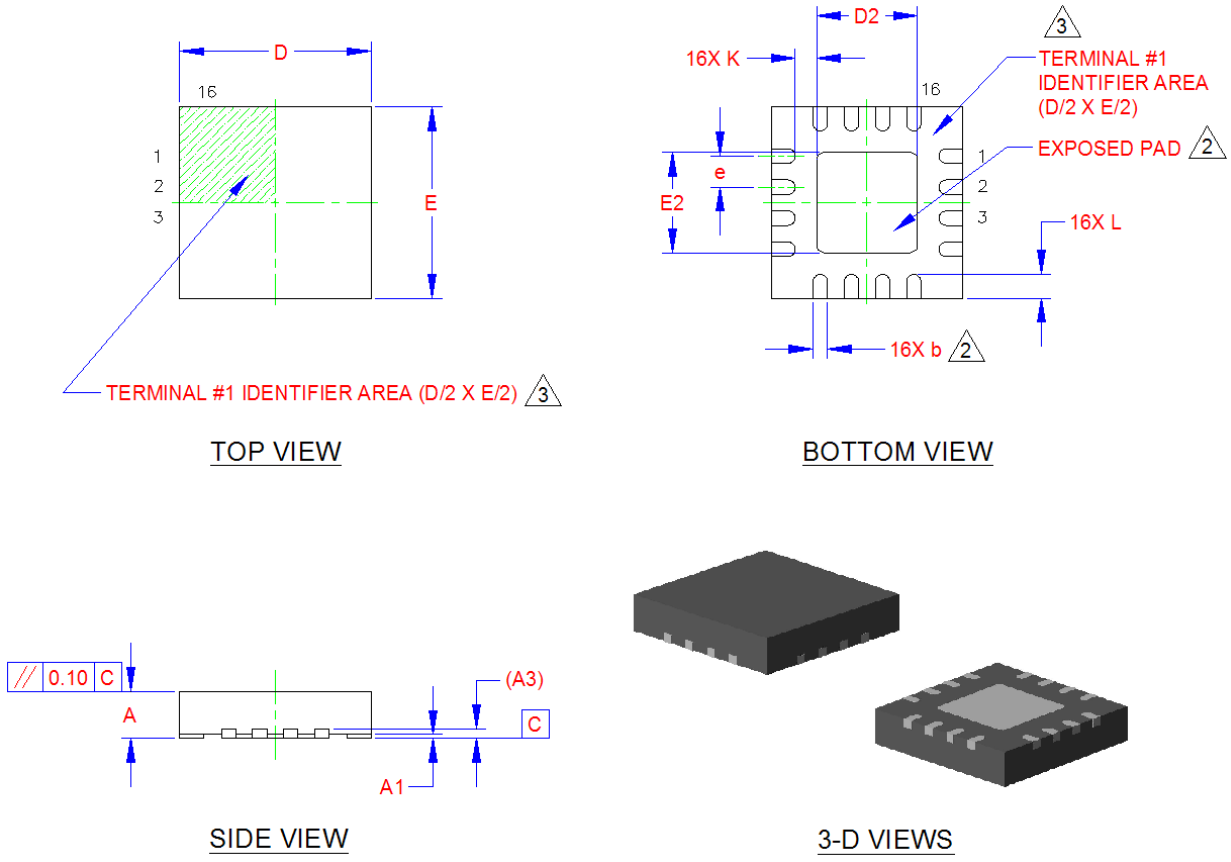
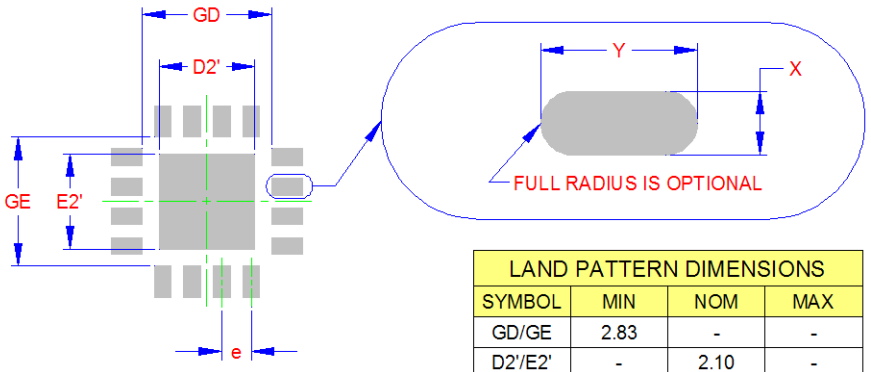



**Figure 1 Package Drawing - 16-Pin QFN 4mm x 4mm**

| 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 | 2.00 | 2.10 | 2.20 | 2 | X/Y EXPOSED PAD SIZE |
| L | 0.45 | 0.50 | 0.55 | - | TERMINAL LENGTH |
| b | 0.25 | 0.30 | 0.35 | 2 | TERMINAL WIDTH |
| K | 0.20 | - | - | - | TERMINAL TO PAD DISTANCE |
| e | | 0.65 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 Package Dimensions - 16-Pin QFN 4mm x 4mm**




| LAND PATTERN DIMENSIONS | | | |
|---|---|---|---|
| SYMBOL | MIN | NOM | MAX |
| GD/GE | 2.83 | - | - |
| D2'/E2' | - | 2.10 | - |
| X | - | - | 0.37 |
| Y | - | - | 0.69 |
| e | | 0.65 | |

RECOMMENDED PCB LAND PATTERN

**Figure 3 PCB Footprint - 16-Pin QFN 4mm x 4mm**