DME1737

Super I/O with Temperature Sensing, Quiet Auto Fan and Glue Logic

Product Features

- General Features
  - 3.3 Volt Operation (SIO Block is 5 Volt Tolerant)
  - LPC Interface
  - Programmable Wake-up Event Interface
  - PC99, PC2001 Compliant
  - ACPI 2.0 Compliant
  - Multiplexed Command, Address and Data Bus
  - Serial IRQ Interface Compatible with Serialized IRQ Support for PCI Systems
  - PME Interface
  - ISA Plug-and-Play Compatible Register Set
  - 25 General Purpose Input/Output Pins
  - System Management Interrupt
- AC Power Failure Recovery
- Watchdog Timer
- 2.88MB Super I/O Floppy Disk Controller
  - Licensed CMOS 765B Floppy Disk Controller
  - Software and Register Compatible with Microchip's Proprietary 82077AA Compatible Core
  - Supports One Floppy Drive
  - Configurable Open Drain/Push-PullOutput Drivers
  - Supports Vertical Recording Format
  - 16-Byte Data FIFO
  - 100% IBM® Compatibility
  - Detects All Overrun and Underrun Conditions
  - Sophisticated Power Control Circuitry (PCC) Including Multiple Powerdown Modes for Reduced Power Consumption
  - DMA Enable Logic
  - Data Rate and Drive Control Registers
  - 480 Address, Up to Eight IRQ and Three DMA Options
  - Support 3 Mode FDD
- Enhanced Digital Data Separator
  - 2 Mbps, 1 Mbps, 500 Kbps, 300 Kbps, 250 Kbps Data Rates
  - Programmable Precompensation Modes
- Serial Ports
  - Two Full Function Serial Ports
  - High Speed NS16C550A Compatible UARTs with Send/Receive 16-Byte FIFOs
  - Supports 230k and 460k Baud
  - Programmable Baud Rate Generator
  - Modem Control Circuitry
  - 480 Address and 15 IRQ Options
- Infrared Port
  - Multiprotocol Infrared Interface
  - IrDA 1.0 Compliant
  - SHARP ASK IR
  - 480 Addresses, Up to 15 IRQ
- Multi-Mode™ Parallel Port with ChiProtect™
  - Standard Mode IBM PC/XT®, PC/AT®, and PS/2™ Compatible Bi-directional Parallel Port
  - Enhanced Parallel Port (EPP) Compatible - EPP 1.7 and EPP 1.9 (IEEE 1284 Compliant)
  - IEEE 1284 Compliant Enhanced Capabilities Port (ECP)
  - ChiProtect Circuitry for Protection
  - 960 Address, Up to 15 IRQ and Three DMA Options
- Keyboard Controller
  - 8042 Software Compatible
  - 8 Bit Microcomputer
  - 2k Bytes of Program ROM
  - 256 Bytes of Data RAM
  - Four Open Drain Outputs Dedicated for Keyboard/Mouse Interface
  - Asynchronous Access to Two Data Registers and One Status Register
  - Supports Interrupt and Polling Access
  - 8 Bit Counter Timer
  - Port 92 Support
  - Fast Gate A20 and KRESET Outputs
- Motherboard GLUE Logic
  - IDE Reset Output
  - (4) Buffered PCI Reset Outputs with software controlled reset capability - default transparent
  - 3VSB Gate and 3V Gate signal generation
  - Front Panel Reset Debouncing and Power Good Signal Generation
  - Power Supply Turn On Circuitry with Support for power button on PS/2 Keyboard
  - Resume Reset Signal Generation
  - SMBus Isolation Circuitry (2 sets external and 1 set internal for Hardware Monitoring Block)
  - SMBus 2.0 compliant interface for Hardware Monitoring
  - LED Control (2)

- Fan Control
  - 5 PWM (Pulse Width Modulation) Outputs
  - Low frequency and high frequency PWM support
  - 6 Fan Tachometer Inputs
  - Programmable automatic fan control based on temperature
  - Interrupt Pin for out-of-limit Fantach Events
  - Fantach events generate PME's and/or Speaker warning
- Temperature Monitor
  - Monitoring of Two Remote Thermal Diodes
  - Internal Ambient Temperature Measurement
  - Limit Comparison of all Monitored Values
  - Interrupt Pin for out-of-limit Temperature Indication
  - Thermal events generate PME's and/or Speaker warning
  - Configurable offset for internal or external temperature channels
- Voltage Monitor
  - Monitor Power supplies (5V, +5VTR, +12V, Vccp, Vbat, VTR, and VCC)
  - Limit Comparison of all Monitored Values
  - Interrupt Pin for out-of-limit Voltage Indication
  - Voltage events generate PME's and/or Speaker warning
- Security Features
  - Security Key Register (32 byte) for Device Authentication
- 6 VID (Voltage Identification) Inputs
- Phoenix Keyboard BIOS ROM
- 128-Pin, QFP RoHS Compliant Package

Description

The DME1737 is a 3.3V (Super I/O Block is 5V tolerant) PC99/PC2001 compliant Super I/O controller with an LPC interface. DME1737 also includes Hardware Monitoring capabilities, enhanced Security features, Power Control logic and Motherboard Glue logic.

The DME1737's hardware monitoring capability includes temperature, voltage and fan speed monitoring. It has the ability to alert the system to out-of-limit conditions and automatically control the speeds of multiple fans. There are four analog inputs for monitoring external voltages of +5V, +5VTR, +12V and Vccp (core processor voltage), as well as internal monitoring of the SIO's VCC, VTR, and Vbat power supplies. The DME1737 includes support for monitoring two external temperatures via thermal diode inputs and an internal sensor for measuring ambient temperature. The nHWM_INT pin is implemented to indicate out-of-limit temperature, voltage, and FANTACH conditions. The hardware monitoring block of the DME1737 is accessible via the System Management Bus (SMBus). The same interrupt event reported on the nHWM_INT pin also creates PME wakeup events and speaker alarm annunciation.

The Motherboard Glue logic includes various power management and system logic including generation of nRSMRST, SMBus buffers, and buffered PCI reset outputs.

The DME1737 incorporates complete legacy Super I/O functionality including an 8042 based keyboard and mouse controller, an IEEE 1284, EPP, and ECP compatible parallel port, one serial port that is 16C550A UART compatible, one IrDA 1.0 infrared ports, and a floppy disk controller with Microchip's true CMOS 765B core and enhanced digital data separator. The true CMOS 765B core provides 100% compatibility with IBM PC/XT and PC/AT architectures and is software and register compatible with Microchip's proprietary 82077AA core. System related functionality, which offers flexibility to the system designer includes, General Purpose I/O control functions, control of two LED's, and fan control using fan tachometer inputs and pulse width modulator (PWM) outputs.

The DME1737 is ACPI 1.0/2.0 compatible and therefore supports multiple low power-down modes. It incorporates sophisticated power control circuitry (PCC), which includes support for keyboard and mouse wake-up events.

The DME1737 supports the ISA Plug-and-Play Standard register set (Version 1.0a). The I/O Address, DMA Channel and hardware IRQ of each logical device in the DME1737 may be reprogrammed through the internal configuration registers. There are up to 480 (960 - Parallel Port) I/O address location options, a Serialized IRQ interface, and Three DMA channels.

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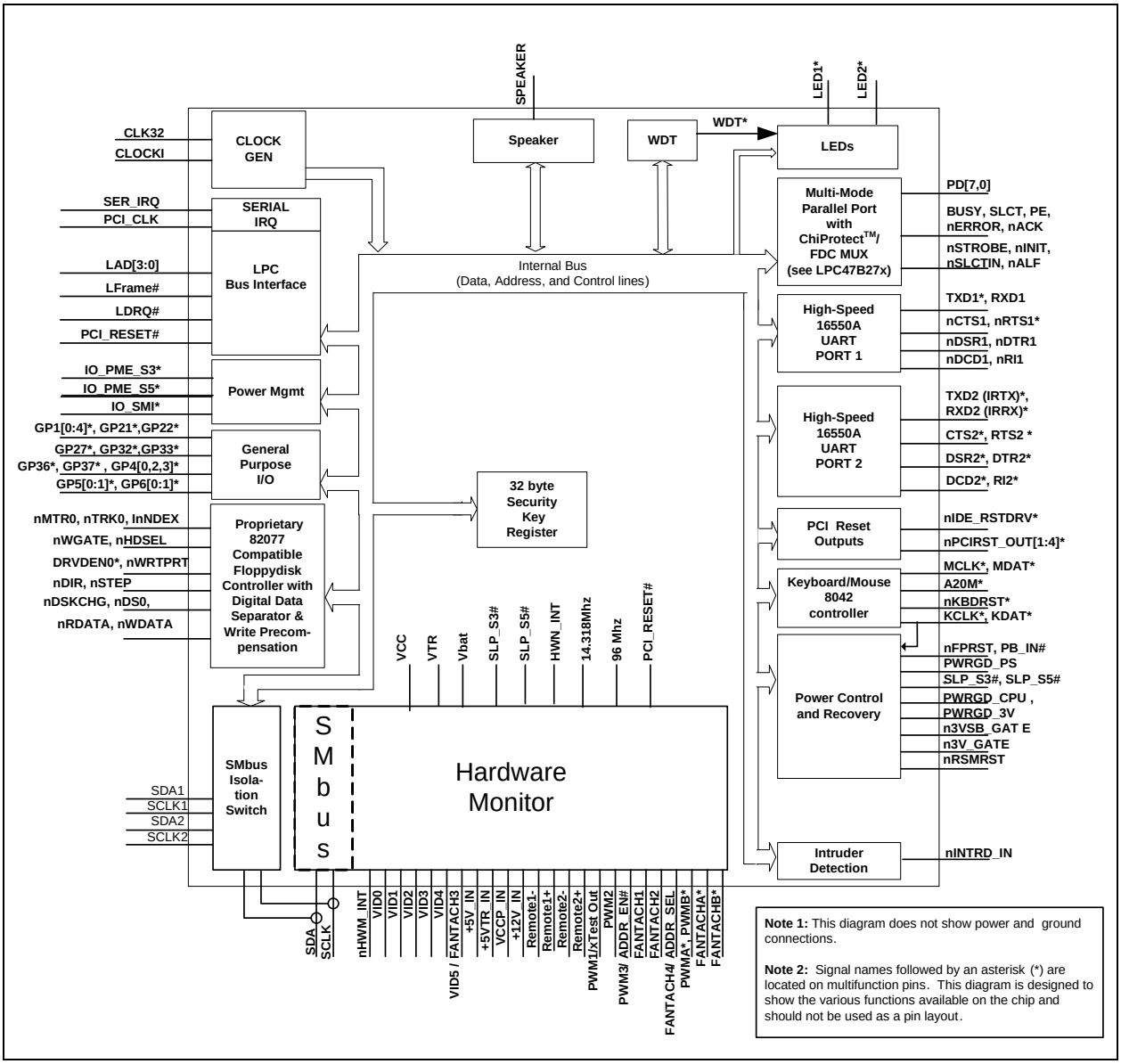
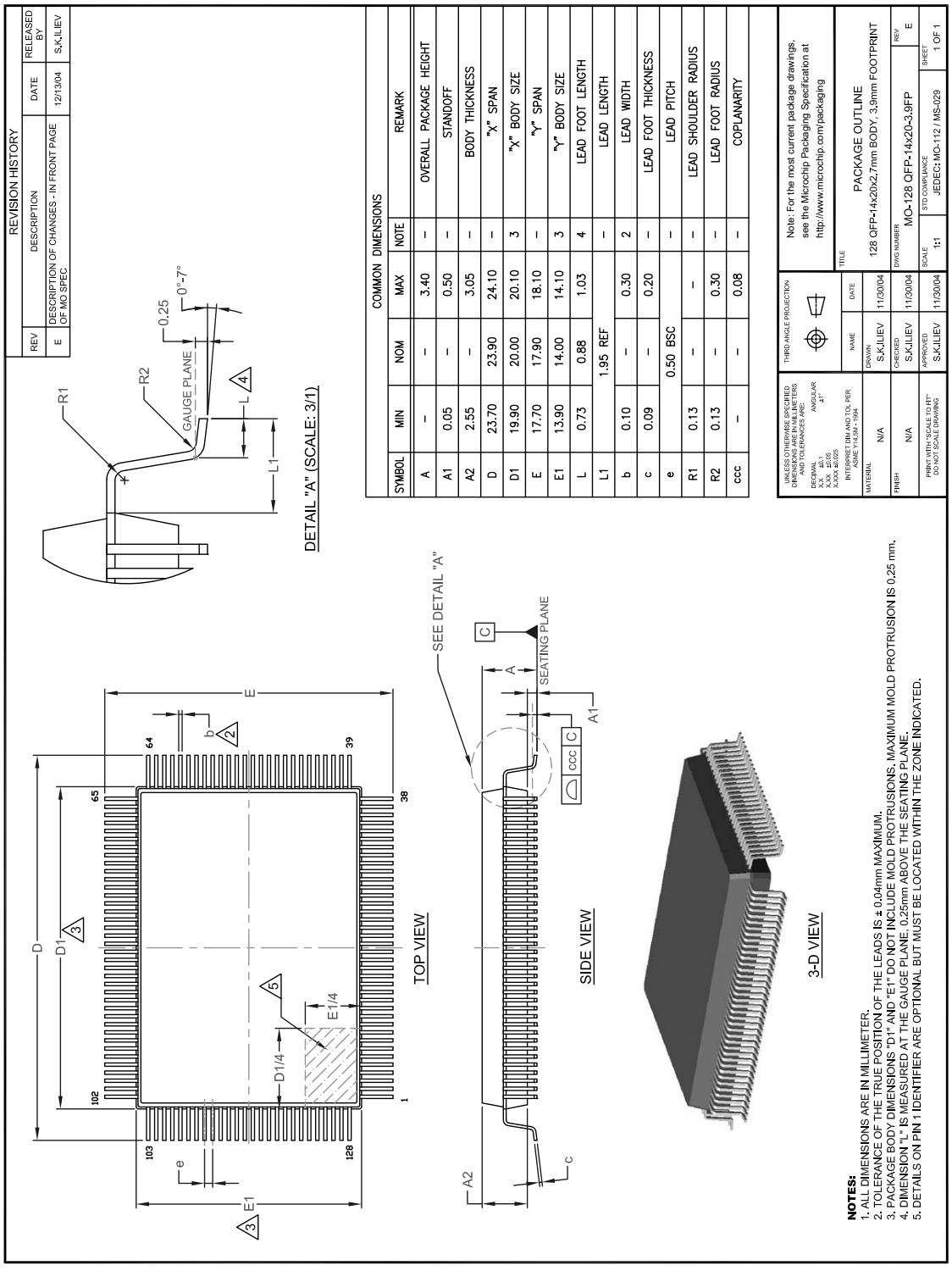
BLOCK DIAGRAM

FIGURE 1: DME1737 BLOCK DIAGRAM



PACKAGE OUTLINE

FIGURE 2: DME1737 128-PIN QFP PACKAGE, 14 X 20 X 2.7MM BODY, 3.9MM FOOTPRINT



APPENDIX A: PRODUCT BRIEF REVISION HISTORY

TABLE A-1: REVISION HISTORY

Revision	Section/Figure/Entry	Correction
DS00001794A (07-29-14)	Replaces previous SMSC version Rev. 0.4 (02-27-07)	

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PART NO.[1]	-	XXX[2]	-	[X][3]
Device		Package		Tape and Reel Option

Device:	DME1737 [1]		
Package:	NW	=	128-pin QFN [2]
Tape and Reel Option:	Blank	=	Tray packaging
	TR	=	Tape and Reel [3]

Examples:

a) DME1737-NW = 128-pin QFN

Note 1: These products meet the halogen maximum concentration values per IEC61249-2-21.

Note 2: All package options are RoHS compliant. For RoHS compliance and environmental information, please visit http://www.microchip.com/pagehandler/en-us/aboutus/ehs.html .

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ISBN: 9781632764041

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