SCH3106

LPC IO with Multiple Serial Ports, 8042 KBC, Reset Generation and Hardware Monitoring

Product Features

- General Features
  - 3.3 Volt Operation (SIO Block is 5 Volt Tolerant)
  - Programmable Wake-up Event (PME) Interface
  - PC99, PC2001 Compliant
  - ACPI 2.0 Compliant
  - Serial IRQ Interface Compatible with Serialized IRQ Support for PCI Systems
  - ISA Plug-and-Play Compatible Register Set
  - Four Address Options for Power On Configuration Port
  - System Management Interrupt (SMI)
  - 40 General Purpose I/O pins
  - 6 GPIO with VID compatible inputs
  - Support for power button on PS/2 Keyboard
  - Security Key Register (32 byte) for Device Authentication
- Low Pin Count Bus (LPC) Interface
  - Supports LPC Bus frequencies of 19.2 MHz to 33MHz
- Programmable Clock Output to 16 HZ.
- 2.88MB Super I/O Floppy Disk Controller
  - Licensed CMOS 765B Floppy Disk Controller
  - Supports Two Floppy Drives
  - Configurable Open Drain/Push-Pull
  - 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 Four DMA Options
  - Support FDD Interface on Parallel Port Pins
- Enhanced Digital Data Separator
  - 2 Mbps, 1 Mbps, 500 Kbps, 300 Kbps, 250 Kbp Data Rates
  - Programmable Precompensation Modes
- 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
  - Phoenix Keyboard BIOS ROM
- Multiple Serial Ports
  - 4 Full Function and 2 Four-Pin Serial Ports
  - High Speed NS16C550A Compatible UARTs with Send/Receive 16-Byte FIFOs
  - Supports 230k, 460k, 921k and 1.5M Baud
  - Programmable Baud Rate Generator
  - Modem Control Circuitry
  - 480 Address and 15 IRQ Options
  - Supports IRQ Sharing among serial ports
  - RS485 Auto Direction Control Mode
- 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)
  - EEE 1284 Compliant Enhanced Capabilities Port (ECP)
  - ChiProtect Circuitry for Protection
  - 960 Address, Up to 15 IRQ and Four DMA Options
- Hardware Monitor
  - Monitor Power supplies (+2.5V, +5V, +12V, Vccp (processor voltage), VCC, Vbat and Vtr.
  - Remote Thermal Diode Sensing for Two External Temperature Measurements accurate to 1.5^{o}C
  - Internal Ambient Temperature Measurement
  - Limit Comparison of all Monitored Values
  - Programmable Automatic FAN control based on temperature
  - nHWM_INT Pin for out-of-limit Temperature or Voltage Indication

  - Configurable offset for internal or external temperature channels
  - Thermtrip signal for over temperature indication
- Watchdog Timer
- Resume and Main Power Good Generator
- Commercial (+70°C to 0°C) Temperature Range
- 128-Pin VTQFP RoHS Compliant Package

Description

The SCH3106 is a 3.3V (Super I/O Block is 5V tolerant) PC99/PC2001 compliant Super I/O controller with an LPC interface. The SCH3106 also includes Hardware Monitoring capabilities, enhanced Security features, Power Control logic and Motherboard Glue logic.

The SCH3106's hardware monitoring capability includes temperature, voltage and fan speed monitoring. It has the ability to alert the system of out-of-limit conditions and automatically control the speeds of multiple fans. There are four analog inputs for monitoring external voltages of +5V, +2.5V, +12V and Vccp (core processor voltage), as well as internal monitoring of the SIO's VCC, VTR, and Vbat power supplies. The SCH3106 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 SCH3106 is accessible via the LPC bus. The same interrupt event reported on the nHWM_INT pin also creates PME wakeup events. A separate THERMTRIP output is available, which generates a pulse output on a programmed over temperature condition. This can be used to generate an reset or shutdown indicator to the system.

The hardware monitoring capability also has programmable automatic FAN control. Three fan tachometer inputs and three pulse width modulator (PWM) outputs are available.

The Motherboard Glue logic includes various power management and system logic including generation of nRSMRST, a programmable Clock output, and reset generation. The reset generation includes a watchdog timer which can be used to generate a reset pulse. The width of this pulse is selectable via an external strapping option.

The SCH3106 incorporates complete legacy Super I/O functionality including an 8042 based keyboard and mouse controller, an IEEE 1284, EPP, and ECP compatible parallel port, multiple serial ports, 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, General Purpose I/O control functions, and control of two LED's.

The serial ports are fully functional NS16550 compatible UARTs that support data rates up to 1.5 Mbps. There are four, 8 pin Serial Ports and two, 4 pin Serial Ports. The reduced pin serial ports have selectable input and output controls. The Serial Ports contain programmable direction control, which will automatically Drive nRTS when the Output Buffer is loaded, then Drive nRTS when the Output Buffer is Empty.

The SCH3106 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.

The SCH3106 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 SCH3106 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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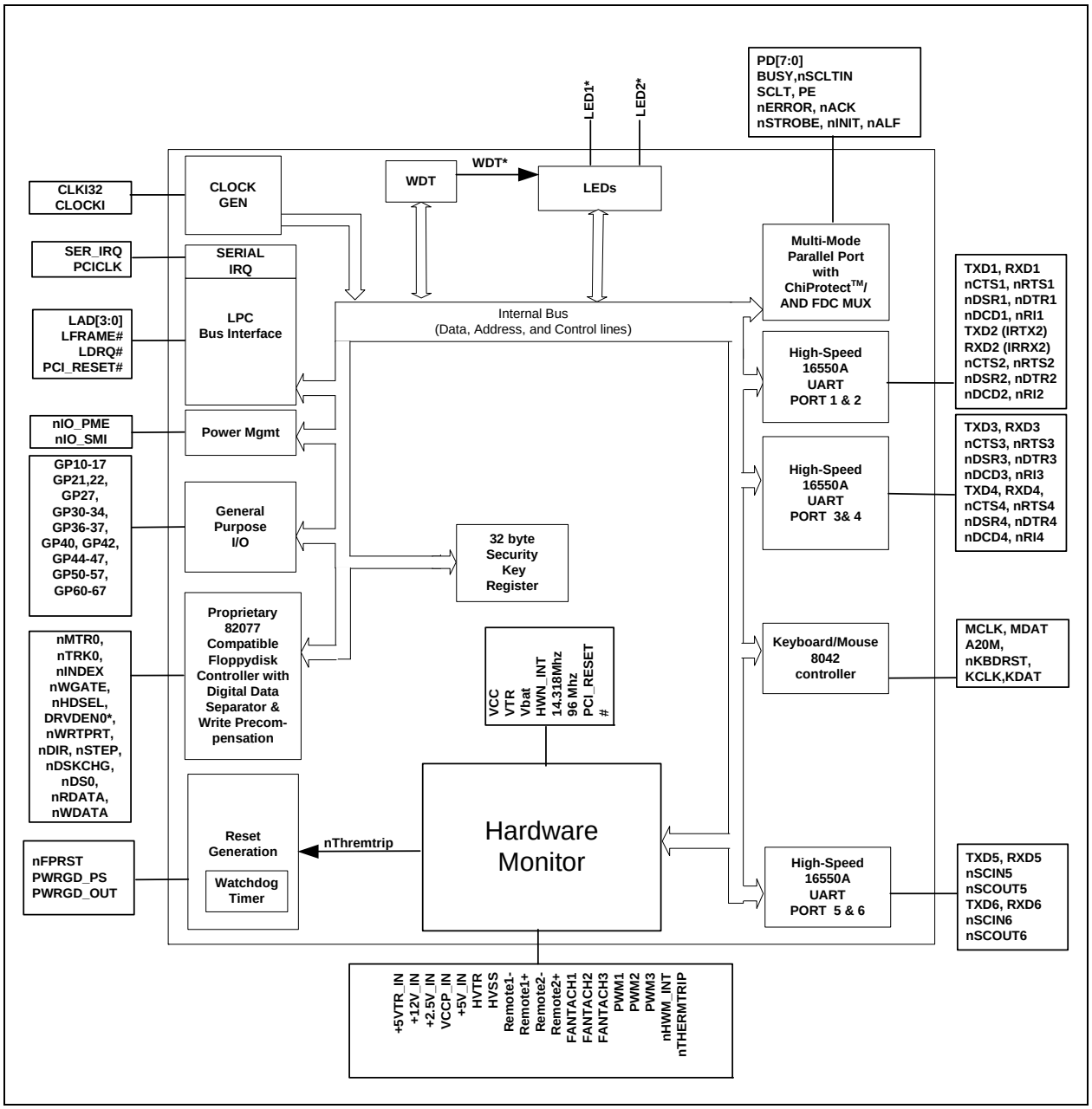
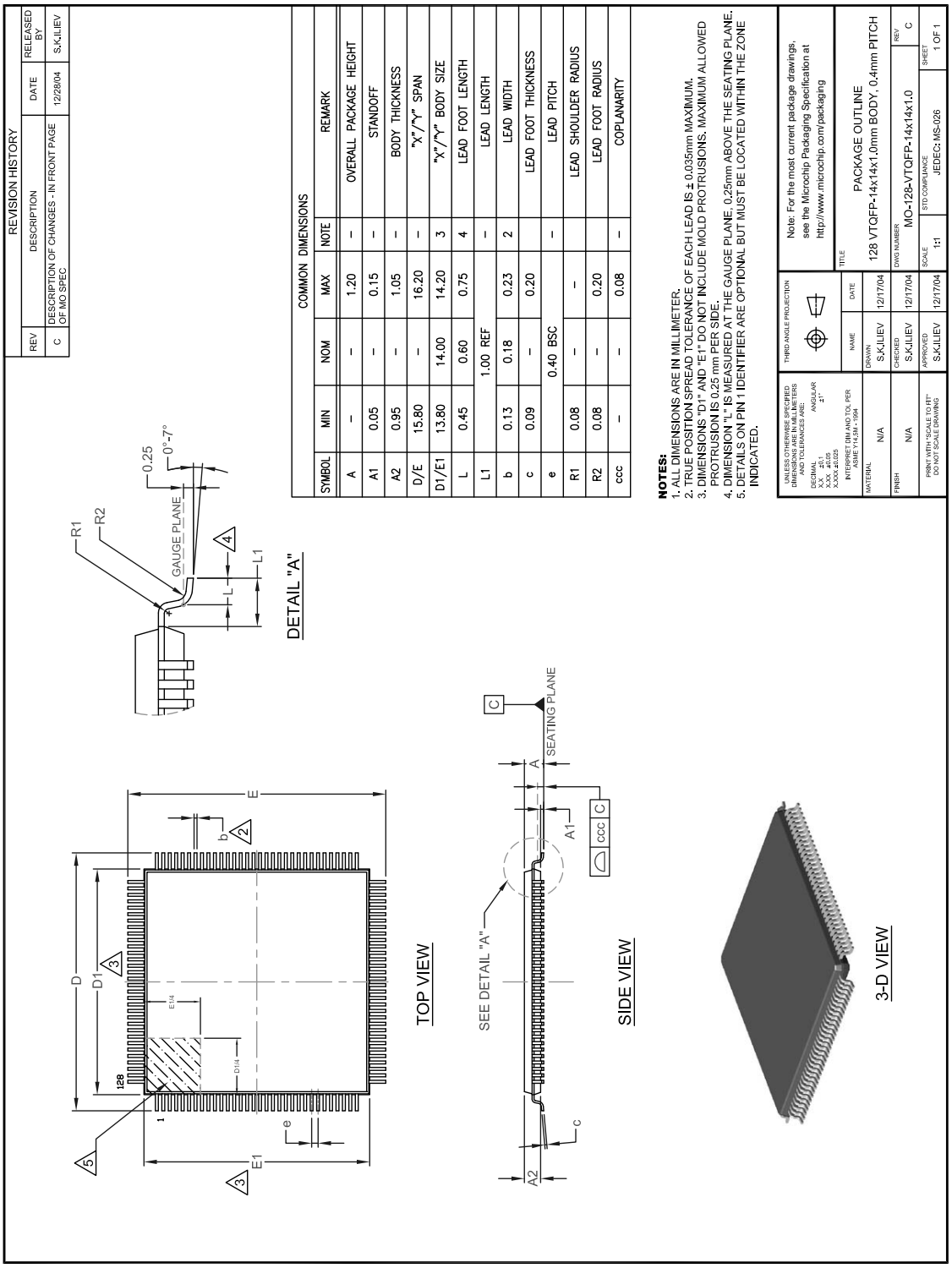
BLOCK DIAGRAM

FIGURE 1: SCH3106 BLOCK DIAGRAM



PACKAGE OUTLINE

FIGURE 2: SCH3106 128-PIN VTQFP, 14MM X 14MM X 1.0MM BODY, 0.4MM PITCH



APPENDIX A: PRODUCT BRIEF REVISION HISTORY

TABLE A-1: REVISION HISTORY

Revision	Section/Figure/Entry	Correction
DS00001780A (07-01-14)	Document Release	

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

Device:	SCH3106 [1]		
Package:	NU	=	128-pin VTQFP [2] (matte tin finish)
Tape and Reel Option:	Blank	=	Tray packaging
	TR	=	Tape and Reel [3]

Example:

SCH3106-NU = 128-pin VTQFP

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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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