

# Desktop System Controller Hub with Advanced, 8051 $\mu$ C-Based Auto Fan Control

## PRODUCT FEATURES

Data Brief

- ACPI 2.0 Compliant
- PC2001 Compliant
- PECl Interface
- Temperature Monitor
  - Monitoring of up to Two Remote Thermal Diodes
  - Supports temperature readings from -63 degrees to +192 degrees
    - Supports monitoring of discrete diodes (3904 type diodes)
    - Supports monitoring substrate diodes (65nm processor diodes)
  - 1/8th degree temperature resolution
  - Internal Ambient Temperature Measurement
  - Limit Comparison of all Monitored Values
- PROCHOT\_IN# Pin
  - Mapped into Temperature monitoring interrupt generation logic
  - May be used to adjust fan control limits
  - May be configured to force fans on full
- PROCHOT\_OUT Pin
- Auto-Fan Control with ProchHot Features
  - PWM (Pulse width Modulation) Outputs (3)
    - Legacy PWM control dc fan outputs
  - High Frequency PWM Options (15kHz up to 30kHz)
  - 2 second delayed start-up for PWM outputs
  - Fan Tachometer or Lock Rotor Inputs (3)
  - Programmable linear automatic fan control based on temperature (diode or PECl)
  - Acoustic enhancement mode
  - ProchHot pins modulate T<sub>min</sub>
  - Fan PWM duty cycle is a function in linear mode of multiple temperatures and ProchHot signals
  - PWM Ramp Rate Closed Loop Control
- Internal Ring Oscillator for VTR Powered Logic
- Low Battery Warning
- Programmable Wake-up Event Interface
- 21 Dedicated Scratchpad registers
- ISA Plug-and-Play Compatible Register Set
- System Management Interrupt
- 46 General Purpose Input/Output Pins
- GLUE Logic
  - Resume Reset Signal Generation
  - Power Supply Turn On Circuitry
  - Power Sequencing
  - Power Good Output
  - Power OK Signal Generation
  - IDE Reset/Buffered PCI Reset Outputs
  - Hard Drive Front Panel LED
  - Power LED Control
  - SMBus Isolation Logic
- 2.88MB Super I/O Floppy Disk Controller
  - Licensed CMOS 765B Floppy Disk Controller
  - Software and Register Compatible with SMSC's Proprietary 82077AA Compatible Core
  - Supports Two Floppy Drives
  - Configurational Open Drain/Push-Pull Output Drivers
  - 100% IBM<sup>®</sup> Compatibility
  - Detects All Overrun and Underrun Conditions
  - Sophisticated Power Control Circuitry (PCC) Including Multiple Powerdown Modes for Reduced Power Consumption
  - 480 Address, Up to Eight IRQ and Four DMA Options
  - Enhanced Digital Data Separator
  - 2 Mbps, 1 Mbps, 500 Kbps, 300 Kbps, 250 Kbps Data Rates
  - Programmable Pre compensation Modes
- Keyboard Controller
  - 8042 Software Compatible
  - Four Open Drain Outputs Dedicated for Keyboard/Mouse Interface
  - Port 92 Support
  - Fast Gate A20 and KRESET Outputs
- 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
  - Multi protocol 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 Four DMA Options
- LPC Interface
  - Multiplexed Command, Address and Data Bus
  - Serial IRQ Interface Compatible with Serialized IRQ Support for PCI Systems
  - PME Interface
- 1.8 Volt Low Power Core Operation
- 3.3 Volt I/O
- 128 Pin QFP Lead-Free RoHS Compliant Package

**ORDER NUMBER(S):**

**SCH5617-NS for 128 pin, QFP Lead-Free RoHS Compliant Package**



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## General Description

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The SCH5617 is a 3.3V PC 2001 compliant Super I/O controller with an LPC interface. All legacy drivers used for Super I/O components are supported making this interface transparent to the supporting software. The LPC bus also supports power management, such as wake-up and sleep modes.

The SCH5617 provides temperature monitoring with auto fan control. The temperature monitor is capable of monitoring two external diodes, one internal ambient temperature sensor or retrieving temperatures from external processors that implement the PECL Interface. This device offers programmable automatic fan control support based on one or more of these measured temperatures. There are three pulse width modulation (PWM) outputs with high frequency support as well as three fan tachometer inputs. In addition, there is support for a PROCHOT\_IN# pin that may be used to generate an interrupt, adjust the programmed temperature limits in the auto fan control logic, or force the PWM outputs on full. There is also a separate PROCHOT\_OUT output pin. The RRCC feature provides a linear relationship of temperature to fan speed.

The GLUE Logic includes various power management logic; including generation of RSMRST# and Power OK signal generation. There are also four LEDs to indicate power status and hard drive activity. Also included is SMBus Isolation logic, which can be used to isolate SMBus signals during power down modes. The part also provides a low battery warning circuit.

SCH5617 provides 46 General Purpose I/O control pins, which offer flexibility to the system designer. There are 21 Scratchpad read/write runtime registers for custom use.

The SCH5617 incorporates the following Super I/O components: a parallel port that is compatible with IBM PC/AT architecture, as well as the IEEE 1284 EPP and ECP; two serial ports that are 16C550A UART compatible; one infrared port that is IrDA 1.0 compliant; a keyboard/mouse controller that uses an 8042 micro controller; floppy disk controller, which uses SMSC's true CMOS 765B core. The true CMOS 765B core provides 100% compatibility with IBM PC/XT and PC/AT architectures and is software and register compatible with SMSC's proprietary 82077AA core.

The SCH5617 is ACPI 1.0b/2.0 compatible supports multiple low power-down modes. It incorporates sophisticated power control circuitry (PCC), which includes keyboard and mouse wake-up events.

The SCH5617 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 SCH5617 may be reprogrammed through the internal configuration registers. There are up to 480 (960 for Standard Mode Parallel Port) I/O address location options, a Serialized IRQ interface, and four DMA channels.

# Block Diagram

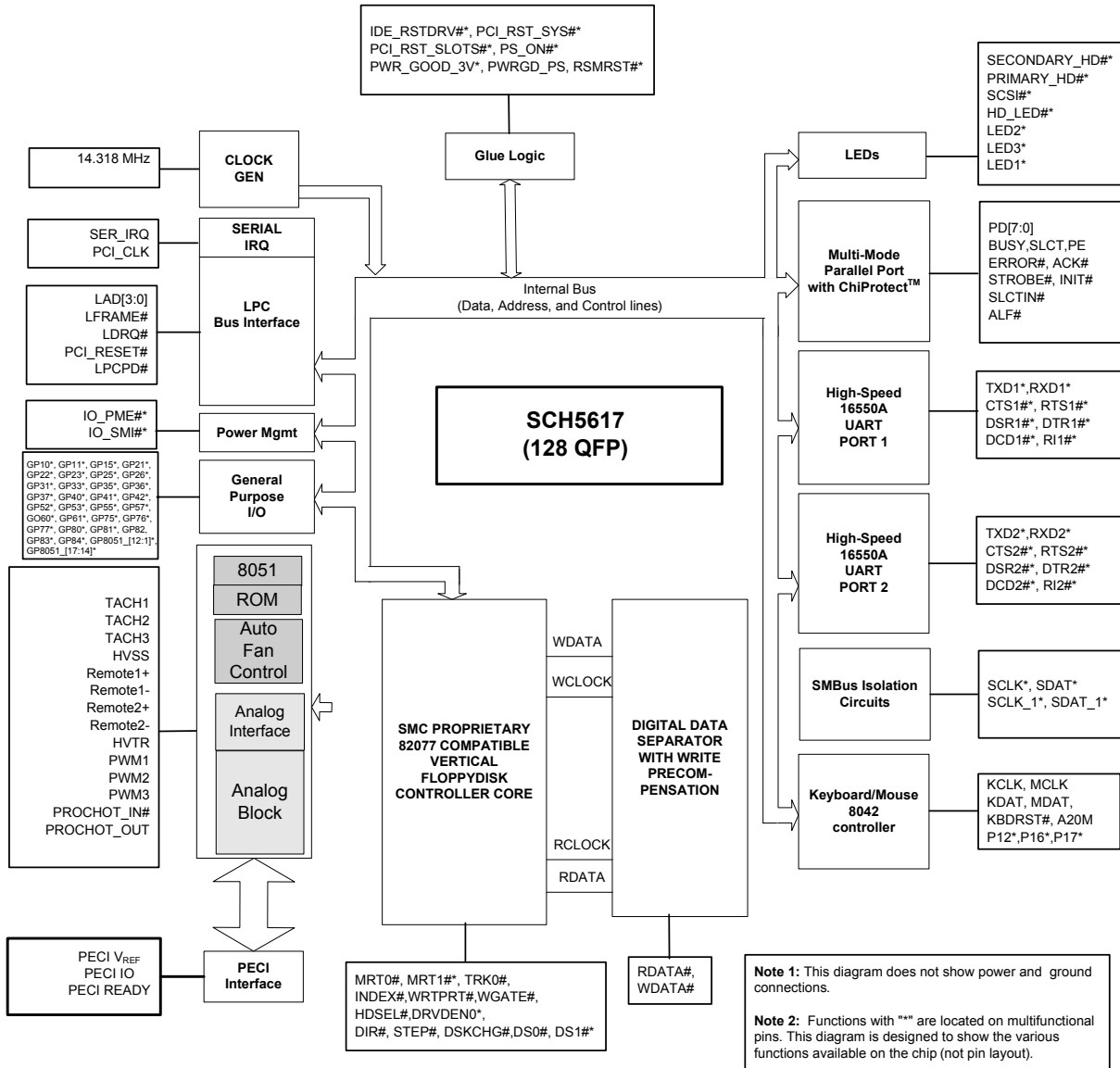


Figure 1 SCH5617 Block Diagram

# Package Outline

Revision 0.5 (05-29-07)

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PRODUCT PREVIEW

SMSC SCH5617

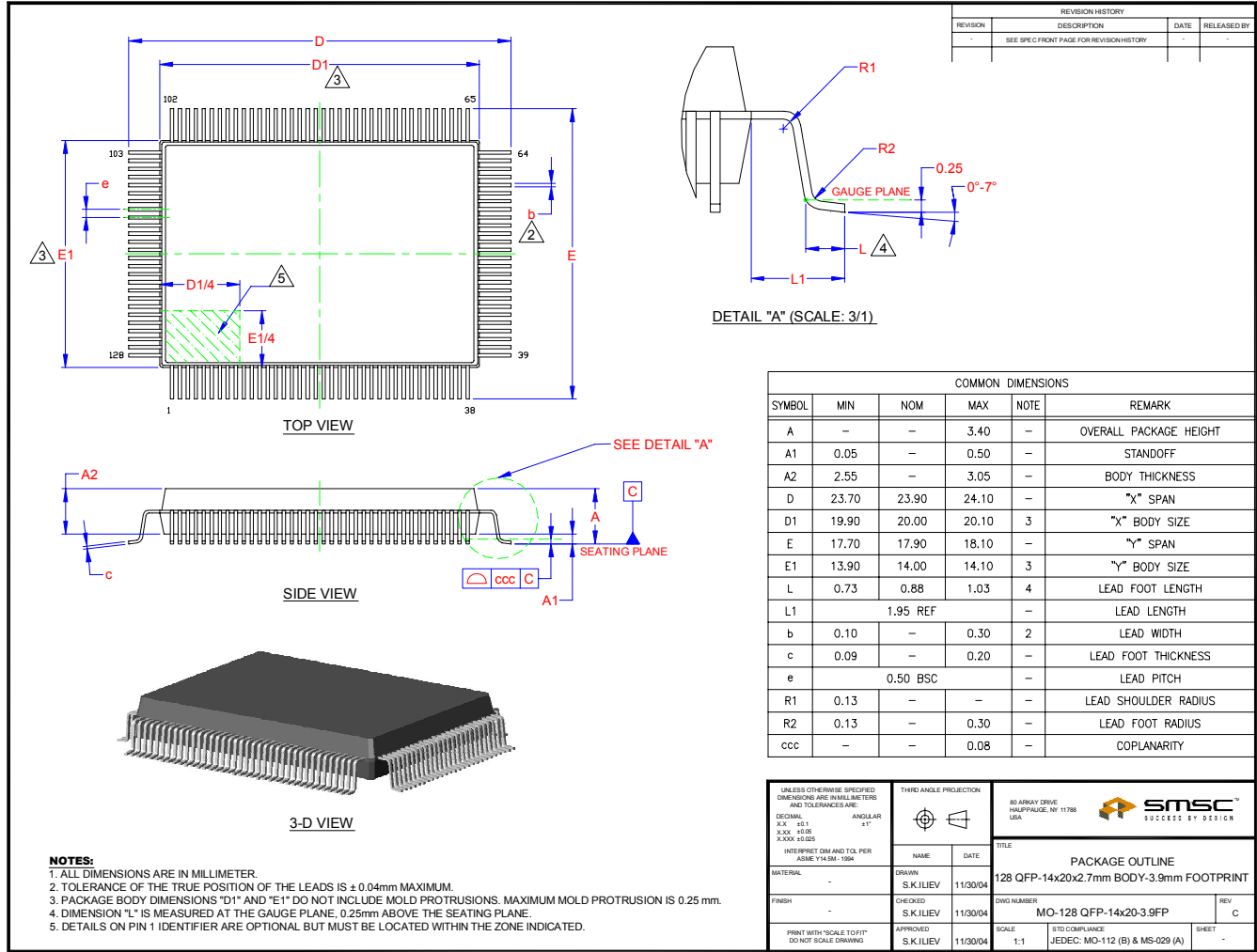


Figure 2 128-Pin QFP Package Outline (3.9mm footprint)

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