

# LPC Super I/O with Hardware Monitoring Block

Data Brief

## Product Features

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- 3.3 Volt Operation (SIO Block is 5 Volt Tolerant)
- LPC Interface
- ACPI 1.0/2.0 Compliant
- Fan Control
  - Fan Speed Control Outputs (2)
  - Fan Tachometer Inputs (2)
- Programmable Wake-up Event Interface
- PC98, PC99, PC01 Compliant
- Dual Game Port Interface
- MPU-401 MIDI Support
- General Purpose Input/Output Pins (37)
- ISA Plug-and-Play Compatible Register Set
- Intelligent Auto Power Management
- System Management Interrupt
- 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
  - Configurable Open Drain/Push-Pull Output 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 15 IRQ and Three DMA Options
- Enhanced Digital Data Separator
  - 2 Mbps, 1 Mbps, 500 Kbps, 300 Kbps, 250 Kbps 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
- Serial Ports
  - Two Full Function Serial Ports
  - High Speed 16C550A 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

- **LPC Interface**
  - Multiplexed Command, Address and Data Bus
  - Serial IRQ Interface Compatible with Serialized IRQ Support for PCI Systems
  - PME Interface
- **Hardware Monitor**
  - Monitor Power supplies (+2.5V, +3.3V, +5V, +12V, +1.8V, +1.5V, V<sub>ccp</sub> (processor voltage), and V<sub>CC</sub> or HVSB)
  - Remote Thermal Diode Sensing for Two External Temperature Measurements
  - Internal Ambient Temperature Measurement
  - Limit Comparison of all Monitored Values
  - System Management Bus (SMBus) Interface
  - THERM# Pin for out-of-limit Temperature or Voltage Indication
  - RESET# Pin for generating 20msec Low Reset Pulse
  - Configurable offset for internal or external temperature channels
- **Phoenix Keyboard BIOS ROM**
- **128 Pin QFP, lead-free RoHS compliant package, 3.2mm footprint**

## **ORDERING INFORMATION**

### **Order Number:**

LPC47M997-NW for 128 pin, QFP lead-free RoHS compliant package



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# Block Diagram

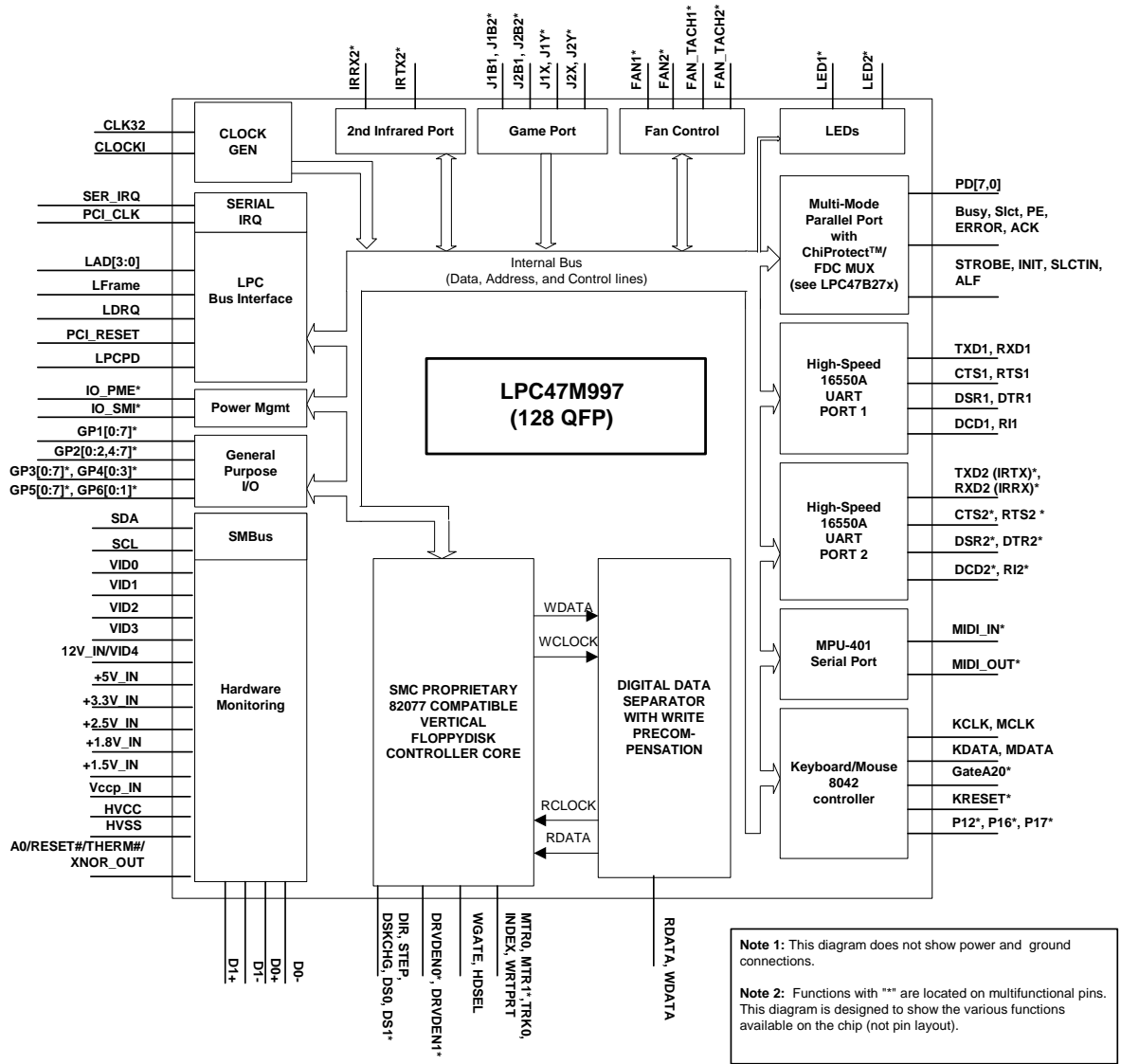


Figure 1 - LPC47M997 Block Diagram

# Package Outline

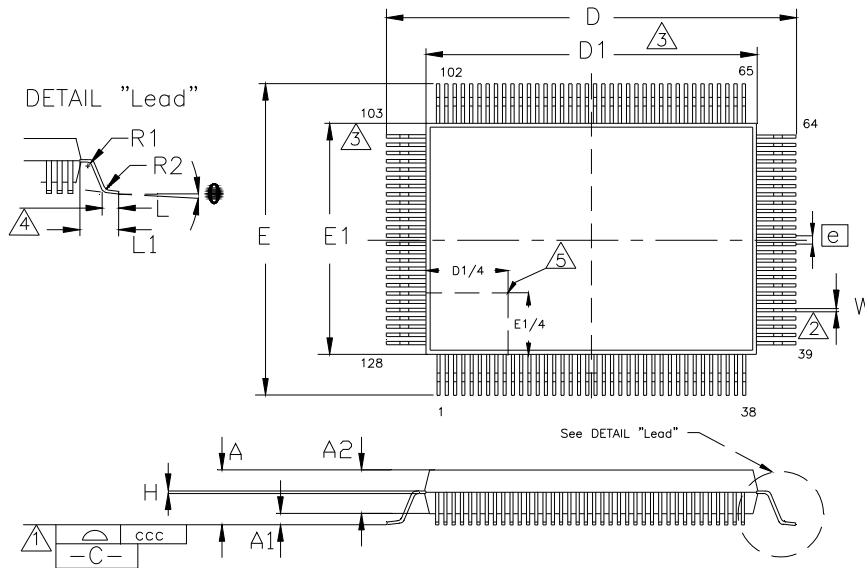


Figure 2 - 128 PIN QFP Package Outline, 14x20x2.7 Body, 3.2 mm Footprint

Table 1 - 128 PIN QFP Package Parameters

	MIN	NOMINAL	MAX	REMARKS
<b>A</b>	~	~	3.4	Overall Package Height
<b>A1</b>	0.05	~	0.5	Standoff
<b>A2</b>	2.55	~	3.05	Body Thickness
<b>D</b>	23.00	23.20	23.40	X Span
<b>D1</b>	19.90	20.00	20.10	X body Size
<b>E</b>	17.00	17.20	17.40	Y Span
<b>E1</b>	13.90	14.00	14.10	Y body Size
<b>H</b>	0.09	~	0.20	Lead Frame Thickness
<b>L</b>	0.73	0.88	1.03	Lead Foot Length
<b>L1</b>	~	1.60	~	Lead Length
<b>e</b>	0.50 Basic			Lead Pitch
<b>θ</b>	0°	~	7°	Lead Foot Angle
<b>W</b>	0.10	~	0.30	Lead Width
<b>R1</b>	0.08	~	~	Lead Shoulder Radius
<b>R2</b>	0.08	~	0.30	Lead Foot Radius
<b>ccc</b>	~	~	0.08	Coplanarity

**Notes:**

1. Controlling Unit: millimeter.
2. Tolerance on the position of the leads is  $\pm 0.04$  mm maximum.
3. Package body dimensions D1 and E1 do not include the mold protrusion.  
Maximum mold protrusion is 0.25 mm.
4. Dimension for foot length L measured at the gauge plane 0.25 mm above the seating plane.
5. Details of pin 1 identifier are optional but must be located within the zone indicated.