LPC47M182

Advanced I/O Controller with Motherboard GLUE Logic

Product Features

- 3.3V Operation (5V tolerant)
- LPC Interface
  - Multiplexed Command, Address and Data Bus
  - Serial IRQ Interface Compatible with Serialized IRQ Support for PCI Systems
- ACPI 1.0b/2.0 Compliant
- Programmable Wake-up Event Interface
- PC99a/PC2001 Compliant
- General Purpose Input/Output Pins (13)
- Fan Tachometer Inputs (2)
- Green and Yellow Power LEDs
- ISA Plug-and-Play Compatible Register Set
- Motherboard GLUE Logic
  - 5V Reference Generation
  - 5V Standby Reference Generation
  - IDE Reset/Buffered PCI Reset Outputs
  - Power OK Signal Generation
  - Power Sequencing
  - Power Supply Turn On Circuitry
  - Resume Reset Signal Generation
  - Hard Drive Front Panel LED
  - Voltage Translation for DDC to VGA Monitor
  - SMBus Isolation Circuitry
  - CNR Dynamic Down Control
- 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-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 Eight 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 UART 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
  - 32-Byte Data FIFO
  - IrDA 1.0 Compliant
  - SHARP ASK IR
  - HP-SIR
  - 480 Address, Up to 15 IRQ and Three DMA Options
- 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
- Interrupt Generating Registers
  - Registers Generate IRQ1 – IRQ15 on Serial IRQ Interface.
- XOR-Chain Board Test
- 128-Pin QFP RoHS Compliant Package, 3.2 mm Footprint

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Description

The LPC47M182 is a 3.3V (5V tolerant) PC99a/PC2001 compliant Advanced I/O controller for Desktop PCs. The device, which implements the Low Pin Count (LPC) interface, includes I/O functionality as well as Motherboard GLUE logic into a 128-pin package. This is a space saving solution on the motherboard resulting in lower cost. The LPC47M182 also provides 13 general purpose pins, which offer flexibility to the system designer, and two Fan Tachometer Inputs. The LPC47M182's LPC interface supports LPC I/O and DMA cycles.

The LPC47M182 includes complete legacy I/O: a keyboard interface; Microchip's true CMOS 765B floppy disk controller with advanced digital data separator; two 16C550A compatible UARTs; one Multi-Mode parallel port including ChiProtect circuitry plus EPP and ECP. The true CMOS 765B core provides 100% compatibility with IBM PC/XT and PC/AT architectures, in addition, it provides data overflow and underflow protection. The Microchip's patented advanced digital data separator allows for ease of testing and use. The parallel port is compatible with IBM PC/AT architecture, as well as IEEE 1284 EPP and ECP. The LPC47M182 incorporates sophisticated power control circuitry (PCC) which includes support for keyboard and mouse wake up events as well as PME support. The PCC supports multiple low power-down modes. The LPC47M182 is ACPI 1.0b/2.0 compatible.

The Motherboard GLUE logic includes various power management logic; including generation of nRSMRST, Power OK signal generation, 5V main and standby reference generation. There are also three LEDs to indicate power status and hard drive activity. The translation circuit converts 3.3V signals to 5V signals. Also included is SMBus main power well to resume power well isolation circuitry.

The LPC47M182 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 LPC47M182 may be reprogrammed through the internal configuration registers. There are up to 480 (960 for Parallel Port) I/O address location options, a Serialized IRQ interface, and three DMA channels. On chip, Interrupt Generating Registers enable external software to generate IRQ1 through IRQ15 on the Serial IRQ Interface.

The LPC47M182's Enhanced Digital Data Separator does not require any external filter components and is therefore easy to use and offers lower system costs and reduced board area. The LPC47M182 is register compatible with Microchip's proprietary 82077AA core.

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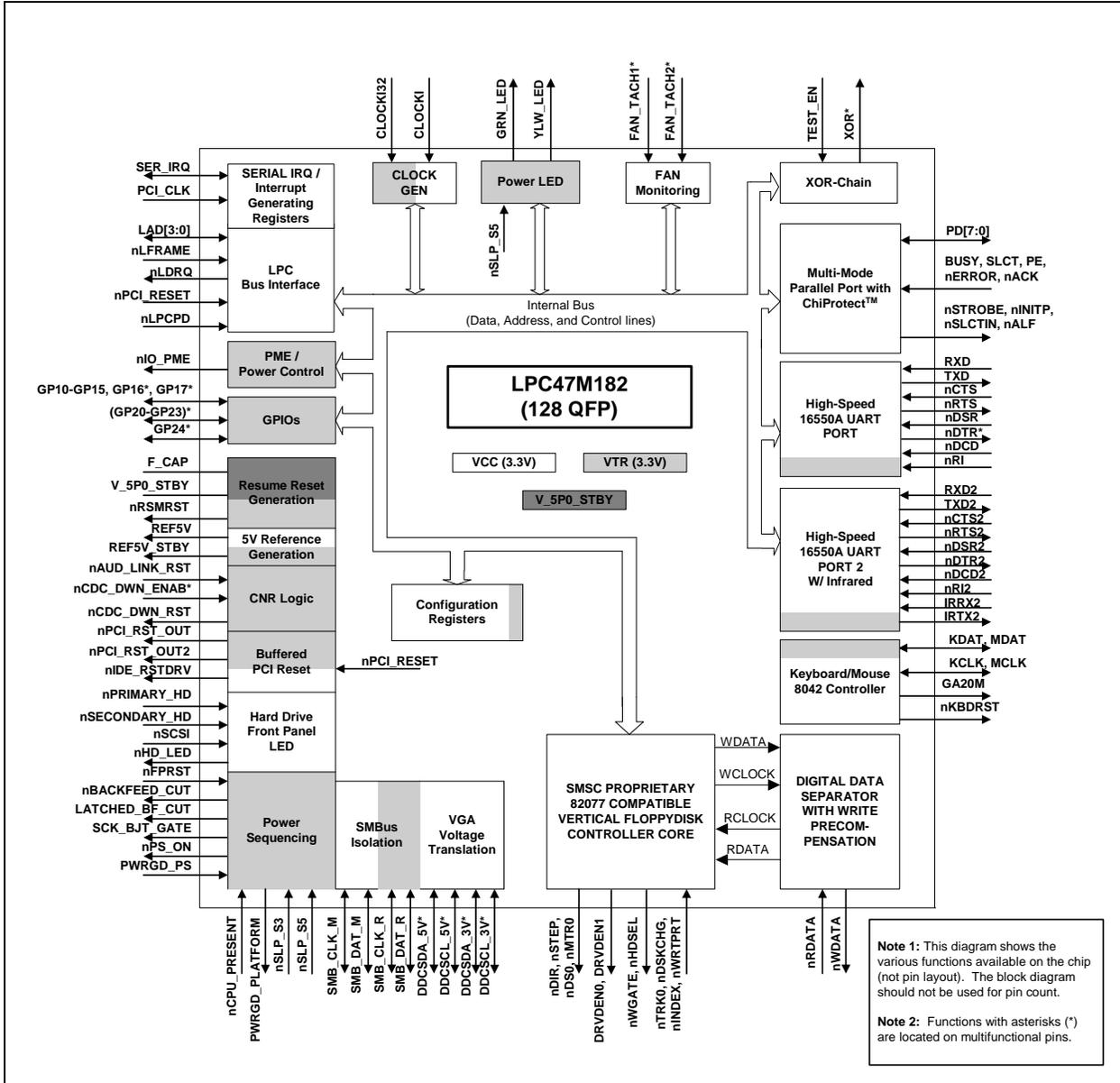
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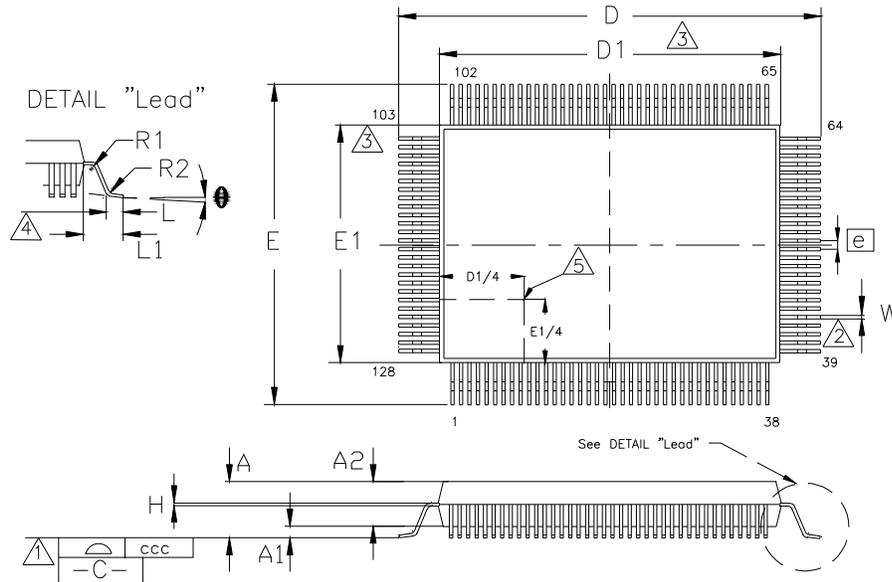
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BLOCK DIAGRAM

FIGURE 1: LPC47M182 BLOCK DIAGRAM

Note 1: This diagram shows the various functions available on the chip (not pin layout). The block diagram should not be used for pin count.

Note 2: Functions with asterisks (*) are located on multifunctional pins.

PACKAGE OUTLINE

> **Note:** For the most current package drawings, see the Microchip Packaging Specification at:
> http://www.microchip.com/packaging.

FIGURE 2: **128-PIN QFP PACKAGE, 14 X 20 X 2.7 MM BODY, 3.2 MM FOOTPRINT**

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

Note 1: Controlling Unit: millimeter.

2: Tolerance on the position of the leads is ± 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.

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APPENDIX A: PRODUCT BRIEF REVISION HISTORY

TABLE A-1:   REVISION HISTORY

Revision	Section/Figure/Entry	Correction
DS00001809A (08-27-14)	Replaces previous SMSC version Rev. 1.9 (03-23-07)	

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PART NO.(1)   -   XXX(2)   -   [X](3)

Device   Package   Tape and Reel
                                      Option

Device:	LPC47M182 (1)	
Package:	NW	= 128-pin QFP (2)
Tape and Reel Option:	Blank TR	= Tray packaging = Tape and Reel (3)

Example:

LPC47M182-NW = 128-pin QFP

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.micro-chip.com/pagehandler/en-us/aboutus/ehs.html .

Note 3: Tape and Reel identifier only appears in the catalog part number description. This identifier is used for ordering purposes and is not printed on the device package. Check with your Microchip Sales Office for package availability with the Tape and Reel option.

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