

LSI53C876E MULTIFUNCTION CONTROLLER

The Communications Company™

PCI-DUAL CHANNEL ULTRA SCSI MULTIFUNCTION CONTROLLER



OVERVIEW

The LSI53C876E controller brings the proven performance of the LSI53C8XX family of PCI-SCSI controllers to a new performance and integration level. This single-chip multifunction device connects directly to the PCI bus, presenting one electrical load, while functioning as a single 32-bit PCI DMA bus master. It contains two wide Ultra SCSI interfaces for maximum performance and flexibility.

The LSI53C876E, and its companion host adapters that support both single-ended and differential SCSI environments, along with a complete set of SCSI drivers, provide a total SCSI solution in desktop, workstation, server, and RAID environments.

PCI FEATURES

- True multifunction device as defined in PCI 2.1 specification — Presents only one load to the PCI bus
- Connects directly to the PCI bus without external logic
- Functions as one 32-bit PCI DMA bus master
- Supports 33 MHz PCI bus zero wait state operation
- Supports maximum burst transfer rate of 132 MBps
- Supports shared or separate interrupts on the PCI bus for maximum flexibility
- PCI Subsystem Vendor ID and Subsystem ID support with 2-wire serial EEPROM port on each channel
- Supports PCI extended access cycles
- Supports 3.3V and 5V PCI interface

BENEFITS

- True PCI multifunction device provides direct connection from the PCI bus to two independent bus mastering Ultra SCSI channels
- One device replaces two, reducing the number of PCI bus loads and bus masters in the system
- Increases throughput up to twofold for systems that now operate with single channel SCSI
- High-performance wide Ultra SCSI solution based on the proven technology of the LSI53C875 controller

FEATURES

- Two independent DMA channels with internal programmable arbitration
- Motherboard or host adapter solution — BIOS can be stored in system, or in local EPROM or FLASH memory
- LSI Logic provides complete software support with BIOS and drivers
- Allows custom driver development with LSI Logic SCSI SCRIPTS™
- 208-pin PQFP or 256-pin BGA package
- Supports IEEE 1149.1 JTAG boundary scan for improved testability
- Compliant with Microsoft® PC99

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SCSI FEATURES

- 16-bit Ultra SCSI design for high performance
- One differential channel (can be configured as single-ended) and one single-ended channel*
- Up to 40 MBps synchronous transfer rate on each channel
- Two separate high-performance SCSI cores with integrated SCRIPTS processors
- Local memory bus for BIOS storage, including EPROM and FLASH memory
- LSI Logic TolerANT® active negation SCSI driver and receiver technology
- 536-byte DMA FIFO on each channel allows PCI burst length up to 128 dwords
- 4 KB SCRIPTS RAM on each channel reduces or eliminates instruction fetches over the PCI bus
- 8 dword SCRIPTS instruction prefetch buffer to reduce PCI bus overhead
- 41 scratchpad registers on each channel for user-defined functions
- SCSI bus loopback diagnostics to test cable integrity
- Software drivers and SCRIPTS compatible with LSI53C825AE and LSI53C875E — Software written for the LSI53C875E operates as is with the LSI53C876E

* A separate device in a 256-pin BGA package is available with two differential channels (can be configured as single-ended).

LOCAL MEMORY BUSES

A parallel ROM interface supports both channels with up to one megabyte of external memory, allowing the use of expansion ROM for add-in PCI cards. For ease of software development and field upgrades of the device's local ROM, the interface supports local programming of FLASH memory. A serial 2-wire interface on each SCSI channel provides a connection to an external serial EEPROM for storing the Subsystem Vendor ID and Subsystem ID.

DIRECT CONNECTION TO PCI

Drawing upon LSI Logic's long-term participation in PCI standards committees, this part was designed with PCI compliance in mind, as were all of the LSI Logic LSI53C8XX family parts. The LSI53C876E is fully compliant with the PCI 2.1 specification, including the requirements for multifunction devices.

SOFTWARE SUPPORT

LSI Logic provides a complete software solution with BIOS and drivers to support the LSI53C876E and the entire LSI53C8XX family of PCI-SCSI controllers.

Drivers are available for:

- Windows® NT® 4.0
- Windows® 95/98
- DOS
- Linux®
- NetWare®
- SCO UnixWare™
- OS/2 Warp
- Solaris®

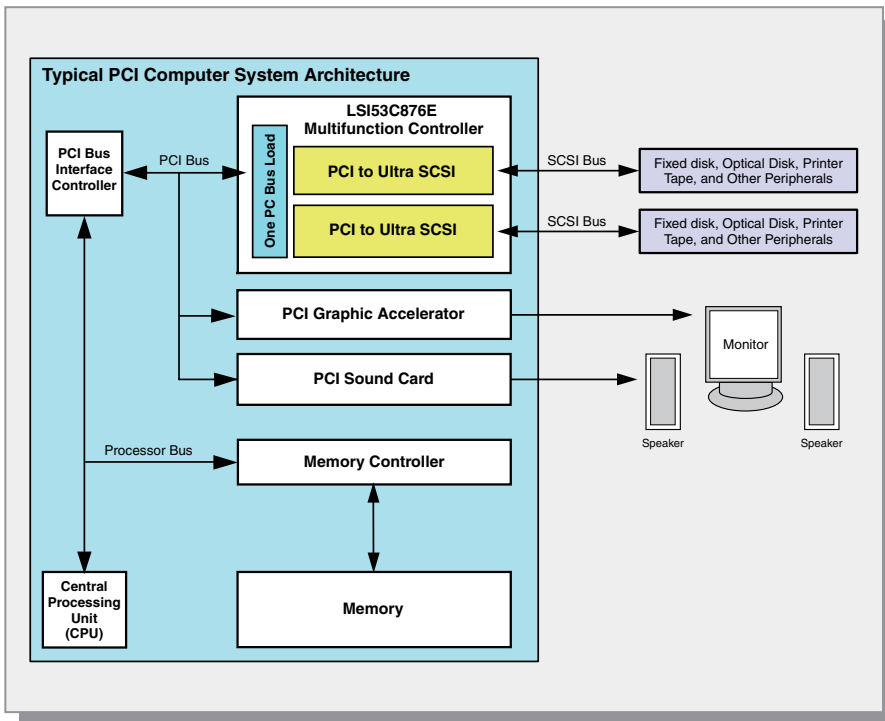


Figure 1: Typical LSI53C876E system application diagram

LSI53C876E

Multifunction Controller

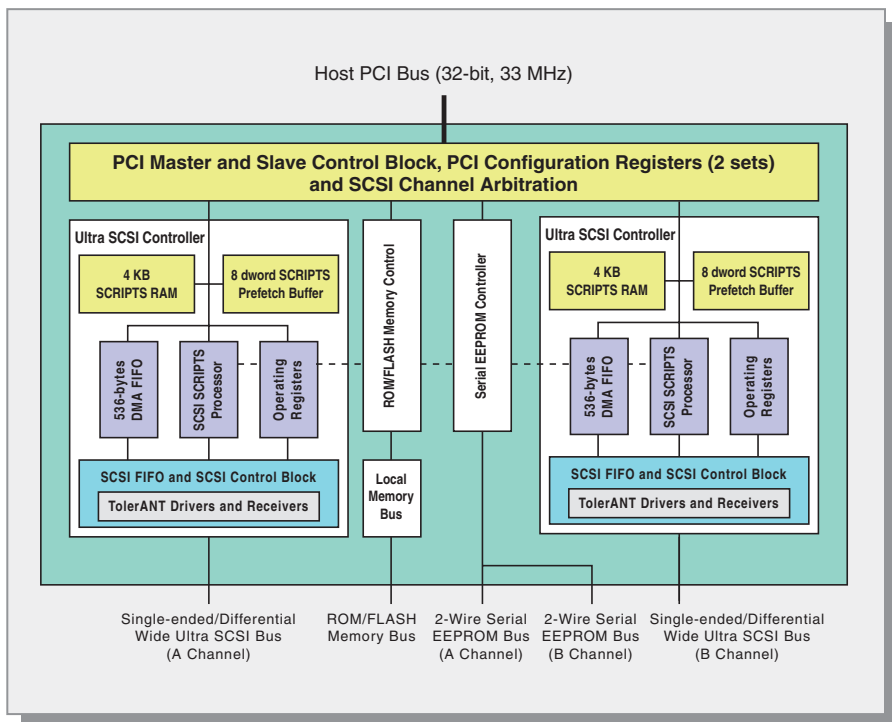


Figure 2: LSI53C876E block diagram

For more information please visit the LSI Logic web site at:

<http://storageio.lsillogic.com>

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