SYM53C876E **Data Sheet**

SYM53C876E

PCI-Dual Channel SCSI Multi-function Controller

The SYM53C876E PCI-Dual Channel SCSI Multi-function Controller brings the proven performance of the SYM53C8XX family of PCI-SCSI I/O Processors to a new performance and integration level. This single-chip multi-function 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 SYM53C876E, 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.

Benefits

- True PCI multi-function 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 SYM53C875 I/O Processor

General 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 PC 97 and PC 98

PCI Features

- True multi-function 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 MB/s
- 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

SCSI Features

- 16 bit Ultra SCSI design based on the existing SYM53C875 for maximum performance
- One differential channel (can be configured as single-ended) and one single-ended channel*
- Up to 40 MB/s 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
- SCAM (SCSI Configured AutoMatically) Level 1 functionality for SCSI plug and play support
- Software drivers and SCRIPTS compatible with SYM53C825A and SYM53C875 – software written for the SYM53C875 operates as is with the SYM53C876E

** 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.

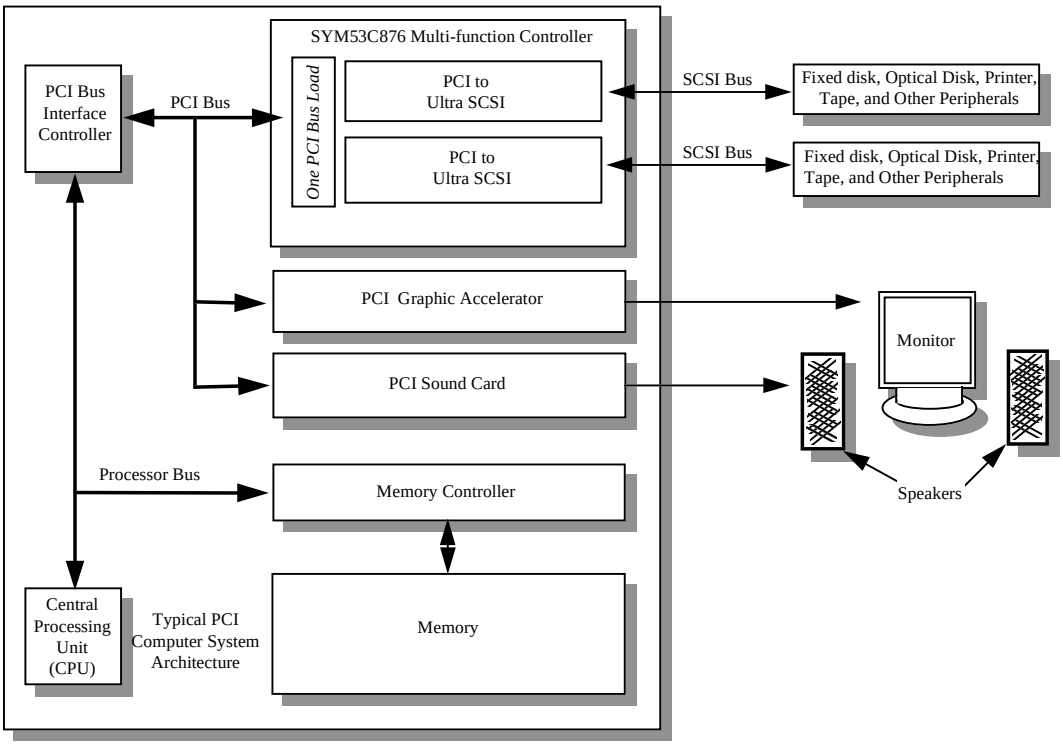
Direct Connection to PCI

Drawing upon LSI Logic' long-term participation in PCI standards committees, this part was designed with PCI compliance in mind, as were all of the LSI Logic SYM53C8XX family parts. The SYM53C876E PCI-Dual Channel SCSI Multi-function Controller is fully compliant with the PCI 2.1 specification, including the requirements for multi-function devices.

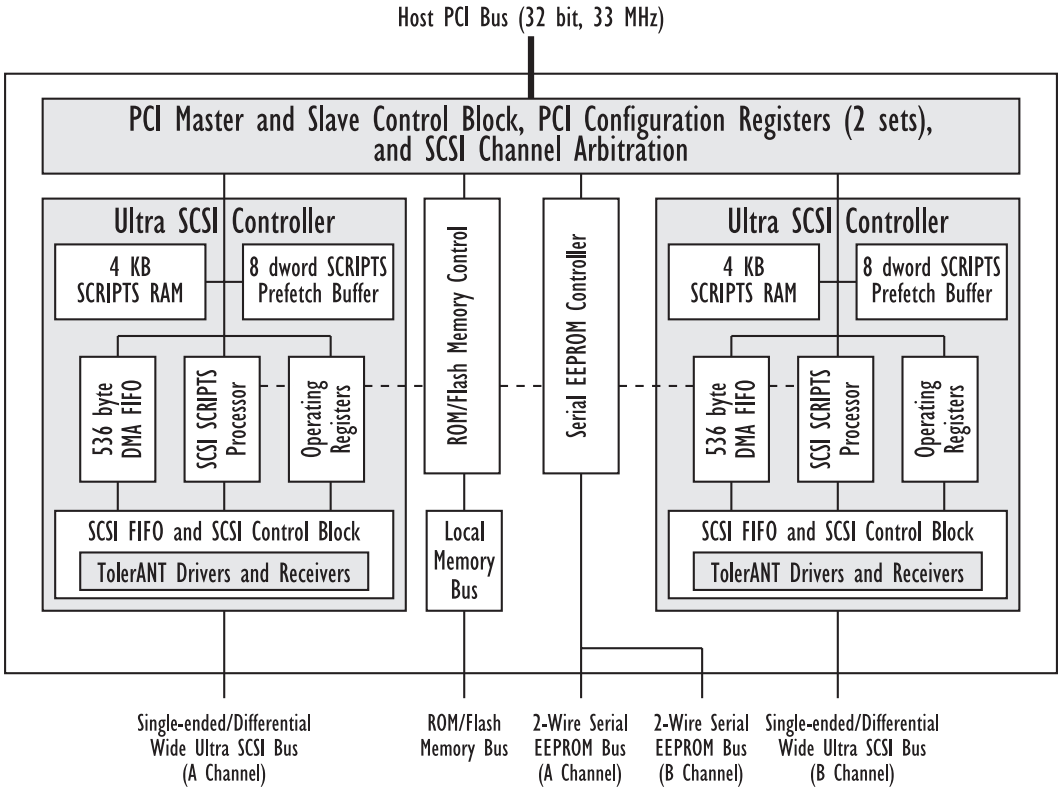
Software Support

LSI Logic provides a complete software solution with BIOS and drivers to support the SYM53C876E and the entire SYM53C8XX family of PCI-SCSI I/O Controllers.

Drivers are available for NetWare, Windows NT, DOS, Windows 3.1, Windows 95, UnixWare, OS/2, and SCO Unix OpenServer.



Typical SYM53C876E System Application



SYM53C876E Block Diagram

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