LSI53C770
SCSI CONTROLLER

SINGLE-CHIP ULTRA SCSI CONTROLLER

OVERVIEW

The LSI53C770 controller supports Ultra SCSI transfers enabling the chip transfer SCSI data at up to 20 MBps on an 8-bit bus and up to 40 MBps on a 16-bit bus. Ultra SCSI is an extension of the SCSI-3 standard that expands the bandwidth of the SCSI bus and allows faster synchronous SCSI transfer rates. When enabled, Ultra SCSI effectively doubles the synchronous transfer rates of Fast SCSI-2.

The LSI53C770 allows easy firmware upgrades and SCRIPTS™– compatible (the SCSI programming language developed by LSI Logic) with the LSI53C7XX and LSI53C8XX families. The device provides full SCSI-2 capabilities and features LSI Logic's TolerANT® SCSI driver and receiver technology for reliable operation in all cabling environments.

Performance enhancements on the LSI53C770 include an additional 4 KB of internal RAM for SCRIPTS instruction storage, which reduces system bus bandwidth requirements, and allows tailored SCSI sequences to be executed locally and saves the system bandwidth for other tasks. A 96-byte DMA FIFO provides more efficient throughput from/to the host to/from the SCSI bus during high latency DMA bus requests. Other features include:

- An increase in the maximum synchronous SCSI offset from 8 to 16 levels — Allows better speed matching during Ultra SCSI transfers.

- A SCSI clock doubler which allows for the use of a 40/50 MHz oscillator (doubled internally to provide the correct frequency for Ultra SCSI transfer modes).

- Expanded handshake-to-handshake and general purpose timers to include a scale factor to increase the length of time before these timers expire.

BENEFITS
- Designed for use in multi-user systems including network file servers, multi-tasking mid-range computers, supercomputers, and minicomputers

- Ultra SCSI technology doubles the synchronous transfer rate up to 40 MBps

- Builds upon proven SCSI technology — a pin-for-pin replacement for the LSI53C720

- Provides new features for enhanced performance and flexibility

FEATURES
- Performs Ultra SCSI data transfers up to:

  - 40 MBps synchronous (16-bit)

  - 20 MBps synchronous (8-bit)

- Functions as full 32-bit PCI DMA bus master

- Additional 4 KB SCRIPTS internal RAM

- 96-bytes DMA FIFO for improved throughput between the host and SCSI bus

- SCSI offset increased to 16 transfers

- 32 additional scratchpad registers for user-defined functions

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LSI53C770 SCSI Controller

EASE-OF-USE

• Pin-for-pin replacement for LSI53C720

• Minimal software and hardware modifications required for Ultra SCSI support.

• Allows migration of existing LSI53C7XX SCRIPTS

• Handshake-to-handshake and general purpose timers include a scale factor to increase amount of time before timers expire

FLEXIBILITY

• Internal SCSI clock doubler allows use of a 40/50 MHz oscillator with Ultra SCSI transfer modes

• SCSI Selected as ID register

• High-level programming interface (SCSI SCRIPTS)

• Allows tailored SCSI sequences to be executed from main memory

• Accommodates changes in the logical I/O interface definition

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