

# LSI53C770 SCSI CONTROLLER

The Communications Company™

## 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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## 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

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

**<http://storageio.lsillogic.com>**

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