



# ISI-755

## 1394a General Purpose Link Layer Core

### IEEE 1394

IEEE 1394 is a high-speed serial bus standard that allows video and audio consumer devices to communicate quickly, reliably, and inexpensively with a PC and with each other.

### FlexFire™ Architecture

Innovative Semiconductors' FlexFire architecture is based on a set of parameterized building blocks that can be quickly and easily configured to support a wide range of 1394 applications. The FlexFire 1394a family includes general purpose and application-specific cores for Link Layer Controllers as well as a PHY.

FlexFire offers a fast and convenient way to incorporate Firewire capabilities into products such as digital cameras, set-top-boxes, audio/video devices, disk controllers, and other PC peripherals.

### ISI-755 General Purpose Link Core

The ISI-755 provides the interface to connect devices to the high speed 1394 serial bus, at speeds up to 400 Mbits/sec. It offers easy adaptability to peripheral and consumer device applications, and has been proven in silicon.

The core is a programmed I/O-style controller which is well-suited to peripheral applications. The ISI-755 can be integrated with Innovative's ISI-736 1394a Mixed Signal PHY Layer core for a single-chip 1394a solution. The ISI-755 is available in synthesizable RTL, and includes a comprehensive test bench and validation suite, synthesis scripts, and user documentation.

### Features

- Compliant with IEEE 1394a Link Layer specification
- Verified in silicon
- Supports 100, 200, and 400 Mbits/sec transfer rates
- Operates at 50 MHz on commercial .5µ or smaller digital CMOS processes
- Works with Innovative's ISI-736 Mixed Signal PHY core, or with commercial PHY chips
- Provides full Link Layer support, plus some Transaction Layer and Bus Management functions
- Supports asynchronous and isochronous transfers, including multi-channel isochronous receive
- Cycle master capable
- 8, 16, or 32-bit application bus interfaces to common embedded processors
- Dynamically configurable FIFO functionality, number, and size
- RAM-based dual port FIFO can also be accessed at random
- Intelligent FIFO pointers implement restore and discard to simplify implementation of Retry
- Detects late packet and sequence errors

### PRODUCT BRIEF

### FlexFire™ 1394a Core Family

- **ISI-755:** General purpose Link
- **ISI-758:** Link compatible with Texas Instrument's GPLynx™
- **ISI-770:** Audio/Video Link with 5C encryption
- **ISI-736:** 1394a Cable PHY
- **ISI-738:** 1394 Backplane PHY

