AMCC STORAGE

JNIC-1460/1560

Fibre Channel-to-PCI/PCI-X ASIC Controller

For nearly a decade, JNI® ASIC controllers have been a pioneering presence in the Fibre Channel world. Now that JNI has joined AMCC — the industry leader in high performance integrated circuits for wide area networks — AMCC is proud to offer JNIC ASIC controllers for a variety of SAN applications.

Benefits

JNIC-1460

- Support for 1 or 2Gb SANs
- Two independent controllers assure full throughput for each port

JNIC-1560

- Dual independent Fibre Channel (FC) ports offer a sustained bandwidth of 800MB/s with a maximum burst rate of 1.064GB

The JNIC-1460 PCI-to-Fibre Channel Controller

The 2Gb-enabled JNIC-1460 offers a flexible architecture that can be easily integrated into a variety of I/O applications. combines. With Full-Duplex Fibre Channel data transfer rates of up to 400 MB/s and a 64-bit, 66 MHz PCI host interface, it delivers the unparalleled I/O performance demanded by next-generation SAN appliances.

This powerful ASIC integrates a wide array of advanced I/O technologies to enhance total system performance. Starting with an embedded I/O engine that performs real-time context switching to maximize SAN data throughput, the engine can queue up to 254 active exchanges on-chip. Additional active exchanges can be accommodated on the local memory port. JNIC-1460 proprietary data flow architecture allows for a very efficient, low latency data path for both receive and transmit channels. An integrated RISC-based I/O engine with large instruction RAM significantly reduces host CPU utilization while requiring less than one interrupt per I/O operation. This makes the JNIC-1460 an ideal candidate for high-end servers and external Fibre Channel storage applications.

The JNIC-1560 Dual Channel PCI-X-to-Fibre Channel Controller

This fifth-generation Fibre Channel I/O controller provides two fully independent, high performance FC ports for high bandwidth I/O paths to a storage area network (SAN). The controller can sustain an unprecedented 800 MB I/O, the highest in its class. Furthermore, it can burst to the host system at full PCI-X speed of 1.064 GB. Two integrated multi-task RISC-based I/O engines minimize host CPU overhead, making the JNIC-1560 an ideal candidate for high-end servers and high-performance embedded storage applications.

The JNIC-1560 employs a wide array of I/O technologies to enhance total system performance. The two embedded engines handle context switching to maximize data throughput in an enterprise SAN environment, where a large number of initiators and targets are integrated to make up the SAN. These onboard engines can each queue up to 254 on-chip active exchanges per channel. Optionally, they can operate on over 32,000 locally stored active exchanges. These engines employ a unique I/O delivery scheme that continuously chains I/Os as issued by the operating system, reducing the number of system interrupts per I/O to below one.

With support for 126 individual AL_PA aliases per port, the JNIC-1560 is well-suited for custom embedded target applications. Its low power dissipation eliminates the requirement of a heat sink in physically confined environments.

JNIC-1460/1560

Features

All Models

- Switched Fabric, Arbitrated Loop, and Point-to-Point topology support
- Multi-layer software architecture

JNIC-1460

- Integrated RISC-based I/O Engine
- 1 or 2 Gb Fibre Channel Data Rate
- 66MHz, 64-bit PCI 2.2 Compliant
- Hardware Assisted Context Switching
- Local Memory Port with Bursting Option
- Concurrent Target and Initiator Mode Support

JNIC-1560

- Two fully independent Fibre Channel (FC) ports on a single ASIC
- Integrated native PCI-X, 50 to 133MHz, 64-bit host interface
- Automatic rate negotiation from 1 to 2Gb
- Multi-protocol capable (FCP, IP, FC-Tape, FC-BB)
- 10- or 20-bit external SERDES support

Applications

JNIC-1460

- Mission critical SANs requiring simultaneous high-speed transactions between multiple Fibre Channel links and a single server

JNIC-1560

- High-end servers and high-performance embedded storage applications.

JNIC-1460 Specifications

Host (PCI) Interface

- 66 MHz PCI clock rate
- 32- or 64-bit data path
- Zero-wait state transfers with cache line streaming
- Message Signal Interrupt (MSI) support
- Independent DMA channels for receive, transmit and command
- Programmable priority for the DMA channels
- 64-bit addressing
- Dual address cycle capable
- Power management registers
- PCI 2.2 and PC99 compliant

Fibre Channel Interface

- 1 or 2 Gb Full-Duplex FC data rate
- Auto Link Speed Negotiation
- Simultaneous Multi-protocol Capable
- Up to 126 ALPA Aliases
- Switched Fabric, Arbitrated Loop, and Point-to-Point
- Support for class 1, 2, 3, and intermix services
- Dynamic half-duplex support
- 10- or 20-bit external SERDES Interface
- Raw frame handling
- Programmable removal from loop
- Loopback control, error status block, LRC control, and busy indicator
- FC-AL-2 rev. 7.0 compliant

Local Memory Interface

- De-multiplexed address and data
- Synchronous SRAM for local active exchanges
- Direct connect 64K to 256K by 18 Sync. SRAM
- Local nonvolatile memory (up to 1 MB)
- SEEPROM (2 Kb) support
- 8 GPIO pins
- Local interrupt input

Software Support

- Multi-layer API
- Concurrent target & initiator mode support
- FCP, IP, FC-BB, and FC-Tape support

Physical Dimensions

- 388-pin PBGA
- 35mm by 35mm
- 1.27 mm pitch

Environmental

- Operating temperature: 0° to 70° C
- Storage Temperature: -40° to 85° C
- Relative humidity: 8% to 85% non-condensing

Reliability

- Internal and external loopback mode
- IEEE 1149.1 JTAG interface
- Parity protection on all data paths

JNIC-1560 Specifications

Host (PCI) Interface

- 32/64-bit PCI up to 66 MHz
- 32/64-bit PCI-X 50 MHz to 133 MHz
- Maximum PCI-X burst rate of 1064 MB
- Maximum PCI burst rate of 528 MB
- PCI-X Split Transaction support
- Zero wait state PCI Bus Master transfers with cache line streaming
- Support for Message Signaled Interrupt
- Independent PCI REQ/GNT pairs per port
- Programmable parity
- Dual address cycle capable
- PCI 2.2 and PCI-X 1.0a compliant

Fibre Channel Interface

- Two fully independent Fibre Channel ports
- 800 MB full-duplex FC data rate
- 2 Gb Fibre Channel with Auto Speed Detect
- Switched fabric, point-to-point, arbitrated loop
- Multi-Protocol Capable (FCP, IP, FC-BB)
- Dedicated RISC Engine for each port
- Dynamic half-duplex support
- Supports 126 AL_PA aliasing
- Link diagnostics, including loop back control, error status block, LRC control and busy indicator
- Raw frame transmit and receive mode
- GBIC & MIA Support
- FC-AL-2 rev. 7.0 compliant

Local Memory Interface

- Synchronous SRAM for local command storage
- 8-Mb flash memory support (1 MB)
- Parity protected data paths
- 8 general purpose I/O pins (4 per port)
- Two local interrupt inputs
- Optional 4K-bit Serial EEPROM interface

Software Support

- Multi-layer API
- Concurrent target & initiator mode support
- FCP, IP, FC-BB and FC-Tape support

Physical Dimensions

- 476-pin PBGA
- 35mm by 35mm
- 1.27 mm pitch

Environmental

- Operating temperature: 0° to 70° C
- Storage Temperature: -40° to 85° C
- Relative humidity: 8% to 85% non-condensing
- Maximum Power consumption: 2.5 Watts

Reliability

- Internal and external loopback modes
- IEEE 1149.1 JTAG interface
- Parity protection on all data paths

AMCC ENTERPRISE

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JNIC1460/1560_DS_09/01/2004