

Product Brief

12-Port 10G Ethernet Switch

The FM2212 fully-integrated single-chip wire-speed 10G/2.5G/1G Ethernet switch leads the market in low-latency intelligent switching. With its robust layer-2 switching capabilities, low power consumption and flexible port speeds, the FM2212 is well suited for applications including ATCA node and carrier node cards. And, with the unprecedented level of integration, it removes the cost barrier for rapid and far-reaching 10G Ethernet deployment. The FM2212 has twelve interfaces that can independently function in 10G, 2.5G, 1G, 100M or 10M modes.

Features

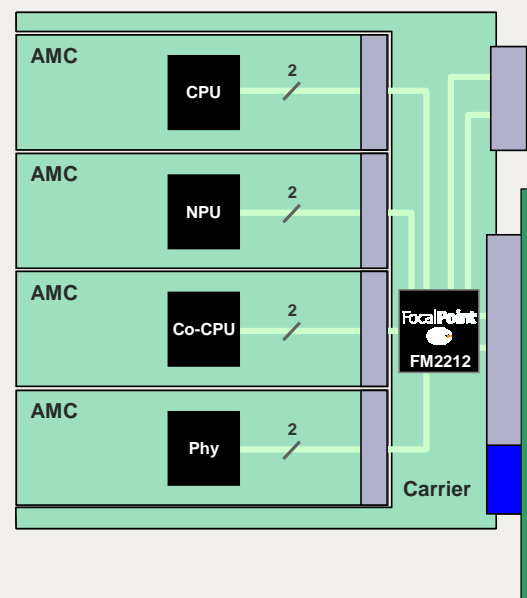
- **Performance-optimized design**
 - Cut-through (or store-and-forward)
 - Industry-leading 200ns latency, ball to ball
- **12 XAUI (CX4) interfaces**
 - Up to 10Gbps per interface
 - CX4 compliant for copper cable support (up to 15m)
 - Supports per-port overspeed up to 12.5Gbps
 - 2.5G, 1G, 100M, 10M per interface in single-lane mode
- **Robust 802.3x PAUSE flow control**
 - Per-port configurable (symmetric or asymmetric)
- **Sophisticated queue management**
 - 8 internal priority levels (802.1P support)
 - Programmable Weighted Early Discard
 - Strict priority and weighted round robin scheduling
 - Multicast/broadcast with programmable storm control
 - Jumbo packet support (up to 10KB)
- **Extensive 802.1Q VLAN support**
 - 4K-entry table (port- or MAC-based association)
 - Supports Q-in-Q (double stacking)
- **MAC addresses**
 - 16K-entry table
 - Multiple Spanning Tree (802.1D, s, w)
 - Configurable hardware aging, with lockable entries
- **Programmable address look-up modes**
 - Configurable header offset (bypass proprietary header)
 - Hash lookup on configurable fields
- **Powerful 802.3ad link aggregation**
 - Support for any number of ports and groups
- **Port-based security (802.1X)**
 - Fully-programmable security actions
- **Extensive packet filtering/monitoring capabilities**
 - VLAN, SA, DA, Priority or Port based
 - Programmable rules for forward, redirect, discard, etc.
- **Sophisticated statistics gathering**
 - RMON, priority, flow, congestion control, VLAN
- **Robust configuration and service**
 - 32-bit generic CPU interface for housekeeping
 - JTAG interface for debug and test
 - SPI for EEPROM boot and configuration
 - Serial interface for LED support
- **Modest and flexible power profile**
 - <15W, typical

Benefits

- **Reduces per-port cost of high-end Ethernet**
 - Simplifies and accelerates system design
 - Reduces component count
 - Accelerates the deployment of 10G infrastructure
- **Enables new performance-sensitive applications**
 - Small-system hub switch
 - PICMG 3.1 ATCA node card interconnect
 - PICMG 3.1 ATCA carrier node card interconnect
- **Enhances existing applications**
 - Can aggregate enterprise LAN traffic
 - Effectively address ATCA requirements
 - Efficiently interconnects multiple resources
 - Offers unprecedented multicast performance
- **Simplifies system-wide management**
 - Extensive monitoring offers clear visibility
 - Programmable triggers provide efficient snooping

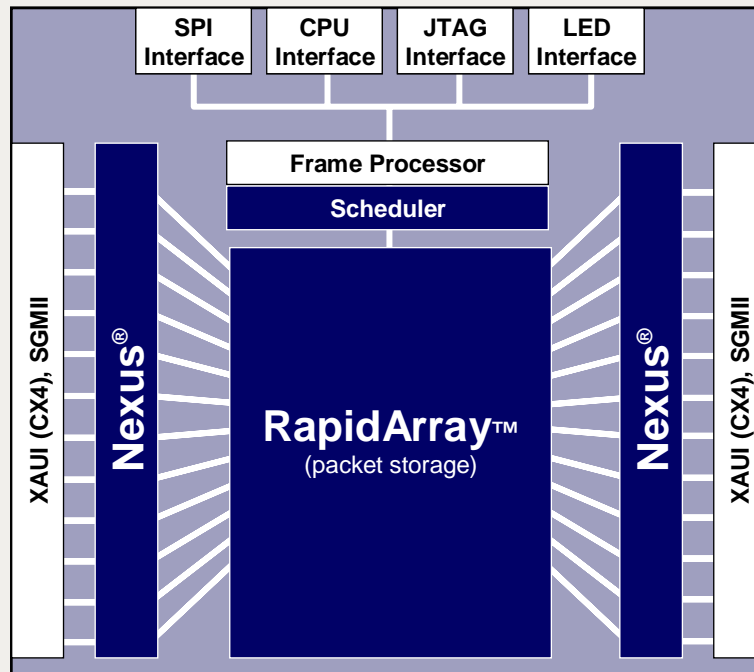
Sample Application

ATCA Carrier Card



As a fully-integrated solution, The FM2212 offers unparalleled performance and cost efficiency for ATCA carrier card interconnects. The extensive Layer 2 capabilities, flexible port speed configurations and superior performance make it ideal for this and related applications.

FM2212 Block Diagram



Leveraging the unique capabilities of Fulcrum's Nexus System Interconnect and ultra-fast RapidArray packet storage, the FM2212 delivers high throughput with negligible delays, enabling a new class of performance-optimized applications never before imagined for Ethernet.

FM2212 Enables Telecommunications Architectures

As the industry continues its migration toward voice, video and data services over IP/Ethernet, ATCA and other system designers are attracted to the proposition of leveraging 10 Gigabit Ethernet for the board level interconnect as well as for the backplane fabric. Such a converged interconnect approach promotes faster time to market, increased flexibility and lower development costs. Together with a growing ecosystem of 10 Gigabit Ethernet enabled components, the FM2212, with its twelve 10G/2.5G/1G interfaces is ideal for effecting this transition. The software and related infrastructure, as well as the silicon technology for the FM2212, is available and proven.

The FM2212 delivers an unprecedented level of performance and integration, allowing system designers to build highly-scalable systems, while maintaining the ubiquitous Ethernet and IP software infrastructure that already exists in their systems. And with the rapid adoption of Ethernet in industry standard platforms, the FM2212 can help enable truly converged telecommunications, storage and data networks. The result is a new frontier of modular networking and computing platforms where all three major system elements (compute, storage, and network) can be scaled independent of the others.

FM2212 Eases System Design

The FM2212 provides a seamless and nearly-transparent infrastructure for efficiently interconnecting multiple Ethernet-based building blocks, enabling system designers to rapidly assemble complex modular computing, storage, and networking platforms. As the central nervous system, the FM2212 possesses the low latency, high throughput, and sophisticated queue management required to efficiently mix data, networking, and storage traffic within a single fabric. The FM2212 also contains advanced test capabilities that ease system bring-up, debug, and test, and simplify central management of large-scale truly converged systems.

Process, Package, and Power

The FM2212 consumes less than 22 Watts at full capacity, with all interfaces active and operating at full speed. Unused interfaces that are disabled consume no power. And, in any case, power scales directly on level of activity.



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