PM8032 Tachyon QE8
Quad-Channel 8 Gbps Fibre Channel Controller

PRODUCT OVERVIEW

The PM8032 Tachyon QE8 device is a high-performance 4-port 8 Gbps Fibre Channel controller. It features an 8-lane native PCI-Express Gen-II link, enabling full-duplex operation simultaneously on all ports. The Tachyon QE8 is an integrated single chip solution ideal for a variety of high-performance I/O applications.

The proven Tachyon State-Machine architecture scales directly with system CPU performance and is not limited by the constraints of an embedded microprocessor. The Tachyon QE8 supports up to 4 processors per FC link using 4 independent register and API queue structures. This feature allows systems to scale to required performance as necessary while maintaining compatibility with the Tachyon programming model at the register level, and with the Tachyon Software Development Kit (TSDK) API tools.

The Tachyon QE8 supports the Protection Information model as described in the SCSI Block Commands - 2 (SBC-2) Standard, which incorporates a Data Integrity Field (DIF) in data records. Additionally, the QE8 has masking capabilities for enhanced functionality. T10 DIF provides robust CRC-based data protection with mechanisms to initiate, extend, verify and replace, or terminate a protection domain.

The Tachyon QE8 offers additional performance by providing Multi-DMA and advanced frame-handling functions that are normally handled by the host processor. These enhancements make it possible for the system to utilize intelligent frame handling while reducing CPU utilization, memory controller utilization, and PCI-Express utilization.

FEATURES

- 4-port 8/4/2 Gbps Fibre Channel controller
- Supports 10 Km distance per link at 8G link rate without external memory
- Native PCI-Express 2.0 8-lane Gen-II 5-Gbit Host Interface
- Multiple Outbound PCIe read requests
- Full duplex operation for each port
- Fibre Channel auto-speed negotiation
- Virtualization support with H/W assisted FC Frame Steering
- Support for up to 4 processors per FC Link
- T10 Data Integrity Field protection (T10 DIF)
- Multi-DMA for cache mirroring
- SCSI BiDi command assist
- Enhanced TRE for higher performance on small data transfers
- CRC offload engine for enabling non-T10 DIF compliant solutions

- ERQ/SCSI LL priority control for additional Quality of Service control
- TWI control and presence detect for optical transceivers
- Platform-independent software development API tools including sample code for Linux, and Windows
- Standard and RoHS compliant packages
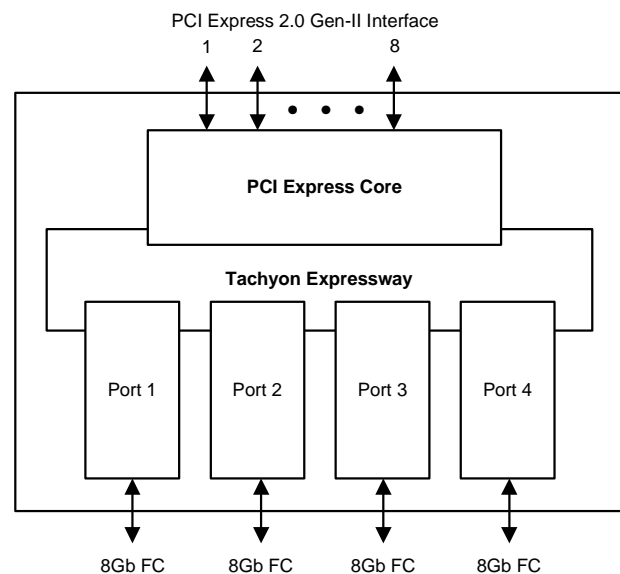- Industry-leading technical support and documentation

DATA INTEGRITY FEATURES

- Variable block size support: 512/520
- I/O level T10 DIF support
- CRC Offload Engine (COE)
- T10 DIF per L/A (DPL)

TACHYON EXPRESSWAY ARCHITECTURE

- Provides an interface from the Fibre Channel core to PCI-Express
- Allows simultaneous operation on each of the four 8 Gbit ports
- AER and Error ECN support
- MSI-X
- 2K + 32-byte T10 DIF PCIe Max TLP

BLOCK DIAGRAM

PRELIMINARY SPECIFICATIONS

- Package Type: 480-pin FC PBGA, 1mm ball pitch
- Power Dissipation: 7 Watts (Estimated)
- Thermal Specification: 0 - 110°C, Junction Temp.
- Voltage Margin: ± 5%

MAINTAIN TACHYON FIBRE CHANNEL FAMILY PROGRAMMING MODEL

- Registers memory mapped
- Backward compatible offsets for Fibre Channel core registers
- Similar to the Tachyon HPFC-6600/6640 QE4 device
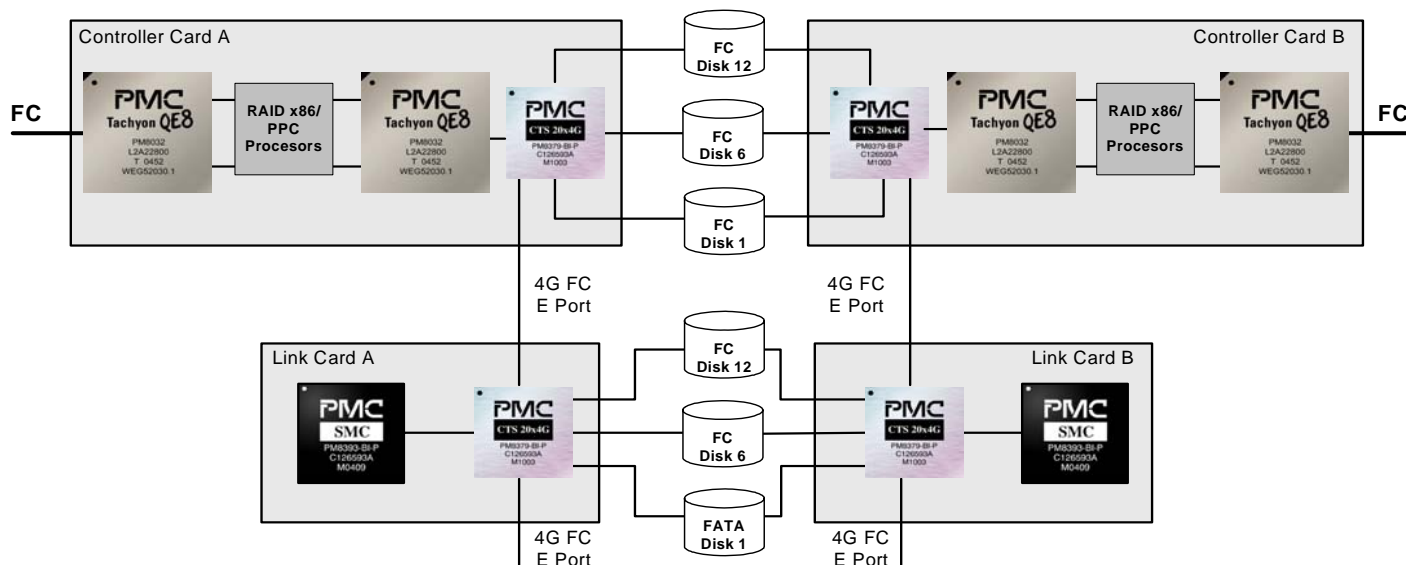
STANDARD TACHYON FIBRE CHANNEL CORE FEATURE SET

- Performance scalable State Machine-based architecture
- Independent, concurrent inbound/outbound transaction processing

- Multiple outbound context support
- Support for SCSI initiator, target and initiator/target modes
- Complete sequence segmentation and reassembly done in hardware
- Up to 2048-byte frame payloads
- Fully assisted FCP Class 2 and Class 3 support
- Class 2 ACK0/ACK1 model assists in hardware
- Interrupt avoidance mechanisms

APPLICATIONS

- Enterprise Storage Systems
- Embedded subsystems
- Disk Arrays
- Multi-protocol Bridges/Routers
- Intelligent Switches
- Virtualization Devices

8G SAN-ATTACHED FIBRE CHANNEL STORAGE SYSTEM APPLICATION

FURTHER RESOURCES

www.pmc-sierra.com/storage
www.pmc-sierra.com/tachyon

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www.DataSheet4U.com