

# PM8032 Tachyon QE8

## Quad-Channel 8 Gbps Fibre Channel Controller

Preliminary  
Product Brief

### 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

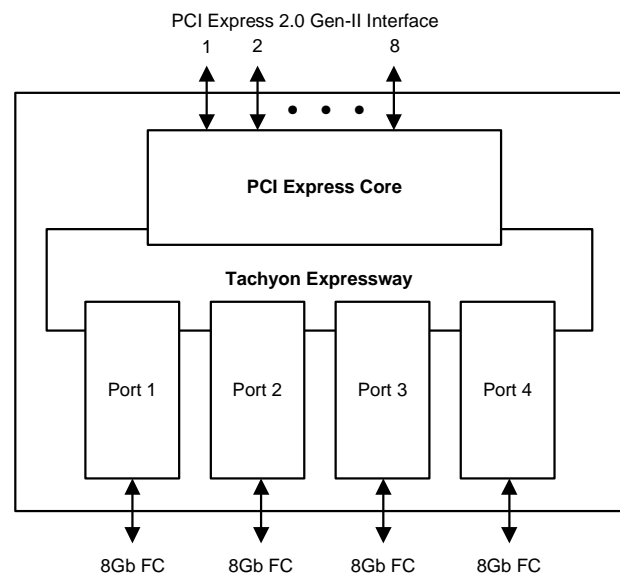
### DATA INTEGRITY FEATURES

- 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:  $\pm 5\%$

## 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

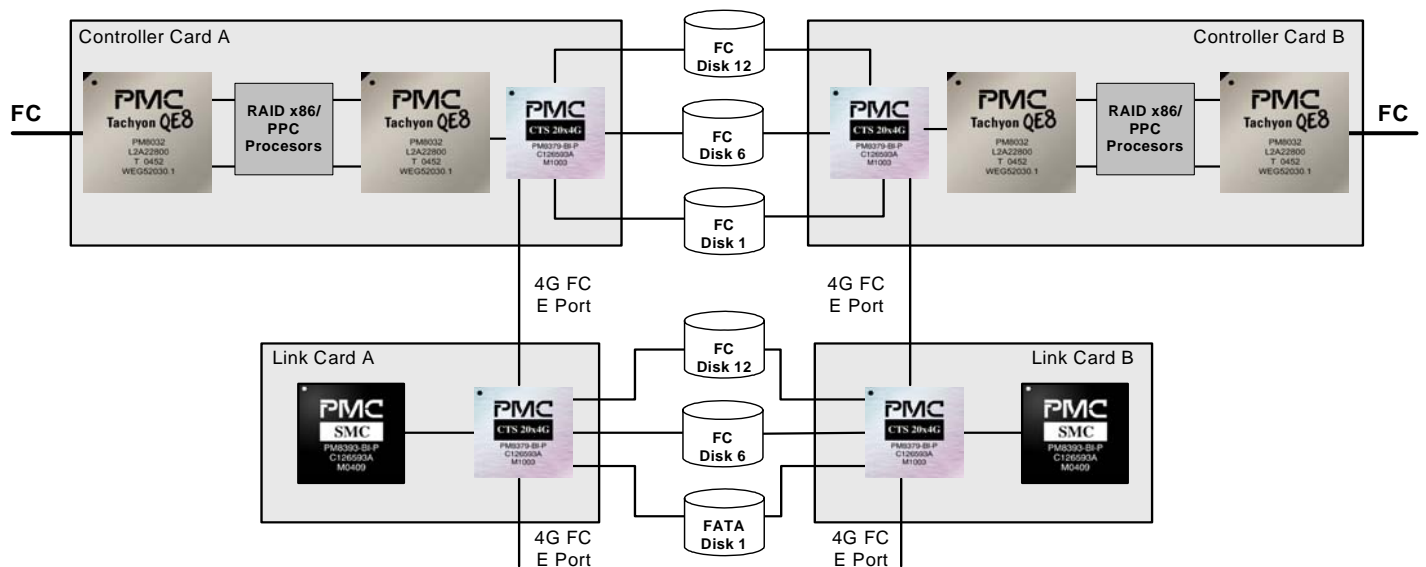
- Performance scalable State Machine-based architecture
- Independent, concurrent inbound/outbound transaction processing

- 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](http://www.pmc-sierra.com/storage)  
[www.pmc-sierra.com/tachyon](http://www.pmc-sierra.com/tachyon)

Corporate Head Office:  
 PMC-Sierra, Inc.  
 Mission Towers One  
 3975 Freedom Circle  
 Santa Clara, CA, 95054, U.S.A.  
 Tel: 1.408.239.8000  
 Fax: 1.408.492.1157

Operations Head Office:  
 PMC-Sierra, Inc.  
 100-2700 Production Way  
 Burnaby, BC V5A 4X1 Canada  
 Tel: 1.604.415.6000  
 Fax: 1.604.415.6200

PMC-2062568 P1 © Copyright PMC-Sierra, Inc. 2007. All rights reserved. For a complete list of PMC-Sierra's trademarks, visit [www.pmc-sierra.com/legal/](http://www.pmc-sierra.com/legal/). Other product and company names mentioned herein may be the trademarks of their respective owners. For corporate information, send email to: [info@pmc-sierra.com](mailto:info@pmc-sierra.com). All product documentation is available on our web site at: [www.pmc-sierra.com](http://www.pmc-sierra.com).

**PMC**  
 PMC - SIERRA