



SFA7942Q Dual-Port 40GbE QSFP+ Half-Length ApplicationOnload Engine

Solarflare® SFA7942Q ApplicationOnload™ Engine (AOE) is the second generation of the product moving application processing into the network adapter to accelerate real-time network application performance. SFA7942Q comprises an innovative integration of an advanced FPGA onboard Solarflare's industry-leading low-latency 40GbE server adapter. SFA7942Q is an open platform that supports applications developed by Solarflare, customers, and third-party developers.

SFA7942Q provides users a unique advantage with an open platform for "on-the-fly" processing of network data that combines the industry's highest performing, lowest latency server adapter with an advanced FPGA acceleration engine. By processing data in hardware before it's presented to the server CPU, the SFA7942Q reduces application run-times, decreases overall latency, and minimizes server CPU workloads. As a result, users can expect to see dramatic improvements in application performance, while maintaining full compatibility with Solarflare's existing server adapter drivers and OpenOnload middleware.

Architecture for Application Acceleration

The SFA7942Q architecture enables users to migrate portions of their business logic – that can be parallelized and perform faster in hardware – to the FPGA. This provides users the ability to optimize their compute and network infrastructure for specific application processing loads. SFA7942Q's bump-in-the-wire architecture also enables a seamless, low-latency and high throughput data path to host applications by reducing message transit time compared to alternative solutions, and leveraging its tight integration with Solarflare's OpenOnload network acceleration.

Comprehensive Development Environment

Customized applications can be easily developed and deployed utilizing AOE's comprehensive development environment with the SFA7942Q and the AOE Open Firmware Development Kit (FDK). AOE accelerates deployment time as well as processing time with a highly-integrated FPGA subsystem featuring tools, services, APIs, and a full data path infrastructure. More details are available in Solarflare's AOE FDK product brief (SF-114797-CD).

Unique Features & Benefits

AOE provides the following benefits for financial services and other applications:

- Accelerate applications with real-time processing on the industry-leading, low-latency network adapter lowering overall latency
- Improve server utilization by reducing CPU, memory, and I/O load which saves processing cycles for other applications
- Significantly reduce FPGA resource utilization by exploiting advanced DMA engines and flow steering capabilities of the SFC9120 controller
- Leverage industry-proven low-latency drivers and Solarflare's unique OpenOnload stack
- Simplify development and reduce deployment time with Solarflare's comprehensive AOE Open FDK development environment
- Choose from Solarflare-developed applications, pre-existing applications from Solarflare's developer community, or customized applications



SolarflareSFA7942Q

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Specifications

Product Number
SFA7942Q

Standards & Compliance
IEEE 802.3ae,
IEEE 802.3ad,
IEEE 802.3Q,
IEEE 802.3p,
IEEE 802.3x
RoHS Compliant

Power
SFA7942Q: 12-35W
(power varies by application)

Operating Range
0° to 50° C, 0 LFM, Min.

Physical Dimensions
L: 16.8 cm (6.6 in)
W: 11.1 cm (4.37 in)
End bracket height:
PCI Express standard
12.0 cm (4.7 in)

Order Information
SFA7942Q-A7-4
2xQSFP AOE – Stratix V A7
FPGA with 2x4GB on-board
DDR3

SFA7942Q-A7-4-PTP
As above adding the Precision
Time AppFlex™ License

Memory Options
AOE-MEM-004D-1600
4GB, 1600 MT/s, 1.35V,
PC3-12800, Single Rank,
ECC SODIMM for
SFA7942Q
AOE-MEM-008D-1600
8GB, 1600 MT/s, 1.35V,
PC3-12800, Dual Rank,
ECC SODIMM for
SFA7942Q

Advanced Features

SFC9120 40G Ethernet Controller
Supports high-performance 10/40GbE

Application Accelerator FPGA
Altera Stratix V GX A7

DDR3 On-board Memory
2x4GB x72 ECC DDR3 at up to 1600MT/s

SODIMM Memory Sockets
Two x72 ECC SODIMM DDR3 at up to 1600MT/s

AOE Board Services
Network data paths, on-board memory control; board, power,
thermal management; initialization

PCI Express
PCIe x8 Gen 3.0 compliant @ 8.0 GT/s for full, 40 Gbps
bi-directional bandwidth

QSFP+ Support
Supports optical & copper QSFP+ modules: Direct-Attach,
10G and 40G Fiber

Low Latency
Cut through architecture/intelligent interrupt coalescing

Adapter Teaming / Link Aggregation
LACP for redundant links & increased bandwidth

Enhanced Tuning
Adaptive interrupt moderation

Jumbo Frames
9216 byte MTU for performance

Remote Boot
PXE

Management
AOE-MM, ACPI v3.0, SNMP

OS Support
Linux Operating Systems: RHEL 5/6/7/MRG 2/Real Time 7,
SLES 11/12, Canonical Ubuntu Server 14/15, Debian 7/8

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