

FM-S28 Dual QSFP/QSFP+ transceiver FMC Module

Octal fiber-optic and/or copper interfaces for 10 and 40 Gigabit Ethernet and other high-speed serial protocols

Features

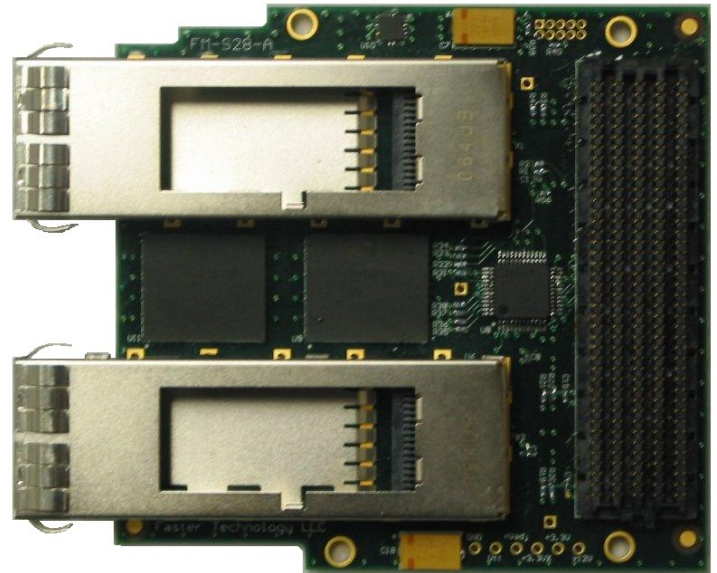
- Industry standard, modular FPGA I/O in an FPGA Mezzanine Card (FMC, aka VITA 57), module
- Two QSFP/QSFP+ cages support two (2) QSFP/QSFP+ transceiver modules
- FMC Compatible
- Supports full range of QSFP and QSFP+ transceivers with signaling rates up to 10Gb/sec per lane
- Supports 10GBASE-LX4 using standard FPGA MGT transceivers; Supports 40GBASE-LX4 using HXT transceivers of Xilinx Virtex-6 HXT (or similar FPGA) based carrier cards
- 2.5 or 3.3 volt signaling
- Two programmable reference clocks
- On board EEPROM for configuration management and user data

Benefits

- Provides lowest possible latency from media to the FPGA inputs
- Supports 2 channels of full 10 Gigabit Ethernet (LX-4) with lower performance FPGA carrier cards
- Dual QSFP / QSFP+ offers high port density with 8 lanes in standard height FMC module
- On board clock generators reduce burden on host FPGA carrier card

Overview

The FM-S28 provides two QSFP/QSFP+ module interfaces directly connected to the carrier card using the differential pairs of the FMC HPC connector. This enables a wide range of full data rate 40 Gigabit Ethernet, Fiber Channel, Infiniband and other very high performance serial standards to communicate with FPGA devices that have built in 10 Gigabit serial transceivers, such as the Xilinx Virtex-6 HXT family. When used with carrier cards with FPGAs that support the standard 3.125 Gigabit / sec. signaling rates, 10 Gigabit Ethernet and similar standards are supported using LX4 style methods. The base functions of the FM-S28 support a range of Vadj from 2.5 to 3.3 V. This enables the serial transceivers, clock generators, EEPROM and LEDs to work with various Spartan-6, Virtex-5 and Virtex-6 based carrier



cards. The FM-S28 is electrically compliant with the FMC standard. Due to the size of the QSFP cages, the FM-S28 is classified as a mechanical superset of the FMC mechanical standards. Special attention should be paid to ensure that the FM-S28 is mechanically compatible if used with non-supported host carrier cards.

QSFP Transceivers

The FM-S28 imposes no restrictions on QSFP/QSFP+ transceivers; any QSFP/QSFP+ transceiver that complies with the QSFP or QSFP+ Multi-Source Agreements (MSAs) can be mounted on the FM-S28. The mounting cage used on the FM-S28 supports the use of heat sinks for compatible QSFP/QSFP+ modules. Caution must be exercised when using modules with heat sinks because the heat sink extends beyond the height limitation of the FMC specification.

QDR II SRAM (under development)

QDR II SRAM on future versions of the FM-S28 will provide very high performance storage for network traffic data or information required by the application on the host FPGA. Special network processing functions such as hash tables can benefit from the completely random access provided by QDR II SRAM. RAM speed will be sufficient to accept full line rate data for simultaneous reads and writes.

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FM-S28 Technical Specifications

Supported Media

Fiber Optic QSFP/QSFP+ Transceivers - One or Two pluggable QSFP or QSFP+ transceivers
 Copper QSFP Transceivers - One or Two pluggable QSFP (twin-ax) transceivers

QSFP/QSFP+ Interface

FMC High Pin Count (HPC) connector
 Eight (8) high-speed serial FMC links
 QSFP Interrupts

DP0 – DP7 dual differential pairs
 LA01 (_P and _N)

Reference Clocks (2)

Clock 0
 Clock 1
 Default frequencies

GBTCLK0-M2C
 GBTCLK1-M2C
 212.5, 250, 300, 312.5 MHz.

FMC card controller

I²C interface

LA00 (_P and _N)

QDR II SRAM

(optional)
 Capacity
 Speed
 Access QDR 0
 Access QDR 1
 Interface signaling

Consult Factory

Supported Host boards

Virtex-6

Xilinx EK-V6-ML605-G (-00 option only)

On-board serial EEPROM

256 Byte Serial EEPROM
 EEPROM interface

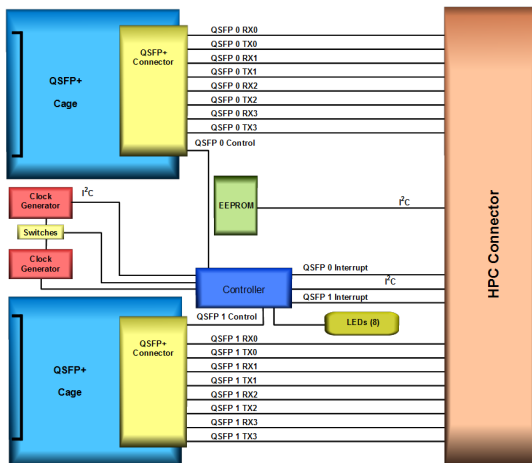
I²C via FMC SCL / SDA interface
 I²C address via FMC GA0 / GA1

Miscellaneous

FMC compliance
 V_{ADJ}

ANSI/VITA 57.1 (February 2010) compatible
 2.5V to 3.3V for -00 option only

Block Diagram



Related Products

- FM-S14 FMC compliant module with one quad SFP/SFP+ cage supporting up to four (4) SFP or SFP+ Modules
- FM-S18 FMC compatible module with two quad SFP/SFP+ cages to support up to eight (8) SFP or SFP+ Modules

Ordering Information

- FM-S28-XX FMC compatible module with two QSFP/QSFP+ cages to support up to two (2) QSFP or QSFP+ Modules
- Options
 - 00 No QDR II SRAM included
 - 02 (reserved for future QDR II SRAM)
 - 08 (reserved for future QDR II SRAM)