FM-S14 Quad SFP/SFP+ transceiver FMC

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

Features

- Industry standard, modular FPGA I/O in FMC (VITA 57) module
- High-speed serial, fiber optic or copper, connections into an FPGA's MGT interfaces
- One quad-SFP cage supports four (4) SFP/SFP+ transceiver modules
- Fully FMC compatible
- Supports a wide range of SFP and SFP+ transceivers with signaling rates up to 10Gb/sec
- 2.5 volt signaling
- Two programmable reference clocks

Benefits

- Direct connections between SFP/SFP+ transceivers and host FPGA ensures maximum throughput and minimum latency
- Easily interfaces high-density, high-speed I/O to an FPGA-based host board
- 2.5V signaling ensures compatibility with Virtex-6 FPGAs

Overview

The FM-S14 is an FPGA Mezzanine Card (FMC) module that provides up to four SFP/SFP+ module interfaces directly into Multi-Gigabit Transceivers (MGTs) of a Xilinx FPGA. Note: In various Xilinx FPGA families, Xilinx refers to these high-speed serial links as RocketIO ports, GTHs, GTXs, and GTPs. For simplicity, in this product brief they will collectively be referred to as MGTs. The FM-S14 supports the industry standard Small Form-factor Pluggable (SFP/SFP+) transceiver module interface.

The FM-S14 utilizes 2.5V signaling to ensure interoperability across the Spartan-6 and Virtex-6 FPGA families, as well as with previous generations of the Virtex family.
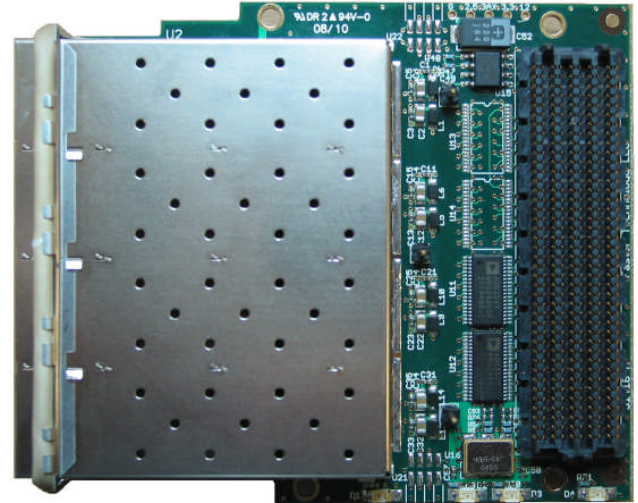
The FM-S14 is electrically compliant with the FMC standard. Due to the size of the quad SFP cage, the FM-S14 is classified as a mechanical superset of the FMC mechanical standards. Special attention should be paid to ensure that the FM-S14 is mechanically compatible if used with non-supported host carrier cards.

SFP Transceivers

The FM-S14 imposes no restrictions on SFP/SFP+ transceivers; any SFP/SFP+ transceiver that complies with the SFP and SFP+ Multi-Source Agreements (MSAs) can be mounted on the FM-S14. However, the FPGA host board on which the FM-S14 is mounted may impose restrictions on the SFP/SFP+ transceivers and clock frequencies. SFP transceivers must be ordered separately or from third party suppliers.

Clocks

The FM-S14 provides two reference clocks that are available as inputs to the FPGA on the baseboard. The clocks provide programmable frequencies from 15.48 to 1300 MHz. One of the four default frequencies can be selected using switches on the FMC module. Other frequencies are programmable from the host board's FPGA via an I^2C interface to the FMC module.

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FM-S14 Technical Specifications

Supported Media
Fiber Optic SFP/SFP+ Transceivers - One (1) to four (4) pluggable SFP or SFP+ transceivers
Copper SFP Transceivers - One (1) to four (4) pluggable SFP transceivers

FPGA Interface
FMC High Pin Count (HPC) connector

Four (4) high-speed serial FMC links	DP0 – DP3 dual differential pairs
I^2C reference clock control	LA00 – LA01
Default frequency select switches	LA02 – LA03
SFP control signals (7 each)	LA04 – LA17
General purpose LEDs	LA18 – LA19

Reference clocks (2)
GBTCLK0-M2C & GBTCLK1-M2C
Default frequencies of 212.5, 250, 300, 312.5 MHz.

Supported Host boards

Spartan-6	Xilinx EK-S6-SP605-G
Virtex-6	Xilinx EK-V6-ML605-G

On-board serial EEPROM
256 Byte Serial PROM

EEPROM interface	I^2C via FMC SCL / SDA interface
	I^2C address via FMC GA0 / GA1

Miscellaneous

FMC compliance	ANSI/VITA 57.1-2008 compatible

Block Diagram
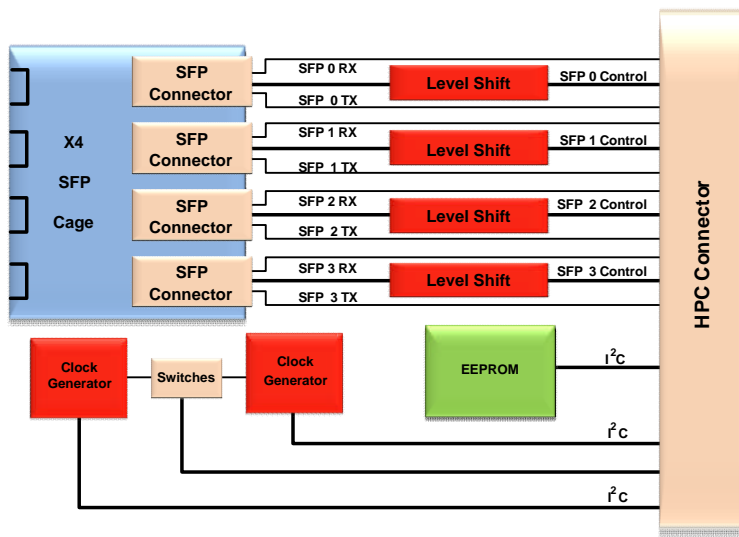
Related Products

FM-S18   FMC compatible module with two quad SFP/SFP+ cages supporting up to eight (8) SFP or SFP+ Modules

Ordering Information

FM-S14   FMC compliant module with one quad SFP/SFP+ cage to support up to four (4) SFP or SFP+ Modules