Preliminary

Product Summary

Quad 2.488 – 2.67 Gb/s SONET/SDH SERDES (Serializer/Deserializer) for OC-48, OC-192 Very-Short-Reach (VSR) Optics and Backplane Applications with Digital Wrapper data rate support

GENERAL DESCRIPTION

The VC1021 is a versatile SERDES that provides an on-ramp to 2.488-2.67 Gb/s electrical or optical SONET/SDH aware backplanes, as well as driving Very-Short-Reach (VSR) optical interfaces. It provides four Serializer/Deserializer lanes, which run from 2.488–2.67 Gb/s, using CML differential I/Os.

The parallel side is an SFI-4 compliant (OIF99.102) 16 x 622MHz differential LVDS interface.

The VC1021 utilizes Velio's low-power GigaCore I/O technology, delivering unmatched signal integrity across both electrical and optical backplanes.

Table 1: VC1021 Features and Benefits

FEATURES	BENEFITS
Four 2.488 – 2.67 Gb/s SerDes Lanes	Integration conserves board space, reduces power. Higher-speed option allows Forward Error Correction (FEC) and Digital Wrapper (g.709) data rate support
16 bit, 622 – 669MHz LVDS Parallel-side Interface (SFI-4, XSBI compliant)	Standard interface to ASICs, off-the-shelf Framers, and other components
1.8 V Core, 2.5V LVDS I/O Voltage Supply	Low Voltage Core reduces power consumption
2.2 W Typical Power	Reduces overall system power requirements
OC-48, OC-192 modes	Processes multiple line rates: 2.5 and 10 Gb/s data
Adjustable Pre-Emphasis on Serial Outputs, including Programmable Output Voltage Swing	Reduces Inter-Symbol-Interference, enables serial transmission over longer distances
Frame Alignment Flexible De-Skew Capability	Aligns incoming SONET/SDH data via A1/A2 bytes; can de-skew up to 235 bytes; can be optionally disabled
Transparent Mode	SONET/SDH Processing/Alignment can be disabled; enables support of FEC and Digital Wrapper traffic
SONET/SDH Processing, Byte Insertion/Monitor	Allows performance monitoring, diagnostic modes
IEEE 802.3ae compliant MDIO/MDC Interface	Fast interface to configuration and status registers
27 mm x 27 mm BGA Package	Space-saving package

APPLICATIONS

- SONET/SDH Backplane SerDes for OC-192 & OC-48 Applications
- FEC traffic, Digital Wrapper Support
- SONET/SDH Transceiver for OC-192 VSR (Very Short Reach) Optics

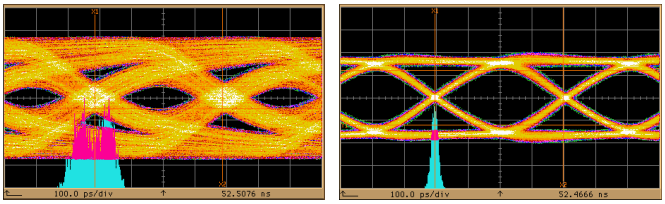

Figure 1: Pre-emphasis effects on Signal Integrity; a 2.488 Gb/s signal through 40" of FR4: disabled (left), and enabled (right)

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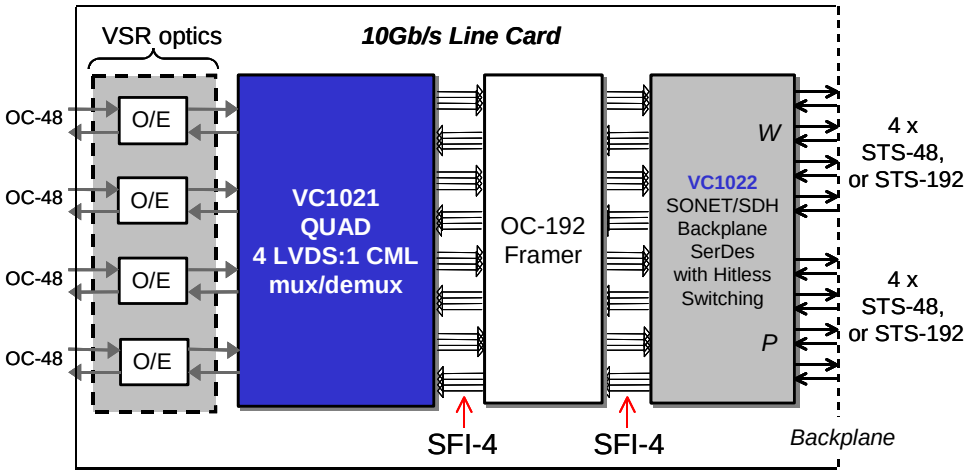

Figure 2: A line card with a VC1021 as an interface to VSR optics, connecting seamlessly to an OC-192 Framer device

VSR APPLICATIONS

The VC1021 functions as an interface to 4 x 2.488 Gb/s Very Short Reach (VSR) Optics. It converts 16 x 622MHz LVDS streams to four 2.488 Gb/s CML streams, for transmission across a VSR4-3 optical interface.

The 622MHz interface is industry standard OIF SFI-4 and XSBI compliant.

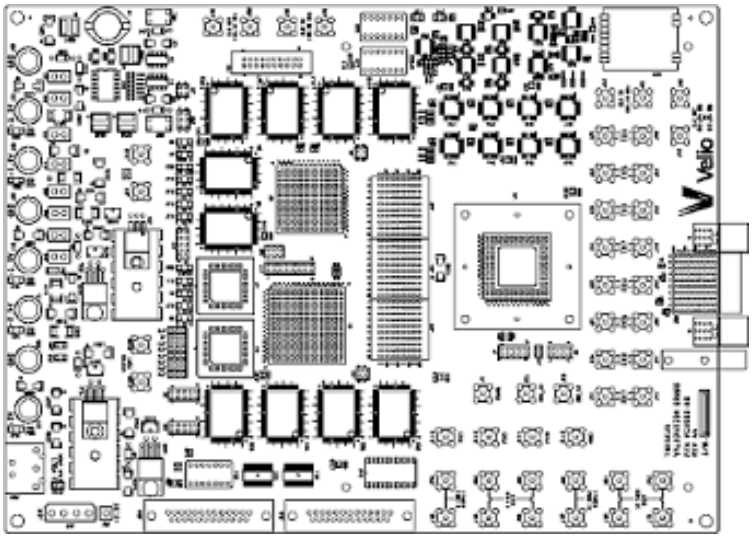

Figure 3: VC1021 Evaluation Platform

VC1021 EVALUATION PLATFORM

The VC1021 Evaluation Platform is an extremely versatile tool for prototyping with the VC1021 SONET/SDH SerDes. It interfaces to existing systems, via both the LVDS Parallel interface and the CML Serial interface.

It contains an FPGA from each of the major suppliers, enabling flexible prototyping, and interoperability testing.