

# VSC7166

# VITESSE

## OC-192 Very Short Reach (VSR) Converter IC



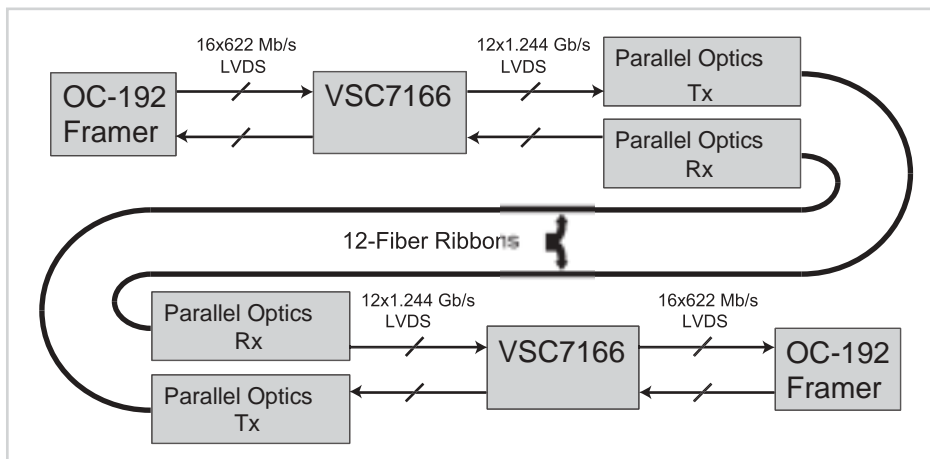
### FEATURES:

- ( 10 Gigabits Per Second of Aggregate Data Throughput
- ( SONET Frame Transport Mechanisms
- ( 8B/10B Encoder/Decoder
- ( LVDS Input and Output Signaling
- ( CRC-based Bit Error Correction Algorithm
- ( Protection Switching Mechanism Recovers any Lost Channel
- ( User Specified High-speed and Low-speed Input Terminations
- ( 1.8V and 2.5V Power Supplies
- ( 256 Pin Thermally Enhanced BGA
- ( Inter-channel Deskewing Capability
- ( Robust Loss of Synchronization (LOS) and Loss of Frame (LOF) State Machines
- ( Conforms to OIF-VSR4-01.0
- ( JTAG Boundary Scan
- ( Two Recovered Clock-based Outputs
- ( Serial Register Interface

### BENEFITS:

- ( Allows the Use of Inexpensive, Currently Available Parallel Optical Modules
- ( Error Detection/Correction for a Robust Link
- ( Error Diagnostics to Improve Links
- ( Patchcord Reversal Protection for Mistake-proof Installation
- ( 8B/10B Encoding for DC Balance, Effective Clock Recovery
- ( Selectable Input Terminations for Maximum Data Transfer Integrity

### VSC7166: SONET INTERFACE



## OC-192 Very Short Reach (VSR) Converter IC

### GENERAL DESCRIPTIONS



The VSC7166 is used to interface between OC-192 Framers and Parallel Optical Modules. In the Serializer, 16-bit OC-192 data from the Framer is mapped and encoded onto twelve 1.244 Gb/s, 8b/10b outputs, with 1 of the twelve outputs being used for XOR protection and another of the twelve for EDC. In the Deserializer, the twelve 1.244 Gb/s inputs are decoded and remapped to SFI-4 OC-192 data for the Framer. The redundant channel permits data to be reconstructed in the deserializer even if a channel fails. The 16-bit 622 MHz signals and the 12 1.244 Gb/s interfaces both utilize LVDS signaling. These devices are intended for high-speed Router-to-Router and DWDM/Sonet Terminal-to-Router connections.

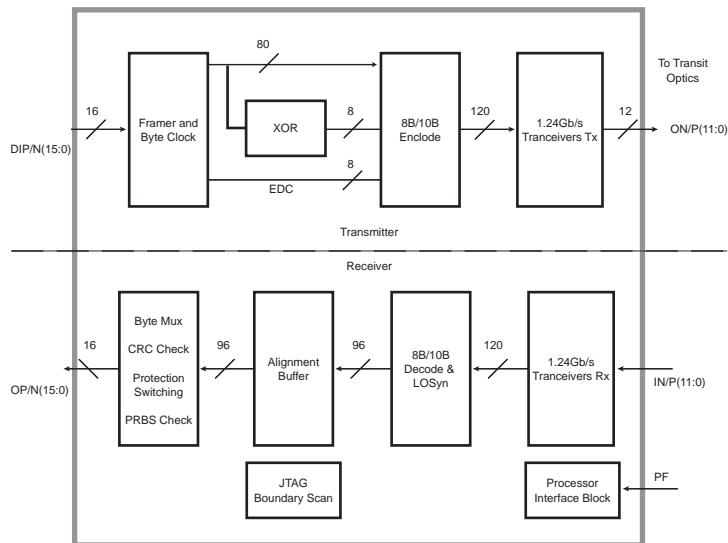
The VSC7166 is designed to conform to the Optical Inter-networking Forum's (OIF) OIF-VSR4-01.0 Implementation Agreement.

### SPECIFICATIONS:

- ( Ten 1.244Gb/s Data Channels
- ( Aggregate 10Gb/s Data Throughput
- ( Clock Frequency Tolerance: +/-200 ppm
- ( 1.8V and 2.5V Power Supplies
- ( Up to 80ns Inter-channel Deskewing
- ( 2.0W Power Dissipation (Typical)
- ( 27mm x 27mm, 256-pin Thermally Enhanced Ball Grid Array (TBGA)

Expanding use of the Internet has caused very high volumes of data traffic to become concentrated at places such as central offices (CO's), points of presence (POP) and portal sites. At these sites many pieces of equipment such as high-speed routers, Dense Wavelength Division Multiplexing (DWDM) equipment and Add/Drop Multiplexors (ADM) are located in close proximity (co-located) and must be connected by extremely high throughput data links. At the core of the network such high volume data traffic is efficiently handled using Synchronous Optical Network (SONET) links. To date, these links have been optimized for long haul transmission where the high cost of traditional lasers has not been a factor. For short reach links between co-located equipment it is highly desirable to use much less expensive arrays of Vertical Cavity Surface Emitting Lasers (VCSEL's). An integrated circuit is necessary to form the interface between the traditional SONET network and VCSEL based optical modules and the VSC7166 fulfills this role.

### VSC7166 BLOCK DIAGRAM



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