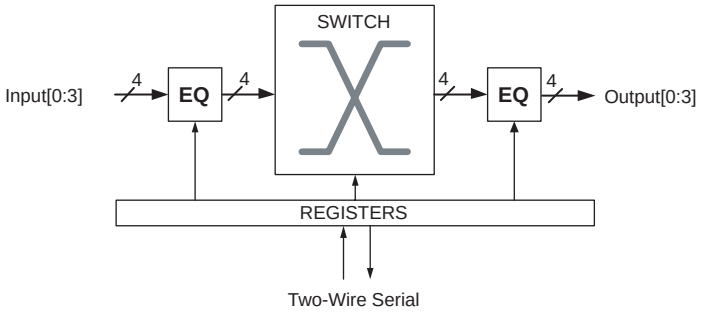
DATA INTERCONNECT

VSC3304

VITESSE®

8.5 Gbps 4 × 4 Crosspoint Switch

BLOCK DIAGRAM:



FEATURES:	BENEFITS:
8.5 Gbps non-return-to-zero (NRZ) data bandwidth	Transparent support for virtually all data rates and protocols
Fully non-blocking and multicasting switch core with per-pin signal inversion capability	Allows complete flexibility in routing and distributing signals
Multiple time-constant programmable input and output equalization	Compensates for multiple impairments in a signal path
Wide equalization adjustment range	Supports all types of interconnect media: PCB, backplanes, and cable
Fully asynchronous operation with <1 ns latency	No adjustments based on data rate or reference clock required
Reconfigurable Input/Output (I/O) capability	Customize the I/O to the application
LOS detection and forwarding	OOB forwarding for protocols like SAS and SATA
Small 7 mm x 7 mm BGA with 1.0 mm pin pitch	Convenient size and pin spacing for signal routing flexibility

APPLICATIONS:

- Wideband signal switching and clean-up
- Line driver or receiver
- Backplane signal fanout, driver, or receiver
- Copper cable driver or receiver
- PCB signal enhancement
- High-speed signal conditioner

VPPD-01594
Revision 1.1

VSC3304

8.5 Gbps 4 × 4 Crosspoint Switch

GENERAL DESCRIPTION:

The VSC3304 is a 4-port 8.5 Gbps asynchronous switch with advanced signal equalization designed for high-speed serial backplanes and cable interconnect applications. VSC3304 switches allow multicast, loopback, and reconfigurable Input/Output (I/O) capability, allowing for great flexibility in allocating and routing signals in a broad range of applications. The VSC3304 includes dual time-constant equalization, which significantly reduces jitter associated with driving multigigabit signals across backplanes and cables.

Using a fully asynchronous architecture allows any data rate or protocol on any channel without the need for an external reference clock. This gives the VSC3304 wire-like interoperability in virtually any application that uses binary signaling.

The VSC3304 can also be used as a buffer that simplifies and enhances the design of high-speed signal paths by providing signal equalization at both inputs and outputs to reduce or reverse signal degradation due to transmission line effects.

VSC3304 ports may be configured as either inputs or outputs without restriction. This design provides the flexibility of using the device as a standard 4 x 4 crosspoint, or any ratio from 1 x 7 to 7 x 1. This unique feature allows full I/O utilization in any application that translates to a significant reduction in chip count.

Featuring programmable input signal equalization and output pre-emphasis, each with multiple time constants, the VSC3304 is also ideal for countering signal degradation over a wide variety of transmission media types and lengths.

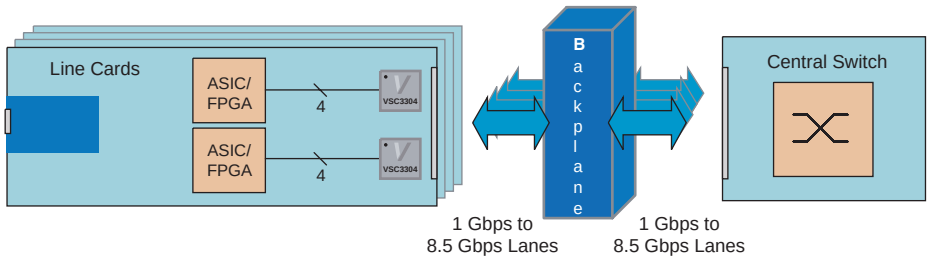
Typical power consumption for the device is 160 mW per active channel, and unused channels may be de-activated to save the power associated with those ports. The output drivers for the VSC3304 also feature a wide supply voltage range, from 1.8 V to 3.3 V, that allows flexibility in matching the output swing to the application requirements.

The VSC3304 has a loss of signal (LOS) detector with programmable thresholds on every input port. LOS forwarding can be enabled for each of the outputs, which will cause the outputs to be squelched in response to a LOS detect at the corresponding input, thereby propagating signal envelopes through the switch.

VSC3304 programming is through a standard two-wire serial interface. The interface address can be hardwired through static pins or through a proprietary two-pin interface that allows for address assignment after power-up.

For more information about signal integrity solutions, visit the Vitesse Web site at www.vitesse.com/SI.

BACKPLANE APPLICATION:



SPECIFICATIONS:

- 8.5 Gbps non-return-to-zero (NRZ) per-channel data rate
- 2.5 V core; 1.8 V, 2.5 V, and 3.3 V high-speed I/O
- 1.2 W at 3.3 V, or 0.9 W at 2.5 V, or 0.7 W at 1.8 V

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