



## 146 x 146 3.5Gb/s Crosspoint Switch with Trace Equalization and Output De-Emphasis

### Key Features

- 146 x 146 crosspoint switch architecture supporting broadcast and multi-cast modes
- Supports all data rates up to 3.5Gb/s
- Low power consumption: 18.5W typical (all channels active)
- Sophisticated, dynamic on-chip power management control
- Independent, programmable input trace equalization to reduce deterministic jitter (ISI)
- Independent, programmable output de-emphasis for driving long board traces
- High-speed video-optimized control for multi-format applications
- Built-in system test features with on-chip PRBS generators and analyzers
- 2.5V analog core voltage, 1.8V digital core voltage
- Input and output voltages support either 1.2V, 1.8V, or 2.5V CML
- JTAG-controlled boundary scan
- Selectable parallel/serial host interface
- 50mm x 50mm BGA (2377 ball)
- Operating temperature range: 0°C to +85°C
- RoHS compliant

### Applications

Large m x n cascaded routers/switch fabrics for:

- Professional broadcast applications
- Enterprise and carrier applications
- High-speed automated test equipment
- 10GbE and InfiniBand networks

### Description

The GX3146 is a low-power, high-speed 146 x 146 crosspoint switch, with robust signal conditioning circuits for driving and receiving high-speed signals through backplanes.

The device consumes as low as 18.5W of power with all channels operational, and features sophisticated, dynamically scalable power management. Unused portions of the core are automatically turned off without affecting the operation of the remaining channels.

The signal conditioning features of the GX3146 include per-input programmable equalization and per-output programmable de-emphasis. The input equalizer removes ISI jitter—typically caused by PCB trace losses—by opening the input data eye in applications where long PCB traces are used. There are four settings available for the input equalizer, allowing flexibility in adjusting the equalization level on a per-input basis.

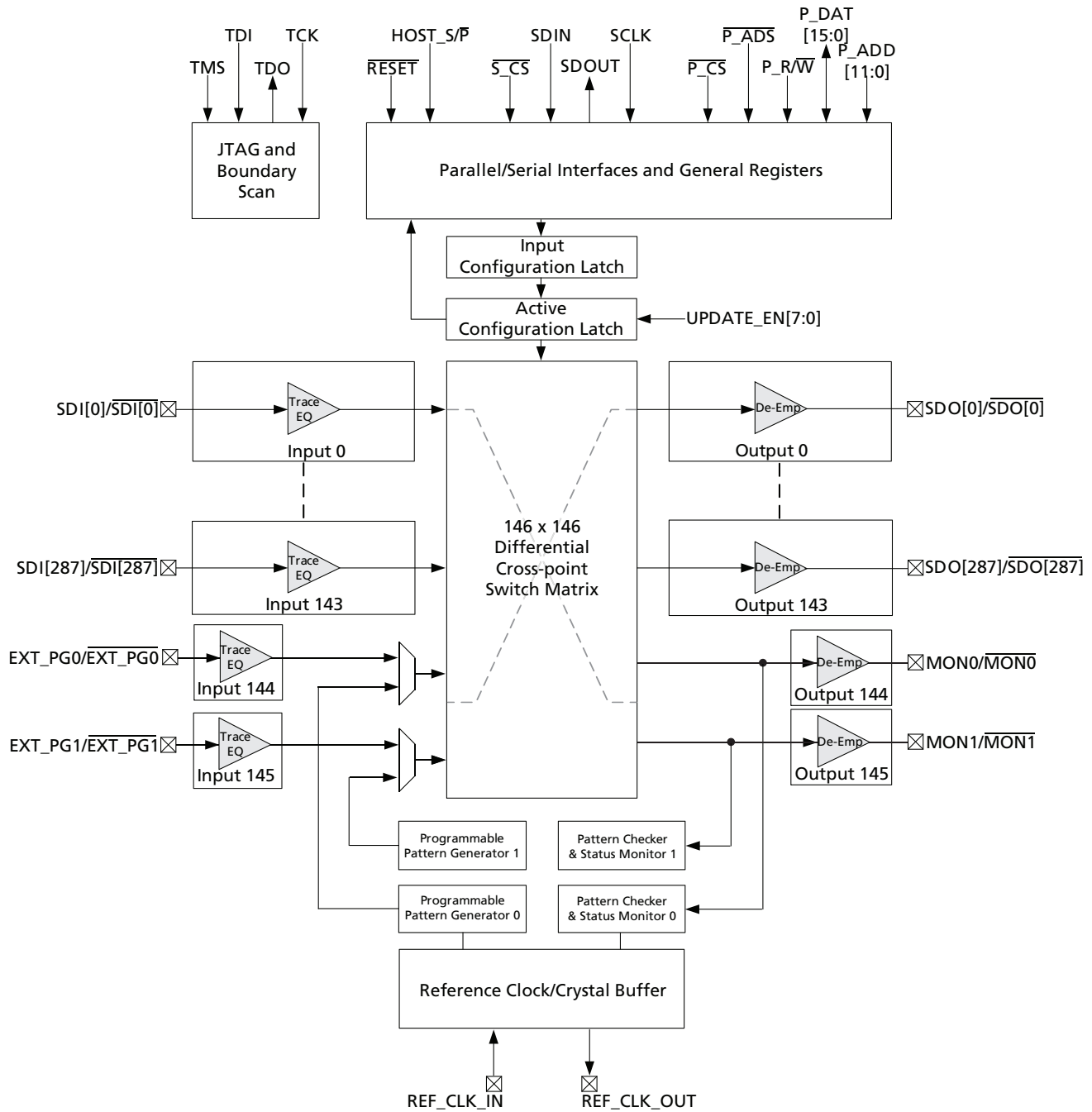
Output de-emphasis capability provides a boost of the high-frequency content of the output signal, such that the data eye remains open after passing through a long interconnect of PCB traces and connectors. There are four de-emphasis settings that can be enabled on a per-output basis.

Two integrated programmable pattern generators, and two pattern checkers are provided to assist in system test and configuration.

The pattern generators can each be routed to any output of the device without impacting the normal operation of any other channel. Any input can be routed to each of the pattern checkers.

The chip features eight independent strobe inputs, UPDATE\_EN[7:0], which are used to determine the timing of the output updates. Any output can be linked to any strobe.

# Functional Block Diagram



**GX3146 Functional Block Diagram**



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**DOCUMENT IDENTIFICATION  
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**Contact Information**

Semtech Corporation  
Gennum Products Division  
200 Flynn Road, Camarillo, CA 93012  
Phone: (805) 498-2111, Fax: (805) 498-3804  
[www.semtech.com](http://www.semtech.com)