89HT0808P Retimer Evaluation Board

89KTT0808P kit for 8.0Gbps, 4-lane PCIe 3.0 Applications

Integrated Device Technology

FEATURES

- Compensates for long PCB trace or cable attenuation and jitter
- 4-lane PCIe adapter card with full PCIe 3.0 protocol support
- Configurable via USB or I²C using IDT Windows GUI tool
- On-board USB to I²C translation circuit allows for simple connection to a PC or notebook for GUI
- EEPROM supports automatic download of configuration data to the 89HT0808P Retimer
- Enables individual channel configurations of equalization and many operating parameters
- Enables use of the On-Die scope function with Windows GUI tool
- Switches allow control of power-on equalization preset hints
- Multiple power connection options
- Card format: 7.5" x 4.75", non-standard size. Use requires an open chassis
- Works with passive trace cards to extend FR4 traces, also available from IDT (6",12",24")
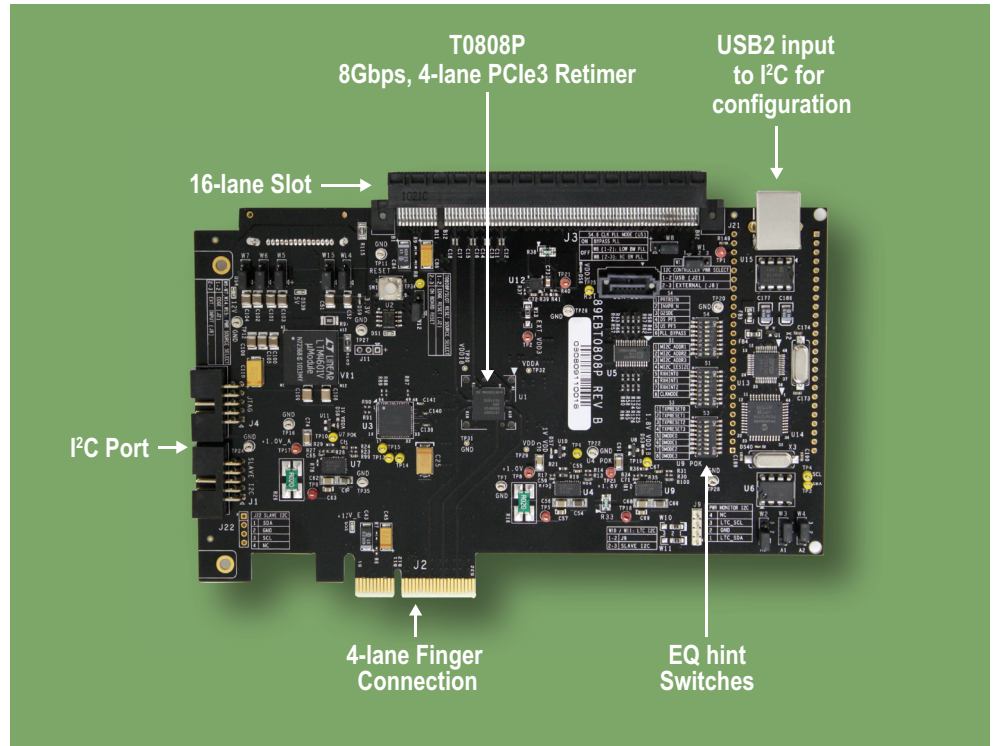
Benefits

- Quick, convenient evaluation of IDT's 89HT0808P Retimer operation
- Extends trace length by improving voltage and timing margins
- Minimizes BER, improving system performance and reliability
- Can speed design time and reduce risk by eliminating signal integrity issues

Kit Contents

- 1- 89HT0808P 4-lane, 8.0Gbps PCIe 3.0 Retimer Evaluation Board
- 1- CD with Windows GUI software tools and design documentation
- 1- 89HT0808P Evaluation Board User's Guide document
- Order number: 89KTT0808P

System Requirements

- PC or Server with x4, x8 or x16-lane PCIe slot – with PCIe 3.0 support recommended (but optional)
- Desktop or notebook PC with Windows NT, Win7 or Vista to use IDT configuration GUI and ODS tools
- USB cable to connect PC for GUI tools
- Target add-in cards for system tests

T0808P
8Gbps, 4-lane PCIe3 Retimer

USB2 input
to I²C for
configuration

16-lane Slot

I²C Port

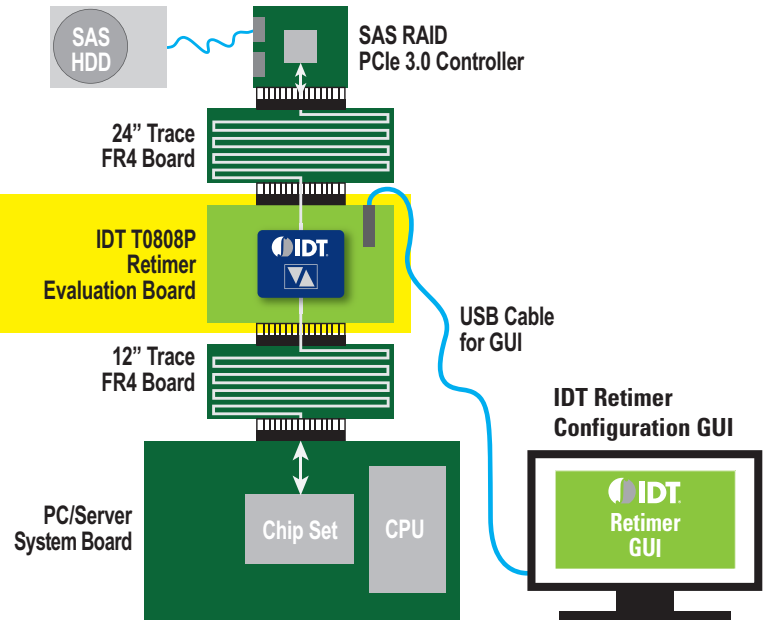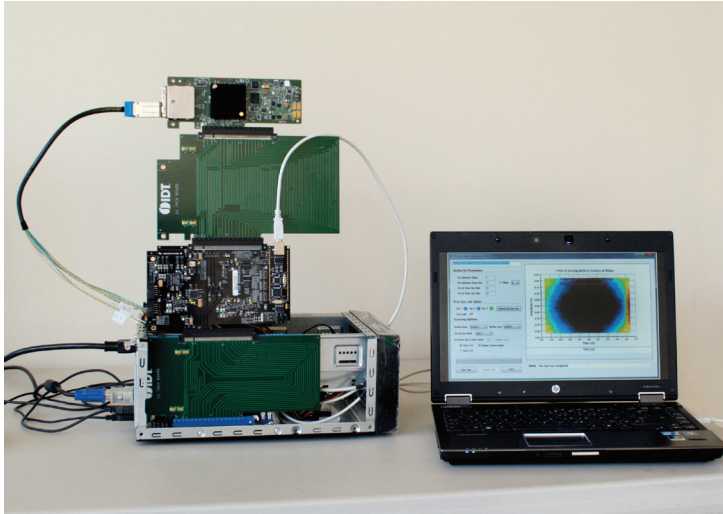4-lane Finger
Connection

EQ hint
Switches

Device Overview

The 89HT0808P Retimer Evaluation Board is designed to enable quick in-system testing of IDT's 4-lane, 8.0Gbps, PCIe 3.0 Retimer IC product.
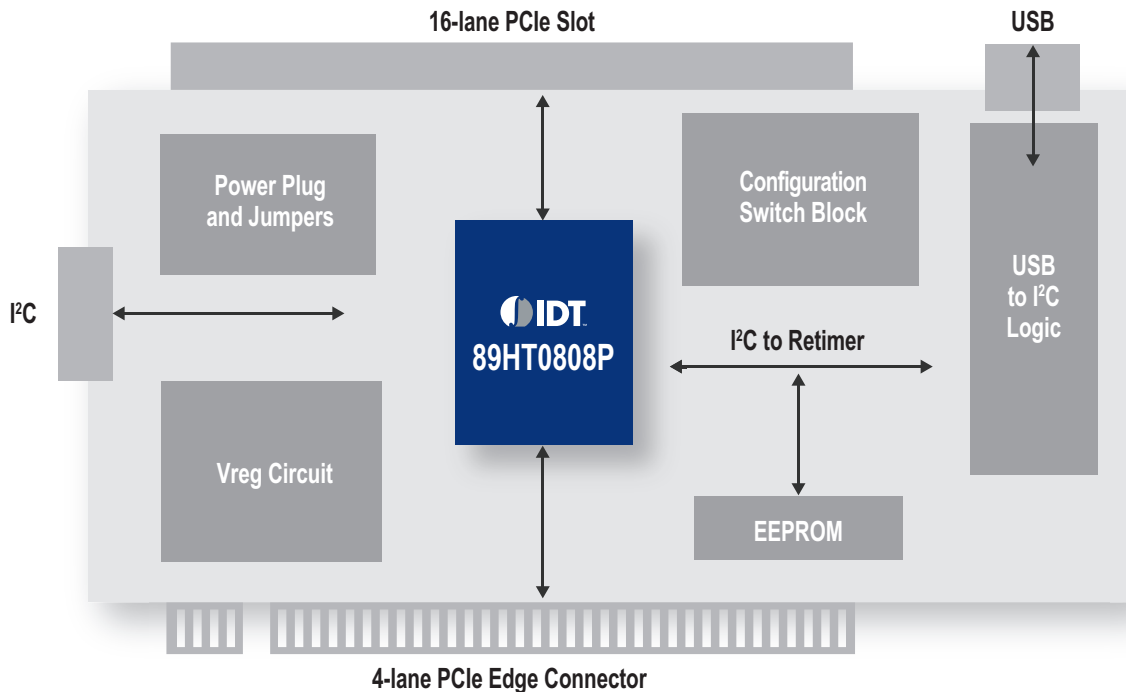
The Board features a 4-lane connection from host through the retimer to an end-point device installed in the upper PCIe slot. Any width adapter card, from a 1-lane SATA card to a 16-lane graphics accelerator, can be plugged into the top-edge PCIe slot and will train to 4-lanes as active. This Evaluation Board includes a USB to I²C bridge circuit which allows convenient connection to a PC for accessing the Retimer via IDT's Retimer Configuration Utility (GUI). An I²C connection is also provided for the same control capability, but uses an external USB to I²C adapter with IDT's Retimer GUI. Via the GUI, the device receiver, transmitter and many other configuration parameters can be adjusted to provide optimum operating performance.

The Evaluation Board is used by inserting it into a desktop PC or server and then plugging an end point card (SATA, Ethernet, USB3, etc.) into the 16-lane slot on top, as shown in the example diagram and photo on the following page. Passive trace cards can be used to extend the data signal to emulate a planned system design. Note that the resulting card stack will require an open chassis test environment. IDT's Technical Applications information can provide configuration for different channel lengths and system architectures.

89HP0808P Repeater Evaluation Board

POWER MANAGEMENT | ANALOG & RF | **INTERFACE & CONNECTIVITY** | CLOCKS & TIMING | MEMORY & LOGIC | TOUCH & USER INTERFACE | VIDEO & DISPLAY | AUDIO

SAS HDD

SAS RAID
PCIe 3.0 Controller

24" Trace
FR4 Board

IDT T0808P
Retimer
Evaluation Board

USB Cable
for GUI

12" Trace
FR4 Board

IDT Retimer
Configuration GUI

PC/Server
System Board

Chip Set   CPU

Retimer
GUI

Example Use

This simple example shows the 89HT0808P Retimer Evaluation Board used to extend 8Gbps signals across a 24-inch passive trace card to a SAS controller and to the host system across another 12-inch passive extender card.

16-lane PCIe Slot

USB

Power Plug
and Jumpers

Configuration
Switch Block

I²C

USB
to I²C
Logic

89HT0808P

I²C to Retimer

Vreg Circuit

EEPROM

4-lane PCIe Edge Connector

Block Diagram

A block diagram of the 89HT0808P Retimer Evaluation Board is shown above. The board design includes one 4-lane 89HT0808P Retimer supporting a 4-lane link.

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