![Chipsmall logo]

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Device Overview

The IDT 89HP0508P (P0508P) is a 5Gbps PCIe® Repeater device featuring IDT EyeBoost™ technology that compensates for cable and board trace attenuations and ISI jitter, thereby extending connection reach. The device is optimized for PCIe Gen1 and Gen2 high speed serial data streams and contains eight data channels, each able to process 5Gbps transmission rates. Each channel consists of an input equalizer and amplifier, signal detection with glitch filter, as well as programmable output swing, slew rate, and de-emphasis with delay control. Since all of these features are user programmable, they allow for application specific optimization.

Besides the per channel programmable features, the P0508P provides global programmable settings - termination resistance values and transfer modes. The P0508P, with its many programmable receiver and transmitter features, is ideal for PCIe applications using any combination of cables and board trace materials.

All modes of active data transfer are designed with minimized power consumption. Also, a wide selection of power reducing modes allows the user to eliminate power of unused blocks, including a shutdown mode. In full shutdown mode, the part consumes less than 80mW in worst case environmental conditions.

Applications

- Blade servers, rack servers
- PCIe instrumentation
- Storage systems
- Cabled PCIe devices

Features

- Compensates for cable and PCB trace attenuation and ISI jitter
- Programmable receiver equalization up to 30db
- Programmable de-emphasis up to -8.5dB
- Recovers data stream even when the differential signal eye is completely closed due to trace attenuation and ISI jitter
- Full PCIe protocol support
- Configurable via I²C interface
- Supports automatic download of configuration from external EEPROM with a single or multiple repeaters on I2C bus
- Leading edge power minimization in active and shutdown modes
- No external bias resistors or reference clocks required
- Channel mux mode, demux mode, 1 to 2 channels multicast, and Z-switch function mode
- Available in a 9x9mm 100-ball FPBGA package

Benefits

- Extends maximum cable length to over 10 meters and trace length over 65 inches in PCIe applications
- Speeds up system design time by allowing usage of longer trace and cable lengths
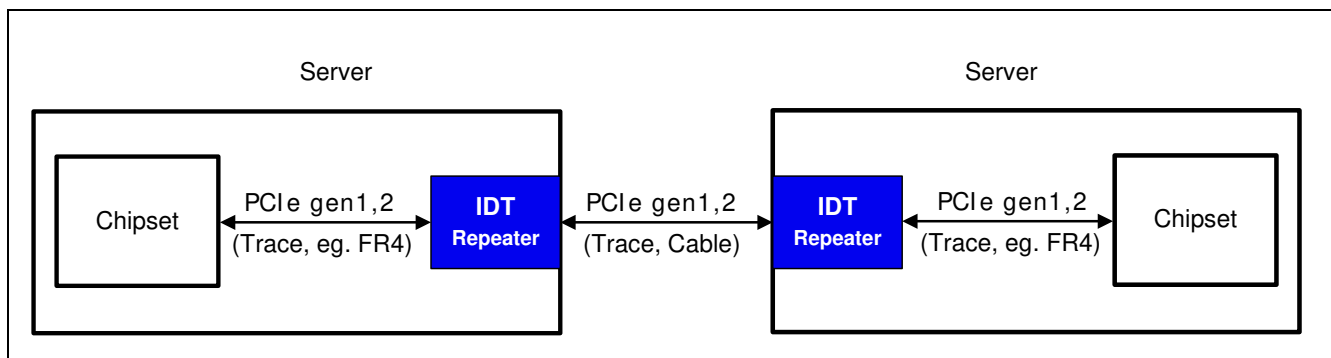- Minimizes BER

Typical Application

Figure 1 IDT Repeaters in Blade Servers

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P0508P PCIe Compliance

The device was designed to provide end users with features needed to comply with PCIe system application requirements:

– Receiver Detection Support, PCIe Beacon Support
– Receiver supports high impedance mode for PCIe
– Jitter, eye opening, and all other AC and DC specifications.

P0508P Block Diagram

The P0508P contains eight high speed channels as shown in Figure 2. Each channel can routed to different outputs. Depending on user configuration via mode selections, input traffic can be muxed, demuxed, or looped back. Please, refer to modes of operation chapter for details. To facilitate buffering of system clocks, the repeater provides 1:2 clock buffer as shown in the figure below. Powerdown (PDB) and Receiver Detection Reset (RSTB) pins are provided for easy state and channel control. Status output pins are available for monitoring critical states, such as the detection of high speed input signals (A0SIGDET, etc.) and the far-end receiver detection (ARXDETSTAT, etc.).

Each channel's configuration and performance can be optimized via the I^2C interface (SCL, SDA). The programming option allows the user to optimize the repeater's performance in a wide range of applications, making it an ideal solution for most applications requiring cancellation of trace or cable attenuation and ISI jitter.
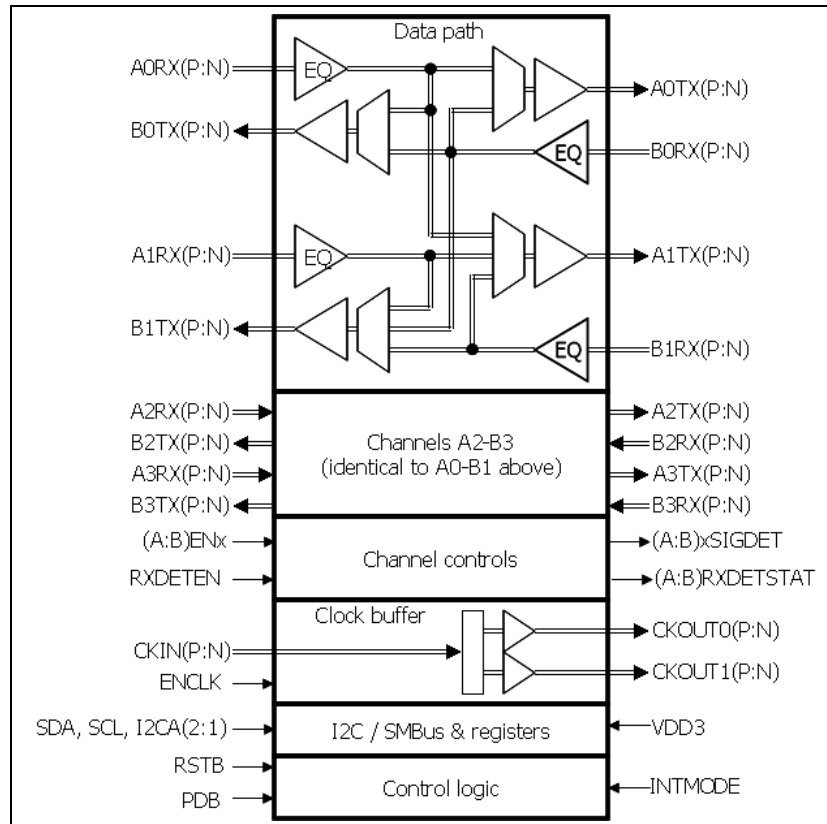

Figure 2 P0508P Block Diagram