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M21450 6.5 Gbps Dual–Channel Backplane Signal Conditioner

⟩ Product Overview

The M21450 is a dual channel device designed to enable the transmission of multi gigabit serial data through the most challenging environments. The device features two independent adaptive equalizers that automatically equalize data at rates up to 6.5 Gbps. Control of key functions of the M21450 is provided through hardware pins, and full register control of the M21450 is provided through an I²C compatible software control interface. The M21450 can also self-configure from an external EEPROM without the need for a host processor. For compatibility with PCI-Express and S-ATA/SAS systems, the M21450 is designed with an electrical idle pass-through function to drive the differential output to the common mode level during OOB signaling. Boundary scan is provided for high-speed input and output pins, and the device is available in a 6x6 mm, 40 pin QFN package.

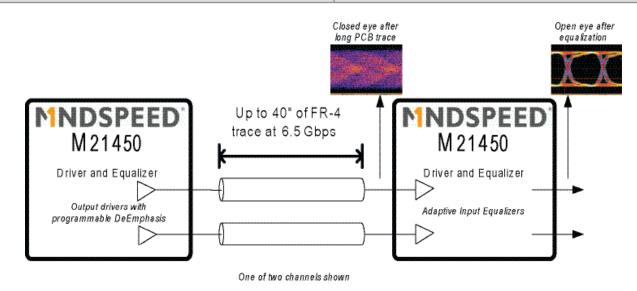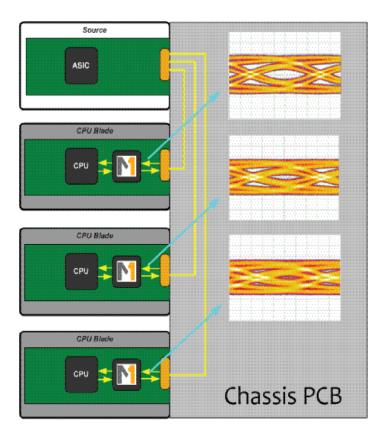| Features	Benefits
⟩ Full non-blocking switch matrices	Ultimate flexibility for switching and copying signals
⟩ Adaptive equalization reach up to 40" over FR-4 trace at 6.25 Gbps	Long distances at higher speeds
⟩ SMPTE 424M, 344M, 292M, and 259M compatible, DVB-ASI	Robust video compatibility
⟩ 40 dB equalization and 6 dB of de-emphasis available	Maximizes transmission length
⟩ Low power dissipation at 140 mW per channel	Minimizes thermal management costs
⟩ 6x6 mm, 40-pin QFN package	Provides space efficiency and reliability
⟩ Out of Band (OOB) / Electrical Bus Idle (EBI) signaling support	Allows for seamless integration into PCIe, SATA, and SAS
⟩ Protocol agnostic	One device supports multiple applications
⟩ 1.2 Volt core / optional 1.2, 1.8 or 2.5 Volt IO	Flexibility to use right power performance
⟩ Extended temperature range (-20ºC to +85 ºC)	Provides additional margin for most applications
⟩ Data rate independent	Operates to 6.5 Gbps, no reference clock required

Fig. 1 – M21450 Application Diagram 1
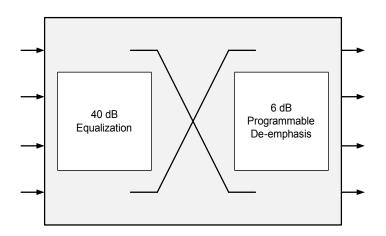
Fig. 2 – M21450 Application Diagram 2

Product Features

- Protocol agnostic
- Supports SMPTE 424M, 344M, 292M, 259M, and DVB-ASI
- Supports rates from 50 Mbps to 6.5 Gbps
- Transparently relays OOB/EBI
- Extended temperature range -20ºC to 85 ºC
- Boundary scan
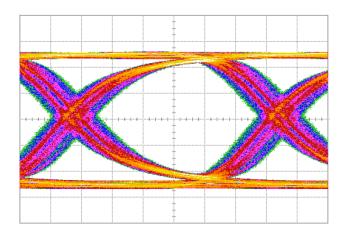- 1.2V core
- 1.2V or 1.8V IO option

Applications

- Backplane equalizer/driver
- SDI video and DVB-ASI equipment
- Blade server board to board interconnect
- InfiniBand reach extension
- PCI express

Package (RoHS Compliant)

- 6x6 mm, 40-pin QFN package

Fig. 3 – M21450 Device Architecture

Fig. 4 – 6.5 Gbps Equalized After 40" FR-4 Trace

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