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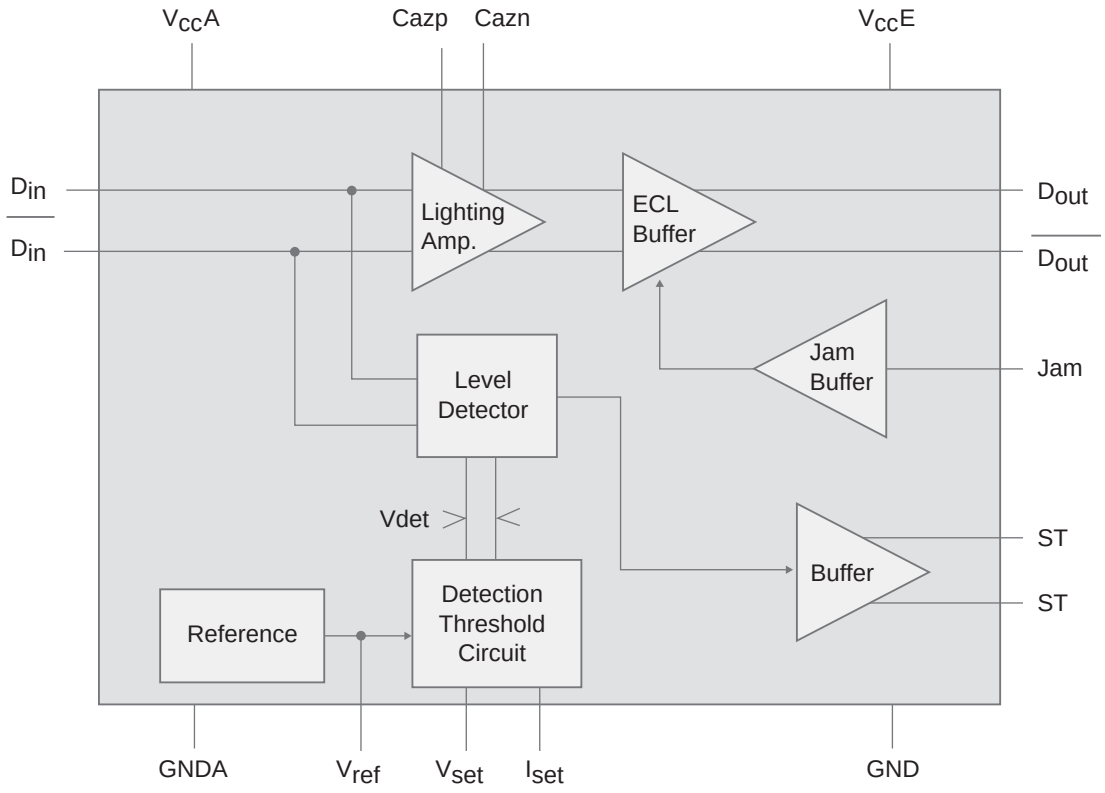
1.25 Gbps Post-Amplifier

MC2046

The MC2046 is a second-generation, integrated high-gain post-amplifier intended for high-speed fibre-optic communications. Normally placed following the photodetector and transimpedance (or pre-amplifier), the post-amplifier provides the necessary gain for PECL-compatible logic outputs. The MC2046 also includes a programmable signal-level detector, allowing the user to set thresholds at which the logic outputs are enabled. Capable of operating over a very wide frequency range, the MC2046 supports most fiber-optic industry standards and is especially well-suited to 1.06 Gbps Fibre Channel and 1.25 Gbps Ethernet

KEY FEATURES

- Low-cost IC, fabricated in advanced submicron BiCMOS process
- 4 mV input sensitivity at 1.25 Gbps
- Programmable input-signal-level detect with on-chip default, saving external components
- Fully differential design
- CMOS and PECL link-status variants
- 3.3 V and 5 V operation
- Available in die form or in QSOP16 and TSSOP20 packages



Product Highlights

Features

- Four full-duplex serial transceivers capable of bit rates from 1 Gbps to 3.125 Gbps each
- Built-in 8B/10B encoder and decoder with bypass option
- Supports ANSI X3T11 Fibre Channel, 802.3z Gigabit Ethernet, 802.3ae 10 Gigabit Ethernet, InfiniBand and Serial ATA standards
- COMMA (idle) detection, generation and word alignment
- Supports both 50 Ω and 75 Ω transmission lines with on-chip selectable termination resistors
- Monolithic clock synthesis and clock recovery with automatic lock-to-reference function — no external components required
- Supports three modes of operation: independent channel mode, four-channel alignment mode and dual-channel alignment mode
- Multiple chips can be interconnected to provide chip-to-chip channel alignment
- Configurable as four channels or two channels with redundant transmitters and selectable receivers
- Programmable transmit pre-emphasis for optimum performance over long cables and PCB trace lengths in excess of one meter (39 inches)
- Supports both AC and DC coupling
- Four-way programmable common mode logic (CML) differential signaling with output swing programmable between 350 mV and 800 mV in DC-coupled mode, and 700 mV and 1,600 mV in AC-coupled mode
- Three loopback modes and built-in self test (BIST) with PRBS random number generation for at-speed internal and external self-testing and diagnostics
- Individual channel power-down capability
- Suitable for printed circuit boards, coaxial cables and as an interface to optical modules
- Low-power CMOS technology (typically 1.9 W @ 3.125 Gbps)
- Each channel's transmitter and receiver can be powered down individually
- JTAG boundary scan
- 324-ball HSFBGA (21 x 21 mm) package; 2.5 V core supply with 2.5 V SSTL-2 interface

Benefits

- High level of integration reduces system cost and board space
- Alignment circuitry significantly reduces design complexity and enables bandwidth scalability and easy upgrade from 4 Gbps to 50 Gbps
- Redundancy feature is ideal for telecommunications applications that require 1:1 redundancy and fault tolerance
- Fully integrated design with no external components for design simplicity and optimal board layout
- Programmable pre-emphasis and output swing enables device optimization for power and distance, interoperability with legacy SerDes devices and best performance over 1 m of FR-4 material
- Low power dissipation for high level of system integration and high port densities

Applications

- High-speed serial backplane interconnects
- Fibre Channel, InfiniBand, Gigabit Ethernet, 10 Gigabit Ethernet and Serial ATA line interfaces
- Chassis-to-chassis serial connections

Ideal For

- High-end and midrange routers
- Enterprise and carrier-class switches
- Storage Area Network (SAN) equipment
- Add/drop multiplexers
- Optical crossconnects
- Network aggregators
- WAN access concentrators
- Server clusters
- High-speed automatic test equipment and high-bandwidth testers

Ordering Information

Evaluation boards are available and the CX27207 device can be ordered in three data rates:

1–1.25 Gbps

1–2.5 Gbps

1–3.125 Gbps

Please contact your local sales representative for details or visit us at www.mindspeed.com

www.mindspeed.com/salesoffices

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