



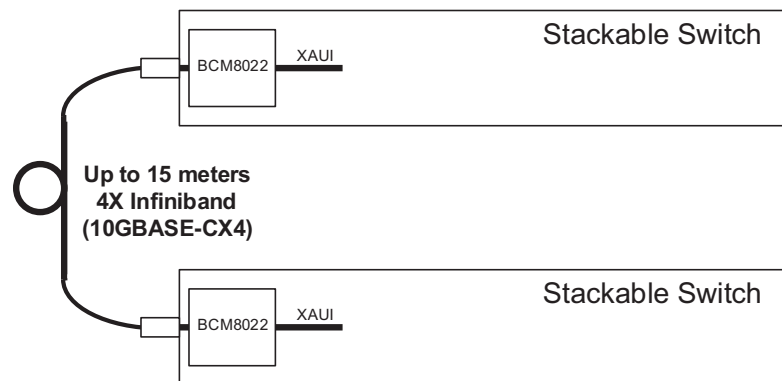
XAUI to 10GBASE-CX4 RETIMER

FEATURES

- **High-speed Retiming for transmission over copper interconnects such as Infiniband Cables or Backplanes**
- **Multi-configurable to support various operating modes**
 - 4 Independent 1.0 to 3.2-Gbps Retimers (Single Clocking Domain)
 - IEEE 802.3ae compliant XAUI-to-XAUI Retimer
 - XAUI-to-CX4 Retimer
- **Low power dissipation**
 - Less than 400 mW per retiming channel including I/O
- **SONET/SDH-quality jitter performance**
 - Less than 3 picoseconds rms jitter generation
 - Exceeds SONET jitter tolerance mask
- **High performance programmable Rx equalization and Tx pre-emphasis**
 - Tx pre-emphasis for interoperability with CML SerDes
 - Rx equalization for copper interconnects
- **Enhanced test capability**
 - Full loopback and on-chip PRBS generator/checker
- **Compact 17-mm × 17-mm BGA package**
 - No requirement for heat sink or airflow

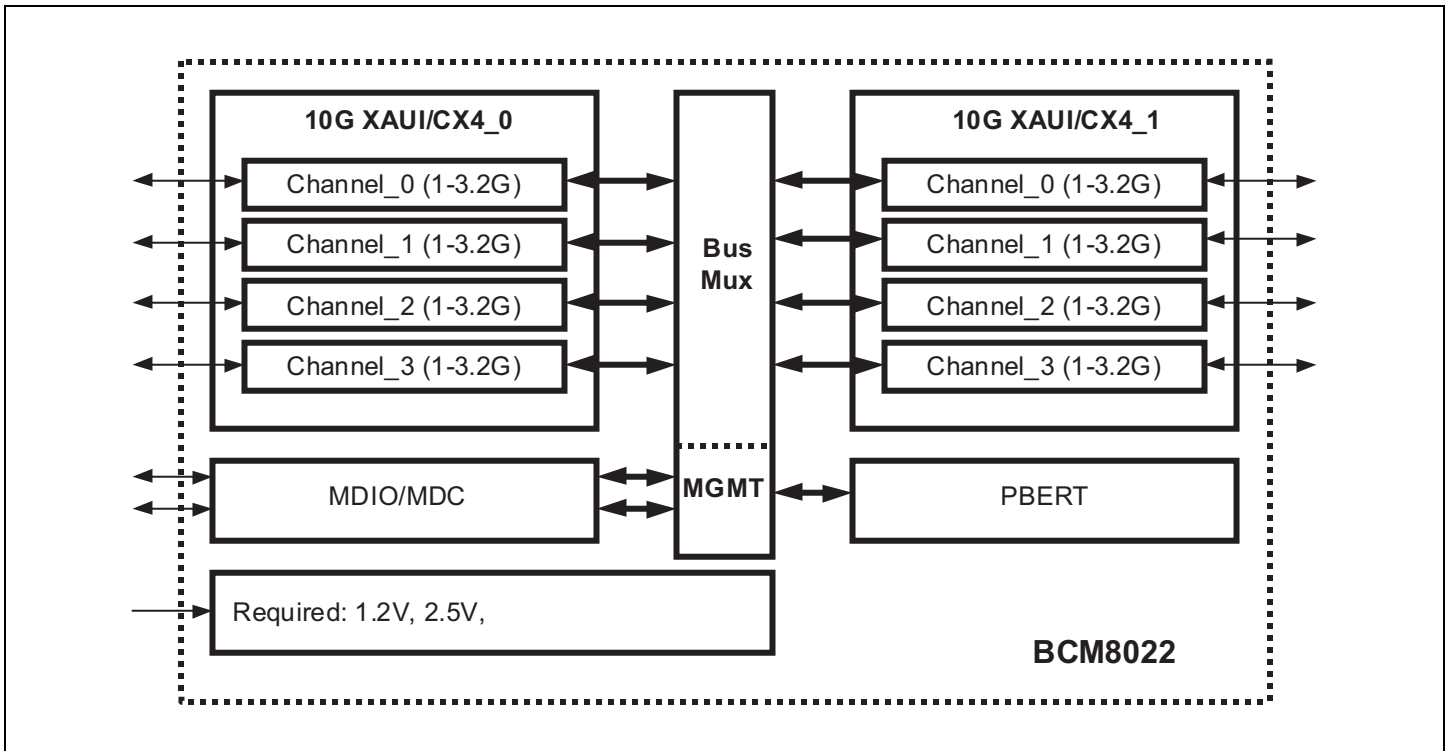
SUMMARY OF BENEFITS

- Enables low-cost applications transmitting 10GbE over various copper media: 15 meters Infiniband Cable (10GBASE-CX4), FR-4 Backplanes.
- Flexible mixed-signal architecture to support various modes of operation and applications with a single device footprint.
- Advanced 0.13- μ CMOS process technology provides unparalleled performance while achieving the lowest possible power consumption.
- Superior jitter characteristics enable data signals transmitted through front panel or backplane networking equipment over low-cost copper media.
- Drive PMD devices or backplane directly with no external clean-up circuit required.
- Simplifies manufacturability with integrated Built-in self-test (BIST), high-speed loopbacks, and programmable PRBS generator/checker.
- Decreases complexity and reduces board space on multi-channel linecard designs.



BCM8022 Application Diagram

OVERVIEW



The BCM8022 device integrates four retimer channels leveraging Broadcom's high-performance mixed signal design experience along with advanced 0.13- μ CMOS process technology. Combine this with a robust architecture offering the highest degree of flexibility and the result is a highly programmable, lowest power retimer solution for network linecard and backplane applications.

The BCM8022 was designed to support the new IEEE802.3ak (draft) standard developed for transmitting high-speed 10GbE data over relatively short distances of low-cost copper media; up to 15 meters of 4X Infiniband Cable. The BCM8022 can be leveraged inside copper based modules designed with easy plug-ability similar to XENPAK or XPAK/X2 type modules, or within discrete solutions directly on the line-card.

The high-speed serial I/O of the BCM8022 supports transmission rates ranging from 1 Gbps to 3.2 Gbps. An on-chip phase lock loop (PLL) synthesizes the supplied reference clock to support the desired transmit rate, while clock and data recovery (CDR) units recover the receive rate clock for timing. The interface can support single-channel (single clock domain) or quad (XAUI/CX4) differential CML I/O.

For high-speed serial copper connections, the BCM8022 incorporates both Tx pre-emphasis on the transmit channels and Rx equalization on the receive channels. Transmit pre-emphasis is programmable to improve the overall cable reach and compensate for electrical imperfections associated with traces and connectors. Rx equalization provides optimal performance over a variety of receive interfaces.

Highly programmable test capabilities exist within the BCM8022 to support high-speed loopbacks using generators/checkers that support PRBS 27 to 231 patterns along with IEEE802.3ae defined test patterns.

A complete evaluation kit, including an evaluation board, related software, and documentation is available upon request.

Applications

- 10-Gigabit Ethernet LAN, MAN, WAN stackable switches and routers
- 1x, 2x, or 10-Gbps Fibre Channel or SONET network cards
- Advanced Test Equipment (ATE)

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