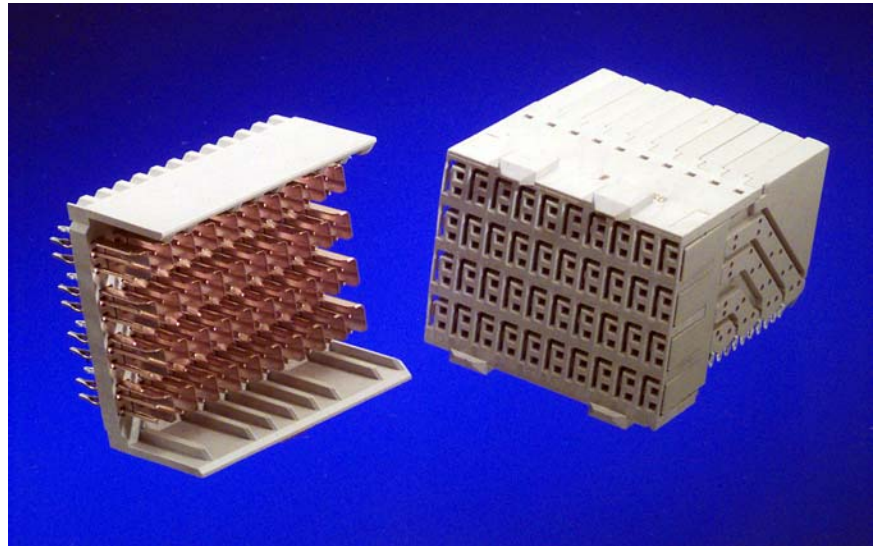


10 Gigabit Ethernet

Positioned as a high-speed, unifying technology for networking applications in LANs, MANs, and WANs, 10 Gigabit Ethernet will provide simple, high bandwidth at relatively low cost. In LAN applications, 10 Gigabit Ethernet will enable organizations to scale their packet-based networks from 10 Mbps to 10,000 Mbps, thereby leveraging their investments in Ethernet. In MAN and WAN applications, 10 Gigabit Ethernet will enable service providers and others to create extremely high-speed links at very low cost.



XAUI HM-Zd Interoperability Platform

- A common platform for interoperability testing supported by members of the 10GEA XAUI Interoperability Group and the 10 Gigabit Ethernet Consortium
- Full duplex link testing
- 3 link lengths
 - 5 inches
 - 20 inches
 - 34 inches
- XAUI signals run in a system-like environment
 - FR-4
 - multi-layer connections
 - 0.200" backplane thickness
 - MDIO / MDC Support

Z-PACK HM-Zd

- Fully modular system- standard size is 25 mm
- Available in two versions:
 - 2 signal pairs per column (20 pairs per 25 mm)
 - 4 signal pairs per column (40 pairs per 25 mm)
- Dual beam contact system with fully encompassing grounds
- Robust mating interface with integral prealignment and mating built-in
- Optimized footprint for improved electrical performance

XAUI Interoperability – Industry Support

The 10 Gigabit Ethernet Alliance has formed a working group, which is chaired by Tyco Electronics, to examine interoperability between different vendors' XAUI implementation. This group selected the Tyco Electronics XAUI HM-Zd Interoperability Platform as a common platform for interoperability testing. The work completed by this group has been adopted by the 10 Gigabit Ethernet Consortium, which will perform future interoperability testing.

Mindspeed Technologies, a member of the 10GEA, has tested the XAUI Interface of their SkyRail Ser/Des Transceiver with the XAUI HM-Zd Interoperability Backplane, and has been able to achieve error free operation at the maximum link length of 34 inches. Mindspeed has summarized this testing in its application support documentation.

For further details regarding the operation of the Mindspeed SkyRail Ser/Des Transceiver with the XAUI HM-Zd Interoperability Backplane, please contact Elie Massabki via email at emassabki@hotrail.com.

M27205 SkyRail 10G Ethernet Ser/Des Transceiver

The M27205 SkyRail from Mindspeed Technologies is a feature-rich quad SerDes transceiver that is fully compliant with the latest IEEE 802.3ae draft standard for 10 Gigabit Ethernet. The device incorporates four independent transmitters and receivers each supporting an unprecedented range of operation from 1 to 3.4 Gbps enabling backward compatibility with legacy data rates. Because of its adherence to the 10 Gigabit Ethernet standard and its ability to operate at 3.1875 Gbps, the M27205 also supports 10 Gigabit Fibre Channel applications.

The M27205 is a highly versatile device and can be used in multiple applications. It can be used as a 10 GbE PHY device, performing XGXS functions such as XGMII to XAUI conversion extending the reach of the Media Access Controller (MAC). It can be used as a XAUI re-timer in XENPAK optical modules to filter the signals and re-time the data to the local clock. It can also be used as a backplane SerDes transceiver in high-speed backplane applications. The M27205 requires no external components and encompasses ease of use, versatility, unparalleled signal integrity, and a high degree of system reliability in a single chip.

1–3.4 Gbps SerDes Transceiver with Amplif-Eye2™

M27205 Quad SkyRail™

Low power 1–3.4 Gbps CMOS SerDes transceiver for high reliability 10 Gigabit Ethernet, 10 Gigabit Fiber Channel, Infiniband, backplane and optical module applications

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KEY FEATURES

- Full compliance with latest IEEE 802.3ae specifications enabling a low pin count solution to transmit and receive 10 Gbps traffic and providing for multi-vendor support and interoperability.
- High speed serial redundancy enables greater system reliability
- Full range of operation from 1 to 3.4 Gbps for compatibility with legacy data rates
- Traffic Monitor enables statistical traffic analysis for superior network reliability
- Programmable Amplif-Eye2 signal conditioning circuitry providing the best possible signal integrity over low cost FR4 material
- Low power consumption of 1.4 W at 3.125 Gbps
- Flexilink Parallel interface enables easy system design with support for HSTL (1.5 V & 1.8 V) & SSTL-2, multiple clocking modes and independent/bundled channel operation
- **Mindspeed Technologies and 10 Gigabit Ethernet**
 - Principal member of the 10GEA
 - Active participant in all IEEE 802-3ae standard committee meetings
 - Lead participant in every interoperability demonstration hosted by the 10GE standards committee

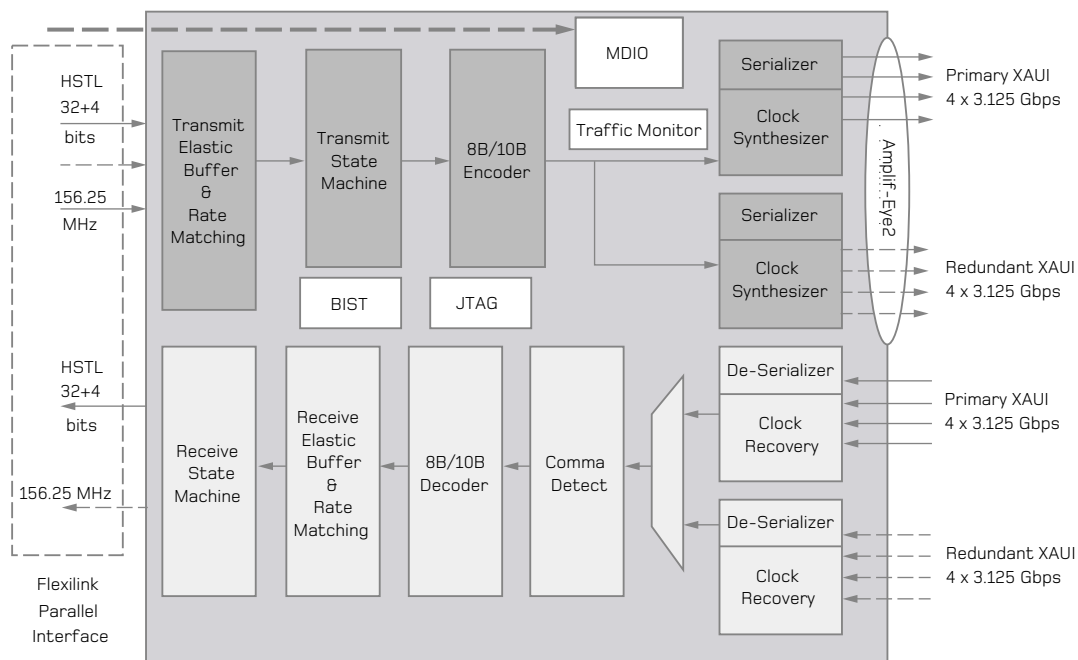


The M27205 contains a Flexilink™ parallel interface which can be configured as a 1.5V HSTL (XGMII compliant), 1.8V HSTL or SSTL-2 interface. The Flexilink interface can be configured to support either 32 bits or 40 bits of parallel data depending on whether the encoding/decoding functions are performed within the M27205 or off-chip. Additionally, this interface supports multiple clocking modes to simplify board and ASIC design.

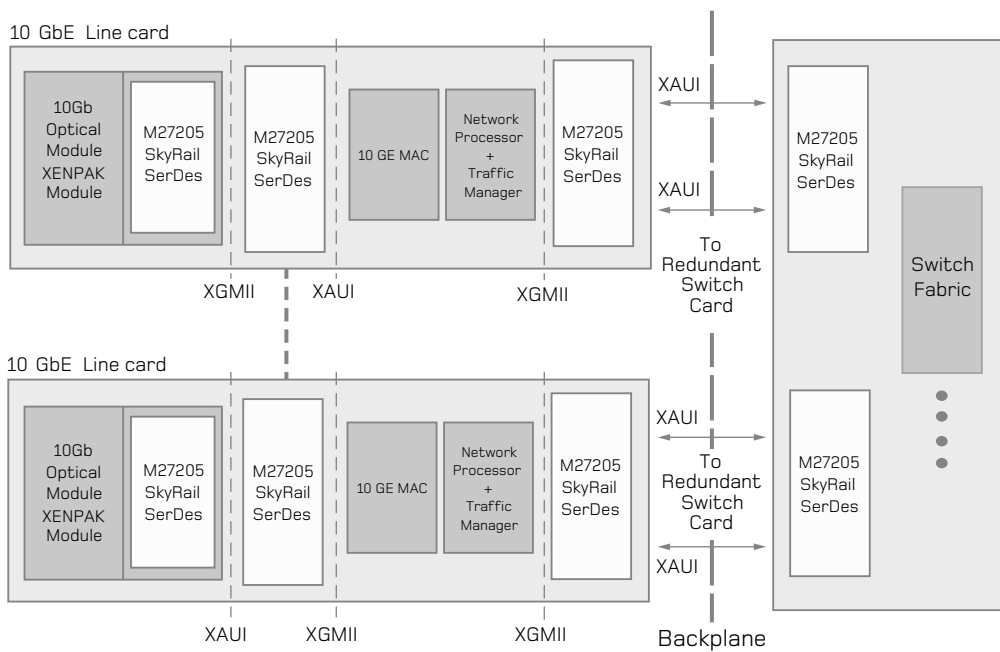
The M27205 SkyRail high-speed serial outputs are equipped with Amplif-Eye2 patented signal conditioning circuitry supporting multiple levels of pre-emphasis in order to

optimize and maximize the device's reach over very long trace lengths and standard connectors.

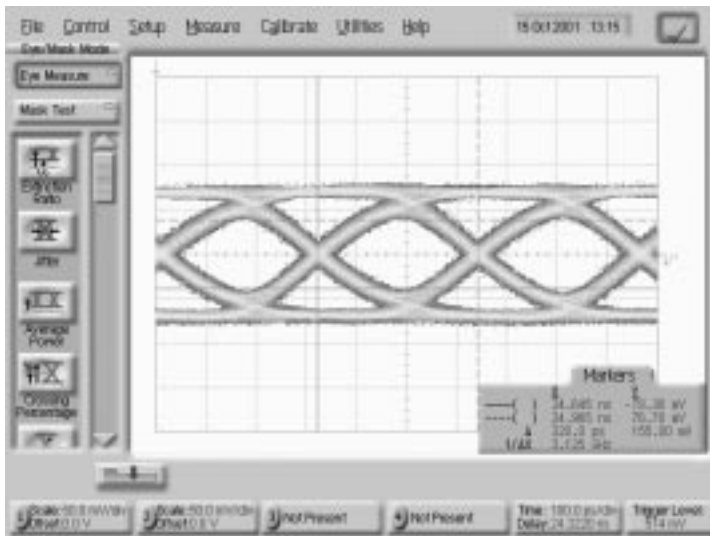
The M27205 device promotes higher system reliability for use in carrier-class equipment as well as enterprise equipment by providing support for high speed XAUI redundancy and traffic monitoring functions. XAUI redundancy enables system vendors to achieve greater levels of system reliability and data throughput through a backplane. The device supports a Traffic Monitor feature which enables system vendors to perform statistical traffic analysis.



M27205 Block Diagram



M27205 Applications Diagram



Data Eye @ 3.125 Gbps

Test Conditions:

- > 40 inches standard FR4 exceeding XAUI requirements
- > IEEE 802.3ae approved patterns CRPAT, CJPAT
- > Amplif-Eye2 Signal conditioning circuitry



Product Highlights

Features

- Fully compliant with the latest IEEE 802.3ae specification
- Four full-duplex serial transceivers with full redundancy, each capable of 1 Gbps to 3.4 Gbps of operation
- Built-in 8B/10B encoder and decoder with a bypass option
- Supports /a/k/r functions for channel alignment, comma detection and clock compensation
- Flexilink parallel interface with on-chip termination resistors for flexible timing and ease in interfacing to other ASICs
- Amplif-Eye2 signal conditioning circuitry with multiple levels of programmable transmit pre-emphasis for optimum performance over long cables and PCB traces
- Quad XAUI channel Transmit (Tx) and Receive (Rx) power-down capability with access through the IEEE 802.3ae compliant MDIO
- Powerful and flexible Built-In-Self-Test (BIST) functions that include CRPAT & CJPAT accessible through the MDIO
- Traffic Monitor accessible through the MDIO for statistical traffic analysis in telecom applications
- Supports IEEE 1149.1 JTAG boundary scan
- Extremely low-power device [typical power dissipation is 1.4W @ 3.125 Gbps]
- Ultra small 289-pin fine pitch BGA (19mm x 19mm)

Benefits

- 1-3.4 Gbps unprecedented range of operation enables backward compatibility with legacy data rates and enables more throughput through the system
- Standard compliance enables multi-vendor interoperability
- High speed XAUI redundancy enables greater system reliability

- Amplif-Eye2 signal conditioning circuitry enables reach and reception exceeding 1m of low cost FR4 material. Best possible signal integrity by compensating for attenuations caused by cables/traces and connectors.
- Flexilink parallel interfaces enables ease of ASIC and system design
- Traffic Monitor enables better network reliability
- XAUI re-timer provides maximum reach for optical modules
- Small package promotes ease of design in space constrained board designs

Applications

- 10 Gigabit Ethernet
- High-speed serial backplane interconnects
- 10 Gigabit Fibre channel
- Infiniband
- Chassis-to-Chassis serial connections

Ideal for

- 10 Gigabit Ethernet links over local area, wide area and metropolitan area networks
- High-end and midrange routers
- Storage Area Network equipment supporting 10 Gigabit Fibre channel
- Enterprise and carrier-class switches
- Optical modules
- High-speed automatic test equipment and high-bandwidth testers

Ordering Information

Evaluation boards are available and the M27205 device can be ordered in four data rates:

1-1.25 Gbps, 1-2.5 Gbps
1-3.125 Gbps, 1-3.4 Gbps

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

www.mindspeed.com/salesoffices

General Information:
U.S. and Canada: (800) 854-8099
International: (949) 483-6996
Headquarters – Newport Beach
4000 MacArthur Blvd., East Tower
Newport Beach, CA 92660-3007
Order# 500231A M01-0570

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