4-Port Gigabit Ethernet and 1/2G Fibre Channel Repeater or Retimer

GENERAL

- Supports four physical interfaces for Gigabit Ethernet at 1.25 Gbit/s per IEEE 802.3z or Fibre Channel physical interfaces at 1.0625 or 2.125 Gbit/s per Fibre Channel Physical Interface (FC-PI) for repeating or retiming applications.
- Backplane repeating/retiming signal integrity features enable standards compliance, link extension and robust gigabit-serial operation in the hostile backplane environment.
- Provides direct connection to high-speed serial backplanes, coax stacking cables, or optical / copper Small Form Factor Pluggable (SFP) modules.
- Provides non-blocking cross-bar for protection switching and data bi-cast, multi-cast or broadcast.
- Fast high-speed serial lock times and low device latency.
- Rate detection/auto-selection between 1G and 2G Fibre Channel.
- Extensive per port backplane monitoring for loss of signal, error rates, and link level violations.
- Supports single-ended or differential 125 MHz reference clock for Gigabit Ethernet, or 106.25 MHz reference clock for Fibre Channel applications.

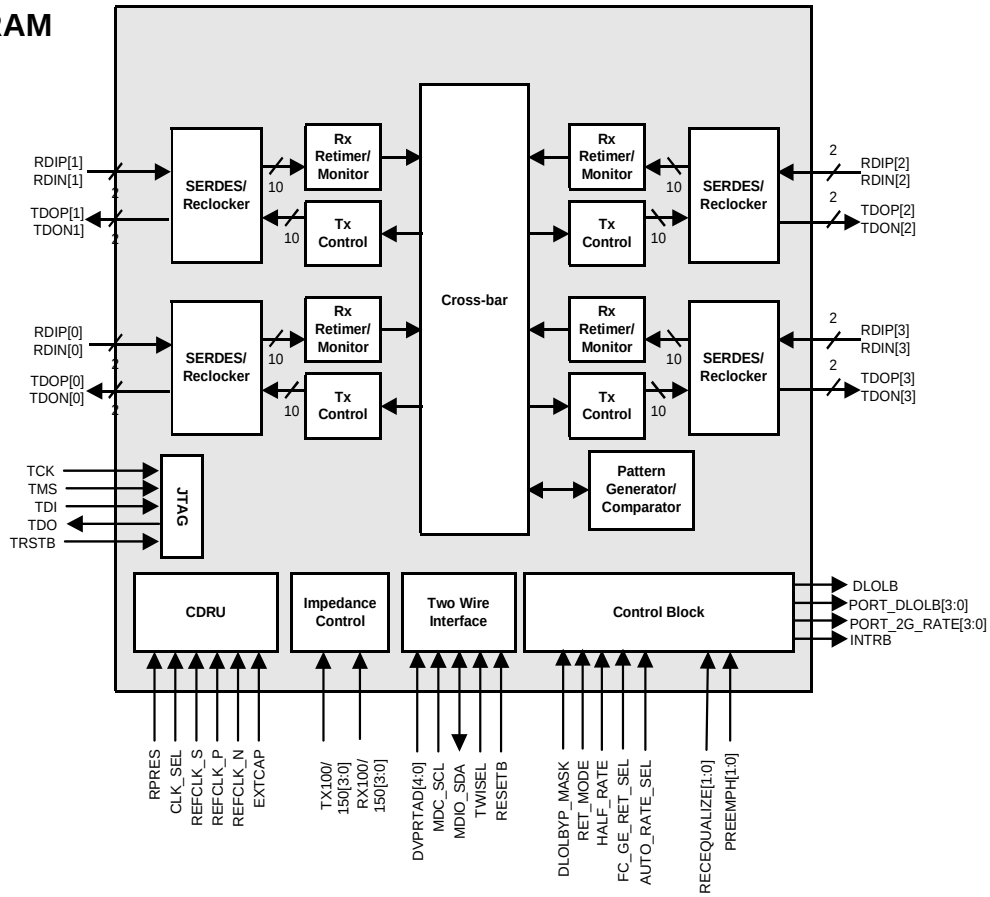
HIGH-SPEED INTERFACE

- High-speed outputs with selectable output amplitude and programmable pre-emphasis per port to counteract dielectric losses and allow maximum reach on printed circuit boards and cables.
- Programmable receive input equalization provides robust data recovery of highly degraded input signals.
- Minimal board footprint and exceptional signal integrity achieved:
  - No external components are required to interface the high-speed signals due to internal AC coupling.
  - Programmable receive input termination of 100 ohm or 150 ohm differential.
  - Programmable output impedance of 100 ohm or 150 ohm differential.

TEST AND CONTROL

- Digital loss of link (DLOL) detect pin provides status output for monitoring individual or multiple links.
- DLOL and optional interrupt pin can be programmed to indicate:
  - Analog loss of signal.
  - Excessive 8B/10B code and disparity violations.
  - Fibre Channel comma density.
- Loss of synchronization to detect Gigabit Ethernet or Fibre Channel framing errors.
- Internal packet generator and comparator features simplify backplane and jitter testing via:
  - Programmable pattern (can be used with GE high, low and mixed frequency tests).

BLOCK DIAGRAM



4-Port Gigabit Ethernet and 1/2G Fibre Channel Repeater or Retimer

- Compliant RPAT test.
- Low Transition Density Pattern.
- Compliant Jitter Tolerance.
- Low Frequency Patter.
- Supply Noise Pattern.
- Internal serial loopback modes for testing and debugging.
- Multple device control options for configuration and diagnostic access:
  - External control pins with register override.
  - 2-pin serial Two-Wire Interface.
  - 2-pin serial MDC/MDIO.
- Provides a standard 5-signal IEEE 1149.1 JTAG test port for boundary scan board testing purposes.

PHYSICAL

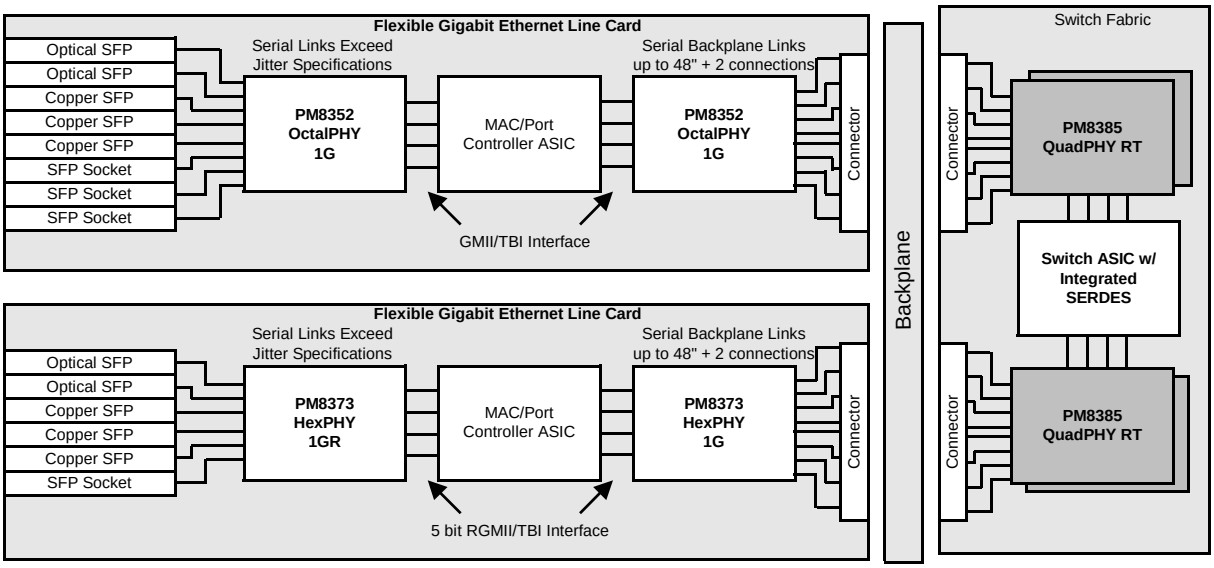
- 0.18 um CMOS, 1.8V and 3.3V supply.
- Small 15mm x 15mm footprint 196-pin BGA with 1mm ball pitch.
- Ultra-low operating power of 1.1W typical with all 4 channels active at 1.25 Gbit/s .
- Extended temperature range of -40°C to +85°C for challenging system environments.

APPLICATIONS

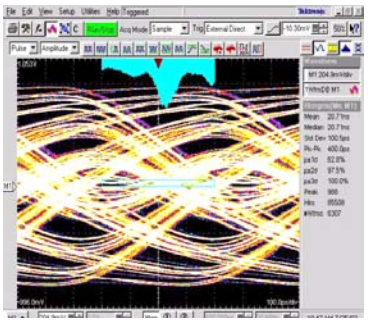
- High-speed backplane driver operating from 1.0625 Gbit/s to 2.125 Gbit/s including 1.25 Gbit/s for Gigabit Ethernet.
- Distributed switch fabrics or protection switches via data bi-cast, multi-cast or broadcast to fabric elements.
- Enterprise Ethernet or Fibre Channel switches.
- Gigabit Ethernet Retimer including 1000BASE-CX driver.
- Fibre Channel retimer.
- Wireless base-station interconnect.
- Performance computing and blade server systems.
- Aerospace, scientific, and medical imaging systems.
- Digital broadcast video.
- Inter-medium connections.

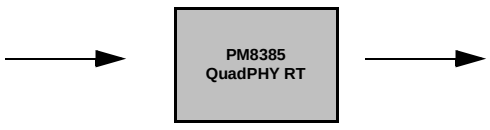
EXAMPLE APPLICATIONS

QuadPHY RT as Dual Bi-directional Gigabit Ethernet Retimer

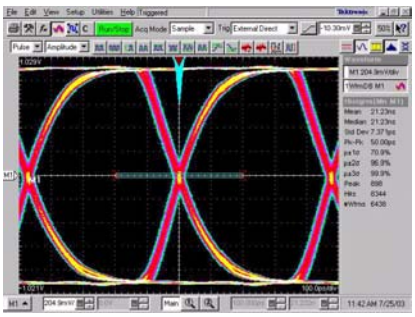


2 G Serial Backplane After 60" Before Retimer





Retransmitted 2 G Serial Backplane After Retimer



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