

Features

- 12x3.6 Gb/s integrated transimpedance and limiting amplifier enabling various 40 Gb/s parallel channel optical receiver PMD applications
- 8 uApp receiver sensitivity for 10-12 BER
- Single +3.3 V supply dissipating 100 mW per channel
- Global signal detect senses quiescent photocurrent with adjustable threshold and hysteresis
- Squelch automatically disables channels when input signal strength is below programmable threshold
- Individual channel signal detect senses input signal strength (OMA) with adjustable sensitivity and hysteresis
- Serial digital interface for controlling channel power down, signal detect sensitivity, output amplitude and global signal detect
- Differential back-terminated outputs
- Flip-chip or direct wire-bond attach to photodiode
- 250-micron channel pitch matches optical ribbon fiber and array photodiodes
- ACJTAG boundary scan testability

Applications

- SNAP12 MSA
- OC-768 VSR parallel optics
- Proprietary 40 Gb/s intra-system parallel optics
- InfiniBandTM 12X parallel optics PMD

Description

The growing use of the Internet has created increasingly higher demand for multi-Gb/s I/O performance. The demand for 100+ Gb/s WAN bandwidth fuels the growth of short-reach 40 Gb/s infrastructures within high-end telco and datacom routers, switches, servers and other proprietary chassis-to-chassis links. The Zarlink PX5429A 12x3 Gb/s TIA/LA Receiver with ACJTAG is a twelve channel TIA/LA optical receiver designed for various 12x3 Gb/s parallel PMD applications. It consists of a DC-coupled transimpedance amplifier and an AC-coupled differential limiting amplifier.

The transimpedance amplifier achieves a nominal 3 GHz bandwidth over a wide range of photodiode input capacitance. Excellent channel-to-channel isolation ensures data integrity at the receiver sensitivity limits. A global signal detect circuit provides the photodiode reverse bias voltage supply and senses average photocurrent supplied to the photodiode array.

The transimpedance amplifier is internally AC-coupled to a high-gain, high-bandwidth differential limiting amplifier. The limiting amplifier provides a differential back-terminated CML output that can be used to drive 3 Gb/s per channel transceivers or other CML compatible clock and data recovery circuits. The limiting amplifier features an adjustable signal detect circuit that senses optical modulation amplitude (OMA) to provide a received signal indication for each channel.

The Zarlink PX5429A Receiver provides full ACJTAG support for boundary scan testability, allowing either AC or DC module connectivity validation and systems test.

Electrical data eye from the PX5429A IC output. Input OMA of -14.5 dBm received through a commercially available photo diode at 3.0 Gb/s with a PRBS $2^{33} - 1$ pattern.

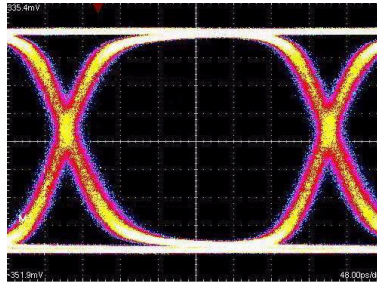


Figure 1 - Typical Optical to Electrical Data Eye

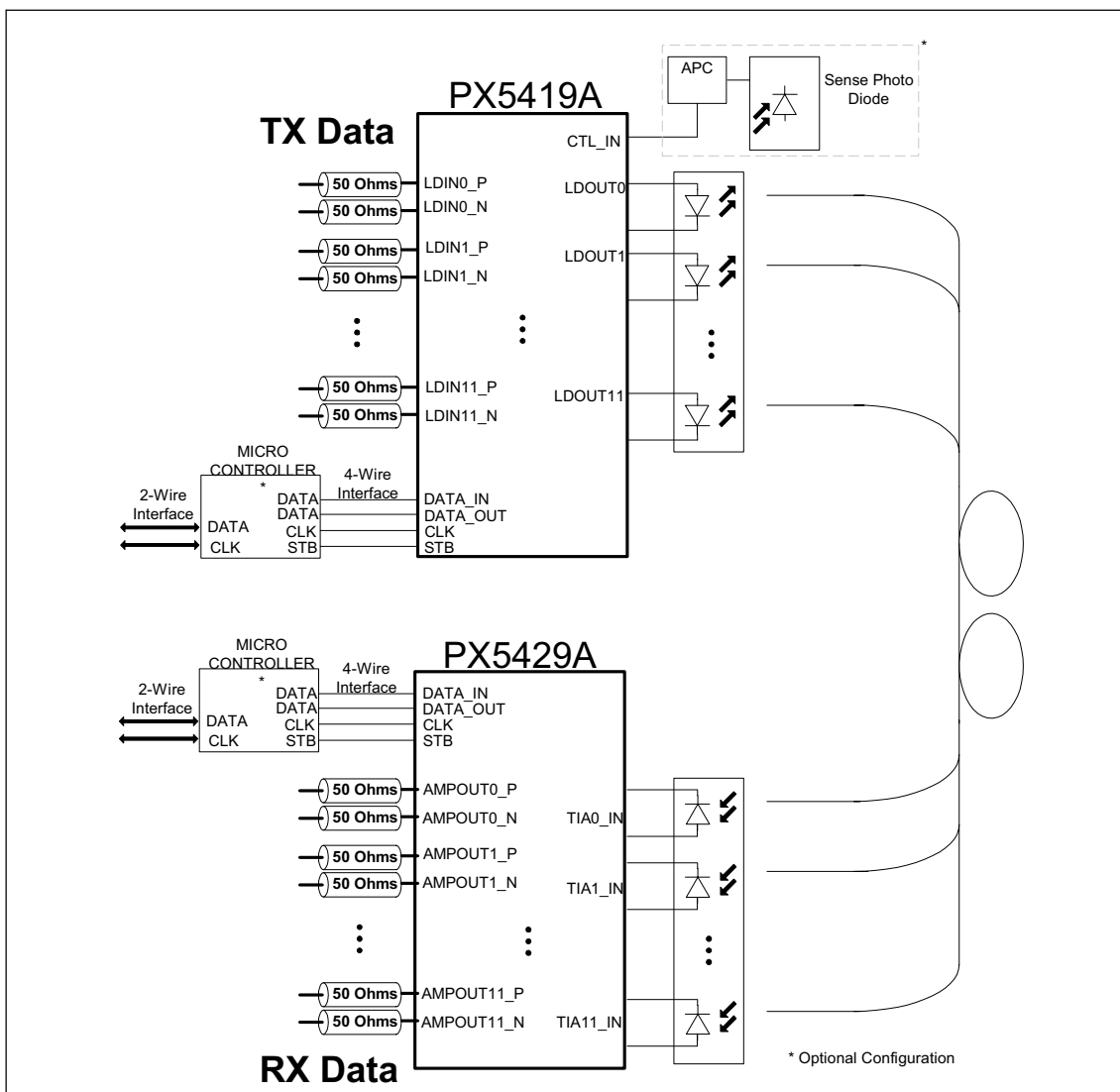


Figure 2 - Application Block Diagram



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