**Features**

- Integrated transimpedance and limiting amplifier for serial optical receiver applications
- Receiver sensitivity $10 \mu\text{A}_{\text{pp}}$ for 10^{-12} BER at 4.25 Gb/s
- Receive signal strength indicator (RSSI)
- Loss of signal indicator (LOS)
- Selectable squelch circuit disables output at low input levels
- Back-terminated 50-ohm CML output
- Selectable 250 mV or 650 mV differential output amplitude
- No external passives required for photodiode bias network
- Single +3.3 V supply dissipating 100 mW

Applications

- Receive optical sub-assemblies (ROSA)
- 4GFC, 2GFC, 1GFC, OC-48, GbE
- SFP/SFF and proprietary optical modules

Description

The growing use of serial optical modules in datacenter LAN and SAN infrastructures have created a need for multi gigabit optical modules. The introduction of 4 Gb/s Fiber Channel standard for SANs is leading the data rate requirements for current 1 Gb/s and 2 Gb/s optical modules while demanding full backward compatibility. The Zarlink PX5420 multi-rate TIA/LA optical receiver provides the performance and feature set required by competitive SFF and SFP optical modules.

The Zarlink PX5420 optical receiver is a single channel TIA/LA optical receiver designed for various applications to 4.25 Gb/s. It consists of a transimpedance amplifier (TIA) and an AC-coupled differential limiting amplifier (LA).

The transimpedance amplifier achieves a nominal bandwidth of 3 GHz over a wide range of photodiode input capacitance. A photodiode bias current monitor allows for a simple alignment procedure.

The transimpedance amplifier is AC-coupled internally to a high-gain, high-bandwidth, limiting amplifier. The limiting amplifier provides a differential back-terminated current-mode logic (CML) output that can be used to drive a 4.25 Gb/s intra module post amplifier or directly drive to the edge of the module.

Full diagnostics are delivered through loss of signal, squelch, and received signal strength indicator circuits.

Figure 1: 4.25 Gb/s differential data output using a PRBS23 data pattern

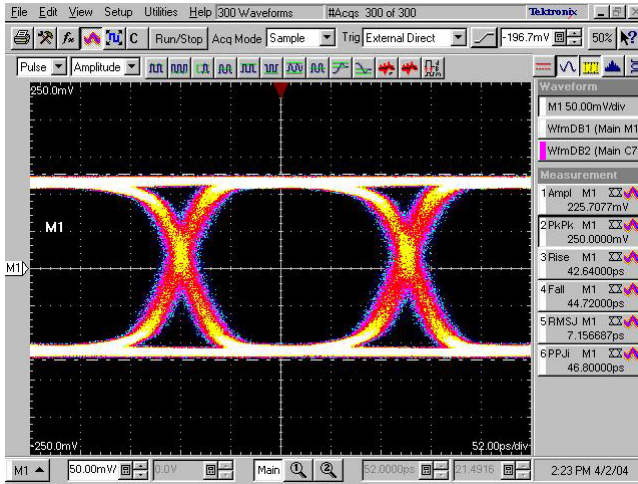
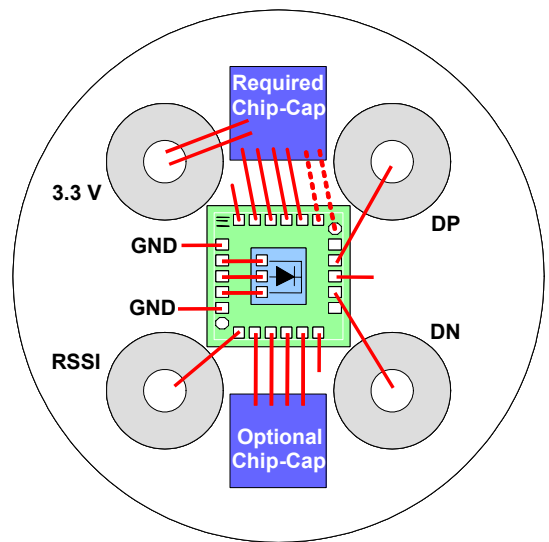
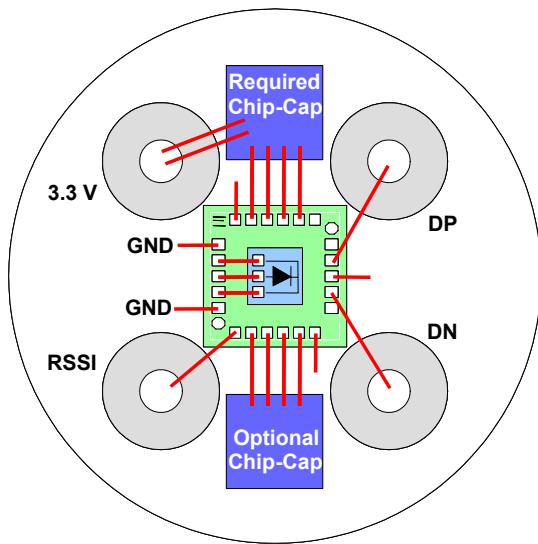


Figure 2: Diagram shows a typical bonding configuration for the PX5420 mounted on a TO-46 header. The figure shows a photodiode attached directly on the PX5420 IC. Also shown are two microwave chip capacitors. A single capacitor connected to a 3.3 V supply is required. The second capacitor (not connected to an external supply) is recommended but not required. Capacitor values of 200 fF are typical but vary by application environment.

Figure 3: Similar configuration as Figure 2. OAC pad connected to VCC providing increased output amplitude. Sq_En (also connected to VCC) disables the limiting amplifier when LOS is asserted.





**For more information about all Zarlink products
visit our Web Site at
www.zarlink.com**

Information relating to products and services furnished herein by Zarlink Semiconductor Inc. or its subsidiaries (collectively "Zarlink") is believed to be reliable. However, Zarlink assumes no liability for errors that may appear in this publication, or for liability otherwise arising from the application or use of any such information, product or service or for any infringement of patents or other intellectual property rights owned by third parties which may result from such application or use. Neither the supply of such information or purchase of product or service conveys any license, either express or implied, under patents or other intellectual property rights owned by Zarlink or licensed from third parties by Zarlink, whatsoever. Purchasers of products are also hereby notified that the use of product in certain ways or in combination with Zarlink, or non-Zarlink furnished goods or services may infringe patents or other intellectual property rights owned by Zarlink.

This publication is issued to provide information only and (unless agreed by Zarlink in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. The products, their specifications, services and other information appearing in this publication are subject to change by Zarlink without notice. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. Manufacturing does not necessarily include testing of all functions or parameters. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to Zarlink's conditions of sale which are available on request.

Purchase of Zarlink's I²C components conveys a licence under the Philips I²C Patent rights to use these components in and I²C System, provided that the system conforms to the I²C Standard Specification as defined by Philips.

Zarlink, ZL and the Zarlink Semiconductor logo are trademarks of Zarlink Semiconductor Inc.

Copyright Zarlink Semiconductor Inc. All Rights Reserved.

TECHNICAL DOCUMENTATION - NOT FOR RESALE
