CONEXANT

BPON Processor and MAC Framer
Xenon

Conexant's portfolio includes a comprehensive suite of semiconductor solutions for broadband communications, enterprise networks, and the digital home. Xenon is a system-on-chip (SoC) solution for broadband passive optical networks (BPON). Xenon delivers data rates of 622 Mbps downstream and 155 Mbps upstream over shared passive optical networks (PONs) for the next generation of high speed triple-play services including video, data and voice. The device integrates an ITU-T G.983 compliant MAC/framer and network processor to provide an ideal solution for optical network terminals (ONTs) used on the client side of fiber-to-the-premises (FTTP) networks. The Xenon can be in a multiple dwelling unit (MDU) in conjunction with Conexant's Accelity VDSL chipset to provide fiber-to-the-neighborhood (FTTN) using VDSL2 technology in the last mile to deliver IP video-on-demand (VoD) over copper wire.

In addition to its embedded network processor, Xenon supports Conexant's ISOS™ suite of communications software, which accelerates the integration of new features, reduces customer development costs, streamlines product development, and reduces time-to-market. The flexibility of the ISOS platform and rich feature set also allows equipment developers to customize products to meet the needs of their subscriber base. When used in with the processor ISOS supports key features for ONT and MDU applications including quality of service (QoS), voice over Internet protocol (VoIP), and IP video multicasting.

ISOS Communications Software
The Xenon PON processor is supported by the Conexant ISOS® suite of communications software. The combination of Xenon and ISOS enables Conexant to continually integrate new features into its ISOS platform to help customers lower costs, streamline product development, and speed their time-to-market with feature-rich broadband equipment. By including an integrated and tested set of hardware and software, Xenon reduces the time needed to develop communications products by up to 50 percent compared with alternative approaches. The flexibility of ISOS, with its source-code software and rich feature set, allows equipment developers to customize and differentiate their products, enabling them to compete effectively.

Conexant Product Portfolio
The company's broad portfolio of semiconductor products also includes client-side digital subscriber line (DSL) and cable modem solutions, home network processors, broadcast video encoders and decoders, digital set-top box components and systems solutions, and dial-up modems. In addition to its IEEE 802.11a/b/g-compliant WLAN chipsets, software, and reference designs, Conexant offers a suite of networking components that includes solutions for applications based on HomePlug[SM] and HomePNA™. Additional products include a complete line of asymmetric and symmetric DSL CO solutions, which are used by service providers worldwide to deliver broadband data, voice, and video over copper telephone lines.
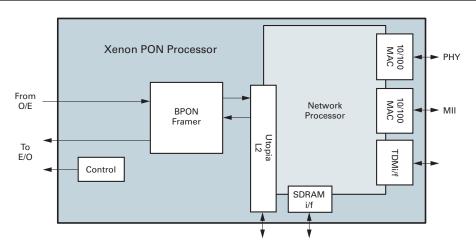

Distinguishing Features

- ITU-T G.983 BPON framer with support for 622 Mbps downstream and 155 Mbps upstream

- Embedded network processor

- 10/100 Mbps Ethernet media access controller (MAC) block with MII output, suitable for direct connection to an Ethernet switch device

- Second 10/100 Mbps Ethernet MAC block with integral PHY for direct connection to Ethernet magnetic

- UTOPIA level 2 interface ADSL or VDSL chipsets

- Integrated time division multiplexing (TDM) interface external voice processor or subscriber line access controller (SLAC)

Part Number   LAZ-500-PIB
Description   BPON Processor and MAC Framer

Xenon PON Processor Block Diagram

Product Features

Software

- Modular Internet protocol (IP) stack for both IPv4 and IPv6

- Bridging and routing capabilities

- Comprehensive networking protocol to support point-to-point tunneling protocol (PPTP), Layer 2 tunneling protocol (L2TP), Dynamic host configuration protocol (DHCP), point-to-point protocol over Ethernet (PPPoE), point-to-point protocol over ATM (PPPoA), and routing information protocol (RIP)

- Flexible, integrated management interface

- Simple network management protocol (SNMP) agent and tools

- Embedded web server

- Stateful packet inspection (SPI) firewall and network address and port translation (NAPT) security solution

- Universal Plug-n-Play (UPnP) for seamless network interconnectivity

- Reference designs available for rapid prototyping

  - Drivers for Conexant's PRISM® wireless chipset (802.11a/b/g)

  - Drivers for high-performance Infineon-ADMtek and Micrel Incorporated Ethernet switches

  - Drivers for Legerity LE78D11 SLAC and LE77D11 subscriber line interface controller (SLIC), and Silicon Laboratories Si3050 codec and Si3210M SLIC

- ATM Protocol Stack

- ATM Traffic Management Features (ATM Forum TM 4.1)

- Software support for VoIP (SIP) and VoATM (BLES)

Bridging Functionality

- Layer 2 MAC transparent bridge as specified in IEEE 802.1D and 802.1Q

- Virtual local area network (VLAN) and 802.1p priority support

- Bridged protocol data unit (PDU) encapsulation (per RFC 2684 or RFC 1483)

- Bridge source MAC address forwarding. Forwarding of IP packets based on MAC address of the packet

- Spanning tree bridge IEEE 802.1D

Routing and IP Functionality

The following protocols are supported:

- IP layer (IPv4 or IPv6) dual stack supported. The IP stack can be configured to include support for IPv4 only packets or both IPv4 and IPv6 packets

- User datagram protocol (UDPv4 and UDPv6)

- Fast UDP (for voice applications)

- Transmission control protocol (TCP IPv4 and IPv6)

- Address resolution protocol (ARP)

- Internet control message protocol (ICMPv4 and ICMPv6)

- Dynamic IP address allocation is supported through:

  - Dynamic host configuration protocol (DHCP RFC 1541), or

  - Internet protocol configuration protocol (IPCP RFC 1332)

- RIP v1 and v2

Security Software

The following security features are provided:

- NAPT
  - Provides up to 1024 NAT translation sessions

- PAP/CHAP authentication on PPP connections

- Embedded firewall

- Intrusion detection settings provide DoS attack and port scan detection and prevention, and protection against IP spoofing and other common types of attacks

- User-configurable IP- and MAC-level packet filtering to accept/deny packets based on layer 3 or layer 2 rules

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