PAS6301
Gigabit Ethernet Optical Network Unit SOC

GENERAL DESCRIPTION

The PAS6301 is a Gigabit Ethernet Optical Network Unit (ONU)system on a chip dedicated for use in an Ethernet Passive Optical Network (IEEE 802.3ah EPON). The PAS6301 chip integrates the Ethernet Media Access Control (MAC) functionality, EPON protocol management, an advanced L2/3/4 classification engine, a powerful embedded CPU and a glueless interface to an on-board Analog Front End (AFE). An integrated software package provides a complete ONU solution.

PRODUCT BENEFITS

- Full IEEE 802.3ah EPON ONU functionality with integrated ARM9 CPU and comprehensive software package

- Includes support for CTC EPON technical requirements version 1.0

- Advanced classification engine with support for VLAN, IP, TCP & UDP to provide true "triple-play" services

- A glueless interface to on-board limiting amplifier and laser diode driver providing an easy maintenance cost effective solution

- Advanced switch management capabilities including a standard MII interface and an L2 software management package (STP, IGMP, etc.) supporting various external switches

- A cost effective SDRAM based packet buffer with 8 queue priorities and up to 8MB of bursty traffic protection

- An advanced Rate Limiter which can be operated in both upstream and downstream and can be configured to operate per priority queue, per the whole ONU, or per VID . An additional mode exists for upstream enabling the rate limitation of multicast and broadcast frames separately.

- Open Software development platform with support for Linux, VxWorks and a low footprint RTOS

- Integrated SERDES for EPON tranceiver connection

- Flexible optical transceiver interface for support of multiple vendors

- FEC coding for improved link budget

- Integrated encryption for enhanced security and privacy based on AES or churning

- Advanced threshold and queue level reporting to support high quality of service DBA algorithms

FEATURES

- Gigabit Ethernet PON ONU based on 802.3ah standard

- Integrated SERDES and CDR for loop timing support

BLOCK DIAGRAM

PMC-SIERRA
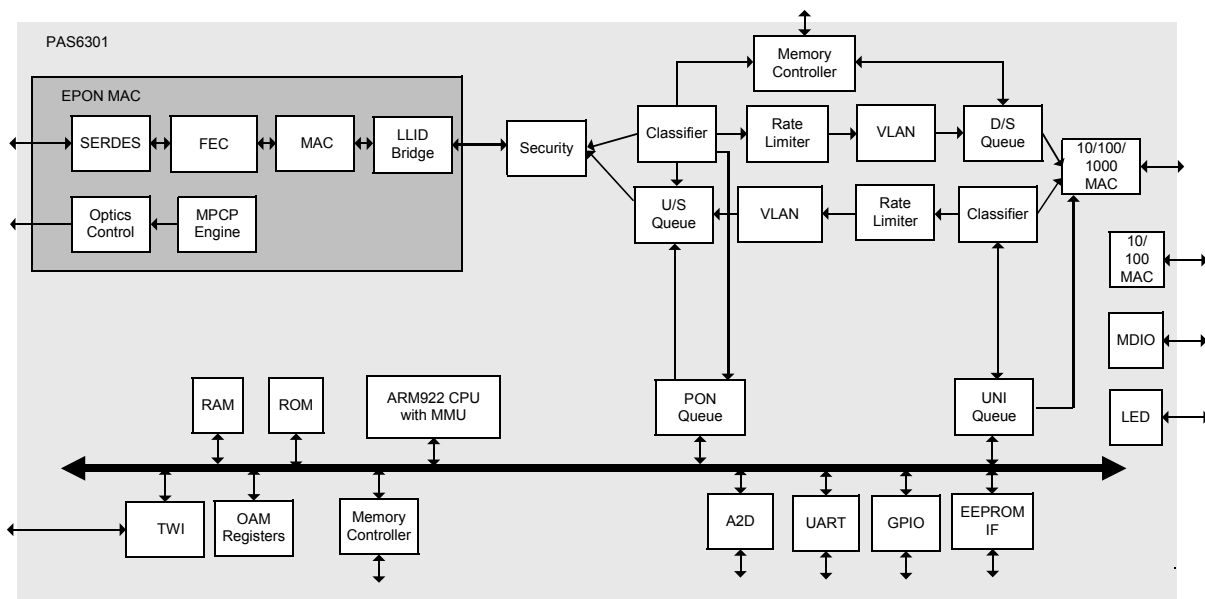
- FEC support for improved optical budget and split ratio
- Programmable interface logic for optical transceiver
- Integrated ARM9 CPU (including MMU)
- Complete ONU software package development platform supports automatic operation and OEM vendor extensions
- Support for buffer threshold reporting for compatibility with dynamic threshold control
- 8 priority queues with multiprotocol classifier including:
  - VLAN manipulation and QOS support
  - 802.1p priority, IPv6, IPv4
  - IGMP
  - IP, TCP, UDP
- Full OAM feature set termination according to 802.3ah
- 128 bit AES encryption – downstream and upstream
- 802.1x Authentication engine with remote administration
- 802.3x flow control for UNI
- 802.1D Bridging: Includes 128 port local address table with aging for isolation of home traffic from network
- Optional external CPU management via UART or Ethernet
- Flow control in uplink queues according to programmable fields including ToS, CoS, VLAN, Ethertype, IP address, TCP/UDP port

- Comprehensive software management package including SNMP, Web-based management, Remote software download, STP and IGMP
- Full VoIP stack executed on the embedded ARM9 with no need for an external CPU
- An integrated Analog to Digital (A2D)
- Glueless interface to an on board Limiting Amplifier (LIA) and Laser Diode Driver (LDD)

INTERFACES

- Full duplex transmit and receive EPON port operating at 1.25Gbit/s with integrated SERDES
- Full-duplex 10/100 MII and 1000Mbit/s GMII Ethernet for connectivity to standard switch ICs or PHY devices
- 32 bit memory controller for FLASH, SDRAM and general peripheral access
- 32 bit memory controller for 8MB SDRAM packet buffer
- Optional EEPROM for boot and configuration parameters
- Dying gasp and vendor event generation pins
- Eight LED indications
- Two-wire SFP interface port
- Two UART ports for debug and control by external devices

ONU EXAMPLE USING PAS6301
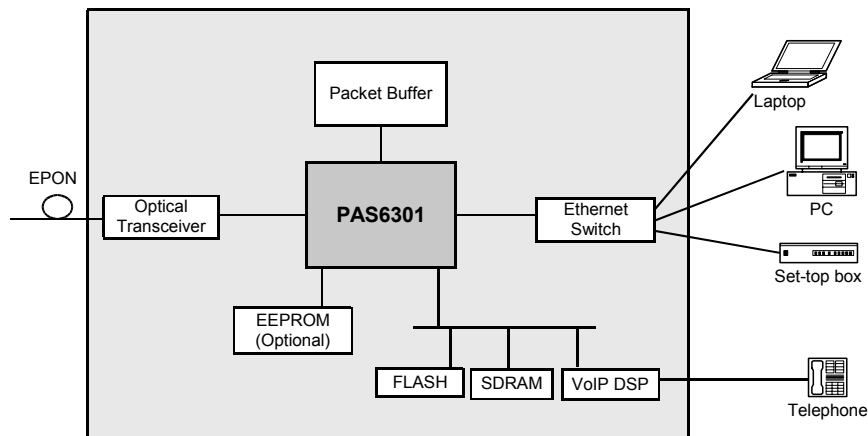
FURTHER RESOURCES

www.pmc-sierra.com/passave/

www.pmc-sierra.com/ftth-pon/

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