

# PAS6301

## Gigabit Ethernet Optical Network Unit SOC

Released  
Product Brief

### 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

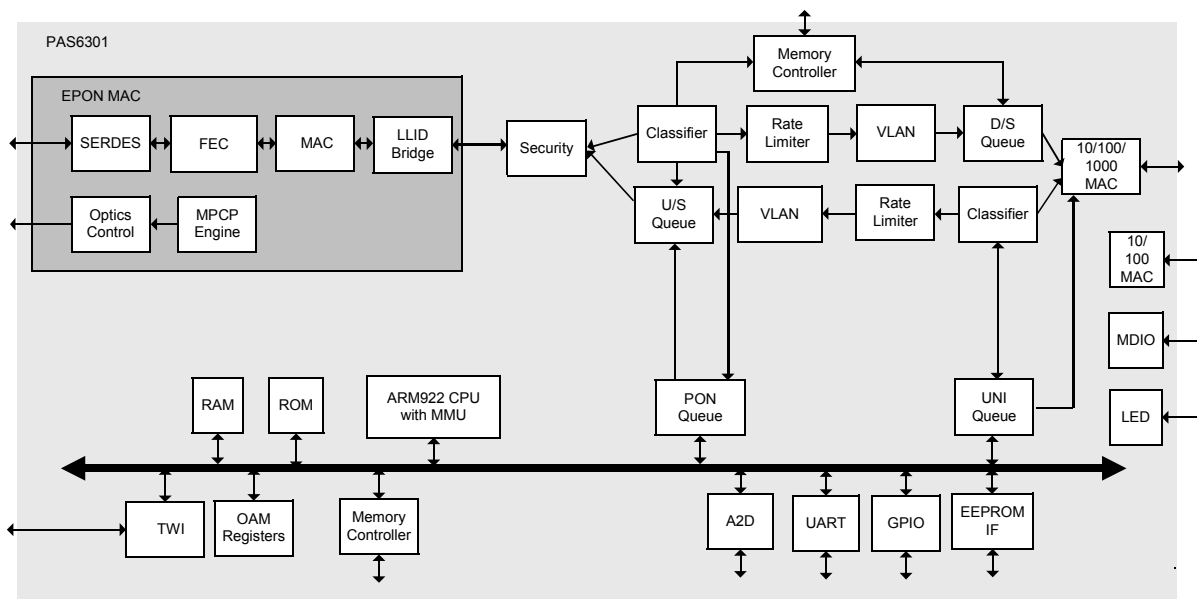
- Full IEEE 802.3ah EPON ONU functionality with integrated ARM9 CPU and comprehensive software package
- Includes support for CTC EPON technical requirements version 1.0
- Advanced classification engine with support for VLAN, IP, TCP & UDP to provide true "triple-play" services
- A glueless interface 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 transceiver 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



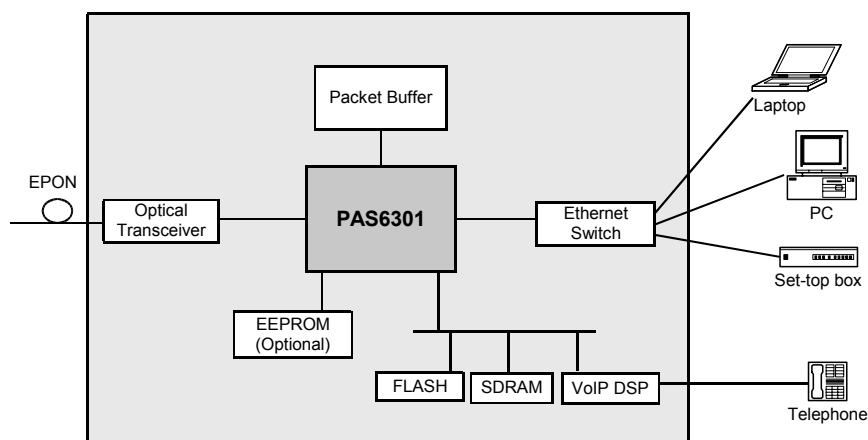
- FEC support for improved optical budget and split ratio
- Programmable interface logic for optical transceiver
- Integrated ARM9 CPU (including MMU)
- Complete ONU software package development platform supports automatic operation and OEM vendor extensions
- Support for buffer threshold reporting for 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/](http://www.pmc-sierra.com/passave/)

[www.pmc-sierra.com/ftth-pon/](http://www.pmc-sierra.com/ftth-pon/)

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