

# PAS740x GPON ONT SoC

## Device Family

### Product Overview

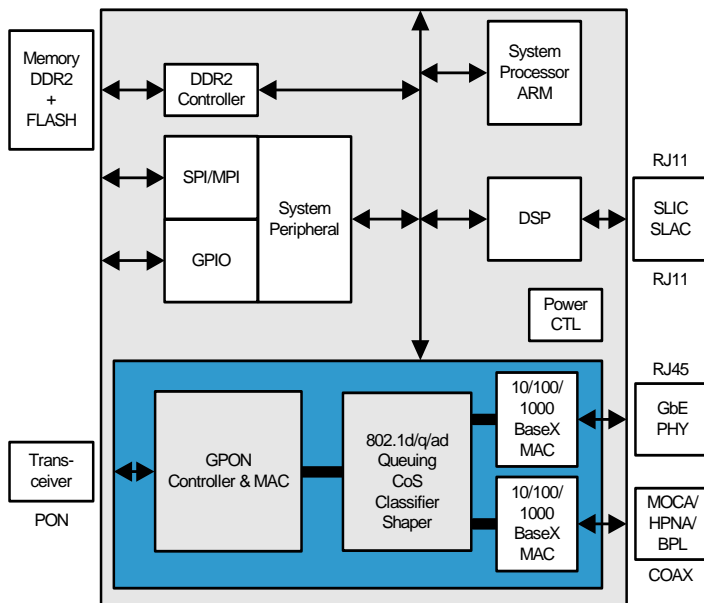
The PAS740x device family is PMC-Sierra's second generation GPON ONT System-on-a-Chip (SoC) device family, dedicated for use in GPON (ITU-T G.984) networks. The PAS740x devices are optimized for building a high-performance, extremely low power and low cost GPON ONT in Single Family Unit (SFU), Multiple Dwelling Unit (MDU), or similar configurations. The PAS740x devices integrate GPON SERDES, MAC and packet processing functions, together with an integrated ARM926 controller, Gigabit Ethernet (GbE) user interfaces, a TDM interface, and a dedicated DSP for VoIP processing (on PAS7401V only).

The PAS740x device family is based on PMC-Sierra's field proven GigaPASS networking architecture, which provides market-leading throughput and quality of service (QoS). The PAS7401/7401V provide simultaneous, sustained 2 Gbit/s downstream and 1.244 Gbit/s upstream throughput at all packet sizes. The GigaPASS networking engine provides TR-101 compliant networking features, compliant with FSAN CTS specifications, including 802.1p/q bridging, packet classification, filtering and queuing, traffic shaping, and policing.

### Product Highlights and Benefits

- **Full ITU-T G.984 GPON ONT functionality** with integrated CPU and a complete software package
- **GigaPASS Wire-speed performance** - Simultaneous 2Gbps downstream and 1.25Gbps upstream sustained throughput at any packet size
- **Advanced classification engine** - Supports classification according to L2/L3/L4 fields, Double tagged VLANs. IPv4- and IPv6-ready
- **Advanced QoS features** - Flexible traffic management enable queuing per user/service with WFQ/SP scheduling, shaping and policing
- **Power down modes** - Enable up to 95% ONT power saving during power outages and standby periods
- **Form factor and RBOM optimization** - Featuring smallest size package and PCB footprint
- **Field proven Interoperability** - Using GPON software stack from PMC-Sierra
- **Low Power** - Typical 1W at 1Gbps throughput

### PAS7401V Block Diagram



### PAS740x Device Selection Matrix

Device P/N	User Interfaces	Package
PAS7400B-NGI	1xGMII/MII	384 balls 17mm FBGA
PAS7401B-NGI	2xGMII/MII	384 balls 17mm FBGA
PAS7401BV-NGI	2xGMII/MII VoIP (4 channels)	384 balls 17mm FBGA

### Features

- ITU-T G.984 compliant GPON ONT SoC
  - Line rate operation - 2.488Gbps downstream; 1.244 Gbps upstream
  - Supports 8 T-CONTs
  - Supports 256 Port-IDs
  - Supports NSR/SR DBA
  - US and DS FEC
  - AES decryption
- Integrated SERDES and CDR
- Embedded ARM926 controller
- Embedded VoIP DSP subsystem supports up to 4 fully featured VoIP channels
- Throughput - 2Gbps downstream and 1.25Gbps upstream at any packet size

- 802.1x authentication engine
- 802.3x flow control at the UNI.
- Multi protocol classifier includes:
  - Ethertype
  - L2/L3/L4 source and destination address/IP/Port
  - IPv4/IPv6 support
  - Single/Double VLAN table
  - VLAN insert/remove/exchange operations
  - DSCP
  - Multicast group (MLDV2 and IGMPv3)
- QoS and Traffic Shaping features include:
  - Internal frame buffer, dynamically shared between US and DS
  - Multiple queues in upstream and downstream with flexible mapping per user/service
  - Dual-token leaky bucket shaper per queue for GBW and PBW enforcement
  - WFQ/SP scheduling
  - Per Port-ID upstream configurable rate limiter and coloring
  - Broadcast rate limiting
- 1W typical power consumption at 1Gbps throughput

## Interfaces

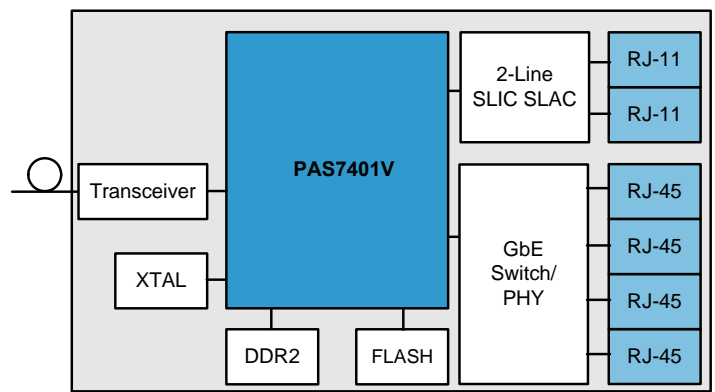
- 2.488/1.244 Gbps GPON port with integrated CDR/SERDES
- 2xGMII/MII Ethernet ports with optional 802.3ad link aggregation for connectivity to standard switch ICs or PHY devices
- Voice - 2x dual SPI/MPI interface for direct connection to SLIC/SLAC devices supports up to 4xFXS ports
- 16 bit DDR2 SDRAM memory
- 16 bit memory controller for FLASH and peripherals access
- 16x dedicated GPIO and 5x alarm inputs
- 12xLED outputs
- UART and JTAG interfaces for debug and control

## Software

PAS740x is provided with a comprehensive, turnkey level software package which includes:

- Fully featured GPON protocol stack and networking drivers
- Fully featured ONT OMCI stack
- Complete VoIP software solution
  - G.711, G.729a, G.729ab, G.723.1 Codecs
  - RTP
- Based on open source Linux kernel
- API enables integration of customer applications

## Example Application Diagram



## Further Resources

### Technology Webpage

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

### Technical Documentation

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

## About PMC-Sierra

PMC-Sierra is a leading provider of broadband communications and storage semiconductors for metro, access, fiber to the home, wireless infrastructure, storage, laser printers, and fiber access gateway equipment. PMC-Sierra offers worldwide technical and sales support, including a network of offices throughout North America, Europe, Israel and Asia. The company is publicly traded on the NASDAQ Stock Market under the PMCS symbol.

Corporate Head Office:  
 PMC-Sierra, Inc.  
 Mission Towers One  
 3975 Freedom Circle  
 Santa Clara, CA, 95054, U.S.A.  
 Tel: 1.408.239.8000  
 Fax: 1.408.492.1157

Operations Head Office:  
 PMC-Sierra, Inc.  
 8555 Baxter Place  
 Burnaby, BC V5A 4V7 Canada  
 Tel: 1.604.415.6000  
 Fax: 1.604.415.6200



*Enabling connectivity. Empowering people.*