**Product Overview**

The PAS8xx1 family is PMC-Sierra’s first-generation 10G-EPON Optical Line Terminal (OLT) System-on-a-Chip (SoC) device family, dedicated for use in a 10-Gbit/s Ethernet Passive Optical Network (IEEE 802.3av 10G-EPON). Optimized for building a high-performance, feature-rich, low-cost 10G-EPON OLT in various line card configurations, the PAS8xx1 family integrates the 10G-EPON SERDES, burst-mode CDR, 10G-EPON Media Access Control (MAC) and protocol management; advanced 10G-EPON DBA, classification/packet processing engine and traffic management; XAUI/RXAUI CNI interfaces, and dual embedded ARM11 CPUs. Advanced PON diagnostic functions include Virtual Scope (RSSI) and integrated in-band OTDR. The devices support Time of Day (ToD), Synchronous Ethernet (SyncE), and IEEE 1588v2 time synchronization for cellular backhaul applications, and Power Save protocols for remote ONUs.

The PAS8xx1 devices are provided with an integrated software package, Application Program Interface (API), and board support package providing a complete OLT solution.

**Features**

- IEEE 802.3av/802.3ah-compliant 10G-EPON OLT SoC
- Compliance to CTC 10G-EPON specifications version 3.0 and to MEF, TR101, and TR156 specifications
- High performance, low latency and programmable DBA for high Quality of Service (QoS) of both 10-Gbit/s and 1-Gbit/s upstream ONUs; support for 256 LLIDs
- Integrated SERDES and Burst-mode CDR
- Dual embedded ARM11 controllers running at 700 MHz
- IEEE 802.1ae and 802.1af-compliant, 128-bit Advanced Encryption Standard (AES) encryption and decryption
- China Telecom downstream triple churning encryption

**Benefits**

- Full IEEE 802.3av 10G-EPON OLT functionality with a comprehensive software package, compatible with PMC-Sierra’s EPON OLT for easy migration
- Co-existence with legacy EPON ONUs [1G, 10G EPON ONU can coexist on one OLT network] for seamless network upgrades
- Support for various markets and operator specifications (CTC, NTT, KT, US MSO); versatile to various line card configurations
- Integrated digital PON diagnostics for in-service detection of PON problems, improving the network maintainability while reducing carrier operating expenses
- Advanced hierarchical classification engine with support for Service type and Layer 2/3/4 fields to provide true “triple-play” services based on user and service models
- Advanced QoS features: advanced DBA algorithm and flexible traffic management to enable queuing per user/service, scheduling, shaping and policing
- Power Save protocols and traffic buffering enabling up to 80% ONU system power reduction
- Proven interoperability using PMC-Sierra 10G-EPON software
Interfaces

- Full-duplex transmit and receive 10G-EPON port operating at 10 Gbit/s downstream and 10 Gbit/s or 1 Gbit/s upstream, with integrated SERDES and PON redundancy
- Flexible, programmable, glueless optical transceiver interface for multiple vendor support
- Dual 10-Gbit/s XAUI/RXAUI interfaces with redundancy scheme for Active:Non Active and Active:Standby
- SGMII interface for traffic monitoring port
- In-band OTDR interface for fiber diagnostics
- Time of Day (ToD) interface
- DDR III memory for packet buffer and CPU
- SoC Interfaces
  - 2 x UART for control and debug and for ToD
  - 100 Mbit/s MII connection for host CPU
  - Parallel bus for host interface connection
  - Serial LED control interface
  - Two-wire interface for peripheral control
  - General-Purpose Input/Output (GPIO) Interface
  - CPU Boot options from Flash, Host MII and XUAI

Software

The PAS8xx1 family is provided with a comprehensive, turnkey level software package which provides:

- Fully-featured 10G-EPON protocol stack and networking drivers
- IEEE 802.3av and IEEE 802.3ah OAM protocol including operator-specific stacks
- Software API, portable to any real-time operating system and any host processor, to enable integration with the customer application
- Compatibility with PMC-Sierra EPON OLT software

PAS8xx1 Family Selection Matrix

<table>
<thead>
<tr>
<th>Device Part No.</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAS8301</td>
<td>10G-EPON asymmetrical OLT supporting 10 Gbit/s and 1 Gbit/s downstream, 1 Gbit/s upstream</td>
</tr>
<tr>
<td>PAS8401</td>
<td>10G-EPON symmetrical OLT supporting 10 Gbit/s and 1 Gbit/s downstream, 10 Gbit/s and 1 Gbit/s upstream</td>
</tr>
<tr>
<td>PAS8311</td>
<td>10G-EPON asymmetrical OLT supporting 10 Gbit/s &amp; 1 Gbit/s downstream, 1 Gbit/s upstream; with integrated traffic management</td>
</tr>
<tr>
<td>PAS8411</td>
<td>10G-EPON symmetrical OLT supporting 10 Gbit/s &amp; 1 Gbit/s downstream, 10 Gbit/s &amp; 1 Gbit/s upstream; with integrated traffic management</td>
</tr>
</tbody>
</table>

Further Resources

Technical Documentation
www.pmc-sierra.com/documents

About PMC-Sierra

PMC (Nasdaq:PMCS) is the semiconductor innovator transforming networks that connect, move and store digital content. Building on a track record of technology leadership, we are driving innovation across storage, optical and mobile networks. Our highly integrated solutions increase performance and enable next generation services to accelerate the network transformation. For more information visit www.pmc-sierra.com.