

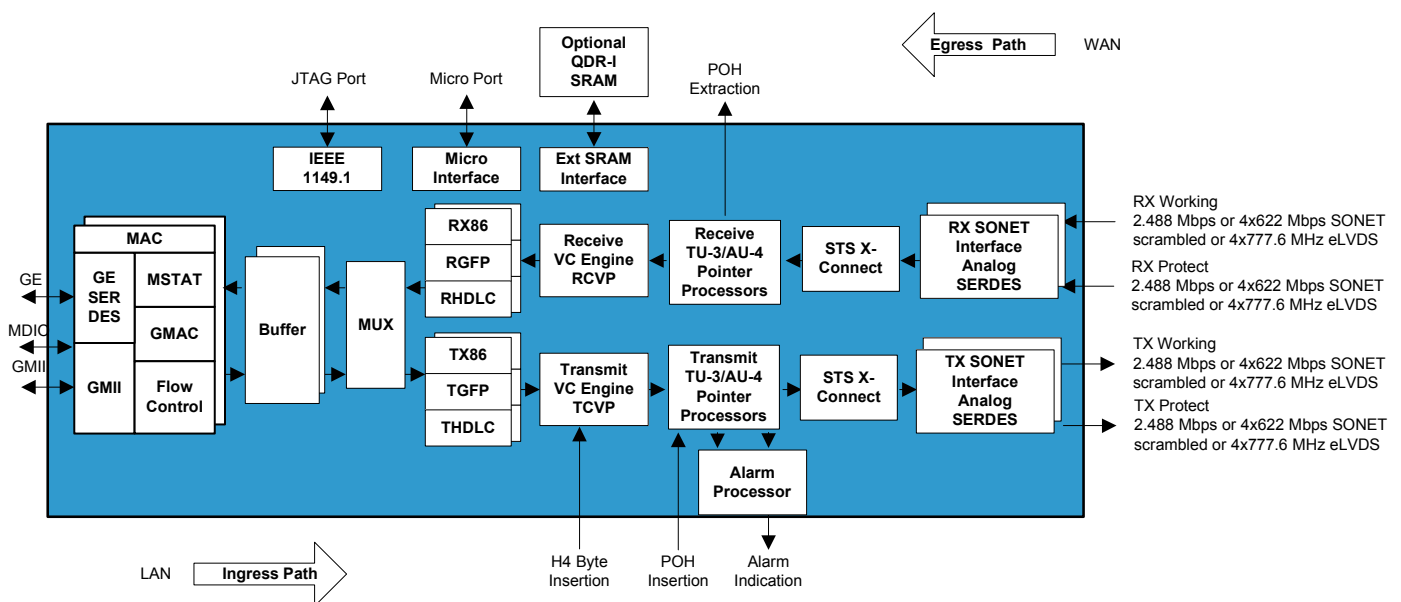
# PM5397 ARROW 2xGE

## Two Channel Gigabit Ethernet to SONET Mapping Device

### Product Highlights

- Single chip, dual channel Gigabit Ethernet, SONET/SDH Virtual Concatenation (VC) mapper to STS-48/STM-16 using either frame mapped Generic Frame Procedure (GFP), LAPS/X.86 or BCP/PPP HDLC encapsulation.
- Provides direct IEEE 802.3 Ethernet line-side connection to optics via two internal Serializer/Deserializer (SERDES) and provides optional connection to Gigabit Ethernet physical layer devices via two GMII interfaces.
- Supports full-rate and oversubscribed data transfer of Gigabit Ethernet over SONET/SDH with STS-1/VC-3 granularity. Ethernet back-pressure prevents packet loss when SONET/SDH channel is over-subscribed.
- Provides a total of 92.8 Kbytes of Ethernet ingress buffer and a total of 28.8 Kbytes of Ethernet egress buffer per channel.
- Supports IEEE 802.3 flow control, auto-negotiation, and management statistics.
- Maps each of two channels of Gigabit Ethernet using frame mapped GFP Ethernet over SONET, LAPS/X.86 or BCP/PPP HDLC encapsulation protocol into a standards-based virtual concatenation stream consisting of between 1 to 8 STS-3c/VC-4 or between 1 to 24 STS-1/VC-3 channels. The VC-3 channels can be either TU-3 mapped or AU-3 mapped.
- Alternatively maps one Gigabit Ethernet channel into an STS-48c (STM-16/AU-4-16c) channel or maps each Gigabit Ethernet channel into either an STS-24c/STM-8, STS-12c/STM-4, STS-9c, STS-6c, STS-3c/STM-1, STS-1/STM-0, TU-3 (VC-3) channel.
- Supports on-chip virtual concatenation differential delay buffers of 125 microseconds or off-chip virtual concatenation differential delay buffers of up to 50 milli-seconds using external Quad Data Rate (QDR-I) SRAM interface.
- Interprets any legal mix of STS (AU-4/AU-3) pointer bytes (H1, H2, and H3), extracts the synchronous payload envelope(s) and processes the path overhead for the receive stream. Generates STS (AU-4/AU-3) pointer bytes (H1, H2, and H3) with offset of 0 (J1 immediately after H3 byte) or 522 (J1 immediately after the J0/Z0 bytes). Inserts the path overhead for the transmit stream.
- Interprets any legal mix of TU-3 pointer bytes (H1, H2 and H3) extracts the VC-3 synchronous payload envelope(s) and processes the path overhead (both VC-4 and VC-3 for the received data stream). Generates TU-3 pointer bytes (H1, H2 and H3) of offset 0. Inserts both the VC-4 and VC-3 path overhead bytes.
- Performs full SONET/SDH path termination, including the processing of H4, C2 and J1 bytes for virtual concatenation.
- Supports GFP Client Management and LAPS/X.86 Control Packet insertion and extraction.

### Block Diagram



- Provides working and protect WAN side interfaces. These ports may be configured as 4 x 777.6 MHz eLVDS, 4 x 622 MHz Serial SONET/SDH eLVDS Interface, or 1 x 2.488 Gbps Serial SONET/SDH eLVDS Interface.
- Supports arbitrary assignment of STS-1 (AU-3) channels via Time Slot Interchange on working and protect WAN side interfaces.
- Supports mapping and demapping of two Gigabit Ethernet channels into a single STS-48c (STM-16/AU-4-16c) channel via a programmable 32-bit prepend field.
- Offers per-channel Ethernet side and WAN side loopbacks for system level diagnostic capability.
- Provides on-chip data recovery and clock synthesis for Gigabit Ethernet and SONET/SDH interfaces.

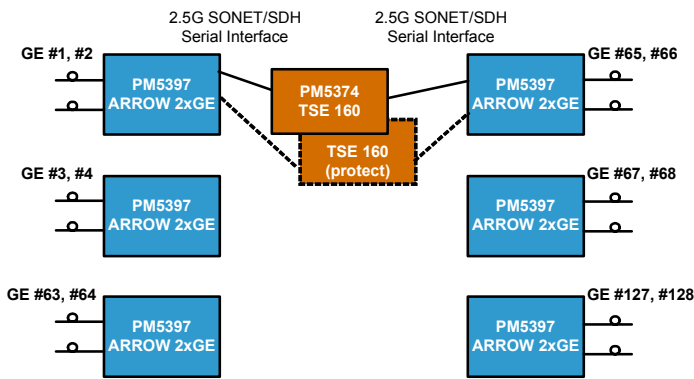
## General

- General-purpose 16-bit microprocessor interface for configuration, management and statistics gathering.
- Standard 5 signal IEEE 1149.1 JTAG test port.
- Low power 1.8 V core with 5.0 V tolerant 3.3 V TTL compatible I/O.
- Industrial temperature range (-40 °C to +85 °C).
- 896-pin FCBGA package.

## Applications

- High density EOS port cards, mapping multiple GE channels into OC-48/STM-16 or OC-192/STM-64 streams.
- Gigabit Ethernet port cards for Multi-Service Provisioning Platforms.
- Non-blocking 128-512 port single-stage fabric Gigabit Ethernet Cross Connect.

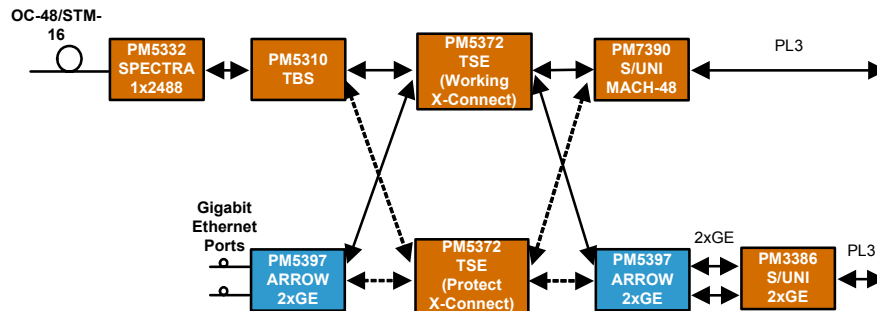
## 128 Port GE Cross Connect



## Gigabit Ethernet to SONET/SDH OC-48/STM-16 Port Card



## Gigabit Ethernet Port Card for Multi-Service Provisioning Platform



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