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Product Brief
April 2003

MARS1G2 P-LT (TDAT161G2) SONET/SDH 155/622 Mbits/s Data Interface

Features

- One of the next generation system on a chip devices of Agere Systems' multiapplication & rate solutions *MARS*™ family of framers.
- Transmission convergence and SONET/SDH terminal functionality for linear networks.
- Versatile IC supports 155/622 Mbits/s SONET/SDH interface solutions for packet over SONET (POS), packet over fiber (POF), or asynchronous transfer mode (ATM) applications.
- Low-power 1.6/3.3 V operation.

SONET/SDH Interface

- Termination of quad STS-3/STM-1 or dual STS-12/STM-4.
- Supports overhead processing for transport and path overhead bytes.
- Optional insertion and extraction of overhead bytes via serial overhead interface.
- STS pointer processing to align the receive frame to the system frame.
- Support for 1+1 and 1:1 linear networks.
- Full path termination and SPE extraction/insertion.
- SONET/SDH compliant condition and alarm reporting.
- Handles all concatenation levels of STS-3c to STS-24c (in multiples of 3: e.g., 3c, 6c, 9c, etc.).
- Built-in diagnostic loopback modes.
- Compliant with the following *Telcordia Technologies*®, *ANSI*®, and ITU standards:
  - GR-253 CORE: SONET Transport Systems: Common Generic Criteria.
  - ITU-T G.707: Network Node Interface for the Synchronous Digital Hierarchy.
  - ITU-T G.803: Architecture of Transport Networks Based on the Synchronous Digital Hierarchy.
  - T1.105: SONET-Basic Description including Multiplex Structure, Rates, and Formats.
  - T1.105.02 SONET-Payload Mappings.
  - T1.105.03 SONET-Jitter at Network Interfaces.
  - T1.105.06 SONET Physical Layer Specifications.
  - T1.105.07 SONET-Sub-STS-1 Interface Rates and Formats Specification.
  - ITU-T I.432: B-ISDN User-Network Interface-Physical Layer Specification.
  - IETF RFC 2615: PPP over SONET/SDH.
  - IETF RFC 1661: The Point-to-Point Protocol (PPP).
  - IETF RFC 1662: PPP in HDLC-like Framing.

Data Processing

- Provisionable data engine supports payload insertion/extraction for PPP, ATM, or HDLC streams.
- Extraction and insertion of DS3 frames containing HDLC or ATM datastreams for up to 16 channels.
- Integrated UTOPIA Level 2 and Level 3 compatible physical layer interface for packets or ATM cells.
- Provides/supports internal E3 mapping.
- Supports DS3/PLCP and clear channel DS3 mapping.
- Insertion and extraction of up to 16 separate data channels.
- Direct cell/packet over fiber interface device.
- Compliant with ATM forum, ITU standards, and IETF standards.

Interfaces

- Enhanced UTOPIA interface for cell and packet transfer.
- *IEEE*® 1149.1 port with BIST, scan, and boundry scan.

Microprocessor Interface

- Up to 66 MHz synchronous.
- 16-bit address and 16-bit data interface.
- Synchronous or asynchronous modes available.
- Configurable to operate with most commercial microprocessors.

Description

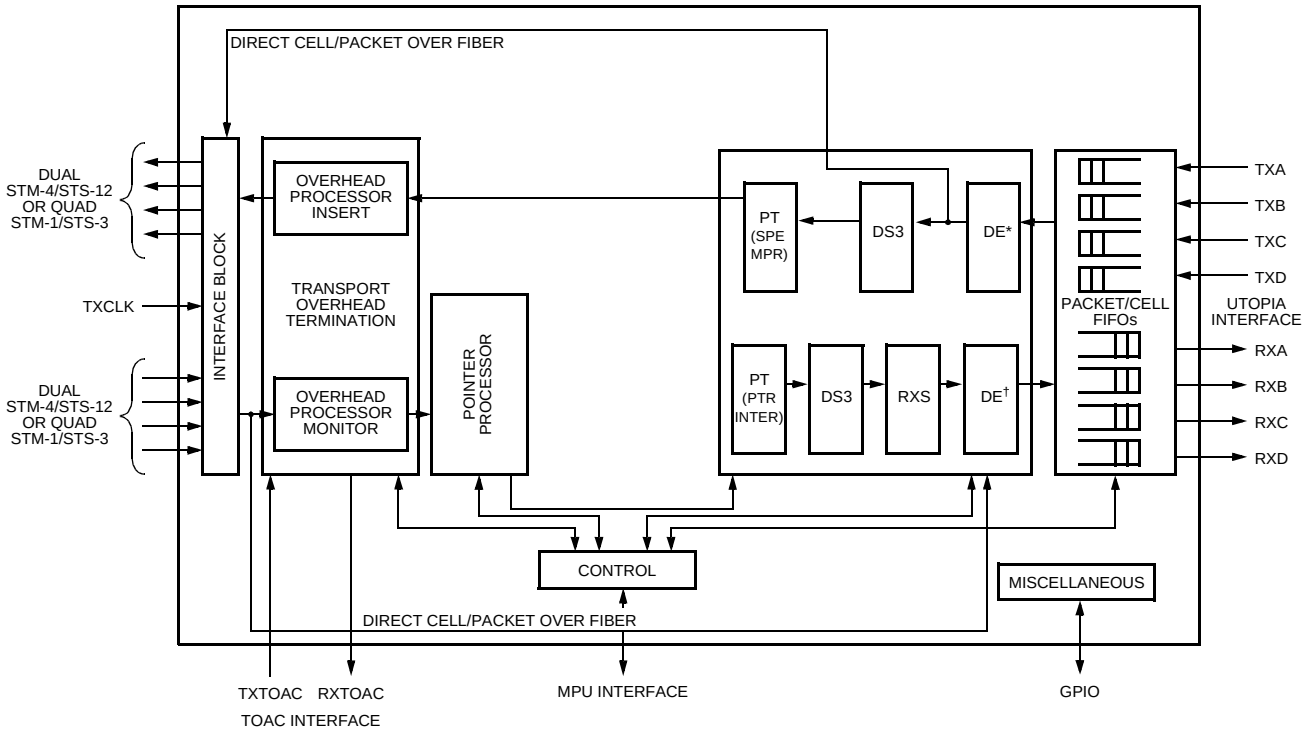
The MARS1G2 P-LT SONET/SDH interface device provides a versatile solution for quad OC-3 and dual OC-12 linear datacom/telecom applications. Constructed using COM2 CMOS modular process, this device incorporates integrated SONET/SDH framing, section/line/path termination, pointer processing, and data engine blocks.

The device provides complete encapsulation and de-encapsulation for packet and ATM streams into and out of SONET/SDH payloads.

Communication with the MARS1G2 P-LT device is accomplished through a generic microprocessor interface. The device supports separate address and data buses.

With the MARS1G2 P-LT device, support for different types of applications for OC-3/OC-12 data equipment is possible, enabling dramatic system cost reduction and the ease of development of extremely competitive solutions.

This device integrates the SONET/SDH network termination functions with a generic cell/packet delineation circuit. The interface rates supported are dual STS-12/STM-4 and quad STS-3/STM-1. The UTOPIA interface can process and hand off up to 16 channels transported within an STS-N payload. The concatenation levels supported by this device are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-15c, . . . , STS-21c, and STS-24c. The data formats processed by this device are ATM cells or HDLC framed packets such as PPP framed packets.



Note: PT = path terminator, RXS = receive sequencer, and DE = data engine.

* In the transmit path the data engine performs packet/cell processing (encapsulation, scrambling).
† In the receive path the data engine performs packet/cell processing (delineation, descrambling, de-encapsulation).

Figure 1. MARS1G2 P-LT Block Diagram

Target Applications Supported

MARS1G2 P-LT (792-Pin PBGA)

This multirate/multiprotocol/multimode SONET/SDH data interface device targets the following applications see Figure 2 for device interface speed/rate information:

- Mixed ATM/POS-TDM.
- Access router and aggregation.
- Wireless, DSLAM, and gateway.

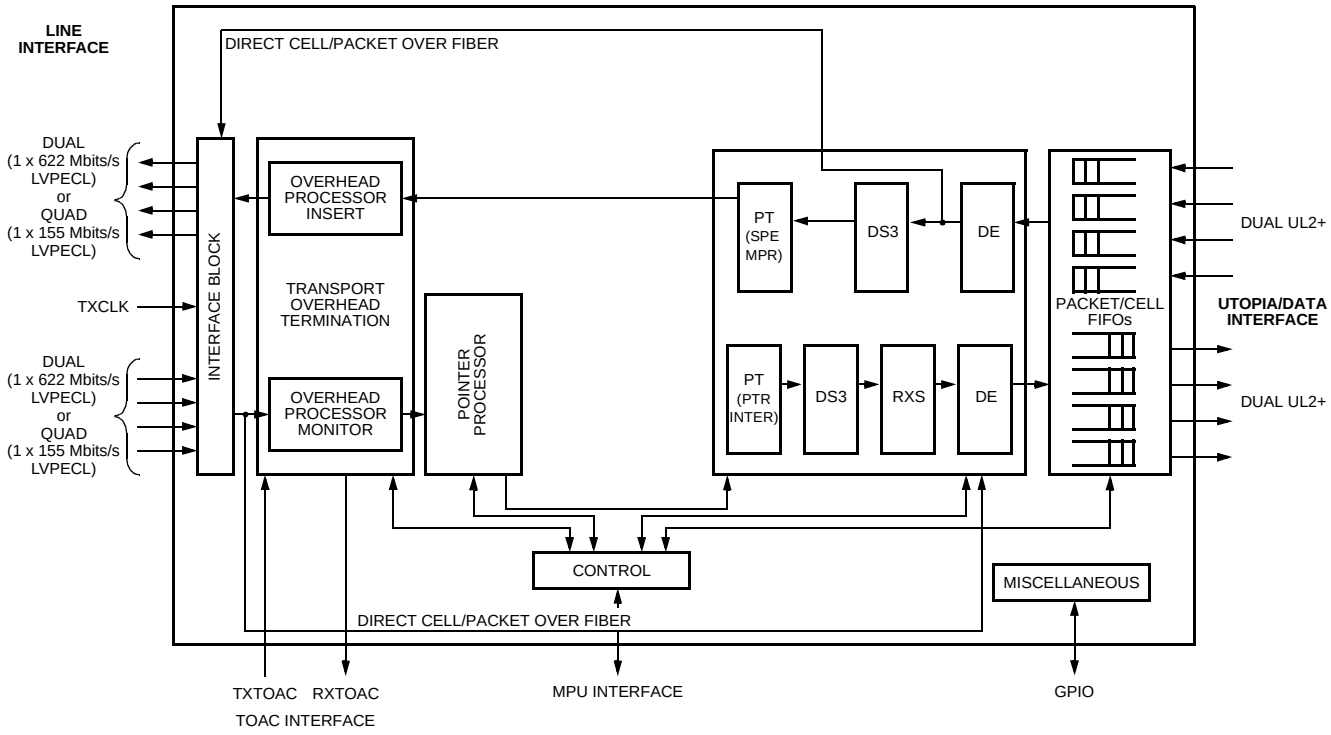


Figure 2. MARS1G2 P-LT Device Interface Speed/Rate Diagram

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