Octal Short Haul T1/E1/J1 Low Latency Transport Line Interface

FEATURES

- Monolithic device integrating eight T1/J1 or E1 short haul line interface units.
- Software switchable between T1/J1 and E1 operation on a per-device basis.
- Meets or exceeds T1/J1 and E1 short haul network access specifications including ANSI T1.102, T1.403, T1.408, AT&T TR 62411, ITU-T G.703, G.704 as well as ETSI 300-011, TBR 4, TBR 12, and TBR 13. In conjunction with the TEMAP 84 (PM5366), allows Add Drop Multiplexers and Terminal Multiplexers to meet GR253, GR496, and G.783.
- Optional encoding/decoding of B8ZS, HDB3, and AMI line codes.
- Provides receive equalization, clock recovery, and line performance monitoring.
- Provides transmit and receive jitter attenuation.
- Provides digitally programmable pulse templates.
- Provides a selectable, per channel independent de-jittered T1 or E1 recovered clock for system timing and redundancy.
- Provides PRBS generators and detectors on each tributary for error testing at DS1 and E1 rates as recommended in ITU-T O.151.
- Uses line rate system clock.

SYSTEM INTERFACE

- Supports transfer of transmitted single rail PCM and signaling data from 1.544 Mbit/s and 2.048 Mbit/s backplane buses or a SBI/SBI TR interface for low pin count interconnection of up to 11 OCTLIU STs to the high-density PM5366 TEMAP 84 T1/E1 framer.

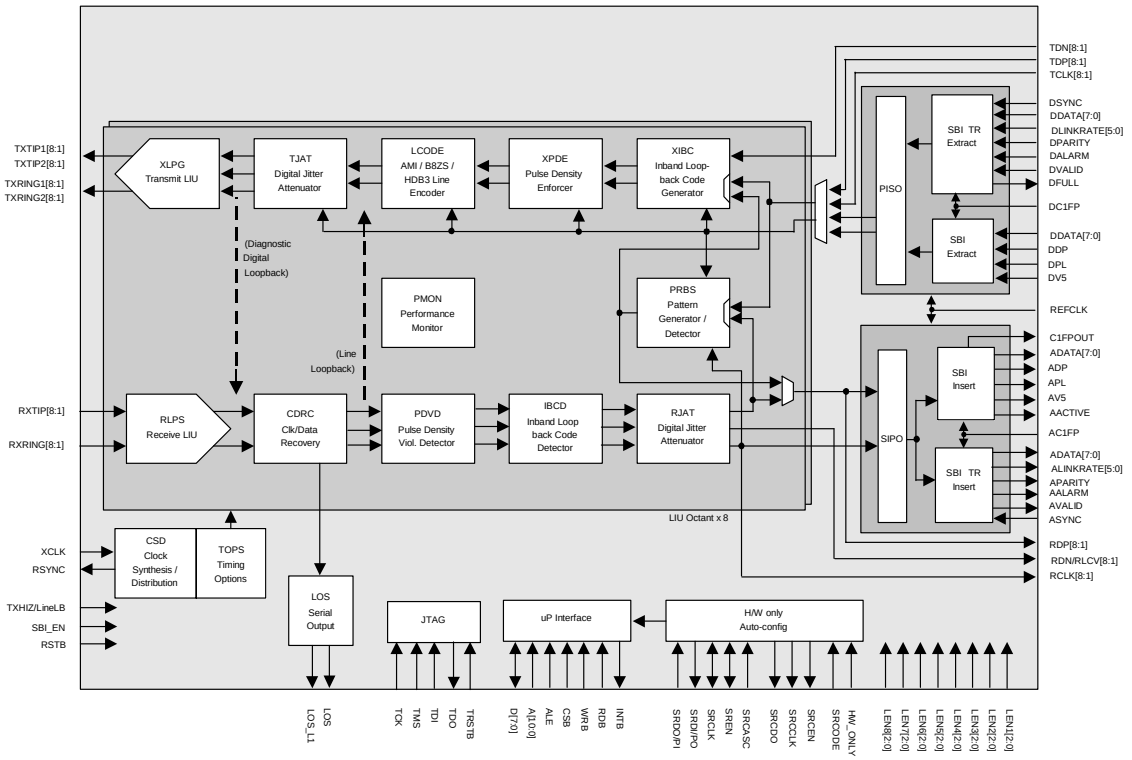
RECEIVE SECTION

- Supports T1/E1 signal reception for distances with up to 12dB of cable attenuation at nominal conditions using PIC 22 gauge cable emulation.
- Supports G.772 compliant non-intrusive protected monitoring points.
- Recovers clock and data using a digital phase locked loop for high jitter tolerance.
- Tolerates more than 0.4 UI peak-to-peak high frequency jitter as required by AT&T TR 62411 and Bellcore TR-TSY-000170.
- Outputs dual rail recovered line pulses, a single rail DS-1/E1 signal, or parallel data in SBI/SBI TR bus format.
- Performs B8ZS or AMI decoding when processing a bipolar DS-1 signal and HDB3 or AMI decoding when processing a bipolar E1 signal.
- Detects line code violations (LCVs), B8ZS/HDB3 line code signatures, and four (E1), eight (T1+B8ZS), or sixteen (T1 AMI) successive zeros.
- Provides a programmable depth FIFO buffer for jitter attenuation, rate conversion, and latency optimization in the receive path.

TRANSMIT SECTION

- Generates DSX-1 short haul pulses with programmable pulse shape compatible with AT&T, ANSI, and ITU requirements.

BLOCK DIAGRAM



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- Generates E1 pulses compliant to G.703 recommendations.
- Provides line outputs that are current limited and may be tristated for protection or use in redundant applications.
- Provides a digital phase locked loop for generation of a low jitter transmit clock complying with all jitter attenuation, jitter transfer, and residual jitter specifications of AT&T TR 62411 and ETSI TBR 12 and TBR 13.
- Accepts either dual rail or single rail DS-1/E1 signals or parallel data from the SBI/SBI TR interface.
- Performs B8ZS or AMI encoding when processing a single rail or SBI/SBI TR-sourced DS-1 signal and HDB3 or AMI encoding when processing a single rail or SBI/SBI TR-sourced E1 signal.
- Provides a programmable depth FIFO buffer for jitter attenuation, rate conversion, and latency optimization in the transmit path.

GENERAL

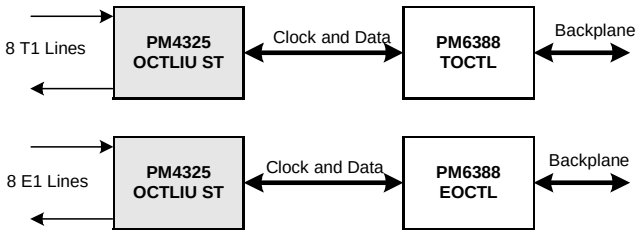
- Provides an 8-bit microprocessor bus interface for configuration, control, and status monitoring.
- Provides a hardware-only (no microprocessor) mode in which configuration data is read from an SPI-compatible serial PROM. The PROM interface can be cascaded such that multiple OCTLIU ST devices can be configured simultaneously from a single PROM.
- Supports line and system side diagnostic loopbacks.
- Provides an IEEE 1149.1 (JTAG) compliant Test Access Port (TAP) and controller for boundary scan test.
- Implemented in low power 3.3 V tolerant 1.8/3.3 V CMOS technology.
- Available in a high-density 288-pin Tape-SBGA package with a -40 °C to +85 °C Industrial temperature operating range.

APPLICATIONS

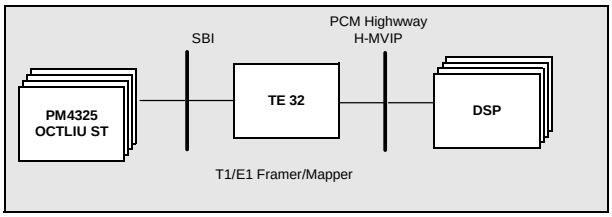
- Metro Optical Access Equipment.
- Edge Router Line Cards.
- Multi-service ATM Switch Line Cards.
- 3G Base Wireless Equipment.
- Digital Private Branch Exchanges (PBX).
- Digital Access Cross-Connect Systems (DACS) and Electronic DSX Cross-Connect Systems (EDSX).

TYPICAL APPLICATIONS

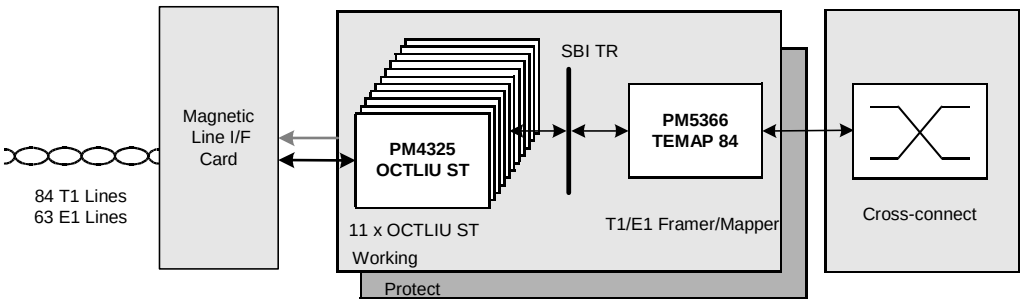
T1/E1 FRAMER/TRANCEIVER



VOICE GATEWAY



SINGLE MAGNETIC LINE PROTECTON



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