Four Channel Combined E1/T1/J1 Transceiver/Framer

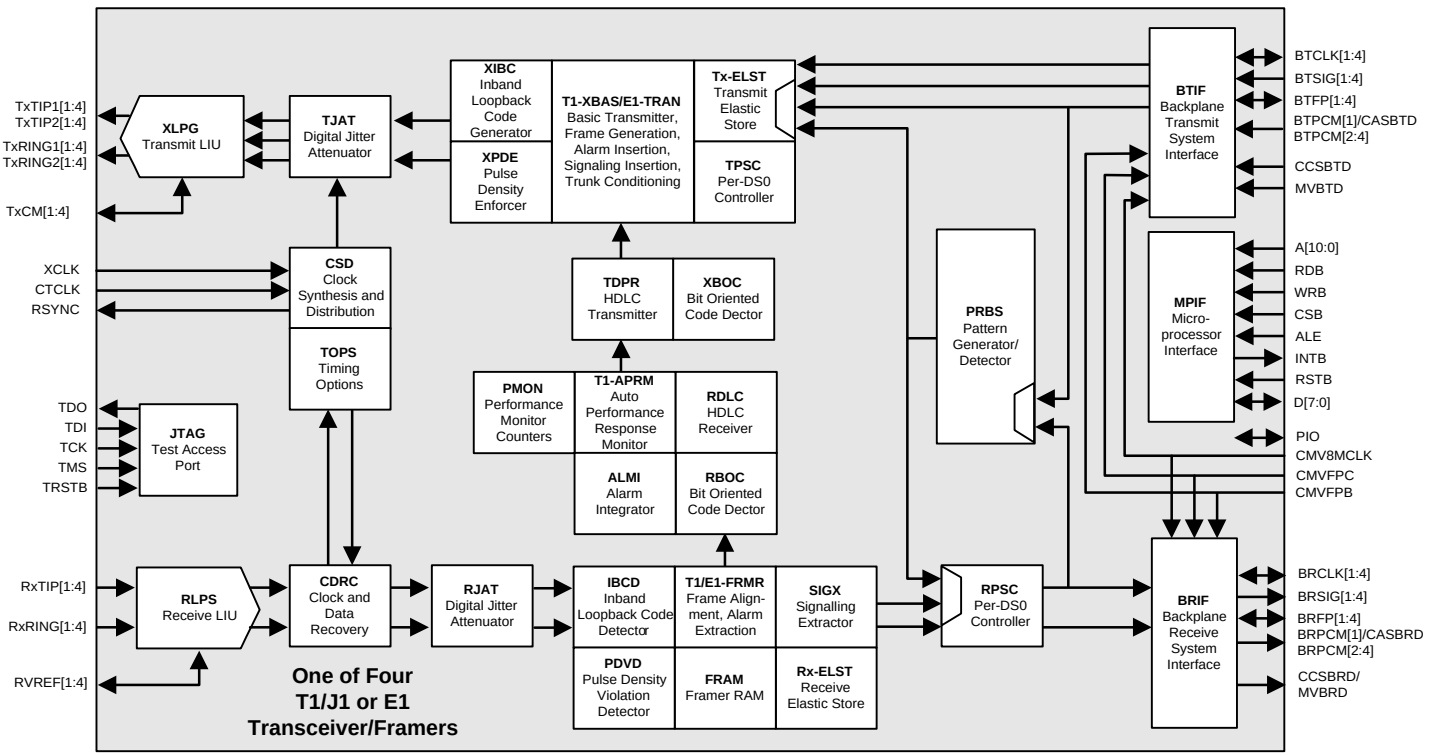
FEATURES

- Monolithic device that integrates four T1/E1 framers and line interfaces for shorthaul and longhaul applications.
- Software selectable between T1/J1 and E1 operation on a per device basis.
- Provides digitally programmable longhaul and shorthaul pulse templates and line build out.
- Meets or exceeds T1/J1 and E1 shorthaul and longhaul 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, CTR-4, CTR-12 and CTR-13.
- Provides encoding and decoding of B8ZS, HDB3 and AMI line codes.
- Provides receive equalization, clock recovery and line performance monitoring.
- Provides transmit and receive jitter attenuation.
- Provides four full-featured HDLC controllers, each with 128-byte transmit and receive FIFO buffers.
- Provides a two-frame payload slip buffer to allow independent backplane and line timing.
- Automatically generates and transmits DS-1 performance report messages to ANSI T1.231 and ANSI T1.408 specifications.
- Provides PRBS generators and detectors on each tributary for error testing at DS1, E1 and N x 64 Kbit/s rates as recommended in ITU-T O.151 and O.152.
- Provides an 8-bit microprocessor bus interface for configuration, control, and status monitoring.
- Uses line rate system clock.
- Provides an IEEE P1149.1 (JTAG) compliant test access port (TAP) and controller for boundary scan test.
- Implemented in a low power 2.5/3.3 V CMOS technology.
- Available in a high density 208-pin fine pitch PBGA (17 mm by 17 mm) package.
- Provides a -40 °C to +85 °C industrial temperature operating range.

RECEIVER

- Typical signal recovery of up to -43 dB at 1024 kHz (E1) and up to -44 dB at 772 kHz (T1/J1).
- Guaranteed minimum signal recovery of -32 dB at 1024 kHz (E1) and -36 dB at 772 kHz (T1/J1) using PIC-22 gauge cable emulation.
- Frames to DSX/DS-1 signals in SF, and ESF formats.
- Frames to ITU-T G.704 basic and CRC-4 multiframe formatted E1 signals. The framing procedures are consistent with ITU-T G.706 specifications.
- Frames to TTC JT-G704 multiframe formatted J1 signals. Supports the alternate CRC-6 calculation for Japanese applications. Frames in the presence of and detects the Japanese yellow alarm.
- Tolerates more than 0.4 UI peak-to-peak, high frequency jitter as required by AT&T TR 62411 and Bellcore TR-TSY-000170.
- Provides programmable in-band loopback activate and deactivate code detection.

BLOCK DIAGRAM



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- Provides diagnostic, line and per-DS0 payload loopbacks.
- Extracts up to three HDLC links to an H-MVIP Bus to support the D-channel, for ISDN Primary Rate Interfaces, and the C-channels, for V5.1/V5.2 interfaces. Detects the V5.2 link identification signal.

TRANSMITTER

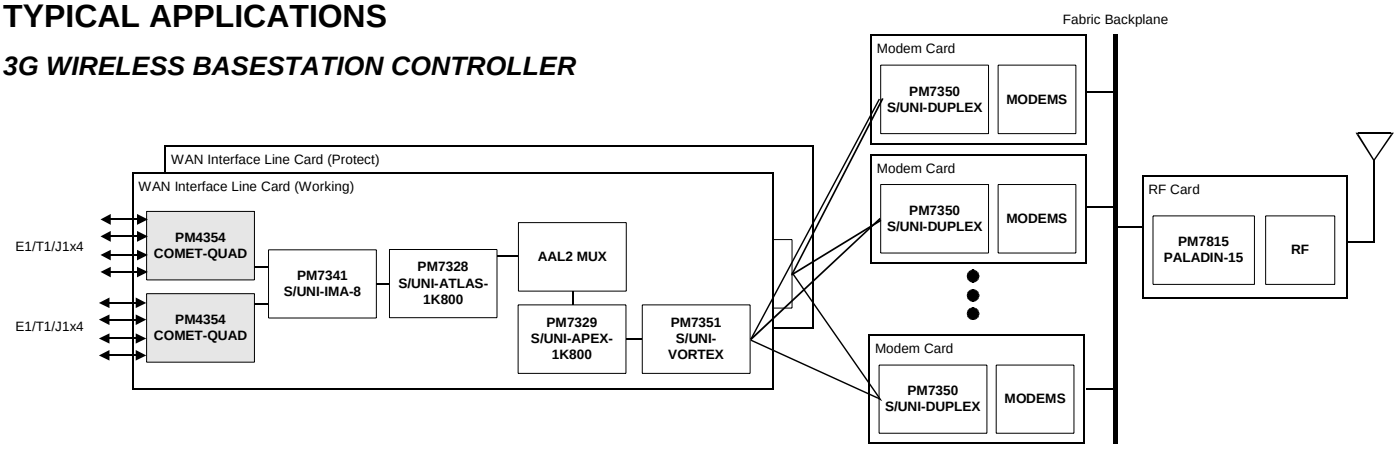
- Generates DSX-1 shorthaul and DS-1 longhaul pulses with programmable pulse shape compatible with AT&T, ANSI and ITU requirements.
- Generates E1 pulses compliant to G.703 recommendations.
- Provides line outputs that are current limited and may be tristated for protection or in redundant applications.
- 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 CTR 12 and CTR 13.
- Provides a FIFO buffer for jitter attenuation and rate conversion in the transmit path.
- Supports unframed mode and framing bit, CRC, or data link by-pass.
- Allows insertion of framed or unframed in-band loopback code sequences.
- Allows insertion of a data link in ESF mode. Optionally inserts a datalink in the E1 national use bits.
- Inserts, from an H-MVIP bus, up to three HDLC links to support the D-channel, for ISDN Primary Rate Interfaces, and the C-channels, for V5.1/V5.2 interfaces.
- Transmits TTC JT-G704 multiframe formatted J1 signals. Supports the alternate ESF CRC-6 calculation for Japanese applications.
- Supports transmission of the alarm indication signal (AIS) and the yellow alarm signal. Supports Japanese yellow alarm generation.
- Provides ESF bit-oriented code generation.

APPLICATIONS

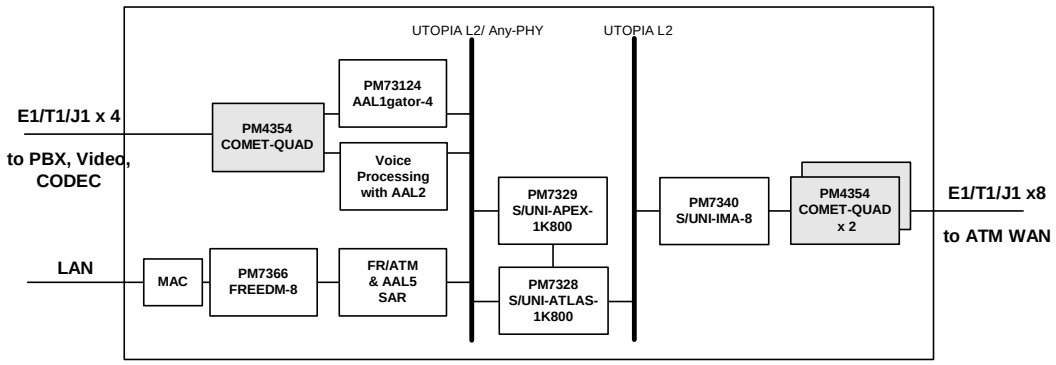
- Wireless Base Transceiver Station and Digital Loop Carrier (DLCs).
- Enterprise Router.
- DSLAM.
- APON Optical Network Unit (ONU).
- Integrated Access Device (IAD).
- Voice Gateway.
- Channel and Data Service Units (CSU/DSU).
- Digital Private Branch Exchanges (PBX).
- Test Equipment.

TYPICAL APPLICATIONS

3G WIRELESS BASESTATION CONTROLLER



INTEGRATED ACCESS DEVICE



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