Lantiq™ SOCRATES-4e / 2e / 1e

SHDSL System - on - Chip for EFM Application PEF2x628

The SOCRATES-4e/2e/1e are the members of Lantiq's 3rd generation SOCRATES™-family of SHDSL transceivers designed for EFM-(Ethernet First Mile) system applications.

Featuring single, dual or four channel variants, the SOCRATES-e family of single-chip solutions is fully compliant with standards of ETSI (SHDSL, SHDSL.bis), ITU (G.shdsl, G.shdls.bis, G.hs, g.998.2/g.bond) and IEEE (EFM).

Advanced system functionality and outstanding performance as well as optimized board-space and power-saving features provide market unique advantages for system solutions required by carriers and subscribers. Seamless compatibility to Lantiq's already deployed SHDSL solutions as well as the compatibility between all family members ensure simple integration with current as well as future market requirements.

Loop Interface

- Line probing according to ITU-T G.991.2
- Line coding with 4 up to 128 level TC PAM
- Integrated bit error tester
- Adaptive integrated hybrid
- Adaptive echo cancellation and equalization

EFM & ATM

- PHY Aggregation Function (PAF) according IEEE EFM/ITU g.998.2
- M-pair / four-wire mode according ITU-T / ETSI
- TPS-TC framing: ATM, 64/65o, HDLC, serial
- 4 x bidirectional AAL5 according ITU-T I.363.5
- Support of RFC2684, LLC encapsulation and VC-MUX (8 VC)
- Fully configurable HDLC controller for Z-bits
- 1 HDLC controller per port for EOC
- One design for combined ATM-EFM solution

Customer Interface

- 2 system interfaces in parallel:
  – IF 1: UTOPIA, MII, RMII, SSSMII
  – IF 2: generic bit serial mode from 768 kHz up to 8192 kHz, TDM
- Parallel and Serial controller interface

Physical Characteristics

- Only two voltages for power supply: +3.3V,+1.5V
- Power consumption: <650 mW
- Temperature range: -40°C to +85°C
- Package P-LBGA-324 (19mm x 19mm)

Applications

- CPE / modem: EFM or ATM and combined solutions
- CPE / modem: Packet over SHDSL
- DSLAM: SHDSL Line-card for EFM, ATM and combined solutions
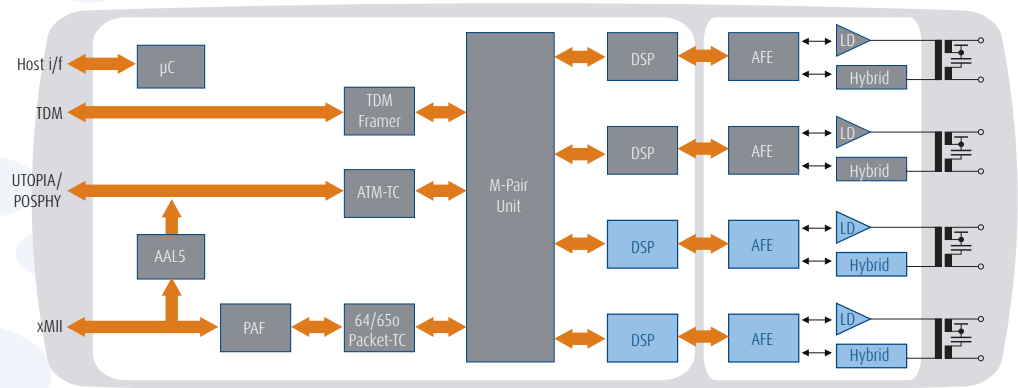- DSLAM: Packet over SHDSL Line-card

Features

- Fully integrated one chip system solution for Ethernet, Packets, ATM and TDM transport over 4, 2 or 1 SHDSL channels
- In compliance with:
  – ETSI SDSL (ETSI TS 101 524 V 1.2.1)
  – ETSI SDSL.bis (ETSI TS 101 524 V 1.2.2)
  – ITU G.shdsl (ITU-T G.991.2)
  – ITU G.shdls.bis (ITU-T G.991.2 (2004))
  – ITU G.hs (ITU-T G.994.1)
  – IEEE EFM (IEEE 802.3-2004)
  – ITU g.bond (g.998.2)
- Integrated Controller for start up and channel bundling (PAF, M-PAIR)
- Fully integrated RAM for Complete FW and bonding delay compensation
- Modes:
  – STU-C, STU-R, STU-C/R
  – Analog, digital and remote loop backs
- SOC-4e/2e/1e are pin and software compatible
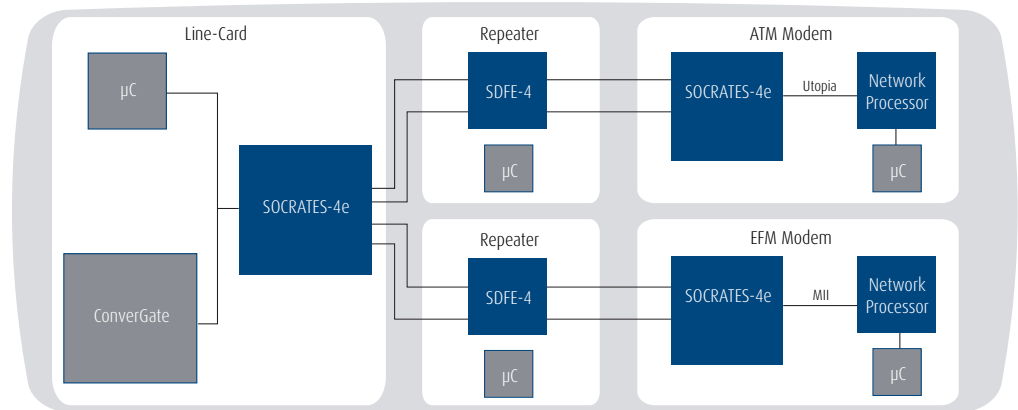- Prepared for Near End Self-Cross Talk Cancellation with separate FW

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SOCRATES-4e Block Diagram

SOCRATES-4e Application Example

Product Summary

Product	Sales Code	Application	Package
SOCRATES-4e	PEF 24628 E	Four-channel SHDSL EFM system-on-chip	P-LBGA-324
SOCRATES-2e	PEF 22628 E	Dual-channel SHDSL EFM system-on-chip	P-LBGA-324
SOCRATES-1e	PEF 21628 E	Single-channel SHDSL EFM system-on-chip	P-LBGA-324

How to reach us: http://www.Lantiq.com

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Information For further information on technology, delivery terms and conditions and prices, please contact the nearest Lantiq Office (www.Lantiq.com).

Warnings Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Lantiq Office. Lantiq components may be used in life-support devices or systems only with the express written approval of Lantiq, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.