Aluminum Symmetric DSL Processor

Virata
Product Profile

August 2000

KEY FEATURES

- **Two chip Symmetric DSL Access Modem using the Aluminum Digitally Tuned Analog Front End**
- **HDSL2/G.shdsl/2B1Q SDSL compliant DSL processor**
- **Programmable data rates from 192Kbps to 2.304Mbps**
- **Configurable for either central office or remote applications**
- **Outstanding reach: 18,000 feet @ 1.5Mbps; greater than 26,000 feet @ 192Kbps**

Description

The Aluminum DSL Processor is designed for full duplex symmetric transmission over ordinary single twisted copper pair when used with Aluminum analog front end. Aluminum combines the PAM transceiver, HDSL2 framer, and 512 state Trellis encoder and decoder with a high performance 32-bit RISC processor to provide unprecedented reach and robustness in a symmetric DSL modem.

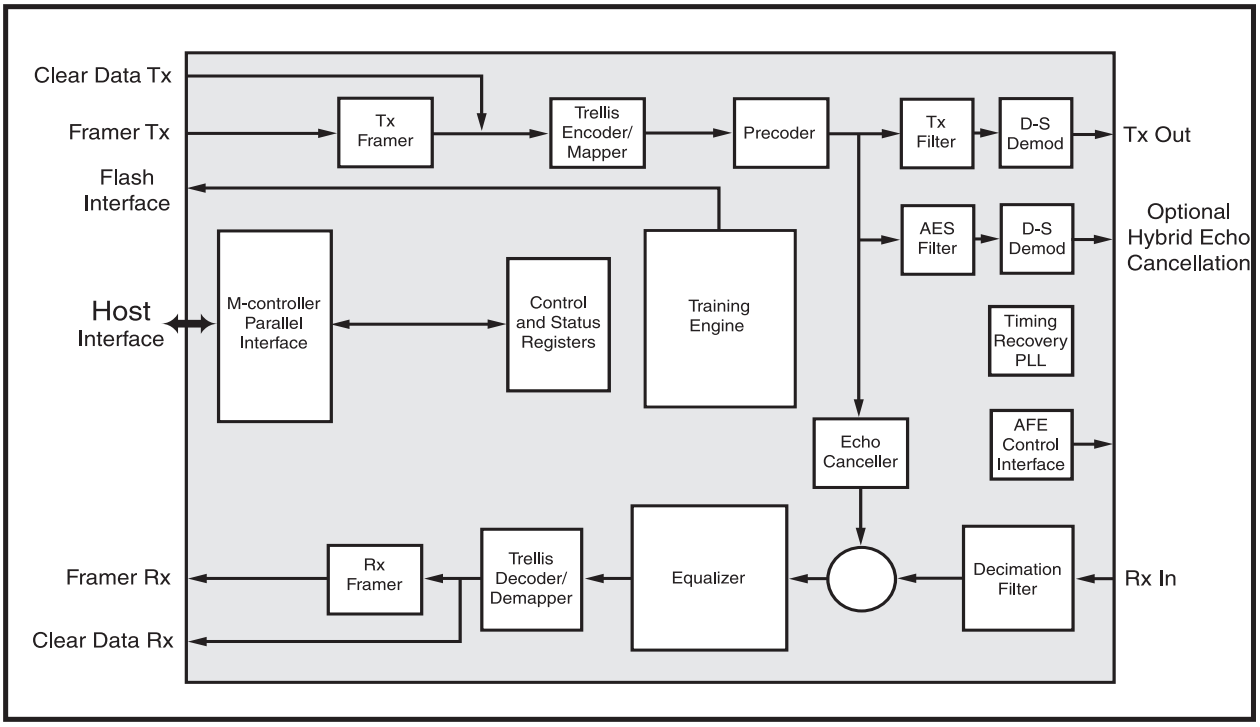
Aluminum is optimized for the ANSI HDSL2 standard for T1 transport. It can also be used for testing and demonstrations of equipment compatible with the emerging ITU G.shdsl standard. Supported rates range from 192Kbps to 2.304Mbps in 8Kbps increments (per G.991.2). Sixteen level PAM with OPTIS transmit PSD mask is used for T1 transport in HDSL2 mode. Aluminum also supports 2B1Q SDSL. The Power Spectral Density (PSD) of the transmitted signal is fully programmable, and supports all symmetric and asymmetric PSDs. This spectral shaping can be used to mitigate the effect of crosstalk and interference to other systems while being spectrally friendly to other services in the binder group.

Aluminum includes all the necessary digital communications subsystems: echo canceller (EC), pre-coder, feed forward equalizer (FFE) and decision feedback equalizer (DFE). Aluminum also supports analog echo synthesis (AES) – a patented digitally adapted analog echo cancellation mechanism for enhanced performance.

The Aluminum DSL Processor works in conjunction with Virata's Aluminum Digitally Tuned Analog Front End device. The Aluminum processor controls Aluminum-AFE through a digital serial bus and provides for parameter calibration, power cutback and other functions. This unique configurability allows the AFE to better match line conditions for higher performance and greater reach.

Reference Platform

The BD3800 is the development reference platform for Aluminum DSL Processor and the Aluminum-AFE, providing a complete set of hardware and firmware tools to assist customers in the rapid development and deployment of their products. Documentation and support are also available.



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Product Applications

- Symmetric DSL routers and integrated access devices
- DSL Access Multiplexers (DSLAMs)
- T1 HDSL2 CSU/DSUs
- T1 HDSL2 M13 line cards
- HDSL2/G.shdsl repeaters
- Multi-tenant and multi-dwelling unit networks
- LAN extension over existing phone lines

Specifications

- Trellis coded PAM (G.shdsl), OPTIS (HDSL2) and 2B1Q (SDSL) operational modes
- Provides for a reach of up to 24,000 ft with 24AWG and a reach of up to 18,000 ft with 26AWG at a data rate of 1.544Mbps
- Integrated high-performance MIPS RISC engine executes advanced training algorithms for extended reach and crosstalk immunity
- MIPS processor maintains the modem state machine in firmware making Aluminum ideally suited for interoperability
- On-chip framer for HDSL2 with optional bypass/transparent mode for flexibility
- Parallel 8-bit microprocessor interface for host functions
- Control bus for the Digitally Tuned Aluminum-AFE

Package

- 144 Pin TQFP package

Environmental

- Consumes < 1Watt at 1.544Mbps.
- 0.25 micron CMOS 2.5V supply

Ordering Information

- VC7220, Aluminum IC
- BD3800, Aluminum Symmetric DSL Chipset Dev Board
- Data book available on request

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