

August 2000

KEY FEATURES

- ▶ **Two chip Symmetric DSL Access Modem using the Aluminum DSL Processor**
- ▶ **HDSL2/G.shdsl/2B1Q SDSL compliant AFE**
- ▶ **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

Aluminum-AFE is an HDSL2/G.shdsl/2B1Q SDSL compliant Digitally Tuned Analog Front End (AFE) designed to be used with the Aluminum Symmetric DSL Processor. Aluminum-AFE integrates all analog circuitry necessary to connect the Aluminum DSL Processor to an external line driver and transformer.

Aluminum-AFE conforms to the HDSL2 OPTIS PSD mask at 1.544 Mbps, as well as all G.shdsl PSD masks for every rate when interfaced with the Aluminum DSL Processor.

Aluminum-AFE can be used in either central office or remote application mode, selectable by configuring the programmable filters in the Aluminum DSL Processor.

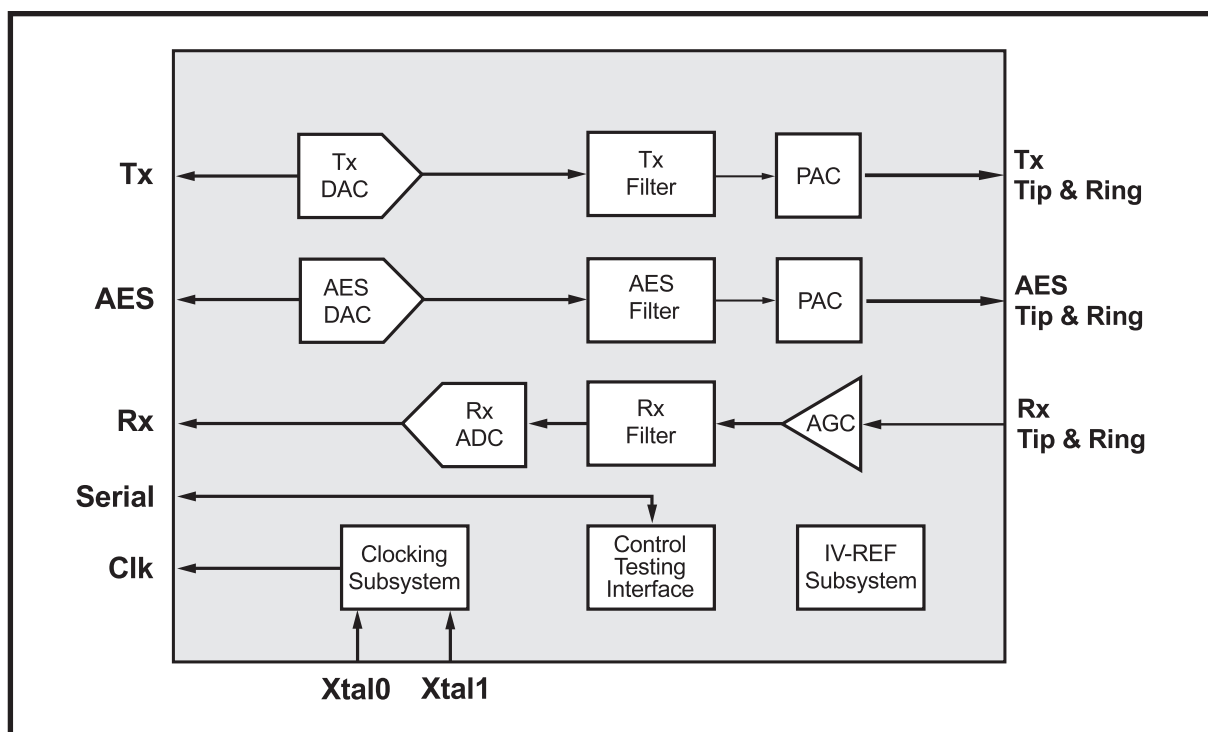
Aluminum-AFE includes one high resolution 16-bit TX DAC in the transmit path, one high resolution 16-bit AES DAC in the adaptive echo synthesis path, and one high resolution 16-bit RX ADC in the receive path. The AES DAC is provided for echo cancellation via Virata's proprietary adaptive echo synthesis technology. The AES path is used in combination with an additional adaptive digital filter to reduce the power of the echoed TX signal.

A 10-bit DAC for the DCX0 control is also integrated in Aluminum-AFE to reduce the number of required external components. The transmitter programmable attenuation control (PAC) and the receiver programmable gain amplifier (PGA) can be programmed via the Aluminum DSL Processor through a four-wire serial bus.

Aluminum-AFE has a low total power consumption of 350 mW in full operation mode (280mW with AES disabled) and operates from a 3.3V/2.5V supply. Aluminum-AFE also provides a power down mode for standby operation.

Reference Platform

The BD3800 is the development reference platform for the 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.



Aluminum-AFE 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

- Fully differential analog paths
- 3 MS/s 16-bit ADC for receiver
- 3 MS/s 16-bit DAC for transmitter
- Patented adaptive echo synthesis (AES) improves echo cancellation by up to 10dB
- Low distortion and noise
- Transmitter programmable attenuation control (PAC) with 16 dB dynamic range and 1 dB resolution for HDSL2/G.shdsl compliant power back off
- Receiver programmable gain amplifier (PGA) with 32 dB dynamic range and 1 dB resolution
- Meets the HDSL2 OPTIS PSD mask when used with Aluminum Processor
- Meets all G.shdsl PSD masks for every rate when used with Aluminum Processor
- Integrated 10-bit resolution DCXO and frequency synthesizer

Package

- 64 pin TQFP package

Environmental

- 350 mW normal operation (290mW without AES)
- 0.35 micron CMOS 3.3V/2.5V supply

Ordering Information

- VC8220, Aluminum-AFE IC
- BD3800, Aluminum Symmetric DSL Chipset Dev Board
- Data book available on request

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