

KEY FEATURES

- ▶ **Single Chip Broadband Access Modem**
- ▶ **G.992.1 and G.992.2 Interoperable and Compatible**
- ▶ **USB Interfaces for External Modem Applications**
- ▶ **PCI interface for Internal PC Applications**

Product Applications

- ADSL Modem
- Fax/V.90 Data Modem
- ATM Access
- Bridging and Routing

Description

Boron is a single-chip solution for fast Internet access. It extends Virata's ATOM device technology, delivering a product-on-a-chip, enabling highly-integrated G.992.1 and G.992.2 interoperable and compatible ADSL equipment.

Boron integrating many common network equipment features and functions: PCI, USB, G.992.1 and G.992.2 DMT processor, V.90 and Fax. Boron is designed for flexible, low cost, high functionality, high performance products. Its interfaces allow telecommuters to enjoy high-speed remote access from home and 56Kbps access on the road. It may be used as a USB or PCI modem device.

Boron is connected to the POTS line with the addition of a simple, low-cost line driver and an Analog Front End (AFE) that performs the necessary A/D, D/A, and filtering. With an additional V.90 AFE, analog modem capability is added.

Boron contains three processors: a protocol processor, a network processor and a DMT processor. The protocol and network processors run the layer 2 and layer 3 Virata networking software suite. The network processor controls a USB and PCI interface.

It also controls a physical DMT processor that acts as a modulator, encryptor and data pump.

Boron runs a suite of Virata networking software. Software flexibility, high integration and built-in hardware debugging (ICE) support allow rapid product development.

This combination of hardware and software, Integrated Software on Silicon (ISOS™) provides a unique time to market advantage.

Reference Platform

The BD 4000 is the development reference platform for Boron, providing a wealth of hardware and software debug tools to assist partners in rapid development and deployment of their products. Training, documentation and support are also available.

Specifications

Processors

- Protocol Processor (PP) is a 60 MHz ARM7TDMI RISC core which includes a 4K cache providing:
 - Modem PHY Management (depending on application)
 - Initialization code
 - Soft real-time tasks
- Network Processor (NP) is a 60 MHz ARM7TDMI RISC core with 8K of SRAM performing:
 - Data Transfer
 - Framing
 - Interleaving
 - CRC Generation
 - Switching
 - Hard real-time tasks
 - G.Lite Processor Control
- DMT Processor (DP) interfaces to external analog front ends (AFEs) for ADSL and V.90. The G.992.1 and G.992.2 interoperable and compatible processor performs:
 - Training
 - Showtime (DMT)
 - Management
 - Error Correction
 - ATM TC

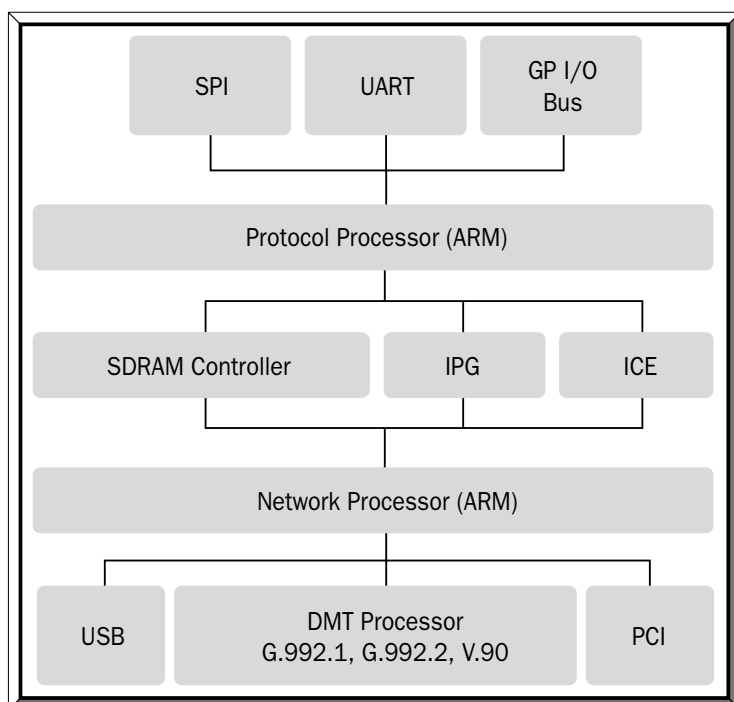


Figure 1. Boron System Interfaces

Interfaces

- DMT Processor to AFE
- V.90 Processor to AFE
- USB 1.1
- PCI 2.2
- GPIO
- UART
- SDRAM
- Flash PROM
- EEPROM

SDRAM

SDRAM interface conforms to JEDEC requirements, supporting address space from 2 to 32 Mbytes with a selectable 16-bit or 32-bit wide data bus.

USB

USB slave interface — 12Mbps using Control, Interrupt, Bulk and Isochronous endpoints and transfers.

PCI

PCI interface, 32-bit bus master/slave operation conforming to version 2.2. The PCI interface supports DMA transfers as a bus master.

GPIO

The General Purpose I/O bus contains 9 pins. Of these pins, two are used for the UART serial interface (Tx and Rx at a speed of 38,462 baud) and three for the serial boot EEPROM (data in, data out and clock).

Boot Options

- USB interface
- PCI interface
- Serial EEPROM
- UART
- Flash PROM

Software

Boron's processors run Virata's extensive networking software suite including:

- NDIS-5 USB driver support for Windows 98 and 2000 (NT 5.0)
- NDIS-5 PCI driver support for Windows 98 and 2000 (NT 5.0)
- Flashless booting for PCI and USB
- OAM F4 and F5 endpoint-only loopback
- Advanced Power Management
- ATM pacing and policing
- ADSL (G.992.1 and G.992.2)
- ATMOS lightweight real-time kernel

Package

225 ball PBGA

Environmental

Supply 3.3V and 2.5V (+/- 10%)
Commercial temperature range of
0 to +70 degrees Centigrade

Ordering Information

VC3910-PBC, Boron IC
BD4000, Development Board
DFM4100, PCI modem board Design
for manufacture
DFM4200, USB modem board Design
for manufacture

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