CONEXANT

Columbia™

DSL Central Office Network Processor for DSL Access Multiplexer Line Card/Multiplexer Unit Platforms/Next Generation DLC Platforms

Conexant's broadband communications portfolio includes the industry's most comprehensive suite of digital subscriber line (DSL) and network processors for all asymmetric and symmetric central office (CO) applications. The Columbia™ CO network processor is a highly integrated, multi-application, RISC-based processor specifically optimized to implement channel aggregation, protocol processing, and Layer 2/3 data and control functions that will be integrated into the next generation of intelligent DSL access equipment*.

The Columbia system-on-a-chip approach provides integrated protocol software, real-time operating systems (RTOS), and hardware inter-working functions that will enable equipment manufacturers to simultaneously address the legacy ATM infrastructure and next-generation Internet/protocol (IP) networks. These functions will also drive new revenue generating features such as virtual private networks (VPN), video on demand (VoD) and IP multicasting services, all on a single scalable platform.

The Columbia processor integrates multiple devices found on the typical DSL line card by providing host processing, data aggregation, configuration, network and data processing, and control electronics. With multiple software applications available, the Columbia can address ATM, bridging, virtual local area network (VLAN), and Ethernet over the first mile (EFM) markets.

The advantage of an application-specific central office network processor combined with Conexant's 24-port DSL chipset can be demonstrated via Conexant's multiple dwelling/tenant unit (MxU) reference designs. By providing complete box level references that are high-performance and cost effective, we can enable our customers to quickly bring new products to market with minimal development investment.

Conexant has a broad portfolio of semiconductor products, including:

- DSL, dial-up, and cable modem solutions
- Home network processors
- Broadcast video encoders and decoders
- Digital set-top box components and system solutions

Conexant also offers wireless data and networking solutions that includes HomePlug, HomePNA, and WLAN (802.11) components and reference designs.

*GlobespanVirata legacy product

Distinguishing Features

- Optimized for channel aggregation, protocol processing, and Layer 2/3 data and control functions integration into next-generation DSL equipment
- Integrates host processing, data aggregation, configuration, network and data processing, and control devices
- Provides complete box level reference designs for faster time-to-market and lower development costs

Part Number	Columbia
Description	DSL CO Network Processor for DSL Access Multiplexer Line Card/Multiplexer Unit Platforms/Next Generation DLC Platforms

Columbia Features and Benefits

Interfaces

- 8 bit data/address multiplex (DSL physical layer [PHY] host) bus
- Standard UTOPIA level 2 at 50 MHz
- Extended (addressing) UTOPIA Level 2 (addressable to 256 ports)
- Programmable interface adapter general purpose Input/Output (GPIO) pins
- Two independent general purpose timers
- Packaged in a 596-pin heat slug ball grid array (HSBGA)
- IEEE 1149.1 boundary scan testing interface (joint test action group [JTAG])
- 4 x 16 bit 133 MHz synchronous dynamic random access memory (SDRAM) controllers
- 32-bit/66 Mhz PCI interface
- 4 x high-speed serial link (HSSL) to 52 MHz synchronous
- 2 x UART interfaces to 5 Mbps asynchronous
- Serial Peripheral Interface (SPI)

ATM Features

- ATM Forum traffic management (TM) 4.1 quality of service (QoS)
- Per virtual channel (VC) shaping/policing
- Early packet discard (EPD)/partial packet discard (PPD) congestion management
- ATM operation administration and management (OAM) I.610 F4/F5 fault management per I.610
- ATM cell multicast support
- Constant bit rate (CBR)/real-time (rt)-variable bit rate (VBR) traffic
- Weighted round robin (WRR) for unspecified bit rate (UBR)/non-real-time (nrt)_VBR traffic
- ATM statistics: per VC, per port
- Header translation and cell switching
- Required management information bases (MIBs)

Packet Features

- Multi-protocol over ATM request for comment (RFC) 2684 (1483)
- Transmission control protocol/Internet protocol (TCP/IP) protocol
- IEEE 802.1D media access controller (MAC) bridging
- IEEE 802.1P priority tagging
- IEEE 802.1Q VLAN bridging
- IEEE 802.3ad Ethernet trunking
- IEEE 802.1d spanning tree
- Generic virtual local area network registration protocol (GVRP)
- Generic multicast registration protocol (GMRP)
- Per box subtending
- Weighted fair queuing (WFQ) and random early discard (RED)/ weighted random early detection (WRED) congestion control
- Bootstrap protocol (BOOTP), dynamic host configuration protocol (DHCP), trivial file transfer protocol (TFTP), and Telnet
- Internet group management protocol (IGMP) snooping for IP multicast

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