Single-Chip USB ADSL Modem
CX82320

Broadband Internet Connectivity

Conexant’s broadband communications portfolio includes a comprehensive suite of semiconductor solutions that enable the digital home and information network. The newest member of Conexant’s AccessRunner family, the CX82320 modem device integrates all of the hardware functions of a USB controller, ADSL discrete multi-tone (DMT) engine, analog front end (AFE), and line driver on a single-chip. This comprehensive device combines the most cost-effective solution with the design simplicity of single-chip integration. The CX82320 ADSL modem device is fully compliant with both the full-rate ADSL (T1.413 Issue 2 and G.dmt) and the splitterless G.lite (G.992.2) standards.

Conexant’s CX82320 modem device provides an “always on” high-speed broadband connection to the Internet. Using existing twisted pair telephone lines, ADSL technology provides data rates over 100 times the speed of a traditional analog modem, without an interruption in telephone service. With data transfer rates up to 8 Mbps downstream and 1 Mbps upstream, ADSL is the ideal solution for high-bandwidth applications such as access to a corporate network, Internet access and video delivery.

Conexant’s ADSL chipsets support the full range of ADSL standards based on industry-standard discrete multitone (DMT) line-code technology. The versatile USB ADSL customer premise equipment (CPE) chipset is a cost-effective solution optimized for today’s market, which demands ease-of-installation without opening the PC.

CX82320 Distinguishing Features

- USB ADSL chipset and drivers
- Full-rate ADSL and G.lite operation
- Annex A and Annex B support
- Integrated ADSL transceiver, AFE, and Line Driver
- USB 1.1 Interface
- Optimized USB ADSL architecture
- Bus-powered USB device
- Plug-n-Play installation without opening the PC
- 208-pin fine pitch ball grid array (FPBGA)
Broadband Modems
ADSL Modems

CX82320 Features

- **ADSL Compliance**
  - Compliant with ADSL standards
  - Full-rate ANSI T1.413 Issue 2 and ITU G.dmt (G.992.1)
  - Splitterless ITU G.lite (G.992.2)
  - DMT modulation and demodulation
  - Rate adaptive
    - Maximum downstream rate of 8 Mbps
    - Maximum upstream rate of 1 Mbps
  - Supports splitterless full rate operation
  - Time detection for low power mode
  - Supports Dying Gasp
  - Interoperable with all major DSLAMs

- **USB Interface**
  - Compliant with USB Specification 1.1
  - USB full speed (12 Mbps)
  - Vendor-specific descriptors
  - Bus-powered

- **Operating System Support**
  - Windows 98/98 SE
  - Windows 2000
  - Windows ME
  - Windows XP
  - Plug and Play Installation

- **Driver Applications**
  - Windows Control Panel
  - Installation Wizard
  - Task Bar Application
  - All applications are customizable
  - All applications support multiple languages

- **ATM Protocols**
  - WAN mode support: PPP over ATM (RFC 2364) and PPP over Ethernet (RFC 2516)
  - LAN mode support: bridged/routed Ethernet over ATM (RFC 1483) and classical IP over ATM (RFC 1577)
  - ATM Forum UNI 3.1/4.0 PVC
  - ATM SAR (segmentation and reassembly)
  - ATM AAL5
  - OAM F4/F5

Optimized USB ADSL Solution

The USB ADSL device set is shown together with the PC drivers in the diagram. The PC drivers use only a fraction of the PC’s host processor.

Conexant’s ‘softSAR’ technology provides the ATM segmentation and reassembly (SAR) function as part of the PC driver. This eliminates the need for a costly dedicated ATM SAR device, required in other ADSL modems. However, in order not to unnecessarily burden the host and the USB controller, the idle cell insertion and deletion that takes place when no information is being transferred across the ADSL link is performed as part of the chipset.

Without the need for an additional ATM SAR device, Conexant’s CX82320 is the most cost-effective, optimized solution designed for the USB.

ADSL Drivers

Conexant’s PC drivers are designed for use with Windows® XP, Windows® 98, Windows® 2000, and Windows® ME and fully leverage Microsoft’s built-in features for the support of USB ADSL peripherals. In addition to softSAR functionality, the drivers fully support the recognized standards for PPP over ATM (RFC2364), PPP over Ethernet (RFC2516), Ethernet bridging/routing over ATM (RFC1483), and classical IP over ATM (RFC1577). A control panel applet is provided for real-time diagnostic information, and hooks are included to allow automatic configuration of the ADSL modem and the drivers.