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EXPERIENCE SMART™

Controller-Based Modem with Fourth Generation SmartDAA® and Speakerphone Support

Product Overview

Conexant's CX93021 serial modem device paired with the CX20548 SmartDAA® 4 LSD (CSM92/34/32-SP) is a full-controlled modem that is ideal for embedded applications such as Internet appliances, security systems, home/personal monitoring systems, and other applications that require robust dial-up connectivity and speakerphone functionality. The speakerphone function is supported with its own voice CODEC—the CX20542.

The modem supports V.92 data modulation, 14.4kbps fax modem operation, remote TAM and speakerphone, V.44/V.42bis/MNP 5 data compression for greater data throughput, and V.42 LAPM/MNP2-4 error correction protocol for increased data integrity and reliability. The device set offers the smallest footprint with space saving low-profile QFN packages.

The CX93021 modem device integrates an MCU, a DSP, an internal RAM, an internal ROM, and a SmartDAA SSD that makes it independent of the host processor and operating system.

The MCU/DSP performs the command processing, host interface functions, and telephone line signal modulation/demodulation, which minimizes the computational load on the host processor. The modem executes from the internal ROM, but also features internal RAM memory that enhances the modem's flexibility. The modem's internal RAM can be used to load new country profiles, override existing country profiles, or add customized firmware code. Additionally, the modem supports an optional external serial NVRAM, which adds the convenience of permanent storage. Just like internal RAM, NVRAM can be used to store new country profiles, override existing ones, or add customized firmware code.

Conexant's SmartDAA 4 LSD builds on three generations of market leading silicon DAA devices, and eliminates the need for costly analog transformers, relays, and opto-isolators typically used in discrete DAA implementation for country-specific modem configurations.

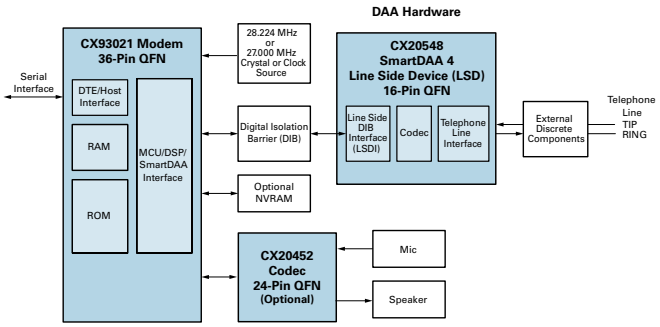
The SmartDAA 4 LSD is system-powered, making it the most reliable and best performing silicon DAA in the market. The SmartDAA 4 LSD also adds enhanced telephony extension features to the modem's operation and other functions, such as call waiting detection and CID decoding.

Incorporating Conexant's proprietary DIB design and other innovative DAA features, the SmartDAA 4 architecture simplifies application design and minimizes the layout area. The result is a worldwide reduced system cost solution using a single BOM.

The optional CX20542 voice CODEC enables the FDSP operation as well as other voice/TAM applications. The speakerphone mode features Conexant's advanced proprietary speakerphone algorithm, which supports full-duplex voice conversation with acoustic, line, and handset echo cancellation to ensure clean and noise-free voice quality.

The feature-rich CSM modem with its reduced voltage operation and low-power consumption make this device set an ideal solution for embedded applications.

System Block Diagram



CX93021/CX20548 CSM92/34/32-SP Serial Modem | ImagingSmart™ Product Brief

Key Features

- Controller-based modem—No external memory required
- Optional FDSP with AEC
- Telephony/TAM support
- Modulations and protocols
  - ITU-T V.92 = Quick connect, modem-on-hold, and PCM upstream
  - V.90/V.34/V.32bis/V.32
  - V.22bis/V.22/V.23/V.21
  - V.23 reverse and V.23 half-duplex
  - Bell 212A/103
  - V.29 FastPOS and V.22 Fast Connect
  - SIA Protocol and Contact ID for alarm equipment
  - V.80 synchronous access mode
  - V.17/V.29 fax class 1/1.0 and 2
- V.44/V.42bis and MNP5 data compression
- V.42 and MNP2-4 error correction
- Caller ID
  - Call waiting detection for selected countries, and Type II CID decoding during V.92 connections
  - Type I CID decoding
  - Type II CID snooping
- 63 embedded and upgradeable country profiles
- Optional serial NVRAM interface for country profile storage and code upgrades
- Embedded AT commands
- Worldwide pre-tested reference design
- Hardware and software flow control and speed buffering
- Full-duplex 8-bit/16-bit PCM voice pass-through mode
- 28.224MHz or 27MHz frequency Xtal or clock input
- Worldwide operation
  - Complies to TBR21 and other country requirements
  - Call progress and blacklisting
  - Meets worldwide DC mask requirements
- Low power and voltage
  - Single 3.3V supply
  - Low-power consumption mode
  - 3.3V I/O level
- Compact, robust board design
  - Reference design files provided for quick time-to-market
  - Reference design tested for PTT and TBR 21 approvals
  - Small, low-profile modem packages
  - Reference design supports 6KV isolation
- Telephony/TAM
  - V.253 commands
  - 2-bit and 4-bit ADPCM
  - 4-bit IMA ADPCM
  - 8-bit and 16-bit linear PCM
  - 8-bit μ-law and A-law PCM coding
  - 8kHz sample rate

SmartDAA Features

- Extension pick-up detection
- Digital line protection
- Line reversal detection
- Remote hang-up detection
- Worldwide compliance
- CX20548 SmartDAA 4 LSD in a 16-pin QFN
- Worldwide support with a single design

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