CONEXANT

CSM92/34/32-SP Serial Modem with 4th Generation SmartDAA and Speakerphone Support

CX93021-2x

Conexant's portfolio includes a comprehensive suite of semiconductor solutions for communications and consumer applications.

Controller-Based Modem with SmartDAA® 4 for Embedded Applications

Conexant's CX93021-2x Serial Modem device (CSM92/34/32-SP) is a full controllered modem supporting V.92 data modulation, 14.4 kbps fax modem operation, and remote Telephone Answering Machine (TAM) and speakerphone. The modem also supports 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 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 device set offers the smallest footprint consisting of a CX93021-2x V.92 Modem device in a 36-pin Quad Flat-No Lead (QFN), a CX20548 SmartDAA® 4 Line Side Device (LSD) in a 16-pin QFN, and a CX20452 Voice Codec in a 24-pin QFN. The CX93021-2x modem device integrates a Microcontroller Unit (MCU), a Digital Signal Processor (DSP), internal RAM, internal ROM, and a SmartDAA System Side Device (SSD) making it independent of host processor and operating system. The device set has a serial interface and codec interface for connection to the optional CX20452 Codec for speakerphone applications. It is also available without the CX20452 Codec for no speakerphone support.

The CX93021-2x modem MCU/DSP performs the command processing, host interface functions and telephone line signal modulation/demodulation, which reduces the computational load on the host processor. The modem operates by executing masked code from internal ROM. The modem 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. An optional external serial NVRAM is supported. The optional external NVRAM 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 line side device builds on three generations of market leading silicon DAA devices. It eliminates the need for costly analog transformers, relays and opto-isolators typically used in discrete DAA implementation for country-specific modem configurations. It's 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 Caller ID decoding. Incorporating Conexant's proprietary Digital Isolation Barrier (DIB) design and other innovative DAA features, the SmartDAA 4 architecture simplifies application design and minimizes layout area. The result is a worldwide reduced system cost solution using a single bill of materials.

Combined with the optional Codec, the CX93021-2x modem supports Full-duplex Speakerphone (FDSP) operation using microphone and speaker, as well as other voice/TAM applications using handset or headset. Speakerphone Mode features

Distinguishing Features

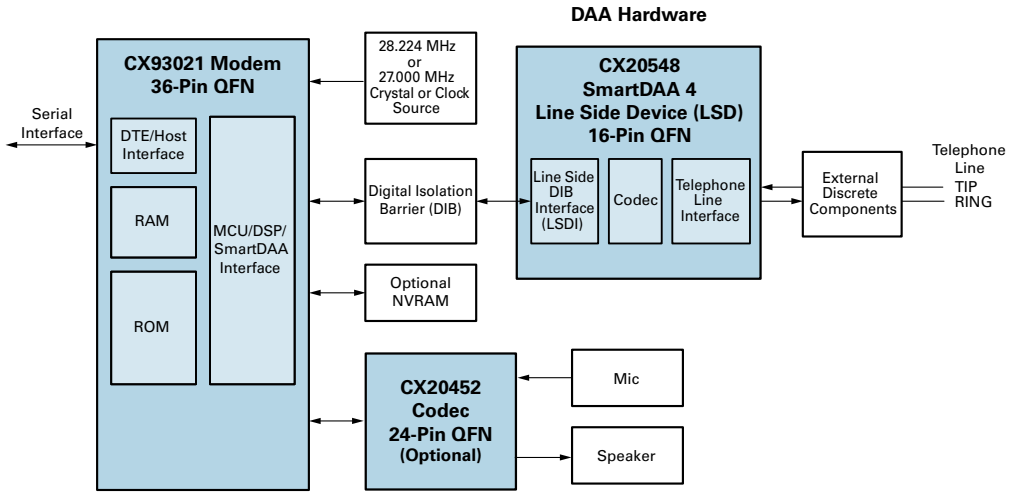
- Controller-based modem, no external memory required
- Optional Full Duplex Speakerphone with AEC
- Telephony/TAM support
- V.92, V.34, V.32bis data modulations
- V.17/V.29 Fax Class 1 and Fax Class 2
- SIA Protocol and Contact ID
- V.80 synchronous access mode, synchronous and asynchronous DTE interface
- V.44/V.42bis and MNP5 data compression
- V.42 and MNP2-4 error correction
- Call Waiting detection and Type II Caller ID decoding during data mode
- Type I Caller ID decoding
- 63 embedded and upgradeable country profiles
- Serial NVRAM interface for optional permanent country profile storage
- Embedded AT commands
- Worldwide pre-tested reference design

Part Number	CX93021-2x
Description	CSM92/34/32-SP Serial Modem with 4th Generation SmartDAA and Speakerphone Support

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.

In TAM mode, enhanced 2-bit or 4-bit per sample coding schemes at 8 kHz sample rate provide flexible format compatibility and allows efficient digital storage of voice/audio. Also supported are 8-bit A-law, µ-law, and linear coding and IMA 4-bit Adaptive Differential Pulse Code Modulation (ADPCM) coding. This mode supports applications such as digital telephone answering machine, voice annotation, and recording from and playback to the telephone line.

Small, low-profile packages, reduced voltage operation, and low power consumption make this device set an ideal solution for embedded applications.



CX93021-2x CSM92/34/32-SP Modem Simplified Interface

CX93021-2x Features

- 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, V.23 half-duplex
  - Bell 212A/Bell 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 Fax Class 2
- V.44/V.42bis/MNP5 data compression
- V.42/MNP2-4 Error correction
- Call waiting (CW) detection for selected countries
- Asynchronous Serial DTE interface
- Hardware and software flow control and speed buffering
- Embedded and upgradable 63 country profiles
- Optional serial NVRAM interface for country profile storage and code upgrades
- Full-duplex 8-bit/16-bit PCM voice pass-through mode
- 28.224 MHz or 27.000 MHz frequency XTAL or clock input
- Worldwide operation
  - Complies to TBR21 and other country requirements
  - Type I and Type II Caller ID (CID) decoding
  - Type II Caller ID snooping
  - Call progress, blacklisting
  - Meets worldwide DC mask requirements
- Low power and voltage
  - Single +3.3 V supply
  - Low power consumption mode
  - +3.3 V 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, and 8-bit µ-law and A-law PCM coding
  - 8 kHz sample rate
  - Concurrent DTMF, ring, and Caller ID detection

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

Conexant Product Portfolio

Conexant's comprehensive product portfolio includes solutions for imaging, audio, and video applications, and analog modems that enable cost-effective Internet access. The company's broadband access products include end-to-end solutions for xDSL networks, and PON solutions for fiber optic applications.

www.conexant.com
General Information:
U.S. and Canada: (888) 855-4562
International: 1+ (949) 483-3000
Headquarters
4000 MacArthur Blvd.
Newport Beach, CA 92660

Doc# PBR-202165

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