

FEATURES

■ Complete PC telephony solution

- Up to 56-kbps receive data rates (CL-MD562X only)
- Highly integrated two- or three-chip set
- Host-based controller
- PCI (peripheral component interconnect) 2.1-compliant
- Future versions include ACPI (advanced configuration power interface) power management
- Exceeds Microsoft® PC 97 requirements
- Microsoft® Windows® TAPI-compliant
- Full-duplex, echo-cancelled digital speakerphone

■ Data modulation

- 3Com® x2™ Technology (software-upgradable to ITU-V.90)
- ITU-V.34 (33.6 to 2.4 kbps) symmetric and asymmetric operation (CL-MD342X and CL-MD562X)
- ITU V.32 bis, V.23, V.22 bis, V.21
- Bell® 212A and 103

■ Fax modulation

- ITU-T V.17, V.29 to 14.4 kbps

■ Voice telephony

- Full-duplex, echo-cancelled digital speakerphone
- IS-101 voice commands
- Telephone emulation for headset applications
- ITU-V.80 videoconferencing future upgrade option
- ITU-V.70 future DSVD (digital simultaneous voice and data) upgrade option

**56K/V.34 FastPath™
Data/Fax/Voice
Controllerless Modems**

OVERVIEW

The CL-MD562X is the industry's first x2™ controllerless modem chipset featuring an integrated PCI interface. This V.90-upgradable 56K solution uses the 3Com® x2 Technology to receive data at rates of up to 53.333 kbps. The V.34 version of the chip, the CL-MD342X, receives and sends data at 33.6 kbps. Both chipset families provide a complete set of industry-standard voice, data, and fax features, plus extras that include full-duplex speakerphone and simultaneous voice and data operation.

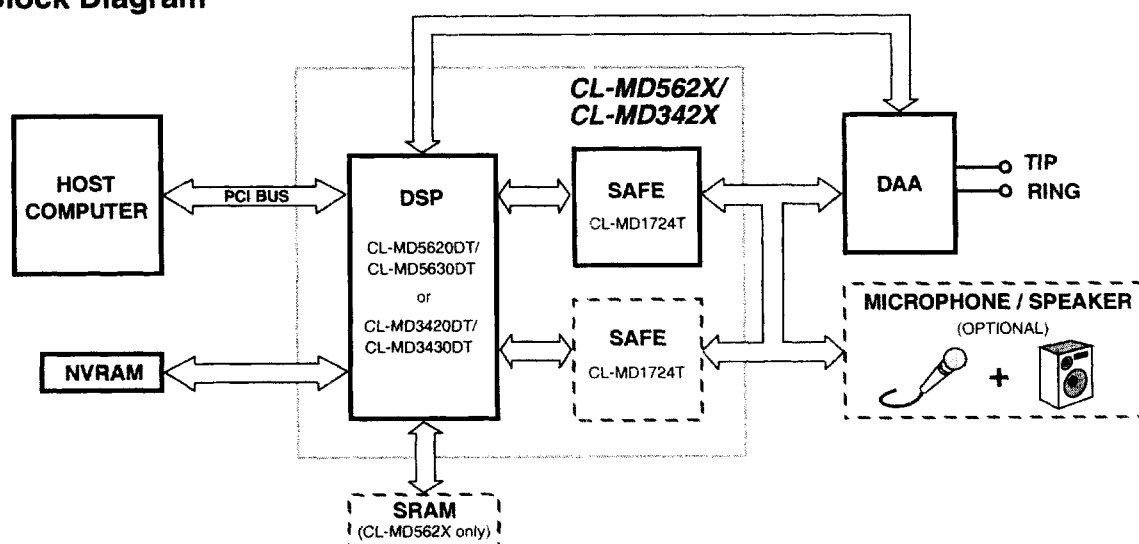
Integrated PCI Interface

The CL-MD562X/MD342X chipsets are based on the FastPath™ platform, a proprietary high-bandwidth DSP (digital signal processor). The integrated PCI interface allows the device to transfer data from the DSP to the host system's CPU faster than current ISA-based 56K solutions. The integrated PCI interface also eliminates

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System Block Diagram



FEATURES (cont.)

■ Voice coder

- Voice compression: 3- and 4-bit ADPCM and CL1 (linear)
- 4800, 7200, 8000, 9600, and 11025 samples per second

■ Data link layer protocols

- Error correction: ITU V.42 and MNP® 2-4
- Data compression: ITU V.42 bis and MNP® 5

■ DTE integrated interface alternatives

- PCI 2.1-compliant

■ Host-based controller

- Fax Class 1 commands
- Voice IS-101 commands

■ Minimal-component design

- Direct connection to PCI bus
- Single crystal
- Passive hybrid

■ Low power requirements

- Single +5-V power source; 3.3-V DSP
- Automatic sleep and wake-up modes

■ Small package options

- DSP: 160-pin PQFP or 176-pin VQFP
- SAFE: 44-pin VQFP

OVERVIEW (cont.)

the ISA bridge chip requirement, thus reducing the chip count, board space, and cost. The FastPath platform's scalability allows the addition of computer telephony features such as speakerphone and telephone emulation and the future addition of DSVD and ACPI power management. The CL-MD562X/MD342X chipset families exceed Microsoft® PC 97 specifications for Windows®, and they are TAPI- and PCI 2.1-compliant.

Satisfies Legacy Applications

The CL-MD562X/MD342X chipsets support all requirements for PC-based communications. With the FastPath platform's robust host-based controller software and powerful DSP, the chipsets support all industry-standard AT commands for data, IS-101 voice, and Class 1 fax.

Versatile 56K Platform

The CL-MD562X chipsets offer data receive speeds of up to 56 kbps using 3Com x2 Technology, although Federal Communications Commission power restrictions limit actual receive speeds to 53.333 kbps. The CL-MD562X will support the ITU-V.90 standard. Products can be designed for complete software upgradability.

Comprehensive Telephony Features

Voice telephony is becoming increasingly important in modem-based products. The FastPath platform has a complete telephony interface (including Caller ID and voice mail), telephone emulation, and answering machine capabilities (including tone generation and

detection and call progress control). The DSVD future upgrade option enables realtime data transfer during a voice conversation, an essential for whiteboard applications and sophisticated customer support. Additionally, the CL-MD562X/MD342X's full-duplex, echo-cancelled digital speakerphone offers the latest technology for hands-free computer telephony. The speakerphone operates in all modes, including DSVD. All voice features are fully compliant with Microsoft's Unimodem V and TAPI standards, and all voice commands comply with IS-101 voice command standards.

International Telephony Support

CL-MD562X/MD342X chipsets support international applications. Cirrus Logic also provides international DAA design recommendations.

Platform of the Future

The CL-MD562X/MD342X chipset families are a solid base for future innovation. The controller code is open for modification in a C code development environment.

The DSP delivers the bandwidth to handle multiple tasks simultaneously and to support specialized functions. Many advanced features are already built in, including a full-duplex, echo-cancelled speakerphone. Concurrent operation is enabled for even the most advanced features, such as Voice Call First videoconferencing and full-duplex speakerphone operation in DSVD mode. Other built-in features are call progress and tone generation, including DTMF, calling tone, and Caller ID. Tones can be tailored to special requirements.

COMPLETE DESIGN GUIDELINES

Reference Designs Available

Cirrus Logic provides reference designs for use and modification by customers. These designs demonstrate chipset applications for several common configurations. The design documentation includes schematics, materials list, fabrication drawings, and MS-DOS®– or Windows®-based OrCAD® files.

Simple Software Upgrades

End users can easily download and install upgrades of 56K software from manufacturer-supported internet sites. Additional program memory is required to support the 32 Kbytes of RAM needed for 56K operation and a full feature set.

Complete Telephony Interface

A proprietary telephone interface is included in each reference design provided to all Cirrus Logic

customers. The telephony interface supports Caller ID and 17 modes related to voice features. Six of these modes provide basic voice features and two modes support future DSVD operation.

Minimal-Component Design

Only a single crystal and 2 Kbytes of NVRAM (non-volatile RAM) are required to complete the designs. All chipsets require one SRAM for controller support (32K × 8, 70 ns), and the CL-MD562X chipsets require an additional SRAM for DSP support (32K × 16, 12 ns). No additional components are needed to add a PCI interface or plug-and-play functionality.

Reduced EMI/RFI Emissions

A single low-frequency crystal serves as a clock for the DSP in the CL-MD562X/MD342X chipsets. The single-crystal design minimizes high-frequency harmonics and simplifies EMI/RFI design considerations.

DESIGN KITS AND SUPPORTING DOCUMENTATION

The following table details the contents of reference design kits and documentation. For information on availability, please contact your local Cirrus Logic representative.

Kit / Document	Contents
• 56K Data/Fax/Voice/Speakerphone Kit MDK562X-4L02 (four-layer) • 56K Data/Fax/Voice/Speakerphone Kit MDK562X-2L02 (two-layer)	— PCI card (United States and Japan only) — <i>CL-MDK56/342X-XX Applications Book</i> — Commercial software — Modem utilities disk (including INF file and drivers)
CL-MDK56/342X-XX Applications Book	— <i>CL-MD562X/MD342X Data Book</i> — <i>CL-MD562X/MD342X Programmer's Guide</i> — <i>MDK562X-4L02 Controllerless 56K Modem Hardware Application Note</i> — <i>Controller Emulator Board for Modem Firmware Debugging</i> — <i>56K Design Concerns and Firmware Upgrading Instructions</i> — <i>Modem Configuration Guide for Windows® 95</i> — <i>Use of Microphones with 56K/V.34 FastPath™ Chipsets</i> — <i>Modem PCB Layout Guidelines</i> — <i>Class 1 Fax Application Note</i>

ORDERING INFORMATION

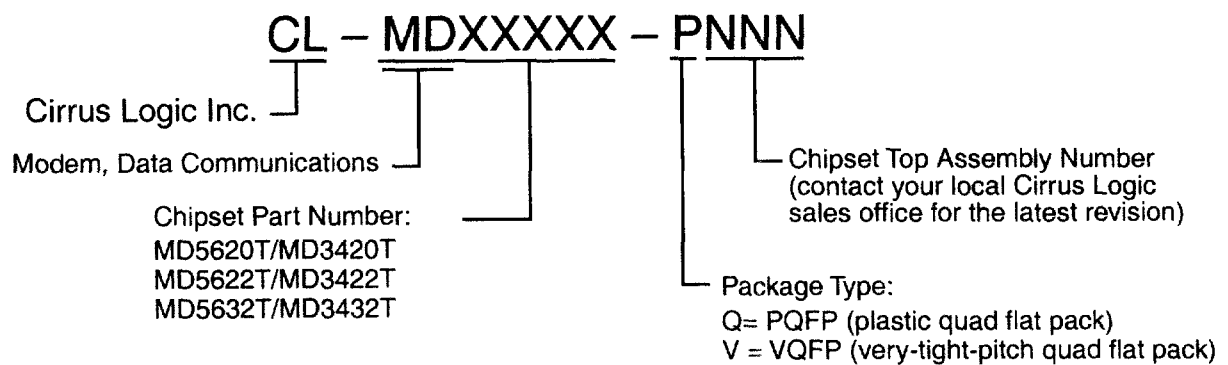
Chipset Composition

Features	CL-MD562X	CL-MD342X
Data/fax voice	CL-MD5620T <pre> graph TD CLMD5620T[CL-MD5620T] --- DSP[DSP] CLMD5620T --- SAFE[SAFE] DSP --- CLMD5620DT[CL-MD5620DT] SAFE --- CLMD1724T[CL-MD1724T] </pre>	CL-MD3420T <pre> graph TD CLMD3420T[CL-MD3420T] --- DSP[DSP] CLMD3420T --- SAFE[SAFE] DSP --- CLMD3420DT[CL-MD3420DT] SAFE --- CLMD1724T[CL-MD1724T] </pre>
Data/fax voice, full-duplex speakerphone	CL-MD5622T <pre> graph TD CLMD5622T[CL-MD5622T] --- DSP[DSP] CLMD5622T --- SAFE1[SAFE] CLMD5622T --- SAFE2[SAFE] DSP --- CLMD5620DT[CL-MD5620DT] SAFE1 --- CLMD1724T1[CL-MD1724T] SAFE2 --- CLMD1724T2[CL-MD1724T] </pre>	CL-MD3422T <pre> graph TD CLMD3422T[CL-MD3422T] --- DSP[DSP] CLMD3422T --- SAFE1[SAFE] CLMD3422T --- SAFE2[SAFE] DSP --- CLMD3420DT[CL-MD3420DT] SAFE1 --- CLMD1724T1[CL-MD1724T] SAFE2 --- CLMD1724T2[CL-MD1724T] </pre>
Data/fax voice, full-duplex speakerphone, future DSVD upgrade option	CL-MD5632T <pre> graph TD CLMD5632T[CL-MD5632T] --- DSP[DSP] CLMD5632T --- SAFE1[SAFE] CLMD5632T --- SAFE2[SAFE] DSP --- CLMD5630DT[CL-MD5630DT] SAFE1 --- CLMD1724T1[CL-MD1724T] SAFE2 --- CLMD1724T2[CL-MD1724T] </pre>	CL-MD3432T <pre> graph TD CLMD3432T[CL-MD3432T] --- DSP[DSP] CLMD3432T --- SAFE1[SAFE] CLMD3432T --- SAFE2[SAFE] DSP --- CLMD3430DT[CL-MD3430DT] SAFE1 --- CLMD1724T1[CL-MD1724T] SAFE2 --- CLMD1724T2[CL-MD1724T] </pre>

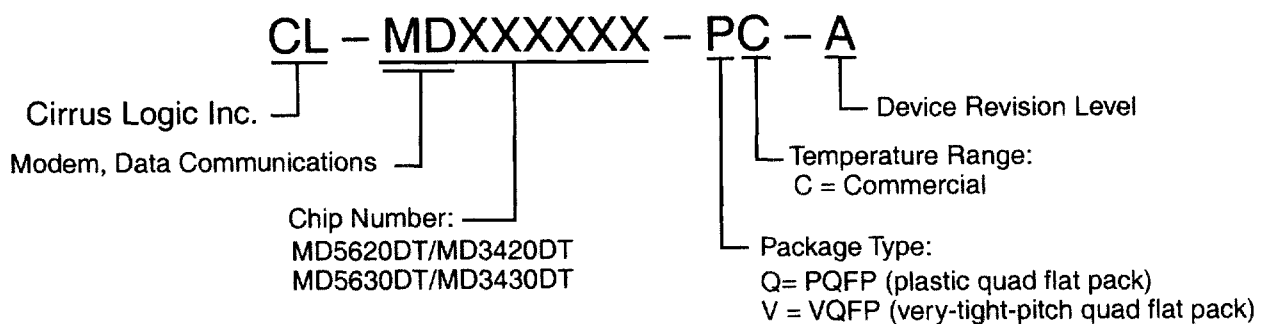
The following table describes the controllerless modem chipsets. These chipsets are currently available except where indicated.

Chipsets	Number of Devices	Features
CL-MD5620T/ CL-MD3420T	2	The CL-MD5620T sends data at 33.6 kbps and receives data at up to 56 kbps. The CL-MD3420T sends and receives data at 33.6 kbps. Both chipset types send and receive fax at 14.4 kbps. The chipsets also includes telephone answering machine functions, telephone emulation, and support for Caller ID. Future upgrade option of ITU-V.80 videoconferencing.
CL-MD5622T/ CL-MD3422T	3	Same features as the CL-MD5620T/CL-MD3420T, plus full-duplex Speakerphone mode with internal echo cancellation and an extra SAFE.
CL-MD5632T/ CL-MD3432T	3	Same features as the CL-MD5622T/CL-MD5632T, plus future upgrade of optional ITU-standard V.70 DSVD. These chipsets are currently not available.

CHIPSET INFORMATION



DEVICE INFORMATION





CL-MD562X/MD342X

Preliminary Product Bulletin

Direct Sales Offices

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