



## CrystalClear™ PCI Audio Accelerator

PC Products  
CL-CS4610



### *PCI Audio Accelerator Employs DSP Technology for Unprecedented Audio Quality and Performance in Multimedia PCs*

Cirrus Logic's CrystalClear™ family of audio chip solutions offers the state-of-the-art SoundFusion™ platform that enables startling new levels of audio quality and performance in multimedia PCs.

The CS4610 SoundFusion PCI Audio Accelerator incorporates a high-performance DSP (digital signal processor) to accelerate content-rich PC audio applications such as advanced interactive 3D gaming, DVD, music playback, and videoconferencing.

The programmability of the CS4610 positions it to be an ideal solution for both current and next-generation multimedia PC applications.

#### **Fully Immersive 3D Audio With Two Speakers**

The CS4610 PCI accelerator, with its innovative system architecture, is the industry's first single-chip audio solution to integrate Dolby Digital (AC-3) hardware acceleration with support for the Aural A3D API and Microsoft DirectSound3D and DirectShow (ActiveMovie) APIs. The result is that a CS4610-based system provides fully immersive interactive audio and virtualized surround-sound for two speakers.

#### **Product Highlights**

- Concurrent processing of leading edge technologies:
  - Aural A3D Interactive™
  - DirectSound3D™ / DirectX™ 5.0
  - DirectShow™ 2.0
  - Dolby® Digital (AC-3™) and MPEG-2 Audio decoding
  - Hardware Wavetable Synthesis with effects processing
  - DirectSound multichannel mixing and sample rate conversion
  - Advanced Power Management 1.2 Support
- Full legacy support when combined with the CS423XB ISA codec
- Full AC '97 compliance when combined with the CS4297 next-generation codec



**Systems In Silicon!**



**New DSP Architecture Streamlines Audio and System Efficiency**

The CS4610 features the newly developed SLIMD (somewhat long instruction multiple data) DSP architecture to support the concurrent processing of the multiple streams of data required to accelerate leading-edge audio technologies. This innovative architecture includes an advanced hardware scatter-gather DMA (direct memory access) engine designed to efficiently transfer audio data between PC system memory and an on-chip DSP memory without requiring the attention of either the system's CPU or the DSP.

The DMA engine can independently manage 96 concurrent streams of audio data (moving in both directions) and intelligently optimize system resources (main memory and PCI bus) to maximize total system performance. This powerful core enables the concurrent processing of complex

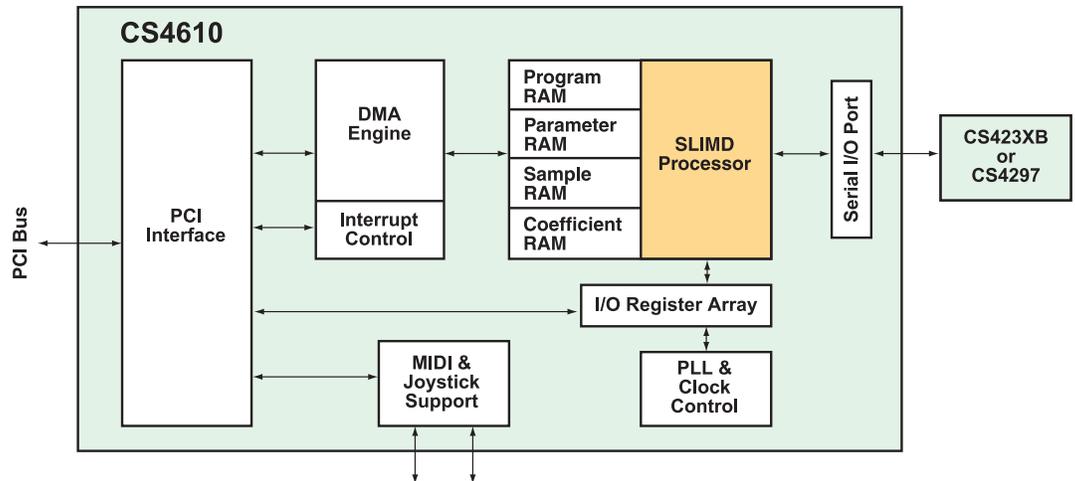
audio functions that have traditionally required multiple special-function IC devices.

**Comprehensive Software and Applications Support**

The high performance and exceptional quality offered by the CS4610 are immediately available for a broad range of state-of-the-art audio technologies. The CS4610 design environment includes a complete suite of software drivers, Windows 95 drivers, BIOS support, and utilities for easy design integration.

Available documentation includes the data sheet, the OEM software reference manual, customer reference design, and reference schematics/layouts. Design-in application engineering support includes schematic review, layout review, and system testing support to speed the design-in process and insure optimal audio quality.

**System Block Diagram**



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