



CIRRUS LOGIC[®]

CS4622/24

**CrystalClear[™]
SoundFusion[™] PCI
Audio Accelerator**

The following information is based on the technical datasheet:

*CS4622/24 DS293PP2 JUN '98
Preliminary Product Bulletin*

Please contact Cirrus Logic, Multimedia Audio support for further information.

**PC MULTIMEDIA AUDIO
PRODUCT INFORMATION**

Copyright © Cirrus Logic, Inc. 1998
(All Rights Reserved)

PI293PP1 JUL '98

CrystalClear™ SoundFusion™ PCI Audio Accelerator

Features

- 300/255 MIPS SLIMD™ DSP Architecture
- DirectX™ 5.0 3D Positional Audio
- Fat Labs Approved 64-Voice Wavetable Synthesis with Effects
- NetMeeting™ AEC Hardware Acceleration
- Dolby® Digital AC-3® (CS4622)
- High Quality Hardware Sample Rate Conversion (90+ dB Dynamic Range)
- PC/PCI Legacy Support
- DDMA Legacy Support
- CrystalClear Legacy Support (CCLS™)
- PCI 2.1 Compliant PCI Interface
- 96 Stream DMA Interface with Hardware Scatter/Gather Support
- PCI Power Management (D0 through D3 Hot), APM 1.2, and ACPI 1.0 Support
- AC '97 2.0 Link Codec Interface
- Secondary AC '97 1.0/2.0 Link Codec Interface for Multi-Channel and Digital Docking Support
- Asynchronous Digital Serial Interface (ZV Port)
- S/PDIF Digital Input and Output Interfaces supporting both PCM and Dolby Digital 5.1 Formats
- MPU-401 MIDI Input/Output Interface
- 3.3 V Power Supply (5 V tolerant I/O)

Description

The CS4622/24 is a high performance pin-compatible upgrade to the 128-pin CS4610C PCI audio accelerator. With the added legacy compatibility modes,

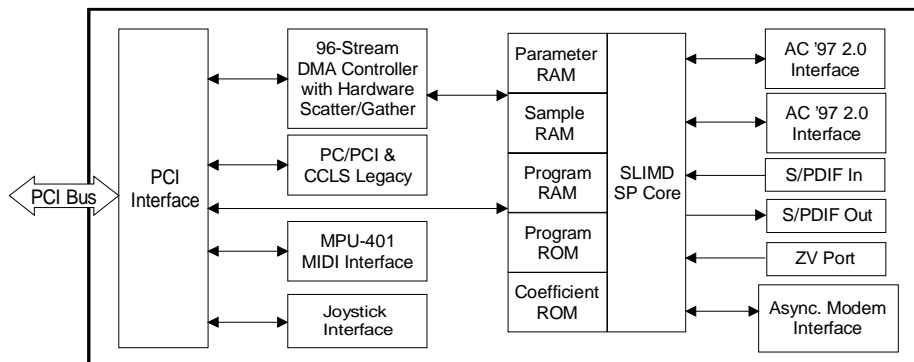
the CS4622/24 enables real mode DOS compatible PCI-only audio sub-systems. This device, combined with application and driver software, provides a complete system solution for hardware acceleration of Windows 95® Direct-Sound®, DirectSound3D®, DirectInput, and Wavetable Synthesis. WDM drivers provide support for both Windows 98 and Windows NT 5.0.

The CS4622/24 is based on the Cirrus Logic CrystalClear Stream Processor (SP) DSP core. The SP core is optimized for digital audio processing, and is powerful enough to handle complex signal processing tasks such as Dolby Digital AC-3 decoding (CS4622 only) with ease. The SP core is supported by a bus mastering PCI interface and a built-in dedicated DMA engine with hardware scatter-gather support. These support functions ensure extremely efficient transfer of audio data streams to and from host-based memory buffers, providing a system solution with maximum performance and minimal host CPU loading.

The all-digital CS4622/24 supports a variety of audio I/O configurations including direct connection to the CrystalClear CS4297 AC '97 Codec. A secondary AC '97 2.0 interface provides support for multi-channel and digital docking solutions. Added extended I/O supports DAA control for modem applications.

Consumer Digital input and output (S/PDIF) interfaces support both PCM and compressed 5.1 digital data formats.

PC/PCI, DDMA, and CrystalClear Legacy support provide PCI-only legacy games compatibility.



Overview

The CS4622/24 is a high performance audio accelerator DSP for the PCI bus. This device, combined with application and driver software, provides a complete system solution for cost effective acceleration of Windows DirectSound, Direct-Sound3D, DirectInput, MIDI playback via Wavetable Synthesis with reverberation and chorus effects processing, and more. The CS4622/24 is compatible with the CS4610C with the following added features:

- Primary AC '97 Interface now 2.0 compatible
- 2nd AC '97 Interface (also 2.0 compliant)
- CrystalClear Legacy Support
- PC/PCI Legacy Support
- DDMA Legacy Support
- PCI Power Management Event Support
- ZV Port Asynchronous Serial Port
- 2nd Asynchronous Serial Port
- 9 Extended GPIO pins for Modem Support
- Consumer Digital (S/PDIF) Input and Output

The CS4622 is a high-performance, full-featured version of the SoundFusion audio accelerator. The CS4624 is a reduced-cost version of the CS4622. The CS4624 has a lower maximum clock speed and does not support AC-3. Please refer to the *OEM Software Reference Manual* for more details.

FAQs

- 1) What is the difference between the two devices?
A: The CS4622 offers the capability to decode Dolby Digital (AC3), and the CS4624 does not.

- 2) How is the Dolby License obtained?
A: Cirrus Logic can only ship devices and software implementing Dolby

technology to Dolby certified customers. A Dolby System License certification can be obtained by faxing a written request to Dolby Licensing Corporation, at (415) 863-1373. This request should include a description of the intended application and should be marked "Request for Dolby License Application".

- 3) How are these devices different than the other Crystal PCI audio products (CS4280 and CS4614)?
- A: The CS4280 does not offer DSP acceleration for wavetable synthesis and 3D sound, using the host processor instead. The CS4614 offers DSP processing, but not digital I/O (SPDIF) or ZVPort support.
- 4) Which markets would the CS4622 and CS4624 serve?
- A: Manufacturers of PC motherboards, portables, and PCI audio cards would use the CS4622 and CS4624, where the performance advantages of DSP processing are desired along with the digital input/output to connect to high-end audio devices. The DSP processor is used for hardware wavetable synthesis and 3D audio acceleration for the games/multimedia market, and acoustic echo cancellation for speakerphone/ videoconferencing in the commercial market.

Ordering Information

CS4622-CQ	128-pin TQFP	20x14x1.60 mm
CS4624-CQ	128-pin TQFP	20x14x1.60 mm

If you have any questions, please contact the undersigned by phone or by email. Also, visit our website "www.cirrus.com" or call our literature department (800) 888-5016 ext. 3594 or (512) 912-3594 for data sheets and application notes.



Sales Office and Applications Support

UNITED STATES

Sales Office and Applications Support:

WESTERN AREA

Cirrus Logic, Inc.
Headquarters, Sales
3100 West Warren Ave.
Fremont, CA 94538
Ph: 510-623-8300
FAX: 510-252-6020

Cirrus Logic, Inc.
827 Wellesley Ave.
Los Angeles, CA 90049
Ph: 310-820-6489
FAX: 310-820-6180

Cirrus Logic, Inc.
Westlake Village
The Townsgate Executive Bldg.
2659 Townsgate Road, Ste. 238
Westlake Village, CA 91361
Ph: 805-371-5860
FAX 805-371-5861

Cirrus Logic, Inc.
6650 S.W. Redwood Lane,
Ste. 105, First Floor Bldg. 16
Portland, Oregon 97224
Ph: 503-620-5547
FAX: 503-620-5665

CENTRAL AREA

Cirrus Logic, Inc.
14205 Burnet Rd., Ste. 400
Austin, TX 78728
Ph: 512-255-8893
FAX: 512-255-0733

SOUTHEASTERN AREA

Cirrus Logic, Inc.
5511 Capital Center Dr., Ste. 103
Raleigh, NC 27606
Ph: 919-859-5210
FAX: 919-859-5334

Cirrus Logic International
3998 NW 8th Avenue, Ste. 300
Boca Raton, FL 33431
Ph: 561-395-1613
FAX: 561-395-1373

NORTHEASTERN AREA

Cirrus Logic, Inc.
10 New England Business
Center, Ste. 100
Andover, MA 01810
Ph: 978-794-9992
FAX: 978-794-9998

Cirrus Logic, Inc.
10440 Little Patuxent Pkwy., Ste. 300
Columbia, MD 21044-3559
Ph: 410-740-5654
FAX: 410-740-6961

U.S. Sales Distributors

Insight Electronics, Inc.
Corporate Headquarters
9980 Huennekens
San Diego, CA 92121
1-800-677-7716
Ph: 619-450-8500
FAX: 619-450-8550

Nu Horizons Electronics
Corporate Headquarters
70 Maxess Rd.
Melville, NY 11747
1-888-747-6846
Ph: 516-396-5000
FAX: 516-396-5050

EUROPE

Sales Office and Applications Support:

Cirrus Logic International SARL
Immeuble Andre Malraux
1 rue de Rome
F-93561 Rosny-sous-Bois
CEDEX, France
Ph: +33148122812
FAX: +33148122810

Cirrus Logic (UK) Ltd.
Anglers Court
Spittal St.
Marlow
Bucks, England SL7 1DB
Ph: +44(0)1628 472 211
FAX: +44(0)1628 486 114

Cirrus Logic GmbH
Muehlfelder-Strasse 2
D-82211 Herrsching, Germany
Ph: +49815292460
FAX: +498152924699

FAR EAST

Sales Office and Applications Support:

CHINA

Cirrus Logic International Ltd.
A-1403, Qiancun Commercial Man-
sion
Beijing, China 100029
Ph: (8610)6443-0783
FAX: (8610)6443-0786 **HONG KONG**

Cirrus Logic International Ltd.
Hong Kong
Ph: (852)2376-0801 **KOREA**
Cirrus Logic, Korea Co., Ltd.
Seoul, Korea
Ph: +82(2)565-8561

SINGAPORE

Cirrus Logic
Crystal International Ltd.
Singapore
Ph: +65-743-4111

TAIWAN

Cirrus Logic International Ltd.
Taiwan Branch
10F, No. 214, Tun Hwa North Rd.
Taipei, Taiwan R.O.C.
Ph: +886(22)718-4533
FAX: +886(22)718-4526

JAPAN

Sales Office and Applications Support:

Cirrus Logic K.K.
Tokyo, Japan
Ph: +81(03)3340-9111



**PC MULTIMEDIA AUDIO
PO BOX 17847
4210 S. INDUSTRIAL DRIVE
AUSTIN, TEXAS 78744
512.445.7222 / 800.888.5016
FAX: 512.445.7581**

**WORLDWIDE WEB:
<http://www.cirrus.com>**