

CS4923

Dolby[®] Digital Audio Decoder

The following information is based on
technical datasheet:

CS4923 DS262PP1 AUG '97

Please contact Cirrus Logic:
Crystal Semiconductor Products Division
for further product information.

CRYSTAL SEMICONDUCTOR PRODUCTS DIVISION PRODUCT INFORMATION

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

PI262PP2 JAN '98

Dolby® Digital Multi-Channel Audio Decoder

Features

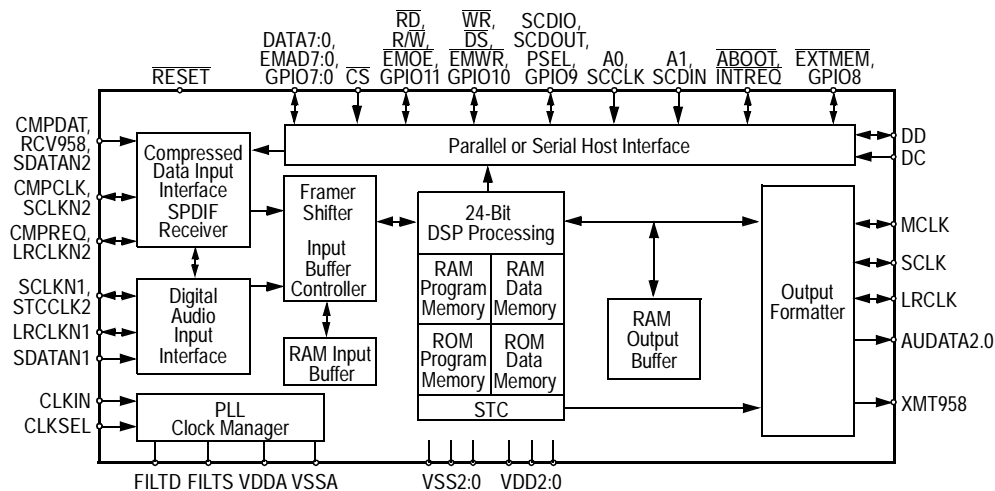
- Dolby Digital, 5.1 Channel Decompression
- Dolby® Surround Pro-Logic™ Decoder
- Dolby Bass Manager & Cross-Over Filters
- Flexible 6-Channel Master or Slave Output
- IEC60958/61937 Transmitter Provides Compressed Data or Linear PCM Output
- IEC60958/61937 Input for Compressed Data or Linear PCM
- Large Variable Input and Output Buffers
- DAC Clock via Analog Phase Locked Loop
- Dedicated Byte or Serial Host Interface
- Multiple Compressed Data Input Modes
- PES Layer Decode for A/V Sync
- 96 kHz Capable PCM I/O, Master or Slave
- Optional External Memory and Auto Boot
- +3.3 V CMOS Low Power, 44-Pin Package

Description

The CS4923 is the first device in a new family of higher performance digital audio decoders all targeted for multi-channel decompression like Dolby Digital, MPEG-2 Surround and DTS. The CS4923 is tailored to provide a complete and flexible solution for Dolby Digital audio decoding in products like: Laser

Disc Players, DVD Movie Players, Stereo Receivers, Out-Board Decoders, HDTV Sets, Head-End Decoders and Set-Top Boxes. The CS4923 is a performance and feature enhanced version of the popular CS4922 audio decoder IC.

A complete set of audio decoder and auxiliary audio DSP microcodes for various applications is provided through Cirrus Logic's Crystal Semiconductor Products Division. Also provided, for all complementary analog/digital audio I/O, is a complete set of high quality audio peripherals including: Multimedia CODECs, stereo A/D and D/A converters, SPDIF/IEC60958/61937 interfaces, wavetable and FM synthesizers. Of particular note is the CS4226 CODEC which provides in one chip: digital receiver, stereo A/D Converters and six 20-bit DAC's. Also available is the CRD4923, a reference design for CS4923 and CS4226.



Overview

The CS4923 has been carefully designed to completely support Dolby Digital audio decompression. In addition to the complete coverage and compliance of Dolby Digital decoding, the CS4923 is also well equipped with extra memory and reserve execution capacity necessary to cost reduce the entire Dolby sub-system including variable surround delays, bass output management, matrix encoding, matrix decoding, custom audio processing like 3-D positional, robust

error concealment, adjustable audio/video sync and bit accurate synchronous audio controller capability

The major functional sub-blocks of the mixed signal chip are: Crystal's own audio quality 24-bit digital signal processing block, a configurable host interface, a flexible compressed data input interface, an auxiliary digital input interface, a multimode digital output controller and a programmable phase locked loop.

The DSP processor section of the CS4923 accomplishes the Dolby Digital audio decoding and post processing with on-chip ROM and/or RAM based microcode supplied by Crystal. The microcode can be downloaded to the CS4923 in two fashions: manually via the host interface writing data into the device or automatically accessed by the CS4923 DSP from an external 8-bit memory if a serial host mode is selected. For complete information on the DSP microcode features and typical operation, see the CS4923 Dolby Digital Microcode Users Manual.

In addition to the DSP processor the CS4923 is also equipped with a complete set of industry standard audio input/output interfaces. All of the interfaces are augmented with internal assist hardware and large configurable buffers to simplify and reduce the DSP intervention for directing the input and output of data and/or audio. To simplify host drivers and enable bursty high speed compressed data delivery from data demultiplexers a multi-channel 8Kbyte input buffer is provided.

The CS4923 DSP and audio I/O can be clocked from a programmable analog phase locked loop for interfaces to external DACs and ADCs. In addition the phase locked loop can be driven from an internally recovered over-sampled clock from a single wire SPDIF input to perfectly match the output sample rate to the quantity of compressed data received and decoded.

FAQs

- 1) What kind of development boards are available for the CS4923?
A: At this time there is a parallel strategy including the CDB4923 development board and the CRD4923 reference design. The CDB4923 is a traditional evaluation board that provides a means to fully exercise the featured IC in all of its modes. The CDB4923 utilizes discrete DACs, ADCs, and

IEC958 digital interfaces all available from Crystal Semiconductor. The CRD4923 reference design utilizes the CS4226 multi-channel codec to form a two chip DSP and data conversion solution for home A/V products.

- 2) Do we have to have a Dolby license to get more information about the CS4923, CDB4923 or CRD4923?
- A: We can provide a data sheet without harm. Only Dolby qualified recipients are authorized to receive sample or production quantities of implementations containing Dolby Technology including Dolby Digital. If a customer is interested in developing a product containing Dolby technologies, they must contact Dolby laboratories and apply to become a licensee. All such requests should be faxed to Dolby Laboratories Corporation at (415)-863-1373 and marked "Request for Dolby System License Application."

Ordering Information

CS4923-CL 44 PLCC

For further information on Crystal products, please visit our website "www.crystal.com" or call our literature department (800) 888-5016 ext. 3594 or (512) 912-3594 for data sheets and application notes.

Schematic & Layout Review Service

Confirm Optimum
Schematic & Layout
Before Building Your Board.

For Our Free Review Service
Call Applications Engineering.



Call : (5 1 2) 4 4 5 - 7 2 2 2

Sales Office and Applications Support

UNITED STATES

Sales Office and Applications Support:

WESTERN AREA

Cirrus Logic
Crystal Semiconductor Div.
50 Airport Pkwy.
San Jose, CA 95110
Ph: 408-437-7743
FAX: 408-437-4943

Cirrus Logic
Crystal Semiconductor Div.
6 Venture,
Ste. 100
Irvine, CA 92718
Ph: 714-453-5910
FAX: 714-453-5914

CENTRAL AREA

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

EASTERN AREA

Cirrus Logic
Crystal Semiconductor Div.
5511 Capital Center Dr.,
Ste. 103
Raleigh, NC 27606
Ph: 919-859-5393
FAX: 919-859-5334

Cirrus Logic
10 New England Business Center,
Ste. 100
Andover, MA 01810
Ph: 978-794-9138
FAX: 978-794-9998

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

EUROPE

Sales Office and Applications Support:

Cirrus Logic France
Immeuble Andre Malraux
93561 Rosny s/s Bois CEDEX,
France
Ph: +33(148)122812
FAX: +33(148)122810

Cirrus Logic
Crystal Semiconductor (UK) Ltd.
Spectrum Point,
279 Farnborough Rd.,
Farnborough,
Hampshire GU14 7LS,
United Kingdom
Ph: +44(0)1252372762
FAX: +44(0)1252372763

Cirrus Logic GmbH
Muehlfelder-Strasse 2
D-82211 Herrsching, Germany
Ph: +49(08152)92460
FAX: +49(08152)924699

FAR EAST

Sales Office and Applications Support:

CHINA

Cirrus Logic International Ltd.
A-1403, Qiancun Commercial
Mansion
Beijing, China 100029
Ph: (8610)6443-0783
Ph: (8610)6443-0784
Ph: (8610)6443-0785
FAX: (8610)6443-0786

HONG KONG

Cirrus Logic International Ltd.
1203 Park Tower
15 Austin Rd., Tsimshatsui
Kowloon, Hong Kong
Ph: (852)2376-0801
FAX: (852)2375-1202

KOREA

Cirrus Logic, Korea Co., Ltd.
Rm 1302 SangKyung Bldg., 824-
21 YeokSam-Dong,
KangNam-Ku,
Seoul, Korea
Ph: +82(2)565-8561
FAX: +82(2)565-8565

SINGAPORE

Cirrus Logic
Crystal International
6 Kaki Bukit Ave. 1,
Ste. 03-03
Singapore 417940
Ph: +65-743-4111
FAX: +65-742-4111

TAIWAN

Cirrus Logic International Ltd.
Taiwan Branch
10F, No.214 Tun Hwa North Rd.
Taipei, Taiwan R.O.C.
Ph: +886(2)2718-4533
FAX: +886(2)2718-4526

JAPAN

Sales Office and Applications Support:

Cirrus Logic K.K.
Shinjuku Green Tower, Bldg. 26F
6-14-1 Nishi-Shinjuku,
Shinjuku-ku,
Tokyo, 160
Japan
Ph: +81(03)3340-9111
FAX: +81(03)3340-9120



**CRYSTAL SEMICONDUCTOR
PRODUCTS DIVISION**

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

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