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[Cirrus Logic, Inc.](#)
[CS47028C-CQZ](#)

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CS47024/28/48 Audio SoC

HIGH PERFORMANCE MULTICHANNEL CODEC + 32-BIT DSP

CS470xx TARGET MARKETS



AUTOMOTIVE HEAD-END UNITS



AUTOMOTIVE OUTBOARD AMPLIFIERS



HOME THEATER IN A BOX

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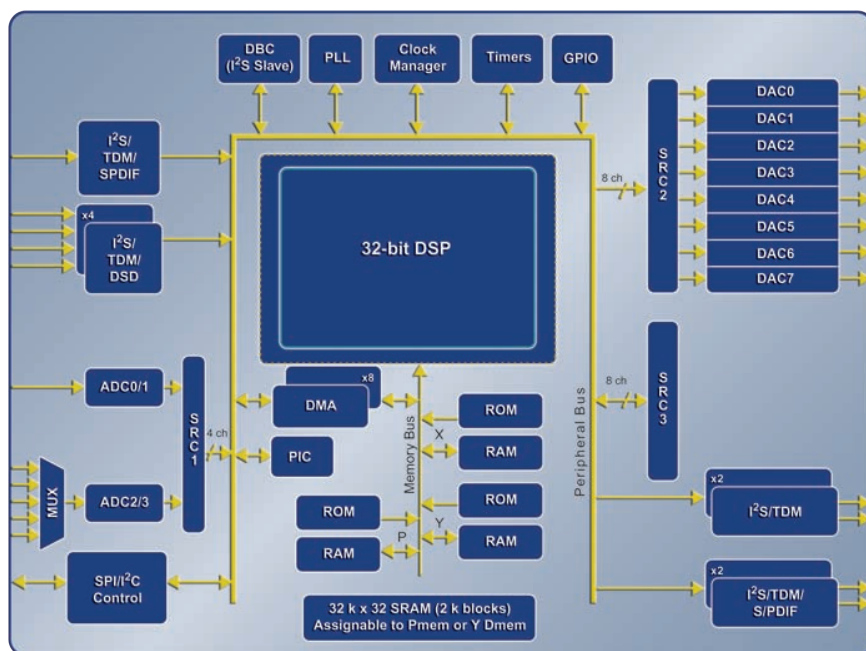
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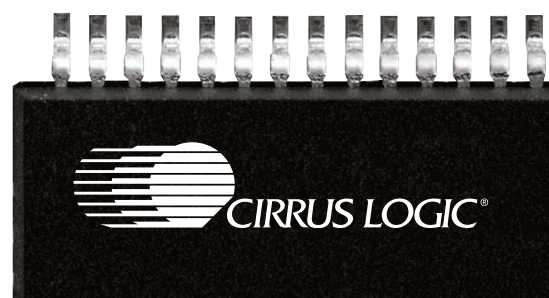
CS470xx FAMILY FEATURES

- Multichannel 32-bit audio processing at 150 MHz with dual MACs & 72-bit accumulator
- Advanced Delta-Sigma converter architecture
- Single-ended or differential analog I/O
- Up to 4-channel 24-bit, 105 dB ADC
- Stereo 5:1 analog input MUX
- Up to 8-channel 24-bit, 105 dB DAC
- Integrated 192 kHz S/PDIF Rx and Tx
- Integrated multichannel, reassignable SRCs
- Supports both TDM (Time-division Multiplexed) and standard serial audio formats
- SPI™/I2C® serial control port
- Low-power standby: 350 µW
- 32 K x 32 RAM which is reassignable
- DSP Composer GUI simplifies programming and generation of custom signal processing using extensive library of primitives
- Licensed third party audio processing algorithms in ROM, plus extensive library of Cirrus proprietary downloadable and customizable firmware—see back for partial list of algorithms

The CS470xx Family audio SoC gives OEMs a cost-effective and simple-to-design audio processing solution with integrated high-performance mixed-signal that provides an extensive selection of enhanced audio features to maximize the end user's listening experience within the automotive entertainment space.

CS470xx FAMILY KEY BENEFITS

- Excellent development tools to simplify system design and provide faster time to market
- Easy to design – most standard processing features and some third party algorithms in ROM
- Best in class analog performance and sound quality
- High level of integration enables small PCB footprint and lower system cost
- No external memory needed



AUDIO SoCs | CS470xx FAMILY

DSP GUI PROGRAMMING ENVIRONMENT WITH CS470xx DEVELOPMENT PLATFORM

CS470xx ORDERING INFORMATION

Device(s)

CS47048-DQZ (Automotive)
CS47048-CQZ (Commercial)
CS47028-DQZ (Automotive)
CS47028-CQZ (Commercial)
CS47024-DQZ (Automotive)
CS47024-CQZ (Commercial)

Package

100-Pin LQFP

Evaluation Board

CDB470XS-DC48/-DC28/-DC24
(Single-ended)
CDB470XD-DC48/-DC28/-DC24
(Differential)

Documentation

CS470xx Data Sheet
CS470xx System Designer's Guide

Tools

DSP Composer™
GUI Software Tool
MicroCondenser™

Standard Processing

Advanced Bass Management
Compressor/Limiter
Crossbar Mixer
Independent Channel Delay
Matrix Mixer
Multiband Parametric/Graphic EQ
Multichannel Tone Control
And many more...

Cirrus Proprietary Algorithm Support

Cirrus BandXpander™
Cirrus Bass Enhancement (CBE)
Cirrus Original Multichannel
Surround™/II (COMS2) for
Hall, Theater, etc. DSP effects
Cirrus Dynamic Volume Leveler™
Cirrus Intelligent Room Correction™/
II (IRC/IRC2)

Cirrus® Virtualizer Technology
(CVT)—Headphone and
Speaker modes

Extensive Third Party Algorithm Support/Capability

Audistry® by Dolby®
Audyssey Dynamic EQ®
Audyssey Dynamic Volume®
Cirrus® Virtualizer Technology
(CVT)—Headphone and
Speaker modes
Dolby® Pro Logic® II, IIx, IIz
Dolby Headphone®
EmbracingSound® Technologies
Neural-THX® Surround
SRS® Automotive™
SRS® CircleSurround® II
SRS® TruSurround® XT™/
HD™/HD4™
SRS® TruVolume
SRS® WOW/WOW HD™
Waves™ MaxxBass®



The CS470xx Family is programmed using Cirrus Logic's proprietary GUI software development tool called DSP Composer.™ An audio processing chain is designed using a drag and drop interface. The tool then configures the CS470xx device through the SPI™/I²C® serial port. The firmware may be loaded from the ROM within the CS470xx device or it may be downloaded through the serial control port.

CS470xx FAMILY DEVICES & FEATURES

Part	Processor	Speed (MIPS)	Car Audio DSPs	General Audio DSPs	Resolution (bits)	Dynamic Range (dB)	A/D Channels	D/A Channels	Comments	Package
CS470xx	Tiny, cost effective, mega-performance PCM processors with integrated CODEC targeted for mini-systems, DVD receivers, speakerbars, car audio, DTVs									
NEW CS47024	Single 32-bit	150	CS47024C-DQZ	CS47024C-CQZ	24	108 DAC 105 ADC	2	4	2 Ch ADC w/ 5:1 MUX, 4 Ch DAC, S/PDIF Tx, SRC (2 Ch)	100 LQFP
NEW CS47028	Single 32-bit	150	CS47028C-DQZ	CS47028C-CQZ	24	108 DAC 105 ADC	2	8	2 Ch ADC w/ 5:1 MUX, 8 Ch DAC, S/PDIF Rx/Tx, SRC (8 Ch)	100 LQFP
NEW CS47048	Single 32-bit	150	CS47048C-DQZ	CS47048C-CQZ	24	108 DAC 105 ADC	4	8	4 Ch ADC w/ 5:1 MUX on one 2 Ch ADC, 8 Ch DAC, S/PDIF Rx/Tx, SRC (8 Ch)	100 LQFP