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

For any questions, you can email us directly:

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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

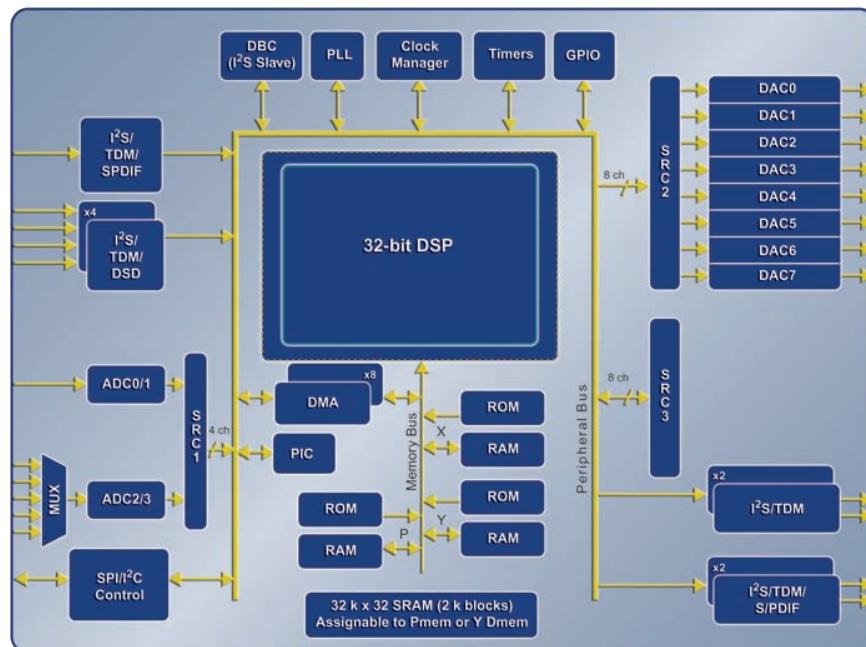
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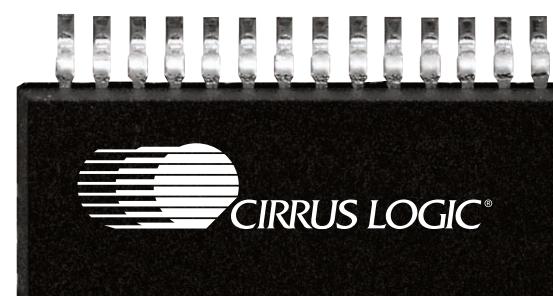
CS470xx FAMILY FEATURES

- 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 Kx32 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



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...

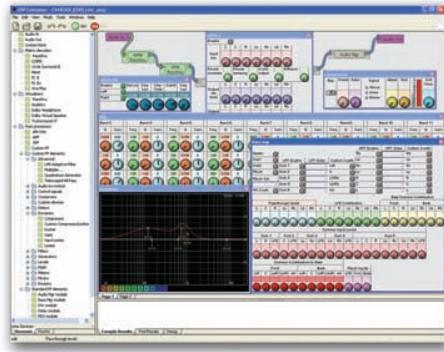
Cirrus Proprietary Algorithm Support

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 (MHz)	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