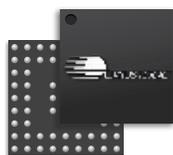
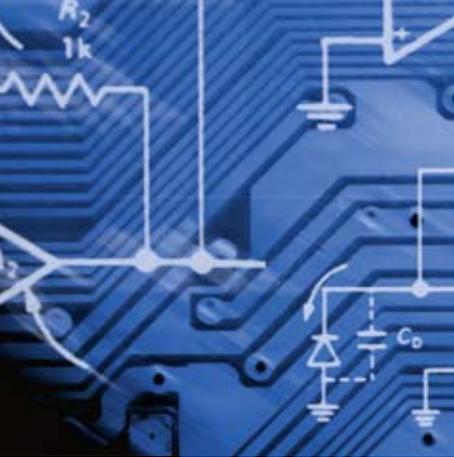
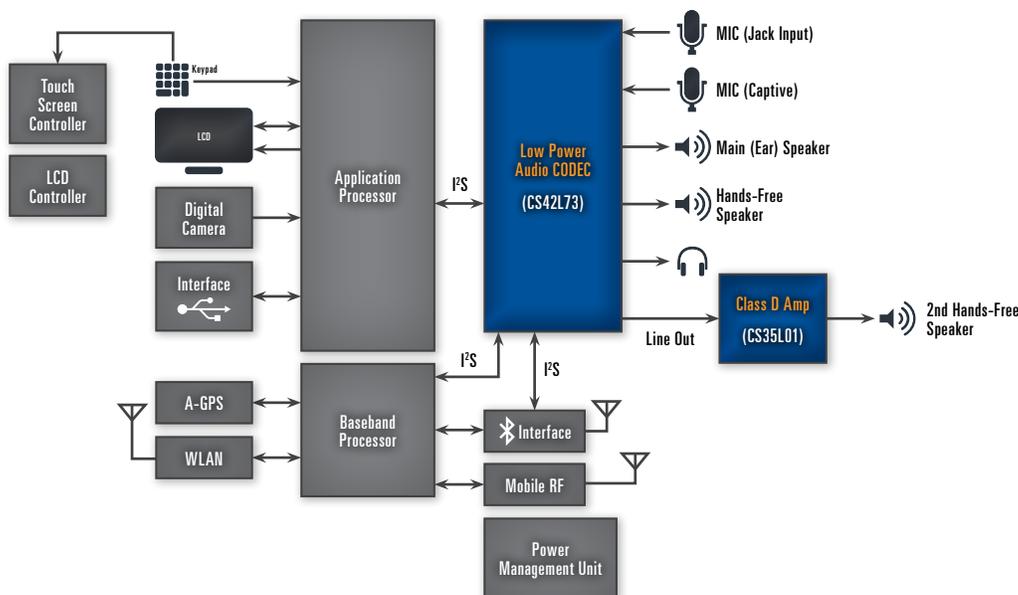


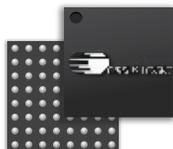
# CS42L73

## HIGHLY INTEGRATED LOW POWER MOBILE STEREO CODEC



CS42L73 65-BALL FBGA PACKAGE

(actual size: 5 mm x 5 mm)



CS42L73 64-BALL WLCSP PACKAGE

(actual size: 3.44 mm x 3.44 mm)



### MARKET APPLICATIONS

- Smartphones
- Mobile Internet Devices
- Bluetooth® Headsets

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### OVERVIEW

CS42L73 is a highly integrated, low-power, mobile audio distribution network that incorporates two stereo DACs and a stereo ADC with ground centered headphone, line and speaker amplifiers for smartphone and portable applications. Three asynchronous bidirectional serial ports with integrated asynchronous sample rate converters (ASRCs) that accept a wide range of incoming audio sample rates can be used to feed the integrated digital mixing engine, which is the heart of the CS42L73. The engine can simultaneously overlay and distribute digital audio from up to three external sources to any of its integrated audio nodes, giving complete routeability to the mobile system designer.

The analog audio peripherals, fed by the digital mixing engine of the CS42L73, routing into two stereo high performance DACs is designed with the smartphone in mind. Additional considerations include an integrated MIC bias to support the high performance stereo ADCs, as well as the first digital MIC input to a Cirrus Logic general market codec. Features such as a 1 V<sub>RMS</sub> line level output from a single 1.8 V power supply, and an on-board tri-level inverting charge pump capable of driving a headphone load with the lowest DC offset on the market contribute to the unique value of the CS42L73. The CS42L73 offers the lowest power consumption of any audio codec with integrated bi-directional SRCs. From the serial port to the stereo headphone load via the digital mixing engine and the SRCs, the CS42L73 burns only 3.5 mW in real world conditions.

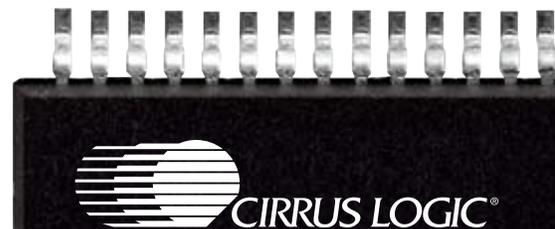
### KEY VALUES

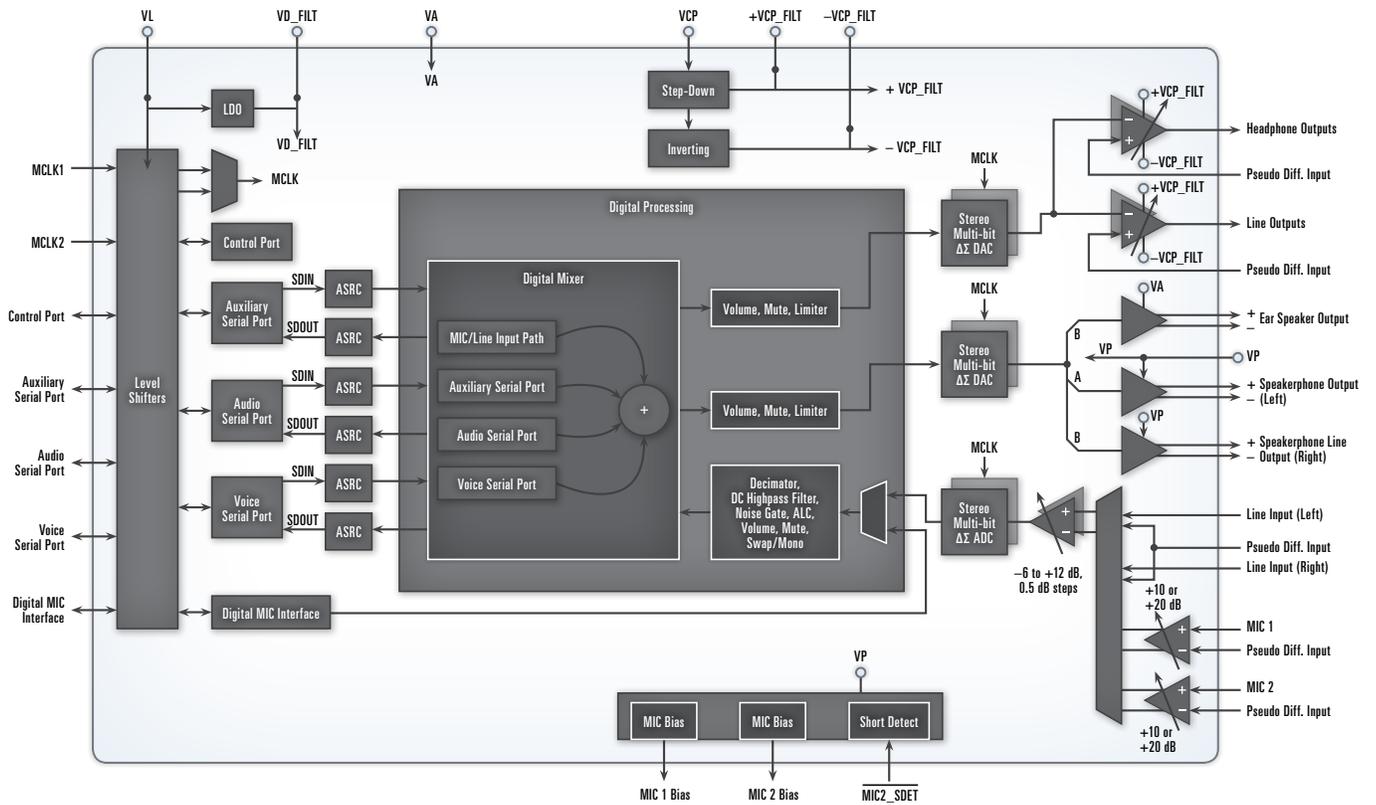
The CS42L73 can reduce the burden of the system's applications processor by taking all digital audio sources into a central location, synchronizing the sources and then mixing them for distribution to the audio human interface peripherals. By driving into smaller process nodes the smartphone codec uses lower levels of power consumption than current models which require direct connection to the baseband processor and affords power savings for the overall system when the applications processor is dormant.

### SYSTEM FEATURES

- Three independent serial ports with integrated asynch SRCs
- Native (no PLL required) support for 6/12/24 MHz, 13/26 MHz, and 19.2/38.4 MHz master
- High-speed I<sup>2</sup>C™ control port (400 kHz)

For the full datasheet, visit [www.cirrus.com/support](http://www.cirrus.com/support).





**FEATURES**

**ANALOG I/O**

- Stereo high performance ADC
  - 91 dB Dynamic Range (A-wtd)
  - 85 dB THD+N
- Dual digital microphone interface
- Independent MIC bias outputs
- Stereo DAC to headphone amplifier
  - 94 dB Dynamic Range (A-wtd)
  - 81 dB THD+N into 32 Ω
  - Integrated Step-down/Inverting Charge Pump
- Class H amplifier - automatic supply adj.
  - High HP Power Output at -70/-81 dB THD+N
  - 2 x 17/8.5 mW into 16/32 Ω @ 1.8 V
- Stereo DAC to Line Outputs

**STEREO HIGH PERFORMANCE LINE LEVEL DAC**

- 97 dB Dynamic Range (A-wtd)
- -86 dB THD+N
- 1 V<sub>RMS</sub> from a single 1.8 V power supply

**MONO DAC TO EAR SPEAKER AMPLIFIER**

- High Power Output at -70 dB (0.032%) THD+N
- -45 mW into 16 Ω @ 1.8 V

**MONO DAC TO SPEAKERPHONE AMPLIFIER**

- High output power at ≤ 1% THD+N
- -1.18/0.84/0.66 W into 8 Ω @ 5.0/4.2/3.7 V
- Direct battery-powered operation

**DEMONSTRATION BOARD CDB42L73**



Part	Resolution (bits)	Dynamic Range (dB)	THD+N (dB)	Sample Rate (kHz)	Analog Outputs	Power Supply (V)	Comments	Package
<b>CS42L73</b>	24	91 ADC 97 DAC	-85	48	Pseudo Differential	VA/VCP/VL = 1.66 to 1.94 VP = 3.0 to 5.25 VD = 0.85 to 1.40	2 ADCs, 4 DACs, Class-H HP, Class A/B speaker driver, 3x asynchronous serial ports	64 WLCSP 65 FBGA