

Multi-Channel Audio Hub CODEC for Smartphones

DESCRIPTION

The WM8994 is a highly integrated ultra-low power hi-fi CODEC designed for smartphones and other portable devices rich in multimedia features.

An integrated stereo class D/AB speaker driver and class W headphone driver minimize power consumption during audio playback.

The device requires only V_{batt} and a 1.8V supply, generating all other internal supply rails from integrated LDOs.

Stereo full duplex asynchronous sample rate conversion and multi-channel digital mixing combined with powerful analogue mixing allow the device to support a huge range of different architectures and use cases.

A fully programmable parametric EQ provides speaker compensation and a dynamic range controller can be used in the ADC or DAC paths for maintaining a constant signal level, maximizing loudness and protecting speakers against overloading and clipping.

A smart digital microphone interface provides power regulation, a low jitter clock output and decimation filters for up to four digital microphones. A MIC activity detect with interrupt is available.

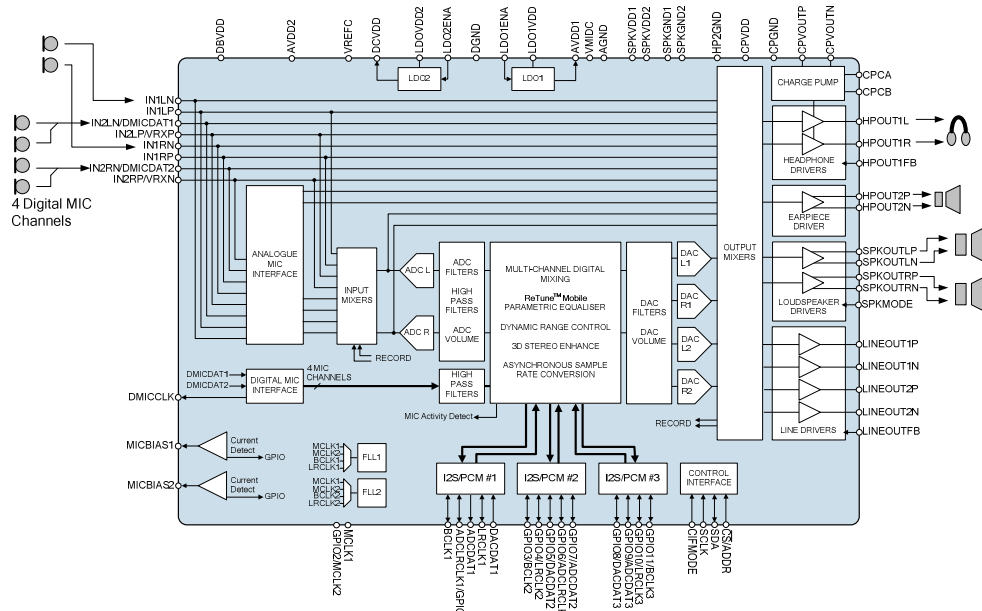
Active ground loop noise rejection and DC offset correction help prevent pop noise and suppress ground noise on the headphone outputs.

FEATURES

- Hi-Fi 24-bit 4-channel DAC and 2-channel ADC
- 100dB SNR during stereo DAC playback ('A' weighted)
- Smart MIC interface
 - Power, clocking and data input for up to four digital MICs
 - High performance analogue MIC interface
 - MIC activity monitor & interrupt allows processor to sleep
- 1W stereo / 2W mono class D/AB speaker driver
- Capless class W headphone drivers
 - Integrated charge pump
 - 6mW total power for DAC playback to headphones
- 4 line outputs (single-ended or differential)
- BTL earpiece driver
- Digital audio interfaces for multi-processor architecture
 - Asynchronous stereo duplex sample rate conversion
 - Powerful mixing and digital loopback functions
- ReTune™ Mobile 5-band, 6-channel parametric EQ
- Programmable dynamic range controller
- Dual FLL provides all necessary clocks
 - Self-clocking modes allows processor to sleep
 - All standard sample rates from 8kHz to 96kHz
- Active noise reduction circuits
 - DC offset correction removes pops and clicks
 - Ground loop noise cancellation
- Integrated LDO regulators
- 72-ball W-CSP package (4.511mm x 4.023mm x 0.7mm)

APPLICATIONS

Smartphones and music phones
 Portable navigation
 Mobile internet devices



ORDERING INFORMATION

ORDER CODE	TEMPERATURE RANGE	PACKAGE	MOISTURE SENSITIVITY LEVEL	PEAK SOLDERING TEMPERATURE
WM8994ECS/RV	-40°C to +85°C	72-ball W-CSP (Pb-free, Tape and reel)	MSL1	260°C

Note:

Reel quantity = 3500

TYPICAL SMARTPHONE APPLICATION

Figure 1 shows a typical multi-processor smartphone or music phone application. Digital connections to a baseband processor, application processor, handset and headset MICs, Bluetooth, FM radio and analogue output devices are all supported.

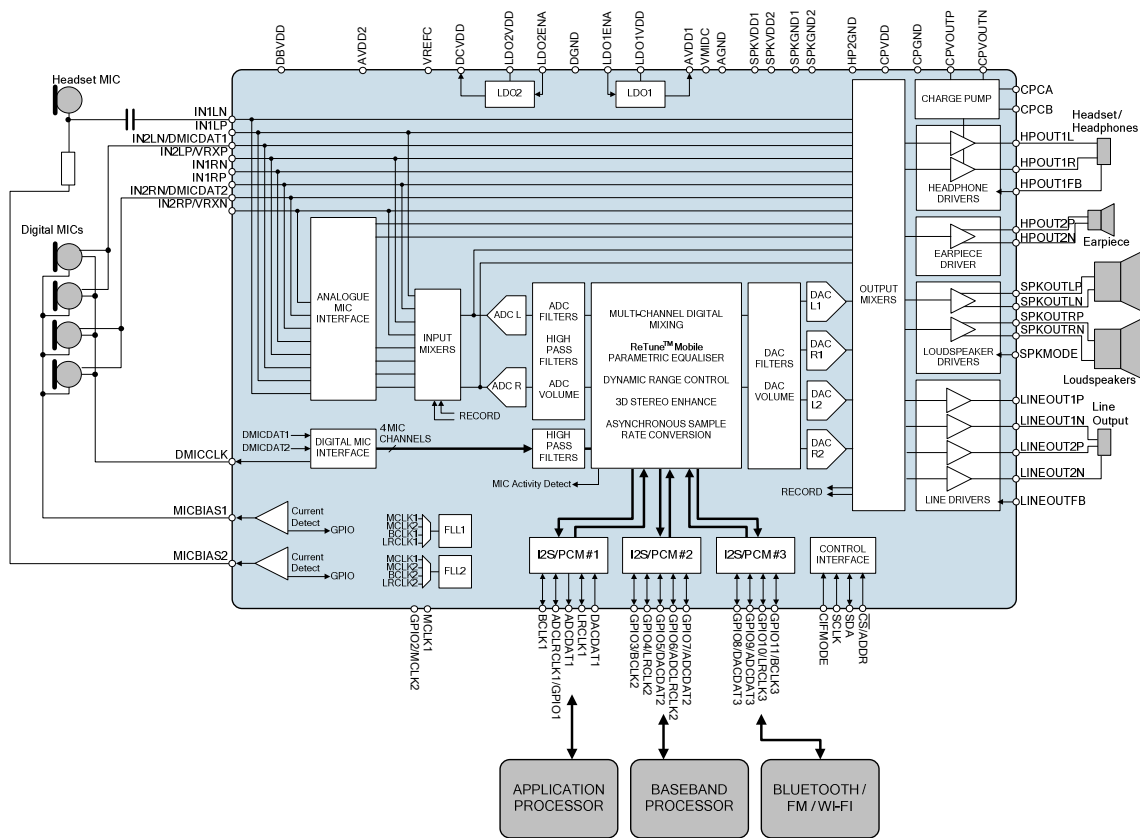


Figure 1 Smartphone using Digital MICs and Digital Voice Interfaces

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