



Audio CODECs

# SGTL5000

## Low-power stereo codec with headphone amp

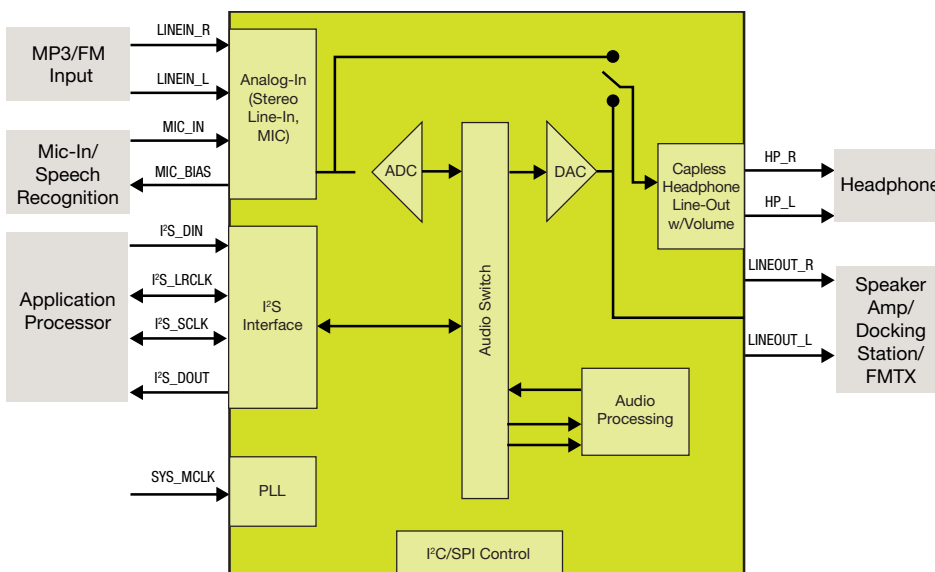
### Overview

Freescale's SGTL5000 is a low-power stereo codec that includes a headphone amp and is designed to provide a comprehensive audio solution for products that require LINEIN, MIC\_IN, LINEOUT, headphone output and digital I/O. Deriving its architecture from the best-in-class Freescale-integrated products currently on the market, the SGTL5000 is able to achieve ultra-low power with very high performance and functionality—all in one of the smallest footprints available. Target markets include media players, navigation devices, smartphones, tablets, medical equipment, exercise equipment, consumer audio equipment, etc. Designed with features such as capless headphone and an integrated PLL to allow clock reuse within the system, Freescale helps customers achieve a lower overall system cost.

### Target Applications

- Media players
- Navigation devices
- Smartphones
- Tablets
- Medical equipment
- Exercise equipment
- Consumer audio equipment

### SGTL5000 Block Diagram



Note: SPI not supported in the 3 mm x 3 mm 20-pin QFN package option.

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## Benefits

- High performance at low power
- Extremely low power modes
- Small PCB footprint
  - 3 mm x 3 mm QFN
- Allows for no-cost system customization

## Features

### Analog Inputs

#### Stereo Line-In

- Support for external analog input
- Codec bypass for low power

#### Mic

- Mic bias provided
- Programmable mic gain
- Auto volume control

#### ADC

- 85 dB SNR and -70 dB THD+N (VDDA = 1.8 V)
- 90 dB SNR and -72 dB THD+N (VDDA = 3.3 V)

### Analog Outputs

#### DAC/Line-Out

- 100 dB SNR and -85 dB THD+N (VDDA = 3.3 V)

#### DAC/HP Output

- 100 dB SNR and -80 dB THD+N (1.8 V VDDA, 16 ohm load, DAC to headphone)
- 62.5 mW max, 1.02 kHz sine into 16 ohm load at 3.3 V VDDA
- Capless design
- Best-in-class PSRR without linear regulator
- Only two external components needed for digital playback
- Ramped digital volumes
- Popless volume
- 0.5 dB analog volume steps (0 dB to 64 dB)

## Digital I/O

- I<sup>2</sup>S port to allow routing to applications processor
- Standard sample rates supported: 8 kHz, 12 kHz, 16 kHz, 24 kHz, 32 kHz, 48 kHz, 96 kHz, 11.025 kHz, 22.05 kHz, 44.1 kHz

## Integrated Digital Audio Processing

- Surround, bass, tone control/parametric equalizer/graphic equalizer

## Clocking/Control

- PLL allows input of 8 MHz to 27 MHz
- Standard audio clocks derived from PLL

## Power Supplies

- Operates from 1.62–3.6 V to maximize performance while minimizing power consumption

## Packages

- 3 mm x 3 mm 20-pin QFN
- 5 mm x 5 mm 32-pin QFN

## Freescale: A Leader in Analog Solutions

Expanding on more than 30 years of innovation, Freescale is a leading provider of analog and power management ICs that are advancing the automotive, consumer, industrial and networking markets. Analog solutions interface with real-world signals to control and drive for complete embedded systems.

For more information, visit [freescale.com/analog](http://freescale.com/analog)



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