ChipCorder®
TECHNOLOGY BY ISD

ISD4004 Series

Single-Chip Voice Record/Playback Devices
8-, 10-, 12-, and 16-Minute Durations

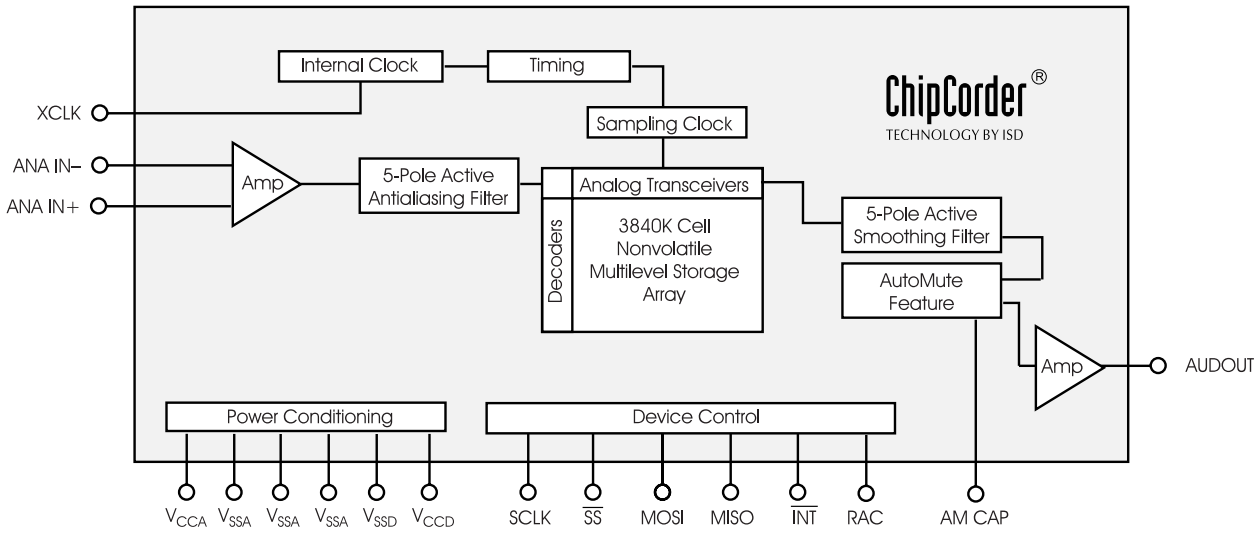
Advanced Information

GENERAL DESCRIPTION

The ISD4004 ChipCorder® Products provide high-quality, 3-volt, single-chip record/playback solutions for 8- to 16-minute messaging applications which are ideal for cellular phones and other portable products. The CMOS-based devices include an on-chip oscillator, antialiasing filter, smoothing filter, AutoMute™ feature, audio amplifier, and high density, multilevel Flash storage array. The ISD4004 series is designed to be used in a microprocessor- or microcontroller-based system. Address and control are accomplished through a Serial Peripheral Interface (SPI) or Microwire Serial Interface to minimize pin count.

Recordings are stored in on-chip nonvolatile memory cells, providing zero-power message storage. This unique, single-chip solution is made possible through ISD's patented multilevel storage technology. Voice and audio signals are stored directly into memory in their natural form, providing high-quality, solid-state voice reproduction.

Figure: ISD4004 Series Block Diagram



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FEATURES

- Single-chip voice record/playback solution
- Single +3 volt supply
- Low-power consumption
  - Operating current:
    I_{CC} Play = 15 mA (typical)
    I_{CC} Rec = 25 mA (typical)
  - Standby current: 1 µA (typical)
- Single-chip durations of 8, 10, 12, and 16 minutes
- High-quality, natural voice/audio reproduction
- AutoMute feature provides background noise attenuation during periods of silence
- No algorithm development required
- Microcontroller SPI or Microwire™ Serial Interface
- Fully addressable to handle multiple messages
- Nonvolatile message storage
- Power consumption controlled by SPI or Microwire control register
- 100-year message retention (typical)
- 100K record cycles (typical)
- On-chip clock source
- Available in die form, PDIP, SOIC, and TSOP
- Extended temperature (–20°C to +70°C) and industrial temperature (–40°C to +85°C) versions available

Table: ISD4004 Series Summary

Part Number	Duration (minutes)	Input Sample Rate (KHz)	Typical Filter Pass Band (KHz)
ISD4004-08M	8.0	8.0	3.4
ISD4004-10M	10.0	6.4	2.7
ISD4004-12M	12.0	5.3	2.3
ISD4004-16M	16.0	4.0	1.7

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