

ISD1100 Series

Single-Chip Voice Record/Playback Device

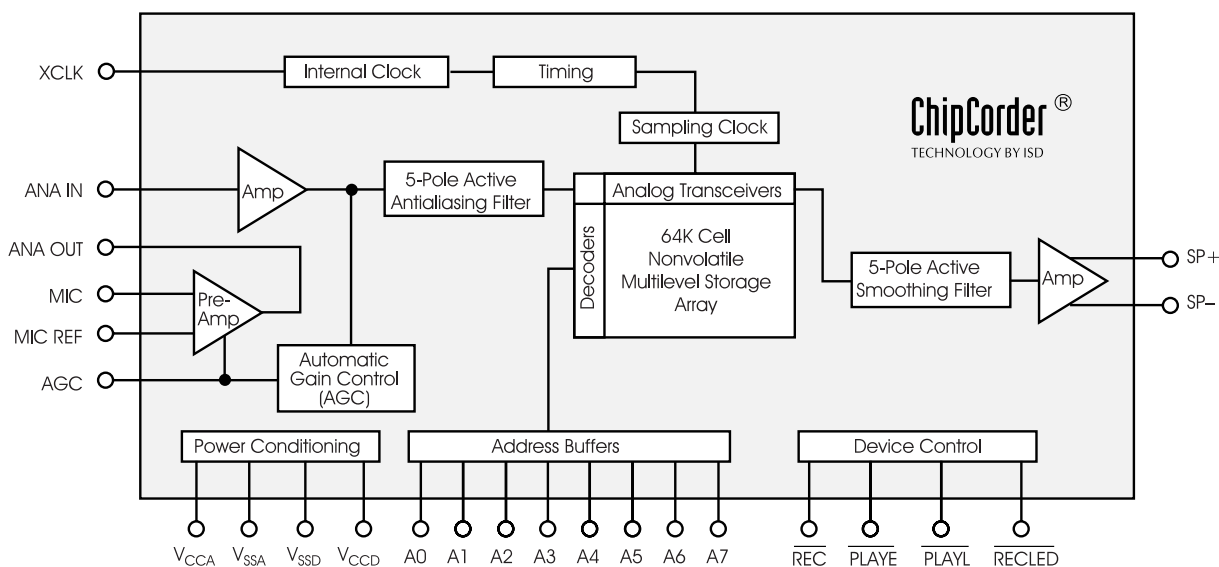
10- and 12-Second Durations

GENERAL DESCRIPTION

Information Storage Devices' ISD1100 ChipCorder® Series provides high-quality, single-chip record/playback solutions to 10- and 12-second messaging applications. The CMOS devices include an on-chip oscillator, microphone preamplifier, automatic gain control, antialiasing filter, smoothing filter, and speaker amplifier. A minimum record/playback subsystem can be configured with a microphone, a speaker, several passives, two push-buttons, and a power source.

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 : ISD1100 Series Block Diagram



FEATURES

- Easy-to-use single-chip voice record/playback solution
- High-quality, natural voice/audio reproduction
- Push-button interface
 - Playback can be edge- or level-activated
- Single-chip durations of 10 and 12 seconds
- Automatic power-down mode
 - Enters standby mode immediately following a record or playback cycle
 - 0.5 μ A standby current (typical)
- Zero-power message storage
 - Eliminates battery backup circuits
- Fully addressable to handle multiple message
- 100,000 record cycles (typical)
- On-chip clock source
- No programmer or development system needed
- Single +5 volt power supply
- Available in die form, DIP and SOIC
- 100-year message retention (typical)

Table: ISD1100 Series Summary

Part Number	Minimum Duration (Seconds)	Input Sample Rate (KHz)	Typical Filter Pass Band (KHz)
ISD1110	10	6.4	2.6
ISD1112	12	5.3	2.2

Table of Contents

ISD1100 Series

Single-Chip Voice Record/Playback Device
10- and 12-Second Durations

DETAILED DESCRIPTION	1
Speech/Sound Quality	1
Duration	1
EEPROM Storage	1
Basic Operation	1
Automatic Power-Down Mode	1
Looping Capability	1
Addressing (Optional)	1
PIN DESCRIPTIONS	2
Voltage Inputs (V_{CCA} , V_{CCD})	2
Ground Inputs (V_{SSA} , V_{SSD})	2
Record (\overline{REC})	2
Playback, Edge-Activated (\overline{PLAYE})	2
Playback, Level-Activated (PLAYL)	2
Record LED Output (\overline{RECLED})	3
Microphone Input (MIC)	3
Microphone Reference (MIC REF)	3
Automatic Gain Control (AGC)	3
Analog Output (ANA OUT)	3
Analog Input (ANA IN)	3
Optional External Clock (XCLK)	3
Speaker Outputs (SP+, SP-)	4
Address Inputs (A0–A7)	4
Looping Capability	4
TIMING DIAGRAMS	5
TYPICAL PARAMETER VARIATION WITH VOLTAGE AND TEMPERATURE (PACKAGED PARTS)	9
TYPICAL PARAMETER VARIATION WITH VOLTAGE AND TEMPERATURE (DIE)	13
FUNCTIONAL DESCRIPTION EXAMPLE	14
APPLICATIONS NOTE	15
ISD1100 SERIES PHYSICAL DIMENSIONS	16
ORDERING INFORMATION	20

FIGURES, CHARTS, AND TABLES IN THE ISD1100 SERIES DATASHEET

Figure 1:	ISD1100 Series Pinout	2
Figure 2:	Record	5
Figure 3:	Playback	5
Figure 4:	Application Example	14
Figure 5:	28-Lead 0.600-Inch Plastic Dual Inline Package (PDIP) (P)	16
Figure 6:	28-Lead 0.300-Inch Plastic Small OutLine Integrated Circuit (SOIC) (S)	17
Figure 7:	ISD1100 Series Bonding Physical Layout	18
Chart 1:	Record Mode Operating Current (I_{CC})	9
Chart 2:	Total Harmonic Distortion	9
Chart 3:	Standby Current (I_{SB})	9
Chart 4:	Oscillator Stability	9
Chart 5:	Record Mode Operating Current (I_{CC})	13
Chart 6:	Total Harmonic Distortion	13
Chart 7:	Standby Current (I_{SB})	13
Chart 8:	Oscillator Stability	13
Table 1:	Device Playback/Record Durations	1
Table 2:	External Clock Sample Rates	3
Table 3:	Absolute Maximum Ratings (Packaged Parts)	6
Table 4:	Operating Conditions (Packaged Parts)	6
Table 5:	DC Parameters (Packaged Parts)	6
Table 6:	AC Parameters (Packaged Parts)	7
Table 7:	Absolute Maximum Ratings (Die)	10
Table 8:	Operating Conditions (Die)	10
Table 9:	DC Parameters (Die)	10
Table 10:	AC Parameters (Die)	11
Table 11:	Plastic Dual Inline Package (PDIP) (P) Dimensions	16
Table 12:	Plastic Small OutLine Integrated Circuit (SOIC) (S) Dimensions	17
Table 13:	ISD1100 Series PIN/PAD Designations, with Respect to Die Center (μm)	19