



APPLICATION INFORMATION FOR ALL ISD ChipCorder PRODUCTS

Frequently Asked Questions

1. I can't get enough audio output from the chip. It isn't loud enough.

Are you using the speaker directly across the speaker leads? Is it in a box? Volume varies greatly depending on the enclosure. The ISD-ES001 Evaluation System with an efficient 4-inch speaker drives us out of the room. We use a 20- Ω resistor in series to keep peace in the lab. If you experiment and still need more volume you can use an audio amplifier chip, as shown in "Using the Device."

2. How do I copy recordings from my tape recorder into your chip?

Take audio from Line Out of the tape deck and attenuate it with a resistor voltage divider. Apply to ANA IN through a DC-blocking capacitor such as a 1.0 μ F. The Line Out of a tape deck is \approx 100–150 mV RMS and must be attenuated to 50 mV P-P (Peak-to-Peak) for our chips. See Figure 4: Prototype 3 Volt AGC Circuit under the section "AGC Circuit for the ISD33000 Series" for a circuit example.

3. I record several messages into the chip but it always plays beyond the end of the message, into the next, playing everything until it reaches the end of the chip!

You are probably holding \overline{CE} (Chip Enable), pin 23, LOW as you did when recording. If you hold \overline{CE} LOW it will play beyond the End-of-Message (EOM) marker into the next message. For playback you need only pulse \overline{CE} LOW momentarily. Then it will play the message, stopping at the end.

4. I hear a lot of noise when I play back my recording. How much should there be?

Is it "hiss" or a "buzz or hum" sort of noise? The normal low-level background noise comes across as a very weak "hiss." It is about the same as a long distance phone call. If it is a "hum," there may several ways to reduce it. First, are you using the differential microphone circuit illustrated in the "Microphone and Speaker Selection." How is V_{CCD} , pin 28, bypassed? See Good "Audio Design Practices" and "Single-Chip Board Layout Diagrams" for layout details. It is sometimes difficult to get good noise performance on wire wrap or "proto board."

**5. How many messages can I put in my chip?
There are eight address lines. Does this mean there are eight messages?**

No. It means that the messages are accessed with binary coding. The starting point of each message is defined by its binary code. (See the address table in "Address Segment Resolution.") In the shorter devices (ISD1110, ISD1210), there are 80 addresses available for starting messages. In the mid-sized devices (ISD1016A, ISD1420), there are 160 potential starting addresses. In the larger devices (ISD2560/75/90/120), there are 600 starting addresses. These are explained in "Basic Addressing."

6. My chip won't do anything. It just sits there when I try to make it record or play.

Is pin 24, PD (Power-Down), HIGH or LOW? It must be LOW for the chip to come out of standby, draw current and operate.

7. My chip will record a message but will only play the message back once until I remove the power. Then it will play one more time only.

The chip probably played to the end of memory and is in "overflow." Pulse pin 24, PD, HIGH briefly to reset the address counter back to the beginning to play the message again. Any time the chip plays all the way to the end, the address counter must be reset (ISD1000A and ISD2500 only).

8. My prototype circuit works intermittently (or not at all). It records, but can only playback once or twice before I have to power it off to work again.

Do you have pin 26, TEST/XCLK, grounded? There must be no floating digital inputs. All address pins, control pins, and TEST/XCLK must be defined as HIGH or LOW.

9. My chip gets hot when I plug it in and doesn't sound very good.

Do you have one of the speaker leads, SP+ or SP-, grounded? These leads must NOT be grounded. They can be connected directly to the speaker or left floating.

10. Is a development system available?

Yes. See the section "ISD Development Systems." Contact an ISD representative for price and availability.

11. Will the ISD chip run from a 9 VDC battery?

Not directly! Use a voltage regulator to get down to 5 VDC for the chip. It is possible to run it from four AA cells at 6 VDC, however.

12. Can the ISD chips play a sound backwards?

No, the addressing technique doesn't allow it.

13. Can the ISD33000 run at 5 volts?

No, the operating voltage of the ISD33000 family is 3 volts \pm 10 percent. You need to regulate the supply voltage down to 3 volts.

14. I am confused about the SPI command format for the ISD33000. Do you have an application note that describes the SPI command format.

Yes, See the section "Operations, Tricks and Techniques."

15. I need a low-cost AGC circuit to use with the ISD33000. What do you recommend?

Please see "AGC Circuit for ISD33000" (also see Figure 4: AGC Schematic under the section "A 'C' Language Source code Example for Use with the ISD33000 Series" for a low cost AGC.