

APPLICATIONS BRIEF 23 — MINIMUM I/O APPLICATIONS FOR ISD PRODUCTS

Many applications for ISD products are I/O limited. That is, they have a limited number of control pins available to operate the device. The following analysis demonstrates the I/O pin count trade off of features versus operability of the various ISD products.

1. **Device:** ISD1110

Voltage Required: 5 volts

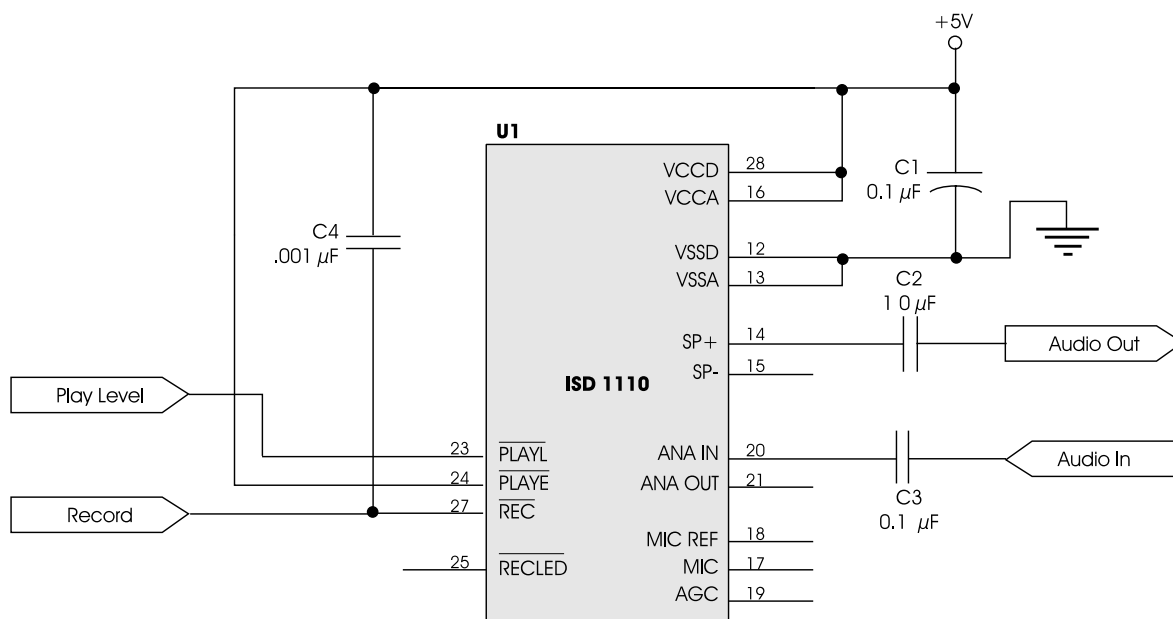
Number of I/O pins: 2

Total Storage time: 10 seconds

Features: One message Record and Play

NOTE Device records as long as $\overline{\text{REC}}$ pin is held LOW. The $\overline{\text{PLAYL}}$ pin as shown must be held LOW for duration of message. If it is allowed to go back HIGH, message will terminate immediately. $\overline{\text{PLAYE}}$ may be substituted if required. A LOW going pulse on this pin causes playback of the message to begin and continue until its end.

Figure 26:



2. **Device:** ISD1420

Voltage Required: 5 volts

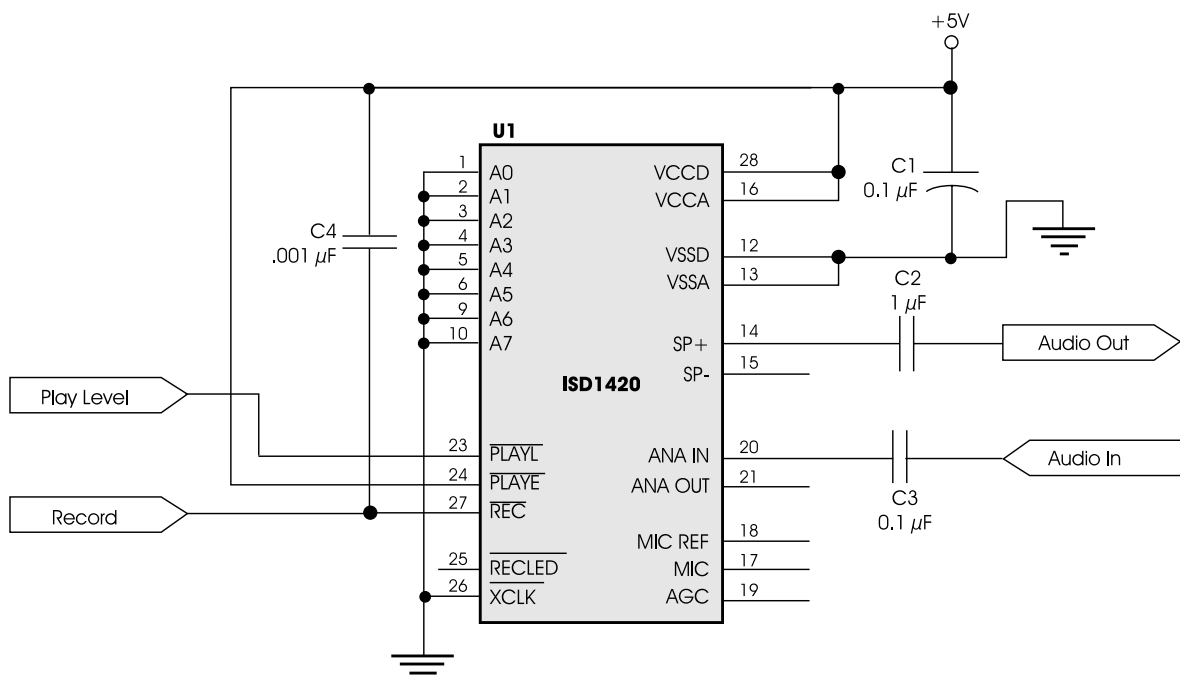
Number of I/O pins: 2

Total Storage time: 20 seconds

Features: One message record and play

NOTE Device records as long as REC pin is held LOW. The PLAYL pin as shown must be held LOW for duration of message. If it is allowed to go back HIGH, message will terminate immediately. PLAYE may be substituted if required. A LOW going pulse on this pin causes playback of the message to begin and continue until its end.

Figure 27:



3. **Device:** ISD1420

Voltage Required: 5 volts

Number of I/O pins: 3

Total Storage time: 20 seconds

Features: Multiple message record and play

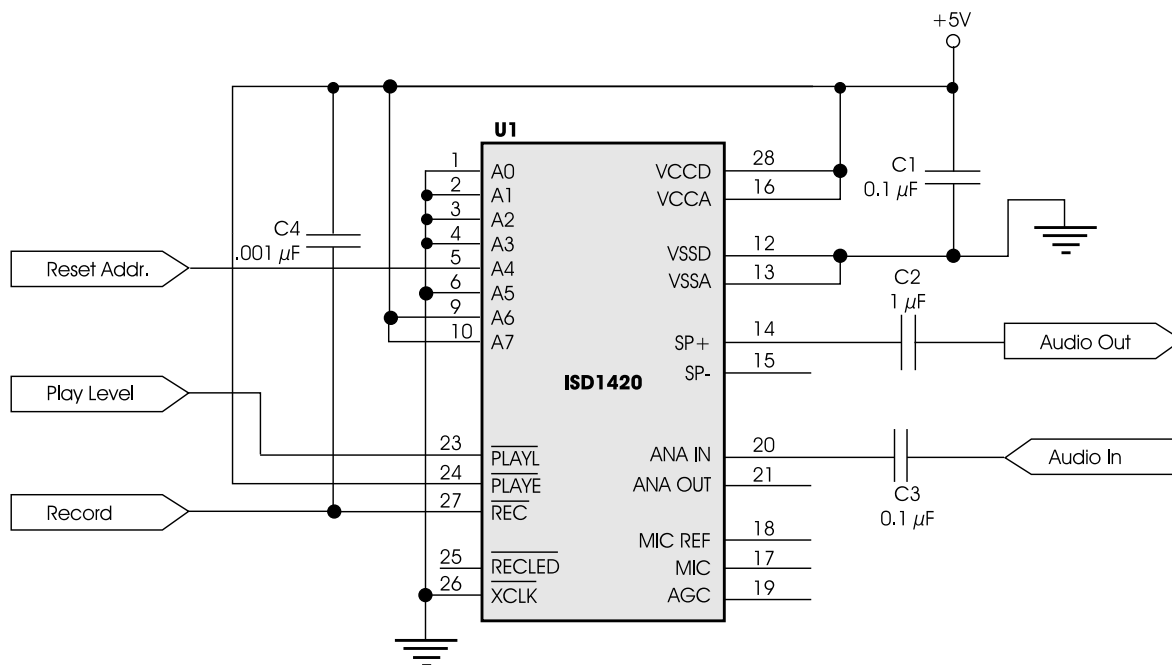
NOTE Device records as long as $\overline{\text{REC}}$ pin is held LOW. Messages are "stacked" during multiple recording sessions as long as A4 is continuously held HIGH. A momentary LOW on A4 when not recording or playing back will reset internal address counter. A Play operation after a Record operation always resets the internal address counter. A Record operation after a Play operation

will record a new message following the message just played.

As in previous applications, $\overline{\text{PLAYL}}$ must be held LOW to play a message. If $\overline{\text{PLAYL}}$ is momentarily changed to HIGH during playback of a message, Playback will stop, but will restart at the same location if $\overline{\text{PLAYL}}$ is again taken LOW and A4 remains HIGH. If $\overline{\text{PLAYL}}$ is held LOW until the end of a message, Playback will stop. A subsequent LOW $\overline{\text{PLAYL}}$ cycle will play the "next" message in the memory.

If $\overline{\text{PLAYE}}$ is substituted for $\overline{\text{PLAYL}}$, a LOW going pulse on $\overline{\text{PLAYE}}$ will cause each message to play through to its end.

Figure 28:



4. **Device:** ISD1420

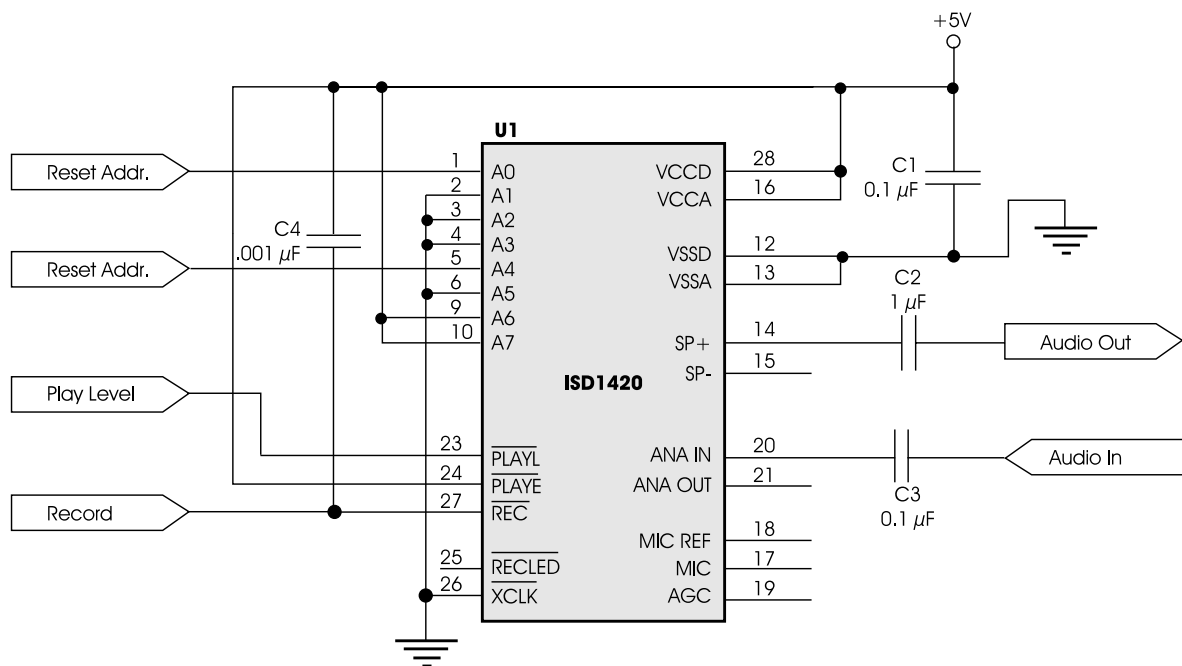
Voltage Required: 5 volts

Number of I/O pins: 4

Total Storage time: 20 seconds

Features: Multiple message record and play with selection of individual messages to be played back

NOTE All the notes of number 3 above apply. The addition of A0 allows a "fast forward" operation through the messages in the chip memory. A Playback cycle with A0 HIGH causes the chip to silently advance to the "next" message in memory in just a few milliseconds.

Figure 29:


5. **Device:** ISD33180

Voltage Required: 3 volts

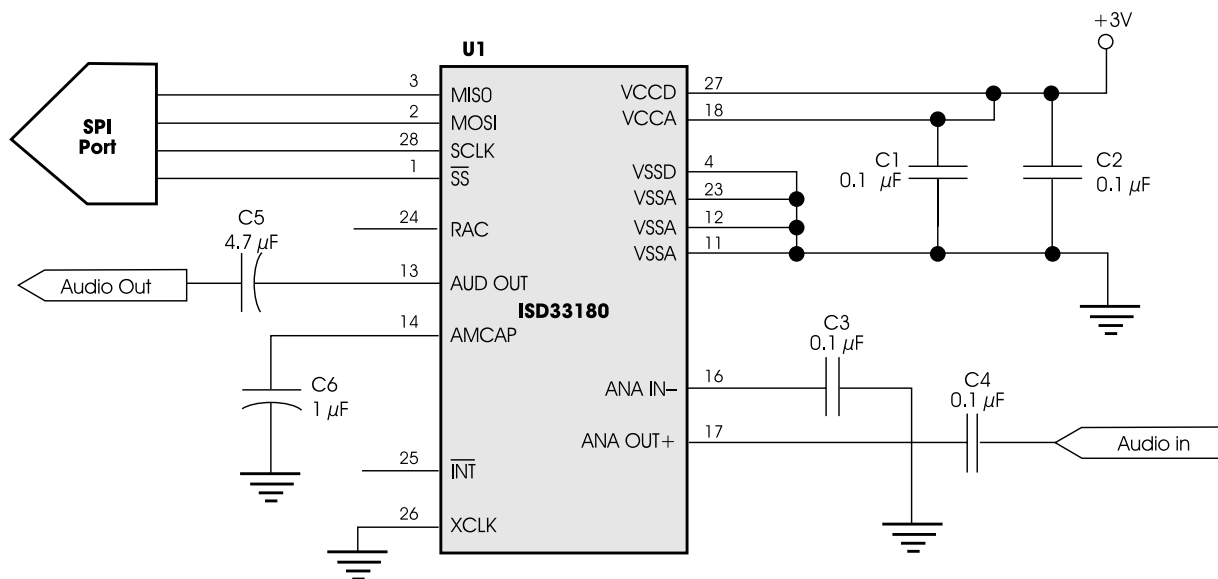
Number of I/O pins: 4

Total Storage time: 180 seconds
(3 minutes)

Features: Multiple message record and play with message management.

NOTE All messages are directly addressed. The internal address pointer may be read while playback is underway or during static or power down conditions. The capability to change addresses "on the fly" enables full message management. Use of the RAC and/or $\overline{\text{INT}}$ pins may simplify some operations.

Figure 30:



6. **Device:** ISD2575

Voltage Required: 5 volts

Number of I/O pins: 4

Total Storage time: 75 seconds

Features: Multiple message record and play with selection of individual messages to be played back

NOTE The circuit below puts the ISD2575 into Push-Button Mode. If fast forward is not needed, this circuit can operate with the 3 remaining inputs. The Start/Pause pin is an edge triggered active LOW input. Messages will be "stacked" during subsequent

Record Cycles started and ended by a LOW pulse on the Start/Pause input. Messages will be played back sequentially by the same LOW pulse. A Record operation followed by a Playback operation always resets the address counter to the beginning of memory. A Playback operation followed by a Record operation results in the new message being recorded following the last message played. The address pointer is also reset by a HIGH pulse on the Stop/Reset pin. The Stop/Reset pin is held LOW for normal operation. The playback/record input must be set up (LOW = Record, HIGH = Play) before the Start/Pause input is pulsed LOW.

Figure 31:

