ISD APPLICATION BRIEF 9 — TECHNICAL CONSIDERATIONS FOR THE CONVERSION FROM AN ISD1000A APPLICATION TO AN ISD2500 APPLICATION

The successor product to the ISD1000A series is the ISD2500 series. The increased storage space of the ISD2500 series allows for longer and more versatile applications and has several new features. Many ISD1000A customers will want to design circuitry that allow an easy upgrade path from one device to another. Others may want to design a single PC board that can use both devices. The following discussion is intended to assist in this endeavor.

The ISD2500 and ISD1000A families may be said to be pinout compatible. All pinout differences between the two devices involve no-connect pins on the ISD1000A. The ISD1000A has 8 address pins located from pins 1–10 with pins 7 and 8 not connected. Pins 7 and 8 are address pins in the ISD2500. The $\overline{EOM}$ output pin of the ISD1000A carries two signals, the end of message indication combined with the overflow signal. In the ISD2500, the overflow signal is separated from the $\overline{EOM}$ and placed on pin 22 which is a not connected pin on the ISD1000A. Table 6 compares the two pinouts.

Table 6: ISD1000A and ISD2500 Address Pin Comparison

Series	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10
ISD1000A	A0	A1	A2	A3	A4	A5	N/C	N/C	A6	A7
ISD2500	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9

Series	Pin 11-21	Pin 22	Pin 23-24	Pin 25	Pin 26-28
ISD1000A	Same	N/C	Same	$\overline{EOM}$ + $\overline{OVF}$	Same
ISD2500	Same	$\overline{OVF}$	Same	$\overline{EOM}$	Same

NOTE: *Shaded address pins are the same for both devices.*

$\overline{EOM}$ AND OVERFLOW SIGNALS

The timing of the $\overline{EOM}$ signal from the ISD2500 is specified to be the same as the timing of this signal from the ISD1000A. The timing of the OVF signal is different and is explained in "Differences in the Operation of the Overflow Signal." Since these two signals are split into two pins in the ISD2500, the designer must realize that when an ISD2500 is recorded to a "full" condition, the $\overline{EOM}$ signal will not indicate that condition. An EOM bit will not be set at the end of the device memory.

If a single ISD2500 is used and the application allows recording to proceed to the end of the memory, the only indication of this is the $\overline{OVF}$ signal will pulse LOW for 6 microseconds. If Playback ends at the device boundary, only the $\overline{OVF}$ signal will indicate playback end.

If an EOM indication is needed at the end of device memory, then the $\overline{EOM}$ and $\overline{OVF}$ signals must be OR'ed together and the circuit must be able to recognize a 6 ms wide pulse as an EOM indication.

Table 7: Operation of Overflow $\overline{EOM}$ Signals

Signal Name	Operation of End of Message	Operation at Overflow	Operation after Overflow
$\overline{EOM}$	T_{EOM} wide pulse	N/A	N/A
$\overline{OVF}$	N/A	6 μSec wide pulse	$\overline{OVF}$ signal follows $\overline{CE}$

DIFFERENCES IN THE OPERATION OF THE OVERFLOW SIGNAL

The Overflow or $\overline{OVF}$ signal in the ISD2500 operates differently than the $\overline{OVF}$ signal in the ISD1000A. In the ISD1000A, the $\overline{OVF}$ signal goes LOW and stays LOW when an overflow condition is reached during playback. During record, the $\overline{OVF}$ signal in the ISD1000A follows the $\overline{CE}$ signal once overflow is reached. The ISD2500 pulses LOW for 6 ms when the overflow condition is reached. At the end of the 6 ms pulse, it then follows $\overline{CE}$ in both playback and record. If $\overline{CE}$ is being held LOW when the overflow condition is reached, the $\overline{OVF}$ signal will go LOW and stay LOW as long as $\overline{CE}$ is held LOW.

Table 7 summarizes the operation of the OVF and EOM signals in the ISD2500.

NEW FEATURES IN THE ISD2500

The ISD2500 has a new state added to its Operational Mode list. The M6 Push-Button Mode allows the user to operate the ISD2500 using only simple push-buttons. Additionally, the device automatically powers down at the end of each operation. This simpler interface will be of benefit in many types of applications. For more information on the M6 Operational Mode, consult the ISD2500 Data Sheets or "Operational Modes."