

## APPLICATION BRIEF 14 — LOW NOISE PC BOARD LAYOUT TECHNIQUES FOR ISD VOICE RECORD/PLAYBACK DEVICES

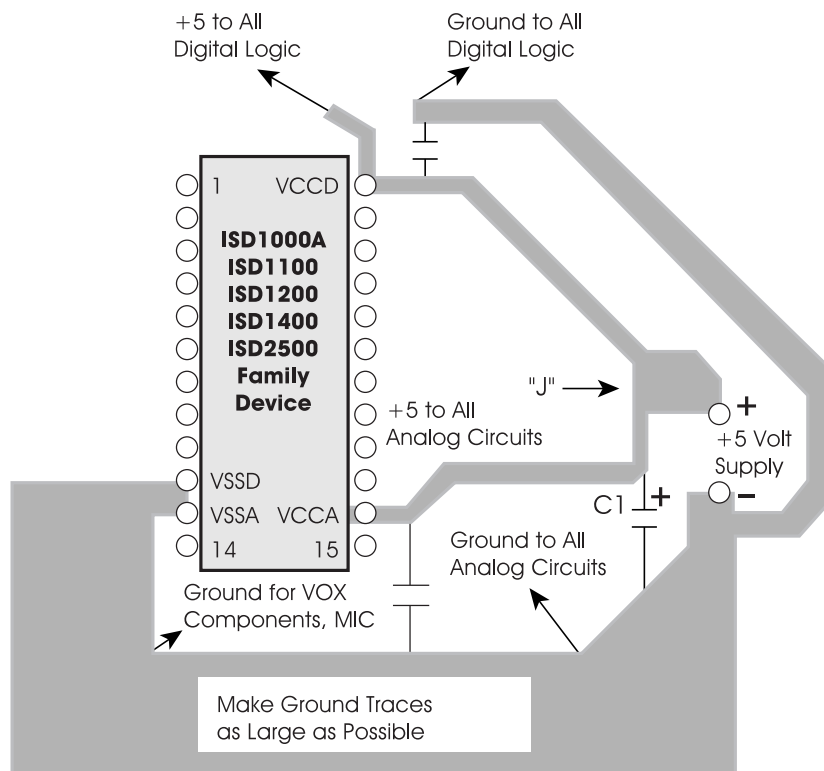
### POWER SUPPLY AND GROUND DISTRIBUTION

There are two pin connections each for power and ground on the ISD devices. These separate connections are provided to minimize interference between the analog and digital portions of the circuits internal to the devices. It is highly recommended that this power separation be maintained in the manner shown on in the Figure 16 Power and Ground Connections diagram. Note in particular that  $V_{SSA}$  and  $V_{SSD}$  should be tied together right at pins 12 and 13.

### CONNECTIONS TO THE ANALOG PATH

Components in the analog section of the ISD device should be physically located near the pins to which they are connected. Again referring to Figure 16, grounds and  $V_{CC}$  supplies for these components should be connected as indicated. In particular, capacitor C1 (low frequency voltage decoupling) should be as close to junction "J" as practicable. (Junction "J" separates  $V_{CCA}$  from  $V_{CCD}$ .) Components on the analog path should be tied as close as practicable to the device and be placed between C1 and the device. All digital control (addresses, control switches, etc.) should be tied to the appropriate  $V_{CC}$  or  $V_{SS}$  feed as shown at the top of the diagram.

**Figure 16: ISD Device Power and Ground Connections**



**NOTE:** Address and control logic and audio connections not shown. Drawing is for power connections only.

### **MICROPHONE AND SPEAKER**

It is important to stress that the above guidelines are most effective if good quality microphones and speakers are used in the system. The user may want to experiment with a variety of microphones and speakers (and speaker enclosures) to get the optimum voice quality performance out of the system. The "Microphone and Speaker Selection" section contains several recommended microphones and speakers and "Using the Device" has a paragraph on audio amplification.