

## Customer Demo Board for the CS7250B

### Features

- CS7250B MEMS microphone
  - Pressure Field
  - Free Field
- Plug and play interface to smart codec main board
  - Functional test
  - Full signal path setup with smart codec
  - System development and prototyping
  - Algorithm verification

### Description

The CDB7250B is a flexible PCB for full electrical and acoustic validation of the CS7250B MEMS microphone. The CDB7250B is designed to connect to test equipment via on board test points or via a codec main board with mating edge connector socket.

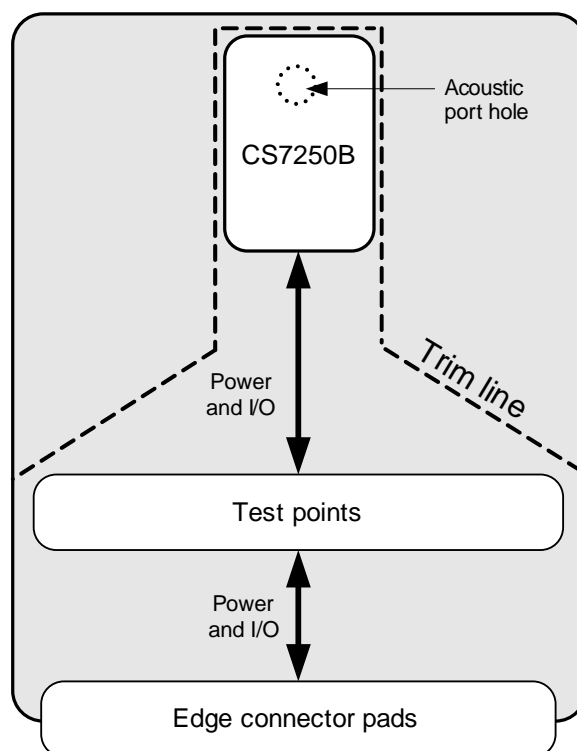
The CDB7250B is ideally suited for pressure field acoustic measurements. Furthermore, the flexible region can be trimmed to enable accurate free field measurements to be made.

The CDB7250B also serves as a component and layout reference for the CS7250B.

### Ordering Information

CDB7250B-M-1

Customer Demo Board



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## 1 System Overview

The CDB7250B customer demo board is a flexible PCB for evaluating the CS7250B low-profile always-on digital silicon microphone. The following subsections describe the features of CDB7250B customer demo board in detail.

### 1.1 Test Points

Test points are available to provide all the connections from CS7250B to standard test equipment for full acoustic measurement. Test points are described in [Table 1-1](#). The operating supply voltage of CS7250B is provided in the data sheet, which is available from Cirrus website.

**Table 1-1. Test Point signals**

Test Point	Pin	Direction	Description
TP1, TP8	VDD	Supply	Power supply
TP2, TP9	DATA	Digital output	PDM data output
TP3	LRSEL	Digital input	Channel select 0 = Data output following falling CLK edge 1 = Data output following rising CLK edge
TP4, TP6, TP7, TP11	GND	Ground reference	Ground
TP5, TP10	CLK	Digital input	Clock input

### 1.2 Edge Connector

The J1 and J2 edge connector pads provide a pluggable connection to a codec main board with compatible edge card socket. The edge connector pin-outs are described in [Table 1-2](#) and [Table 1-3](#).

**Table 1-2. Edge connection J1**

Pin	Pin	Direction	Description
1	NC	—	No connection (pin 1 is marked by a small dot)
2	VDD	Supply	Power supply from codec MICBIAS
3	GND	Ground reference	Ground
4	CLK	Digital input	Clock input
5	DATA	Digital output	PDM data output
6	LRSEL	Digital input	Channel select
7, 8, 9, 10	NC	—	No connection

**Table 1-3. Edge connection J2**

Pin	Pin	Direction	Description
1, 2, 3, 4, 5, 6, 7, 8, 9, 10	NC	N/A	No Connection

### 1.3 Trim Line

To enable more accurate free field frequency responses to be obtained, the flexible region of the CDB7250B may be trimmed to reduce acoustic interactions. If required, there is a guide line on the silkscreen that can be cut along. Refer to [Fig. 4-1](#) for further details.

## 2 Quick Setup Guide

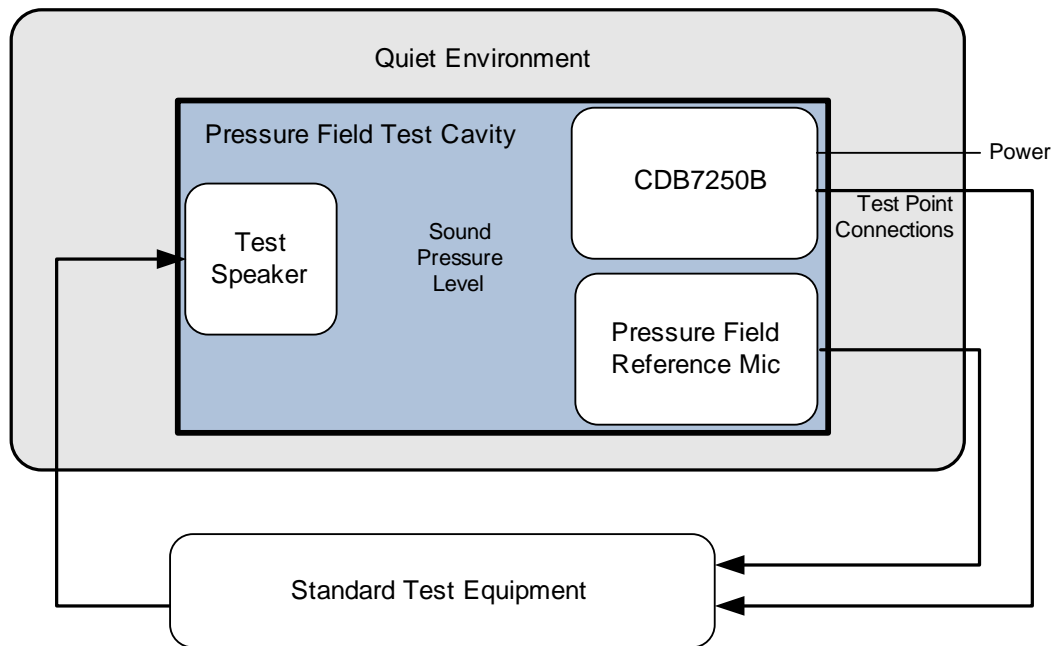
As a standalone PCB, the CDB7250B can be used in a pressure field acoustic test setup or free field acoustic test setup. It can also be connected to a compatible codec main board to enable full signal path setup within a system platform.

Acoustic measurements can be obtained using a number of different methods. Typical acoustic test setups, using a comparison method, are shown in [Section 2.1](#) and [Section 2.2](#).

### 2.1 Pressure field acoustic test

Recommendations for accurate pressure field measurements are as follows:

- Ensure calibrated test equipment is used for making measurements
- Ensure CDB7250B acoustic port hole is tightly sealed within the pressure field test cavity
- Ensure CDB7250B and reference mic are placed close together with minimum placement error
- Use a suitable test microphone—a pressure field reference microphone is recommended
- Ensure the pressure field test cavity is tightly sealed
- Measurements should be performed within a quiet environment

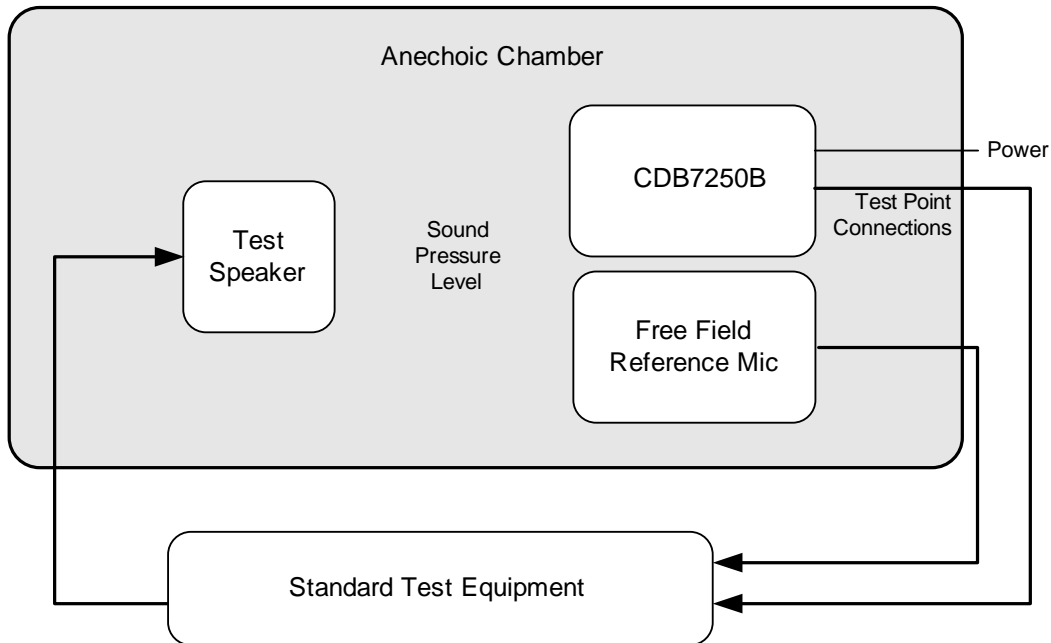


**Figure 2-1. Pressure field test setup with CDB7250B**

## 2.2 Free field acoustic test

Recommendations for accurate free field measurements are as follows:

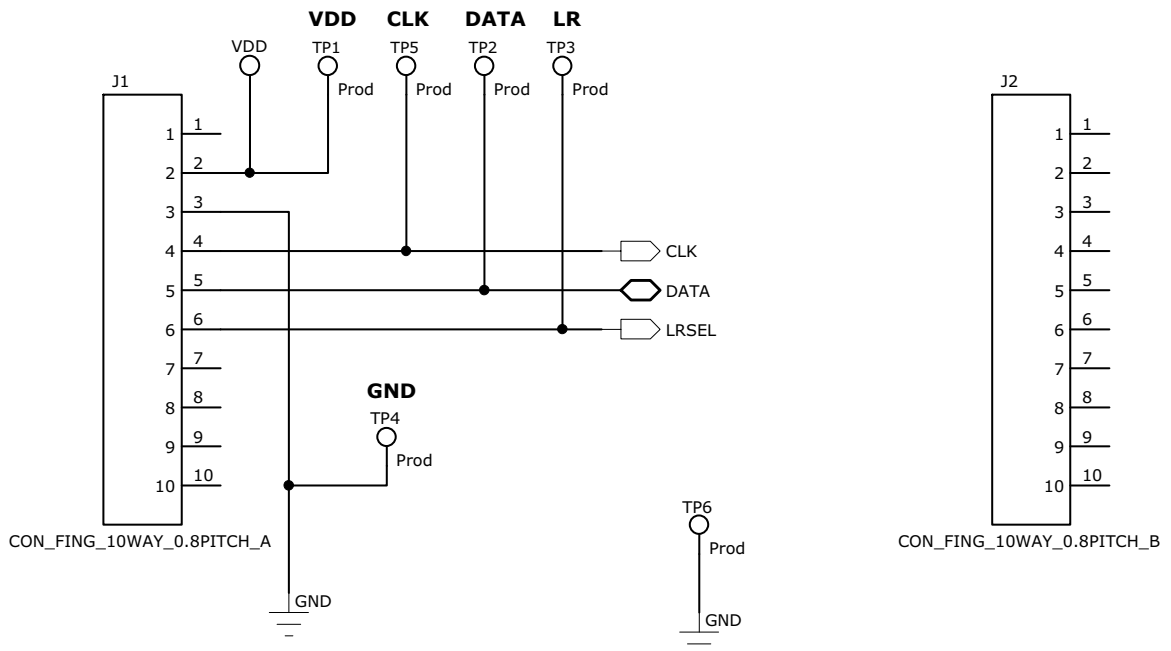
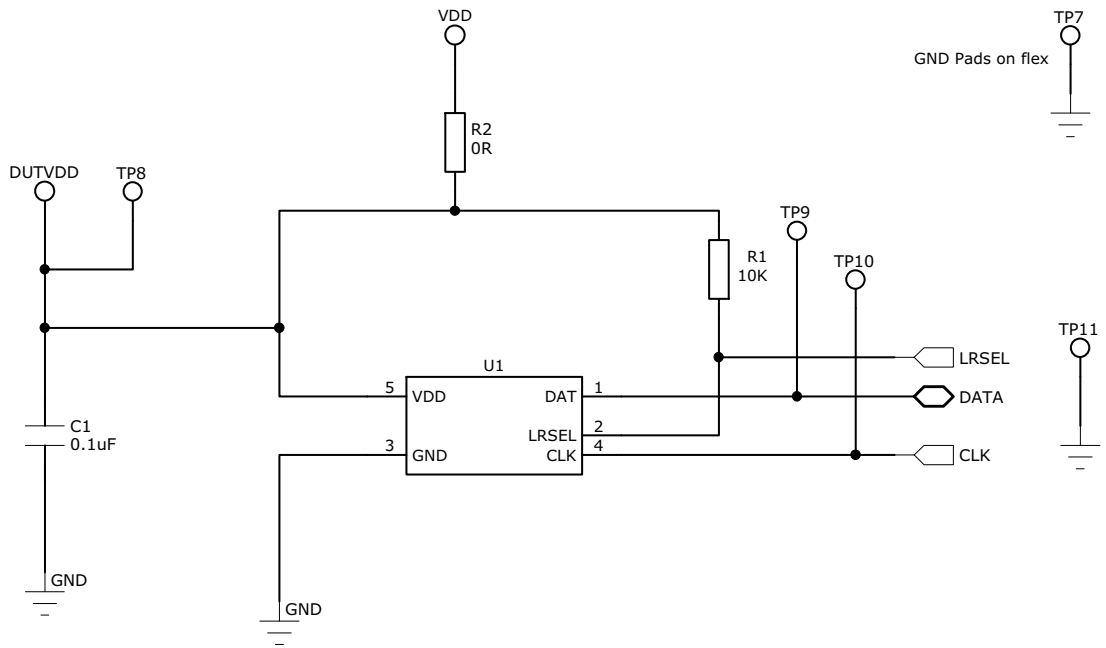
- Ensure calibrated test equipment is used for making measurements
- Ensure CDB7250B acoustic port hole and reference mic are facing to the incoming sound pressure
- Ensure CDB7250B and reference mic are placed close together with minimum placement error
- The CDB7250B may be trimmed along the 'Trim line' to improve accuracy
- Use a suitable test microphone—a free field reference microphone is recommended
- Measurements should be performed within an anechoic environment



**Figure 2-2. Free field test setup with CDB7250B**

### 3 Schematic

#### MICROPHONE CIRCUIT



## 4 Layout

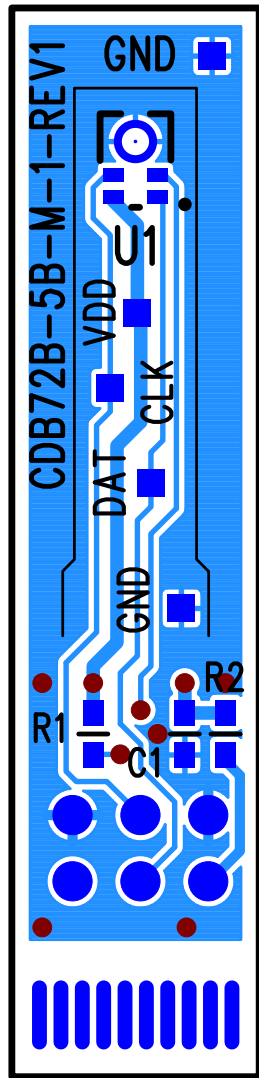


Figure 4-1. Flex Top Layer + Silkscreen

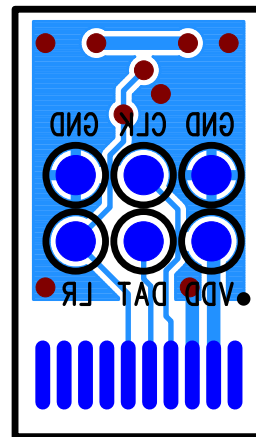


Figure 4-2. PCB Bottom Layer + Silkscreen

## 5 Known Issues

There are no known issues with this board.

## 6 Bill of Materials

**Table 6-1. Bill of Materials**

Item	Reference	Description	Manufacturer	Manufacturer's Part Number
1	PCB1	Printed circuit board	Cirrus Logic	CDB72B-5B-M1-REV1
2	U1	CS7250B bottom port digital silicon microphone	Cirrus Logic	CS7250B-CAZR
3	C1	0.1- $\mu$ F 0603 SMD ceramic capacitor 16 V X7R	Phycomp	2238 786 15649
4	R1	10-k $\Omega$ 0603 SMD chip resistor 1% 0.063 W	Multicomp	MC 0.063W 0603 1% 10K
5	R2	0- $\Omega$ 0603 SMD chip resistor 1% 0.063 W	Multicomp	MC 0.063W 0603 0R

## 7 Revision History

**Table 7-1. Revision History**

Release	Changes
DB1 AUG '16	Initial revision

**Important:** Please check [www.Cirrus.com](http://www.Cirrus.com) to confirm that you are using the latest revision of this document and to determine whether there are errata associated with this device.

## Contacting Cirrus Logic Support

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To find the one nearest you, go to [www.cirrus.com](http://www.cirrus.com).

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