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PDM Digital Output MEMS Microphone Flex Evaluation Board User Guide

GENERAL DESCRIPTION

This user guide applies to the following MEMS microphone evaluation boards:

- EVAL-INMP421Z-FLEX
- EVAL-INMP521Z-FLEX
- EVAL-INMP522Z-FLEX
- EVAL-INMP621Z-FLEX

The EVAL-INMPxxxZ-FLEX is a simple evaluation board that allows quick evaluation of the performance of analog MEMS microphones in a package with a 4.00 mm × 3.00 mm footprint size. The small size and low profile of the flexible PCB enables direct placement of the microphone into a prototype or an existing design for an in situ evaluation. The evaluation board consists of a bottom port microphone soldered to a flexible PCB with color-coded wires attached. The only other component on the board is a 0.1 µF supply bypass capacitor. Table 1 describes the functions of the five connection wires. Table 2 describes the functional differences between the different microphones that are used with this flex circuit.

TABLE 1. PIN FUNCTION DESCRIPTIONS

Wire Color	Microphone Pin	Description
Blue	DATA	PDM digital output signal
Red	VDD	Power supply, 1.62 V to 3.63 V DC
White	CLK	Clock input
Black	GND	Ground
Yellow	L/R SELECT	Left /right channel select
		DATA1 (right): L/R SELECT tied to GND
		DATA2 (left): L/R SELECT pulled to V_{DD}

TABLE 2. MICROPHONE FUNCTIONAL DIFFERENCES

Microphone	Maximum Supply Current	Sensitivity	Clock Frequency
INMP421	0.65 mA	−26 dBFS	1.0 to 3.3 MHz
INMP521	1.2 mA	−26 dBFS	1.25 to 3.072 MHz
INMP522	1.2 mA	−26 dBFS	0.9 to 3.6 MHz
INMP621	1.3 mA	−46 dBFS	0.9 to 3.6 MHz
INMP421	0.65 mA	−26 dBFS	1.0 to 3.3 MHz

EVALUATION BOARD CIRCUIT

Figure 1 shows the schematic of the evaluation board, and Figure 2 shows the flex board layout. See the respective microphone data sheets for complete descriptions and specifications of the microphones.
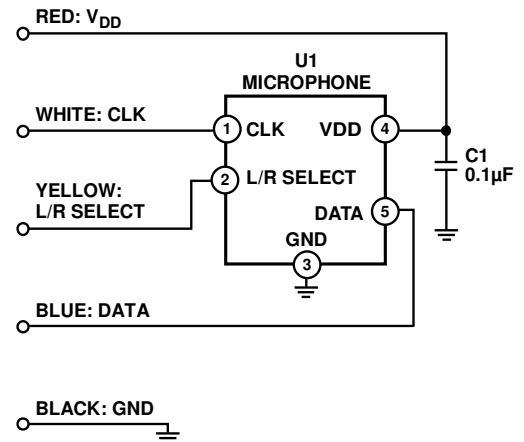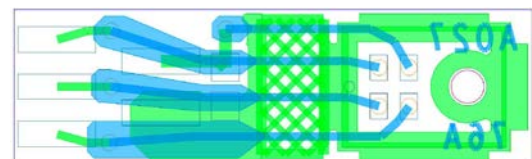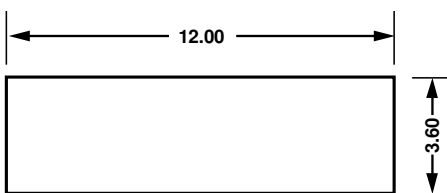

Figure 1. Evaluation Board Schematic

Figure 2. Evaluation Board Layout (Top View)

InvenSense reserves the right to change the detail specifications as may be required to permit improvements in the design of its products.

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Figure 3. Evaluation Board Dimensions in Millimeters (Wires Not Included)

EVALUATION BOARD PHOTOGRAPH
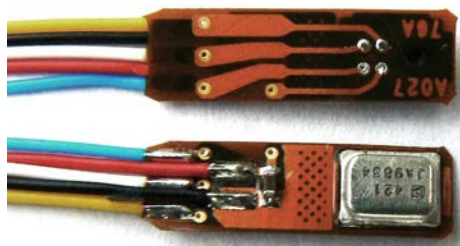
Figure 4. Top and Bottom View

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