

## Analog Output MEMS Microphone Flex Evaluation Board User Guide

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### GENERAL DESCRIPTION

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

- EVAL-INMP404Z-FLEX
- EVAL-INMP405Z-FLEX
- EVAL-INMP504Z-FLEX
- EVAL-INMP510Z-FLEX
- EVAL-INMP801Z-FLEX
- EV\_ICS-40180-FX
- EV\_ICS-40310-FX

**THIS IS A SIMPLE EVALUATION BOARD THAT OF THE PERFORMANCE OF SINGLE-ENDED ANALOG MICROPHONES. THE SMALL SIZE AND LOW PROFILE PCB ENABLES DIRECT PLACEMENT OF THE PROTOTYPE OR AN EXISTING DESIGN FOR AN IN EVALUATION BOARD CONSISTS OF A BOTTOM PORT SOLDERED TO A FLEXIBLE PCB WITH COLOR-CODED THE ONLY OTHER COMPONENT ON THE BOARD IS A BYPASS CAPACITOR.**

Table 1 describes the functions of the three connection wires. Table 2 describes the functional differences between the different microphones that are used with this flex circuit.

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**TABLE 1. PIN FUNCTION DESCRIPTIONS**

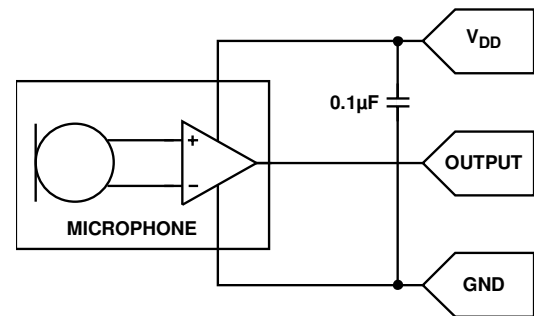
Wire Color	Microphone Pin	Description
Red	VDD	Power Supply. 1.5 V DC to 3.6 V DC; (0.9 V DC to 1.3 V DC for ICS-40310 and INMP801)
White	OUTPUT	Analog Output Signal
Black	GND	Ground

**TABLE 2. MICROPHONE FUNCTIONAL DIFFERENCES**

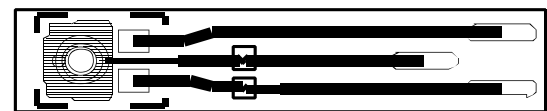
Microphone	Maximum Supply Current	Maximum Output Voltage	Output Impedance	DC Offset
INMP404	250 $\mu$ A	0.18 V rms	200 $\Omega$	0.8 V
INMP405	250 $\mu$ A	0.18 V rms	200 $\Omega$	0.8 V
INMP504	225 $\mu$ A	0.18 V rms	200 $\Omega$	0.8 V
INMP510	250 $\mu$ A	0.40 V rms	350 $\Omega$	0.7 V
INMP801	23 $\mu$ A	0.13 V rms	4.5 k $\Omega$	0.57 V
ICS-40180	260 $\mu$ A	0.40 V rms	350 $\Omega$	0.7 V
ICS-40310	25 $\mu$ A	0.12 V rms	4.5 k $\Omega$	0.57 V

**EVALUATION BOARD CIRCUIT**

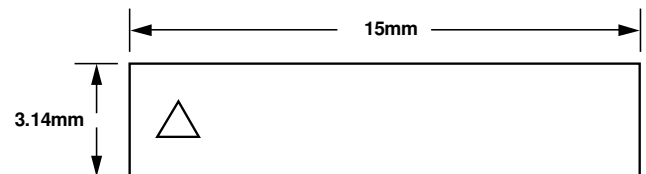
Figure 1 shows the schematic of the evaluation board, and Figure 2 shows the flex board layout. See the respective microphone data sheets for complete descriptions and specifications of the microphones. Note that the layout for the EV\_ICS-40180-FX differs slightly from what is shown in Figure 2 because of this part’s different package footprint, but the routing of the three signals is consistent.



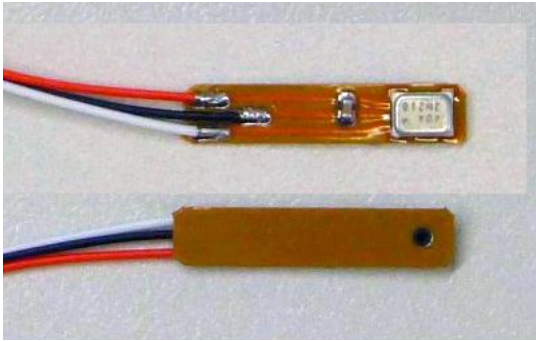
**Figure 1. Evaluation Board Schematic**



**Figure 2. Evaluation Board Layout (Top View)**



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

**EVALUATION BOARD PHOTOGRAPH****Figure 4. Top and Bottom View**

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