

Analog Output MEMS Microphone Flex Evaluation Board User Guide

GENERAL DESCRIPTION

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

- EV_INMP404-FX
- EV_INMP405-FX
- EV_INMP504-FX
- EV_INMP510-FX
- EV_ICS-40180-FX
- EV_ICS-40181-FX
- EV_ICS-40310-FX

This is a simple evaluation board that allows quick evaluation of the performance of single-ended analog MEMS microphones. 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 μ F supply 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.

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) |
| 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 μ A | 0.18 V rms | 200 Ω | 0.8 V |
| INMP405 | 250 μ A | 0.18 V rms | 200 Ω | 0.8 V |
| INMP504 | 225 μ A | 0.18 V rms | 200 Ω | 0.8 V |
| INMP510 | 250 μ A | 0.40 V rms | 350 Ω | 0.7 V |
| ICS-40180 | 260 μ A | 0.40 V rms | 350 Ω | 0.7 V |
| ICS-40181 | 250 μ A | 0.40 V rms | 350 Ω | 0.7 V |
| ICS-40310 | 25 μ A | 0.12 V rms | 4.5 k Ω | 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-40181-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.

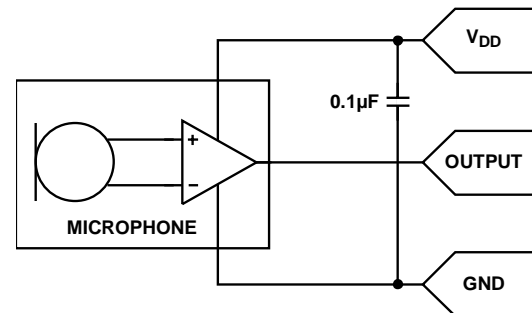


Figure 1. Evaluation Board Schematic

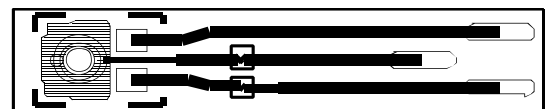


Figure 2. Evaluation Board Layout (Top View)

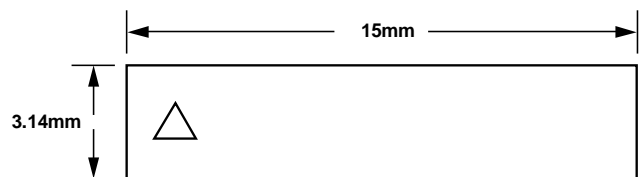


Figure 3. Evaluation Board Dimensions in Millimeters (Wires Not Included)

BOTTOM PORT EVALUATION BOARD PHOTOGRAPH

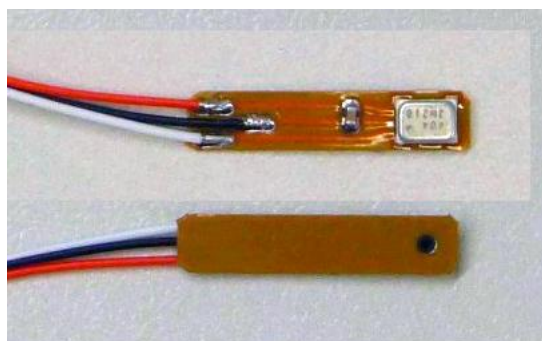


Figure 4. Top and Bottom View

TOP PORT EVALUATION BOARD PHOTOGRAPH

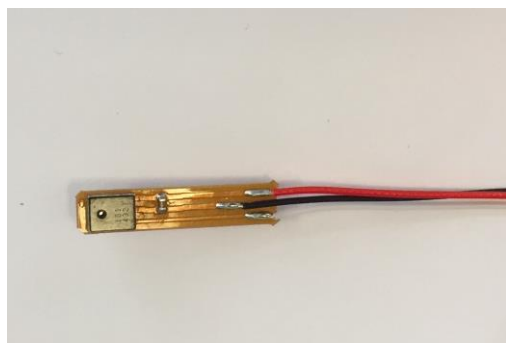


Figure 5. Top View

REVISION HISTORY

| REVISION DATE | REVISION | DESCRIPTION |
|---------------|----------|--|
| 10/14/2015 | 1.3 | This v1.3 is the initial release in Agile. Previous revisions were uncontrolled. |
| 03/26/2015 | 1.4 | Updated part names, added Figure 5 |

COMPLIANCE DECLARATION DISCLAIMER

InvenSense believes the environmental and other compliance information given in this document to be correct but cannot guarantee accuracy or completeness. Conformity documents substantiating the specifications and component characteristics are on file. InvenSense subcontracts manufacturing and the information contained herein is based on data received from vendors and suppliers, which has not been validated by InvenSense.

This information furnished by InvenSense is believed to be accurate and reliable. However, no responsibility is assumed by InvenSense for its use, or for any infringements of patents or other rights of third parties that may result from its use. Specifications are subject to change without notice. InvenSense reserves the right to make changes to this product, including its circuits and software, in order to improve its design and/or performance, without prior notice. InvenSense makes no warranties, neither expressed nor implied, regarding the information and specifications contained in this document. InvenSense assumes no responsibility for any claims or damages arising from information contained in this document, or from the use of products and services detailed therein. This includes, but is not limited to, claims or damages based on the infringement of patents, copyrights, mask work and/or other intellectual property rights.

Certain intellectual property owned by InvenSense and described in this document is patent protected. No license is granted by implication or otherwise under any patent or patent rights of InvenSense. This publication supersedes and replaces all information previously supplied. Trademarks that are registered trademarks are the property of their respective companies. InvenSense sensors should not be used or sold in the development, storage, production or utilization of any conventional or mass-destructive weapons or for any other weapons or life threatening applications, as well as in any other life critical applications such as medical equipment, transportation, aerospace and nuclear instruments, undersea equipment, power plant equipment, disaster prevention and crime prevention equipment.

©2015 InvenSense, Inc. All rights reserved. InvenSense, MotionTracking, MotionProcessing, MotionProcessor, MotionFusion, MotionApps, DMP, AAR, and the InvenSense logo are trademarks of InvenSense, Inc. Other company and product names may be trademarks of the respective companies with which they are associated.



©2015 InvenSense, Inc. All rights reserved.

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А