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Evaluating the ADXL371 Micropower, 3-Axis, ±200 g Digital Output, MEMS Accelerometer

FEATURES

2 sets of spaced vias for population of 5-pin headers
Easily attached to prototyping board or PCB
Small size and board stiffness minimize impact on the system and acceleration measurements

EQUIPMENT NEEDED

External host processor

DOCUMENTS NEEDED

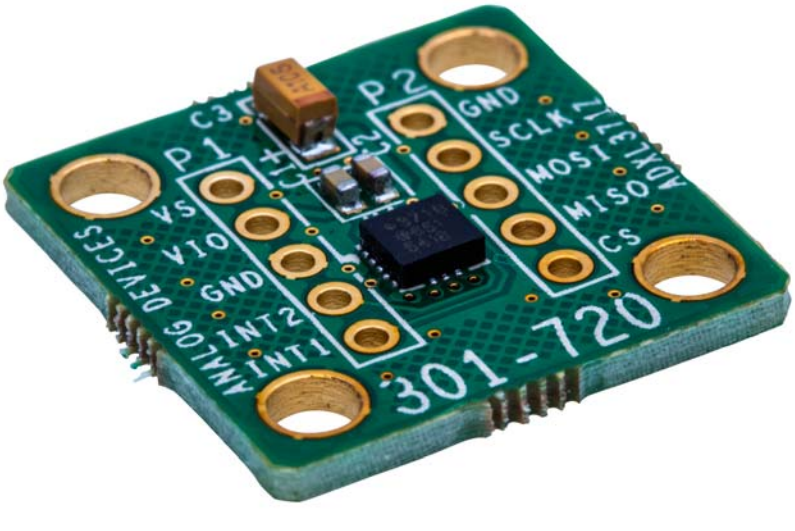
ADXL371 data sheet

GENERAL DESCRIPTION

The EVAL-ADXL371Z is a simple evaluation board that allows quick evaluation of the performance of the ADXL371 ultralow power, 3-axis, digital output MEMS accelerometer. The EVAL-ADXL371Z is ideal for evaluation of the ADXL371 in an existing system because the stiffness and the small size of the evaluation board minimize the effect of the board on both the system and acceleration measurements.

For full specifications on the ADXL371, see the ADXL371 data sheet, which should be consulted in conjunction with this user guide when using this evaluation board.

EVALUATION BOARD PHOTOGRAPH



25041-001

Figure 1.

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REVISION HISTORY

3/2021—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

The EVAL-ADXL371Z has two sets of 0.1 inch spaced vias for populating the 5-pin headers that provide access to all power and signal lines. The vias or headers allow attachment of the evaluation board either to a prototyping board (breadboard) or to a printed circuit board (PCB) in an existing system. Four holes are provided that are set 15 mm × 15 mm at the corners of the PCB for mechanical attachment of the EVAL-ADXL371Z to the application fixture. An external host processor is required for communication to the device.

The dimensions of the EVAL-ADXL371Z are 20 mm × 20 mm.

CIRCUIT DESCRIPTION

The PCB layout of the EVAL-ADXL371Z is shown in Figure 1. The EVAL-ADXL371Z is equipped with three factory installed capacitors for bypass: two 0.1 µF capacitors (C1 and C2) and a 10 µF capacitor (C3). C2 and C3 are V_S bypass capacitors for reducing analog supply noise, and C1 (located between $V_{DDI/O}$ and GND) is for reducing digital clocking noise.

The schematic of the EVAL-ADXL371Z is shown in Figure 2. See the ADXL371 data sheet for information on configuring the accelerometer following its connection to the application host processor.

HANDLING CONSIDERATIONS

The EVAL-ADXL371Z is not reverse polarity protected. Reversing the V_S or $V_{DDI/O}$ supply and GND pins can cause damage to the ADXL371.

Dropping the EVAL-ADXL371Z on a hard surface can generate several thousand *g* of acceleration, which may exceed the data sheet absolute maximum limits. See the ADXL371 data sheet for more information.

EVALUATION BOARD SCHEMATICS AND ARTWORK

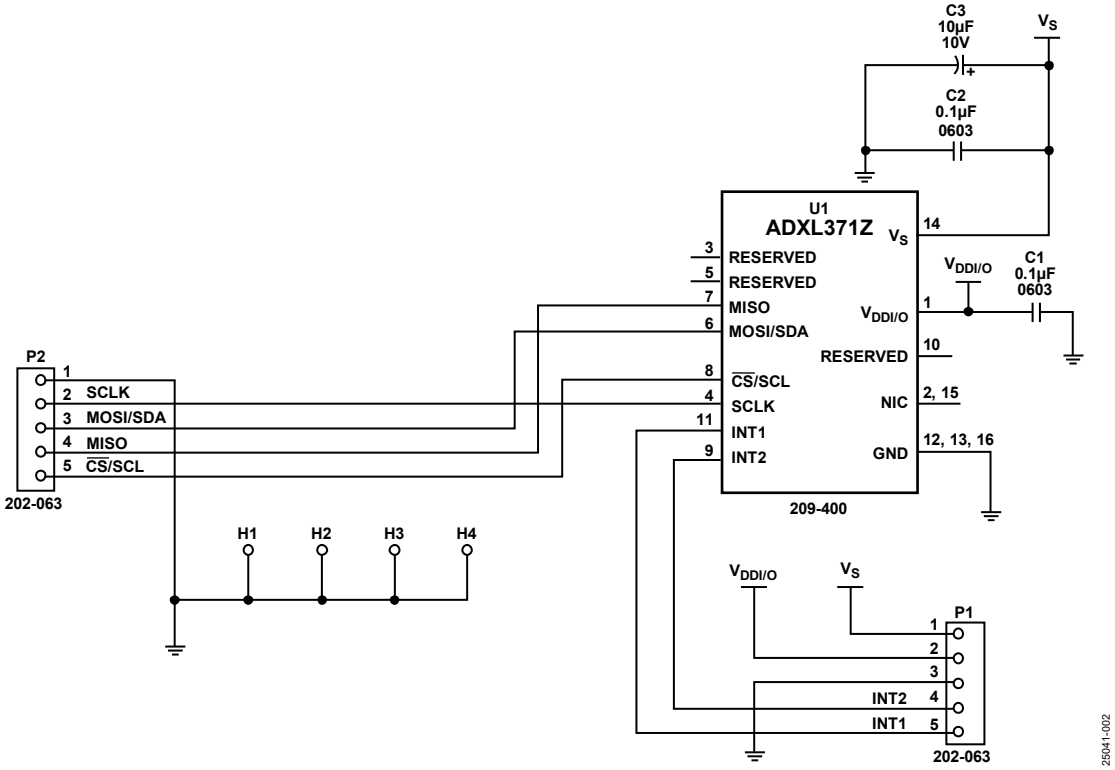

Figure 2. EVAL-ADXL371Z Schematic

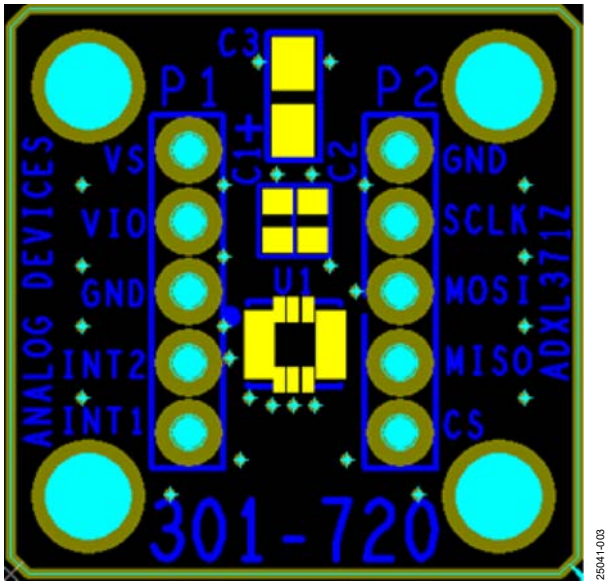

Figure 3. Printed Circuit Board Layout

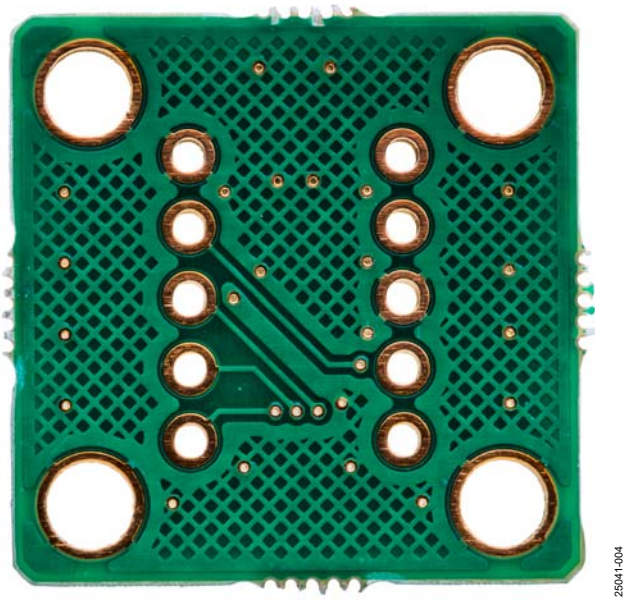

Figure 4. EVAL-ADXL371Z Bottom Layout

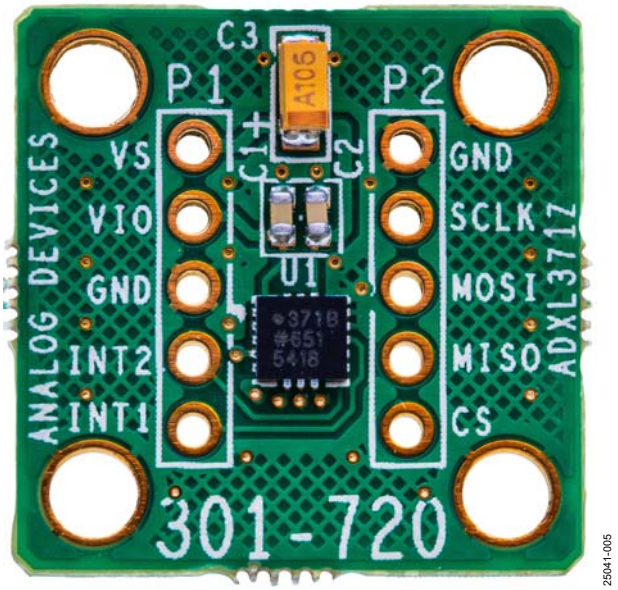

Figure 5. EVAL-ADXL371Z Top Layout

ORDERING INFORMATION

BILL OF MATERIALS

Table 1.

Qty	Reference Designator	Description	Manufacturer	Part Number
1	U1	Micropower, 3-axis, ±200 g digital output, MEMS accelerometer	Analog Devices, Inc.	ADXL371BCCZ-ENG
2	C1 and C2	0.1 µF ceramic capacitors, 50 V, 10%, X7R	CAL-CHIP	GMC10X7R104K50NTLF
1	C3	10 µF tantalum capacitor, 10 V, 10%	CAL-CHIP	TCKIA106ATL
2	P1 and P2	Headers, male, nonshrouded, 1 × 5, 0.1″ spacing	Adam Tech	PH1-05-UA