Evaluating the ADXL383 I²C, Low Noise, Low Power, Wide Bandwidth, 3-Axis MEMS Accelerometer

FEATURES

- Provides interface to host system through a 10-pin, dual-row, 2.00mm pitch header
- Small size and board stiffness minimizes impact on the system and acceleration measurements

EQUIPMENT NEEDED

- External host processor

DOCUMENTS NEEDED

- ADXL383 data sheet

EVALUATION BOARD PHOTOGRAPH

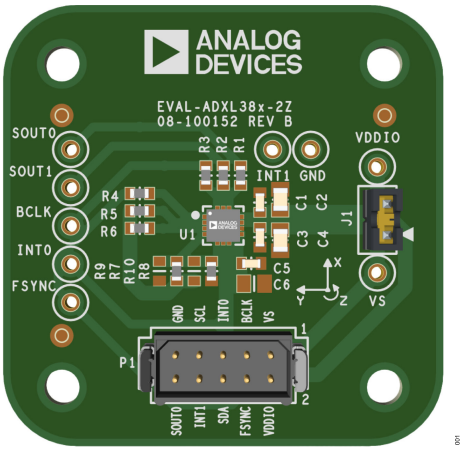

Figure 1. EVAL-ADXL383-2Z Evaluation Board Top View

GENERAL DESCRIPTION

The EVAL-ADXL383-2Z is a simple evaluation board that allows quick evaluation of the performance of the ADXL383 I²C, low noise, low power, wide bandwidth, 3-axis, digital output, microelectronic mechanical system (MEMS) accelerometer. The evaluation board provides a 10-pin header for access to the main ADXL383 communication and interrupt signals.

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REVISION HISTORY

5/2026—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

The EVAL-ADXL383-2Z incorporates a 10-pin, dual-row, 2.00mm pitch header that provides access to the power supply and key signals and interrupt lines. This connector enables connection of the evaluation board to an external host processor or interface board. Four holes are provided in the corners of the board for mechanical attachment of the EVAL-ADXL383-2Z to an application. An external host processor is required for communication with the ADXL383.

The dimensions of the EVAL-ADXL383-2Z are 38mm × 38mm × 2mm. The center of each of the four mounting holes is located 5.08mm from the edges of the printed circuit board (PCB). Each hole has a diameter of 3.04mm and is sized for M3 screws (see Figure 1).

CIRCUIT DESCRIPTION

The PCB layout of the EVAL-ADXL383-2Z is shown in Figure 1. The EVAL-ADXL383-2Z is equipped with five factory installed ceramic capacitors: C1 = C3 = C5 = 0.1µF and C2 = C4 = 1µF. C1 to C4 are optional capacitors meant for decoupling the accelerometer from the noise on the power supply. In contrast, C5 is required and ensures internal supply stability.

A jumper connects the V_S pin or the V_{DDIO} pin, enabling the board to be powered using one supply voltage applied to either of the two pins.

On the bottom side of the PCB, a set of check boxes is used to indicate the assembled device variant. The ADXL383 option is marked on this board (see Figure 2)

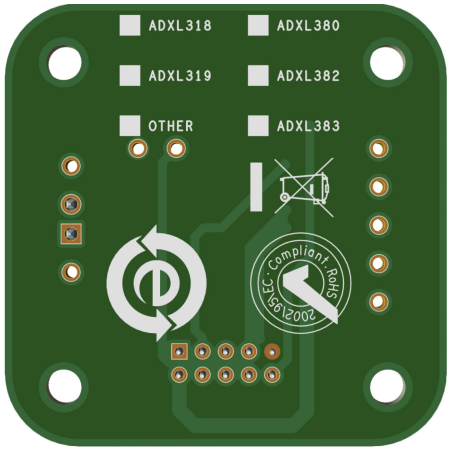

Figure 2. EVAL-ADXL383-2Z Evaluation Board Bottom View

The schematic of the EVAL-ADXL383-2Z is shown in Figure 3.

Some components (test points, C6, R9, and R10) are designated as do not install (DNI) and are not populated on this board (see Table 2). The SOUT1/MCLK test point provides access to the SOUT1/MCLK signal, which is not routed to the P1 connector. By default, the I^2C address is set to 0x53 through R7 and R8. This address can be modified by removing R7 and/or R8 and populating the R9 and/or R10 footprints.

Refer to the ADXL383 data sheet for information on configuring the accelerometer after connection to the application host processor.

HANDLING CONSIDERATIONS

The EVAL-ADXL383-2Z is not reverse polarity protected. Reversing the V_S or V_{DDIO} supply and GND pins can cause damage to the ADXL383.

Dropping the EVAL-ADXL383-2Z on a hard surface can generate several thousand *g* of acceleration, which may exceed the absolute maximum limits of the device. See the ADXL383 data sheet for additional information.

EVALUATION BOARD SCHEMATIC

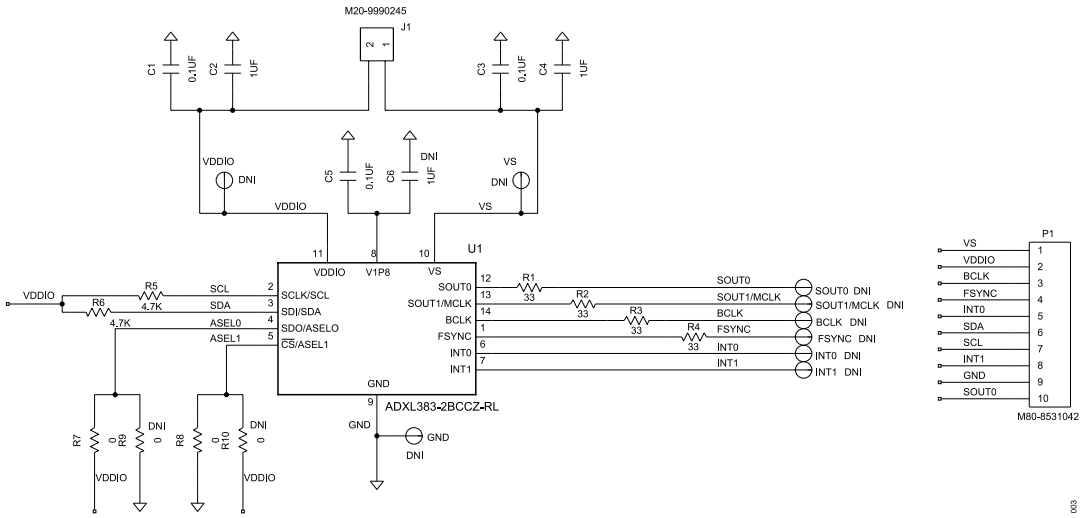

Figure 3. EVAL-ADXL383-2Z Evaluation Board Schematic

ORDERING INFORMATION

ORDERING GUIDE

Model[1]	Description
EVAL-ADXL383-2Z	ADXL383 I²C Evaluation Board

[1] Z = RoHS-Compliant Part.

BILL OF MATERIALS

Table 1. Bill of Materials

Item	Quantity	Reference Designator	Description	Manufacturer	Part Number
1	1	U1	Low noise, low power, wide bandwidth, 3-Axis MEMS accelerometer	Analog Devices, Inc.	ADXL383-2BCCZ-RL
2	3	C1, C3, C5	0.1µF ceramic capacitors, 50V, 10%, X7R, 0603	TDK	CGA3E2X7R1H104K080AE
3	2	C2, C4	1µF ceramic capacitors, 25V, 10%, X7R, 0805	TDK	CGA4J3X7R1E105K125AB
4	1	J1	2-position header, throughhole, 2.54mm pitch	Harwin	M20-9990245
5	1	P1	10-position, dual-row header, throughhole, 2.00mm pitch	Harwin	M80-8531042
6	4	R1, R2, R3, R4	33Ω resistors, ±5%, 0.1W, 0603	Panasonic Industry	ERJ-3GEYJ330V
7	2	R5, R6	4.7kΩ resistors, ±5%, 0.1W, 0603	Yageo	RC0603JR-074K7L
8	2	R7, R8	0Ω resistors, 0.1W, 0603	Panasonic Industry	ERJ-3GEY0R00V

Table 2. Do Not Install (DNI) Components

Item	Quantity	Reference Designator	Description	Manufacturer	Part Number
1	9	BCLK, FSYNC, GND, INT0, INT1, SOUT0, SOUT1/MCLK, VDDIO, VS	PC test points, miniature black	Keystone Electronics	5001
2	1	C6	1µF ceramic capacitor, 25V, 10%, X7R, 0805	TDK	CGA4J3X7R1E105K125AB
3	2	R9, R10	0Ω resistors, 0.1W, 0603	Panasonic Industry	ERJ-3GEY0R00V

ESD Caution
ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.