

GENERAL DESCRIPTION

The ADXL210EB is a simple evaluation board that allows users to quickly evaluate the performance of the ADXL210 dual-axis $\pm 10 g$ accelerometer. Users must add only three additional through-hole passive components, depending on the bandwidth required in their applications. The ADXL210EB has a 5-pin, 0.1 inch spaced header for access to all power and signal lines that users may attach to a prototyping board (breadboard) or wire via a standard plug. Two holes are provided for mechanical attachment of the ADXL210EB to users' applications.

CIRCUIT DESCRIPTION

The schematic and parts list of the ADXL210EB is shown in Figure 1 and Table I, respectively. The minimal application will require at least a resistor (R_{SET}) added to the board to set the

PWM period (T_2). By adding capacitors C_2 and C_3 , analog bandwidth may be set. Refer to the ADXL210 data sheet for a complete description of the operation of the accelerometer.

The part layout of the ADXL210EB is shown in Figure 2. The ADXL210EB has two factory installed 2200 pF capacitors (C_1 and C_4) at X_{FILT} and Y_{FILT} to satisfy the minimum filter capacitor specification of the ADXL210. Users' applications will likely require narrower bandwidth (and lower noise), in which case users may add a through-hole capacitor in parallel in the space provided at C_2 and C_3 , respectively. When calculating the capacitance required to achieve users desired analog bandwidth, do not forget to subtract the 2200 pF already on the PCB.

The pinout description of the ADXL210EB is shown in Table II.

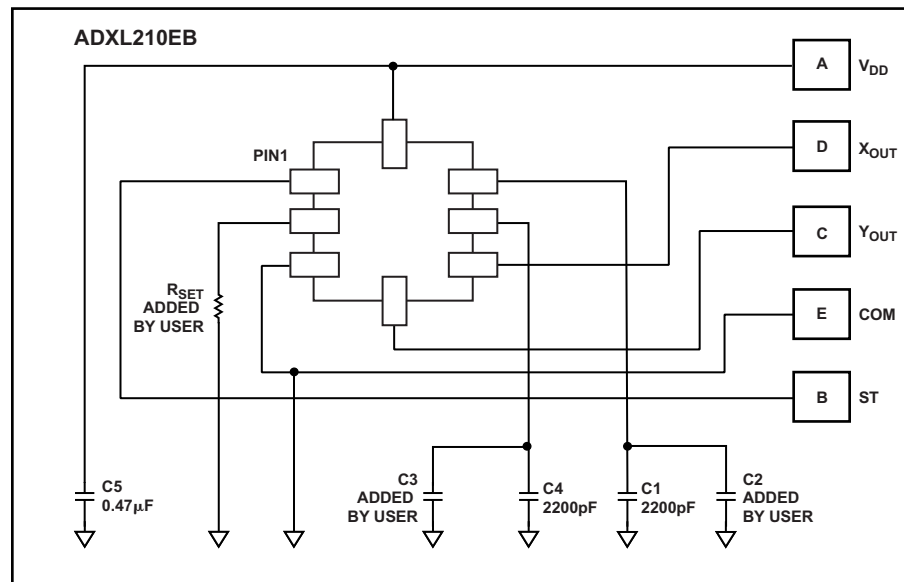


Figure 1. ADXL210EB Schematic

REV. B

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective companies.

ADXL210EB

Table I. ADXL210EB Parts List

Reference	Value	Function
C1	2200 pF/25 V	X _{FILT} . Sets X-axis analog bandwidth along with C2.
C2	Added by User	X _{FILT} . Sets X-axis analog bandwidth along with C1.
C3	Added by User	Y _{FILT} . Sets Y-axis analog bandwidth along with C4.
C4	2200 pF/25 V	Y _{FILT} . Sets Y-axis analog bandwidth along with C3.
C5	0.1 μF/25 V	Power Supply Decoupling
J1	Connector	All Power and Signal Connection through J1
R1	Added by User	R _{SET} . Sets the PWM period (T2).
U1	ADXL210	Dual-Axis ±10 g Accelerometer

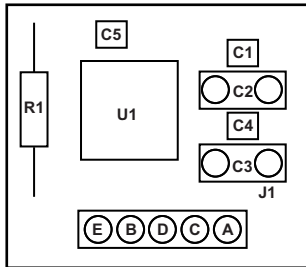


Figure 2. ADXL210EB Part Layout (Top View)

SETTING THE PERIOD OF THE DUTY CYCLE MODULATOR

R_{SET} sets the DCM period. Choose a value between 100 kΩ and 2 MΩ. See Table III for some typical R_{SET} values.

SETTING THE ADXL210'S BANDWIDTH

The ADXL210EB is supplied with the minimum specified X_{FILT} and Y_{FILT} values installed. Users' applications will likely require a narrower bandwidth to improve noise performance. See Table IV for some typical capacitor values.

SPECIAL NOTES ON HANDLING

The ADXL210EB is not reverse polarity protected. Reversing the +V supply and ground pins will damage the ADXL210.

Dropping the ADXL210EB on a hard surface may generate several thousand g of acceleration; enough to damage the accelerometer. Please refer to the ADXL210 data sheet for information on shock survivability.

Table II. ADXL210EB Pinout Description

Pin Reference	Function
E	Ground
B	Self-Test Input
D	X-Axis Duty Cycle Out
C	Y-Axis Duty Cycle Out
A	+V Supply (3 V dc to 5.25 V dc)

Table III. DCM Period vs. R_{SET} Value

T2 Period (ms)	R _{SET}
1	124 kΩ
2	248 kΩ
5	620 kΩ
10	1.24 MΩ

Table IV. Typical X_{FILT} and Y_{FILT} Values vs. Bandwidth and Noise Performance

X _{FILT} , Y _{FILT} (μF)	Bandwidth (Hz)	RMS Noise (mg)
0.01	500	12.7
0.047	100	7
0.1	50	4.2
0.47	10	2.3