Evelta ADXL345 Triple Axis Digital Accelerometer Breakout SPI/I2C

User Manual

Overview

The Evelta ADXL345 breakout board utilises the ADXL345 chip designed by Analog Devices is a 3-Axis, ±2 g/±4 g/±8 g/±16 g Digital Accelerometer. The ADXL345 is a small, thin, low power, 3-axis accelerometer with high resolution (13-bit) measurement at up to ±16g. Digital output data is formatted as 16-bit twos complement and is accessible through either a SPI (3- or 4-wire) or I2C digital interface.

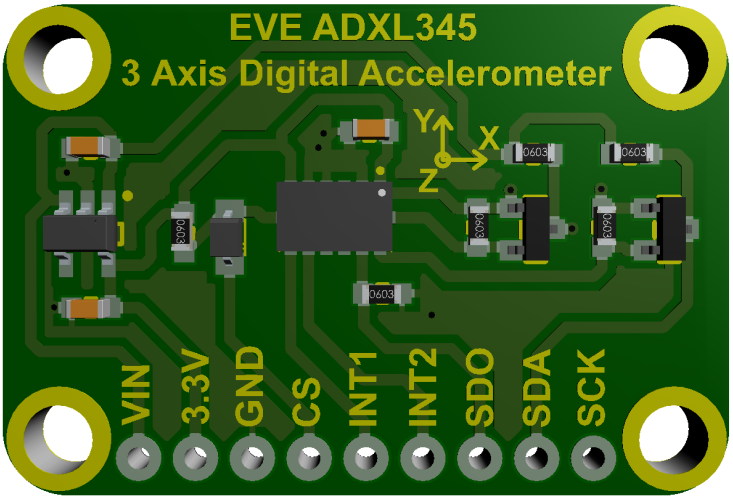
The ADXL345 is well suited for mobile device applications. It measures the static acceleration of gravity in tilt-sensing applications, as well as dynamic acceleration resulting from motion or shock. Its high resolution (4 mg/LSB) enables measurement of inclination changes less than 1.0°.

Several special sensing functions are provided. Activity and inactivity sensing detect the presence or lack of motion and if the acceleration on any axis exceeds a user-set level. Tap sensing detects single and double taps. Free-fall sensing detects if the device is falling. These functions can be mapped to one of two interrupt output pins. An integrated, patent pending 32-level first in, first out (FIFO) buffer can be used to store data to minimize host processor intervention.

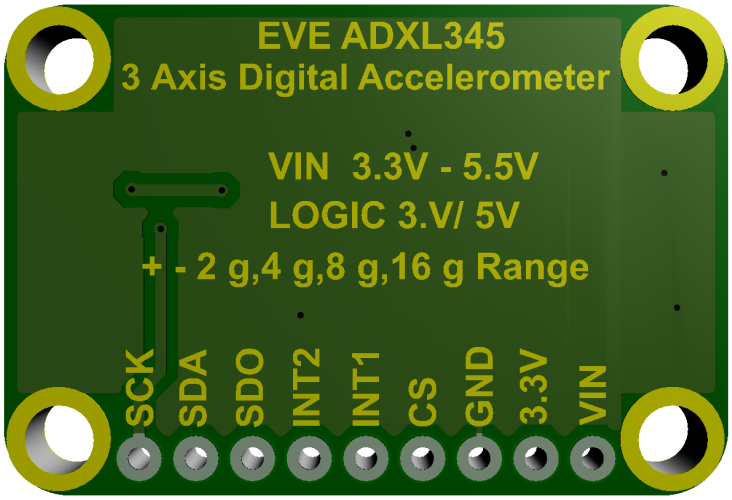
Low power modes enable intelligent motion-based power management with threshold sensing and active acceleration measurement at extremely low power dissipation.

Board Features

- Single tap/double tap detection
- Activity/inactivity monitoring
- Free-fall detection
- Supply voltage : 3.3V/5V
- Ultralow power: as low as 23 µA in measurement mode and 0.1 µA in standby mode at VS = 2.5 V (typical)
- SPI (3- and 4-wire) and I2C digital interfaces
- Dimensions: 32.5 x 22 mm

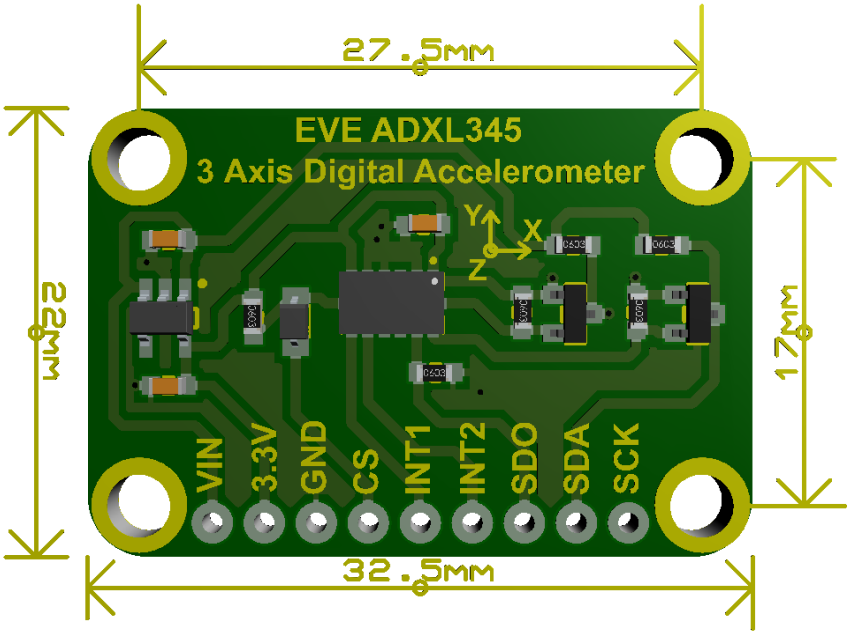


Front



Back

Board Dimensions



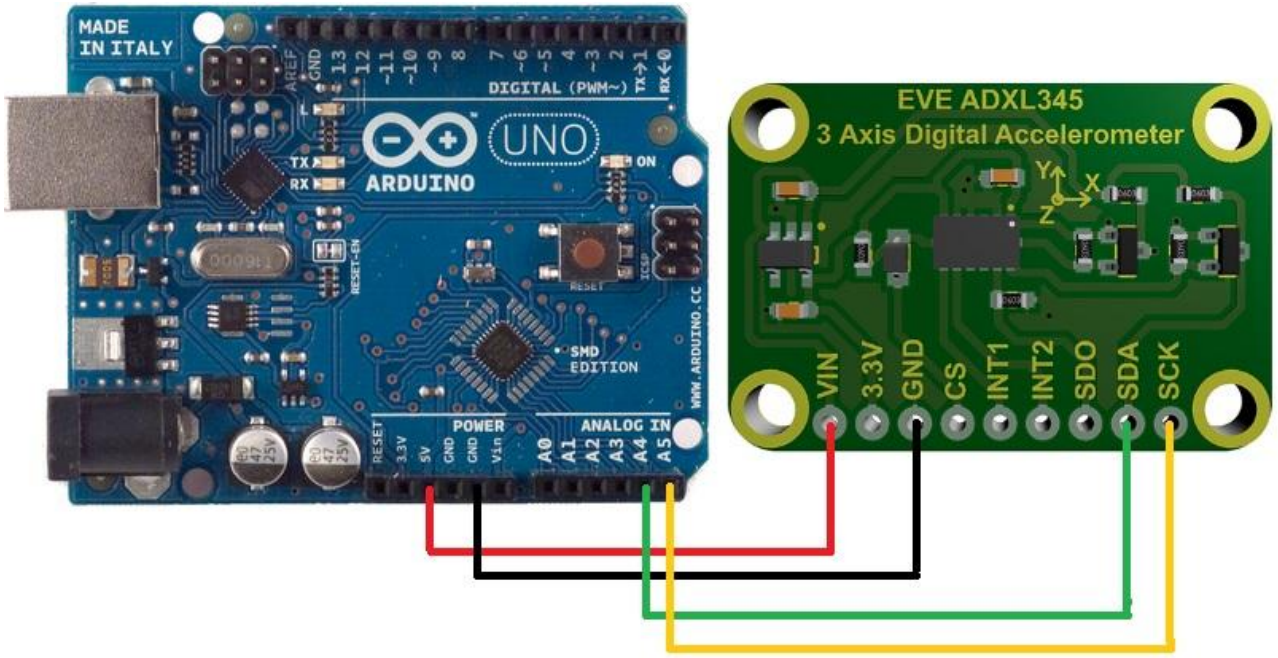
Breakout Board Pin Function

Pin	Function
GND	This pin must be connected to ground
VIN	Supply Voltage
CS	Chip Select
INT1	Interrupt 1 Output
INT2	Interrupt 2 Output
SDO	Serial Data Output (SPI 4-Wire) / I2C Address Select
SDA	Serial Data I2C / Serial Data Input (SPI 4-WIRE) / Serial Data Input and Output (SPI 3-Wire)
SCK	Serial Communications Clock

Arduino I2C Connection
The ADXL345 Breakout has an I2C address of **0x53**. It can share the I2C bus with other I2C devices as long as each device has a unique address. Only 4 connections are required for I2C communication.

1. GND->GND
2. VIN->+5v
3. SDA->SDA (Analog 4 on "Classic Arduinos")
4. SCL->SCL (Analog 5 on "Classic Arduinos")

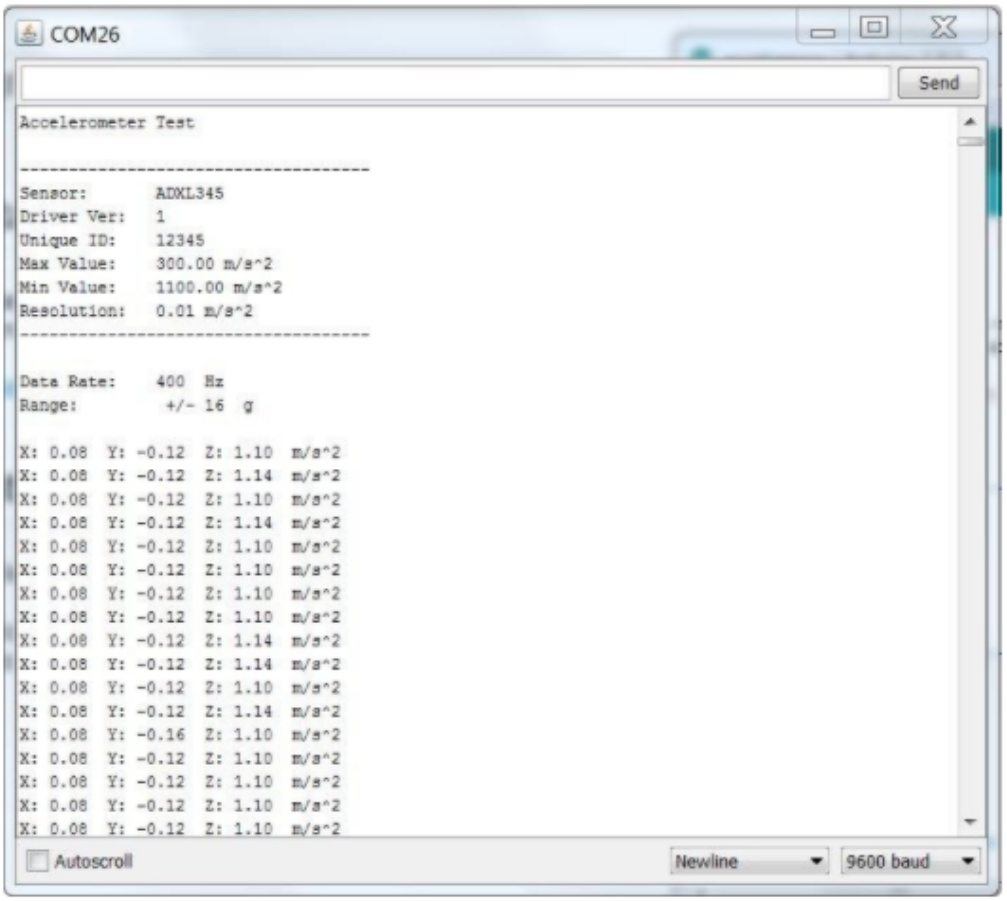
The Evelta breakout has level shifting and regulation circuitry so you can power it from 3-5V and use 3V or 5V logic levels for i2c.



Install the Library
Download the ADXL345 library and install it.

Click "File->Examples->Adafruit_ADXL345->sensortest" to load the example sketch from the library.

Then click on the compile/upload button to compile and upload the sketch to the Arduino. You should see output similar to below. Watch the values change as you move the board around.


COM26
Send
Accelerometer Test

Sensor: ADXL345
Driver Ver: 1
Unique ID: 12345
Max Value: 300.00 m/s^2
Min Value: 1100.00 m/s^2
Resolution: 0.01 m/s^2

Data Rate: 400 Hz
Range: +/- 16 g
X: 0.08 Y: -0.12 Z: 1.10 m/s^2
X: 0.08 Y: -0.12 Z: 1.14 m/s^2
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X: 0.08 Y: -0.12 Z: 1.10 m/s^2
Autoscroll
Newline
9600 baud