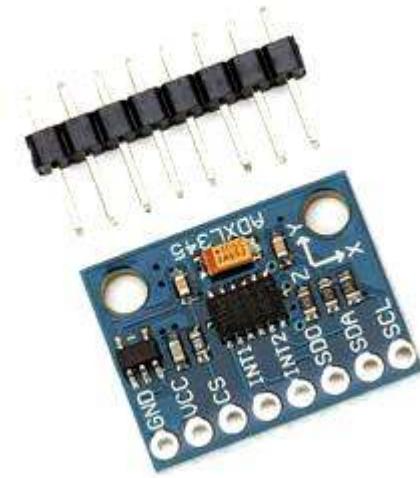


GY-291 ADXL345 3-Axis Accelerometer Module



GY-291 ADXL345 3-Axis Accelerometer is a sensor board based on ADXL345 accelerometer integrated circuit. The ADXL345 is a small, thin, ultralow power, 3-axis accelerometer with high resolution (13-bit) measurement at up to ± 16 g. 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 (3.9 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 by comparing the acceleration on any axis with user-set thresholds. Tap sensing detects single and double taps in any direction. Freefall sensing detects if the device is falling. These functions can be mapped individually to either of two interrupt output pins

GY-291 ADXL345 3-Axis Accelerometer - General Specifications

- Single tap/double tap detection
- Activity/inactivity monitoring
- Free-fall detection
- 10,000 g shock survival
- SPI (3- and 4-wire) and I2C digital interfaces
- Flexible interrupt modes mappable to either interrupt pin
- Measurement ranges selectable via serial command
- Bandwidth selectable via serial command

GY-291 ADXL345 3-Axis Accelerometer - Technical Specifications

- Operating Voltage: 4V to 6V
- I/O Voltage Range: 1.7V to 3.6V
- Communication: SPI and I2C

- Operating Temperature: -40°C to 85°C
- Size: 3 mm \times 5 mm \times 1 mm

ADXL345 3-Axis Accelerometer

The ADXL345 is a 3-axis accelerometer with high resolution (13-bit) measurement at up to ± 16 g. 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 (3.9 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 by comparing the acceleration on any axis with user-set thresholds. Tap sensing detects single and double taps in any direction. Freefall sensing detects if the device is falling, can be mapped individually to either of two interrupt output pins. An integrated, patent pending memory management system with a 32-level first in, first out (FIFO) buffer can be used to store data to minimize host processor activity and lower overall system power consumption. Low power modes enable intelligent motion-based power management with threshold sensing and active acceleration measurement at extremely low power dissipation.

Features

- Power consumption scales automatically with bandwidth
- User-selectable resolution
- Single tap / Double tap detection
- Activity / Inactivity monitoring
- Free-Fall detection
- Full resolution, where resolution increases with g range, up to 13-bit resolution at ± 16 g (maintaining 4 mg/LSB scale factor in all g ranges)
- SPI (3- and 4-wire) and I2C digital interfaces
- Flexible interrupt modes mappable to either interrupt pin
- Measurement ranges selectable via serial command
- Bandwidth selectable via serial command
- 10,000 g shock survival

Specifications

- Current: Ultralow as low as 23 μA in measurement mode and 0.1 μA in standby mode at $\text{VS} = 2.5$ V (typical)
- Patent pending, embedded memory management system with FIFO technology minimizes host processor load
- Supply voltage: 4.0 to 6 VDC
- I/O voltage range: 1.7 V to 3.6V
- Working temperature: -40°C to $+85^{\circ}\text{C}$
- Size: 3 mm \times 5 mm \times 1 mm