

Arduino Sensor Accelerometer



Description:

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. 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.

Specification:

- Ultralow power: as low as 23 μA in measurement mode and
- 0.1 μ A in standby mode at VS = 2.5 V (typical)
- Power consumption scales automatically with bandwidth
- User-selectable resolution
- Fixed 10-bit resolution

- Full resolution, where resolution increases with g range, up to 13-bit resolution at ±16 g (maintaining 4 mg/LSBscale factor in all g ranges)

- Patent pending, embedded memory management system with FIFO technology minimizes host processor load
- Single tap/double tap detection
- Activity/inactivity monitoring
- Free-fall detection
- Module supply voltage range: 3.0 V to 5 V
- I/O voltage range: 1.7 V to 3.6V
- 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
- Wide Temperature range (-40°C to +85°C)
- Small and Thin: 2.2 x 1.2 cm

Applications:

- Handsets
- Medical instrumentation
- Games and pointing devices
- Industrial instrumentation
- Personal navigation devices
- Hard disk drive (HDD) protection





Pin Function Descriptions:

Pin	Pin Name	Description
1	GND	This pin must be connected to ground
2	VCC	Supply Voltage 3 – 5 V
3	CS	Chip Select
4	INT1	Interrupt 1 Output
5	INT2	Interrupt 2 Outputs
6	SDO	Serial Data Output (SPI 4 - Wire)/Alternate I2C Address Select (I2C)
7	SDA	Serial Data (I2C)/Serial Data Input (SPI 4 - Wire)/Serial Data Input and Output (SPI 3 - Wire)
8	SCL	Serial Communications Clock. SCL is the clock for I2C, and SCLK is the clock for SPI

<u>Table:</u>

Name	Description
Operating Voltage Range	3~5 V
Supply Current	5uA
Interfaces	IIC / SPI
Operating Temperature	-40°~ 85°

Made in China

