I2C-ACC™ I²C +/- 2.0g DUAL AXIS ACCELEROMETER
User Manual

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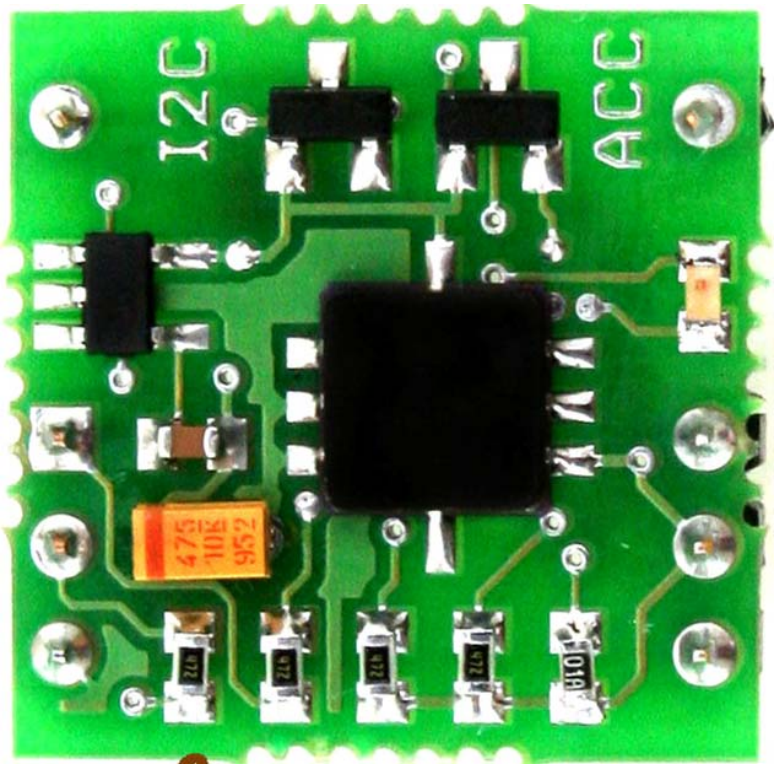

uResearch

GRAVITECH GROUP

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Description

The I2C-ACC board is an 8-pin CMOS device that measures acceleration with a full-scale range of +/-2g and sensitivity of 400counts/g @3.0V at 25°C. There are no external components required. Only two signal lines SDA and SCL plus supply voltage and ground are required to be connected. This makes it perfect for embedded systems that require acceleration measurement.

This board features innovations that set it apart from other acceleration sensor module. Innovations feature like on-board voltage-level translator, pull-up resistors and power LED. The on-board voltage-level translator is eliminated the need for external components since the sensor is 3.3V device. The module can be quickly connected directly on to the breadboard. The board is small and compact in size 0.70 x 0.70 inches.

The I2C-ACC is designed base on MXC6202xJ IC. It is a complete sensing system with on-chip mixed signal processing and integrated I^2C bus, allowing the device to be connected directly to a microprocessor eliminating the need for A/D converters or timing resources.

It can measure both dynamic acceleration (e.g. vibration) and static acceleration (e.g. gravity). Its design is based on heat convection and requires no solid proof mass.

Features

- Stand alone module, no external components required
- On-board voltage-level translator, pull-up resistors and power LED
- Design easy for breadboard
- High quality double sided PCB
- Small and compact in size 0.70 x 0.70 inches
- Dual row 0.6” width, 0.1” pitch header pins
- Suitable for 3.3V or 5.0V microcontroller
- Full-scale range of +/-2g and sensitivity of 400counts/g
- I^2C slave, FAST (≤400 kHz) mode
- Power up/down function through I^2C
- On-chip temperature sensor available
- >50,000g shock survival rating

Applications

It is optimized for motion-sensing and tilt-sensing applications such as gesture recognition, menu and screen navigation and more including:

- Cell Phones, PDA’s, MP3’s
- Pedometers, Blood Pressure Monitor, Digital Cameras
- Joysticks, RF Interfaces, Handheld games, Menu Selection, Tilt Sensing
- And much more…

* I^2C is a trademark of Philips Semiconductors Corporation

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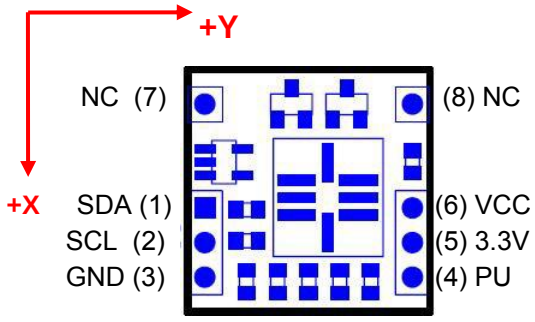
Pin Configuration



Pin No.	Name	Type	Description
1	SDA	I/O	Serial data line
2	SCL	Input	Serial clock line
3	GND	PWR	Supply ground
4	PU	PWR	I²C bus pull-up resistor
5	3.3V	PWR	External 3.3V input, Internal 3.3V output
6	VCC	PWR	5.0V Supply voltage
7-8	NC	NC	No connect

Interfaces

Power:

The I2C-ACC board needs an external 3.3VDC or 5.0VDC supply.

- **VCC:** is a 5.0V input power to I2C-ACC board. When 5.0V applied to the device, 3.3V pin become a 3.3V output from on-board voltage regulator. The 3.3V output can supply up to 100mA including the components on the device.
- **3.3V:** is a 3.3V input power to I2C-ACC board. This pin is use as an input power for 3.3V logic system.
- **GND:** is a common ground for every pin. This pin MUST be connected to ground of the external power supply.

***** Use "VCC" pin for 5V logic system and "3.3V" pin for 3.3V logic system. DO NOT apply power to both pins. *****

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Pull-up pin (PU):

I²C bus specification required to have pull-up resistors on SDA and SCL pin. I2C-ACC comes with these two pull-up resistors on-board. To use on-board pull-up resistors, the "PU" pin must be connect to the supply voltage pin. For example, if the device is used in 5V system the "PU" pin must be connect to "VCC" pin. Also, solder the bridge on "PU" at the bottom of the module.

I²C pins:

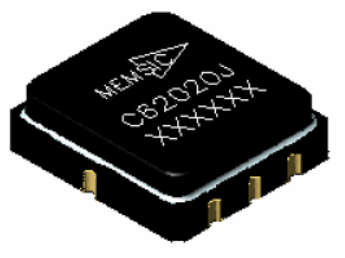
The I2C-ACC operates as a slave on the I²C bus. Only two signal lines SDA and SCL are required for I²C bus. Please refer to I²C specification for more information.

Module Configuration

I²C address:

The address of I2C-ACC is [0010xxx]. "[xxx]" Is determined by factory programming, a total of 8 different addresses are available.

The bottom picture shows how to read device address.



Ordering Guide:

MXC6202xJV

Package type:

Code	Type
V	LCC8 RoHS compliant

Performance Grade:

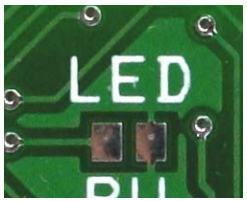
Code	Temp	Output Range
J	-10~70°C	I²C:4096counts
K	-40~85°C	I²C:4096counts

Address code: 0 to 7

Number	Address
0	20H
1	22H
2	24H
3	26H
4	28H
5	2AH
6	2CH
7	2EH

Power-on LED:

The green LED on the module is illuminating when the power applied. The power-on LED is enabled from the manufacture. It can be disabling for light sensitive or low current requirement application by remove the solder bridge on "LED" at the bottom of the module.



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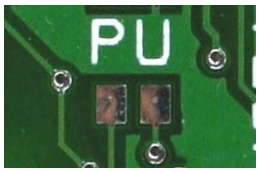
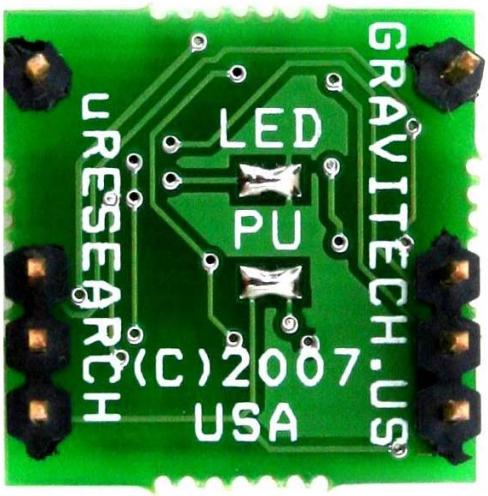
I²C pull-up resistors:

I2C-ACC comes with two SDA and SCL pull-up resistors. It uses conjunction with "PU" pin4. It is enabled from the manufacture. It can be disabling when connect to I²C bus that already have pull-up resistors by remove the solder bridge on "PU" at the bottom of the module.



Below is the default setting from the manufacture.



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Notes

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