



Monolithic and Wafer Level Packaged Three-Axis Accelerometer

MXC400xXC

FEATURES

- Ultra Low Cost
- Most Advantaged Technology in Industry
- Monolithically-Integrated Single Chip MEMS Sensor with On-Chip Signal Processing
- MEMSIC Proprietary Technology with No Moving Parts
- >200,000g Shock Survival Rating of Sensing Structure
- 12-bit Signal Output for X, Y and Z Axes
- Full Scale Range $\pm 2g$, $\pm 4g$ and $\pm 8g$
- 8-bit Temperature Output (-50°C to $+100^{\circ}\text{C}$)
- Smallest Wafer Level Package (WLP) Footprint $1.18\text{mm} \times 1.70\text{mm} \times 0.85\text{mm}$
- 6-Position Orientation Detection
- Shake Detection with Interrupt
- Programmable Shake Detection Threshold
- I²C Slave, FAST (≤ 400 KHz) Mode Interface
- 1.8~3.6V Single Supply Continuous Operation
- 1.8V Compatible I/O
- Embedded Power Up/Down Mode
- Eight I²C Addresses Pre-settable by User
- RoHS Compliant

APPLICATIONS

- Information Appliances – Cell Phones, Tablets, PDA's, Computer Peripherals
- Consumer – LCD Projectors, Pedometers, DSC/DVC, MP3/MP4
- Gaming – Joystick, Toys
- Household Safety – Heating Fan, Iron, Cooling Fan

DESCRIPTION

The MEMSIC Three-Axis Thermal Accelerometer is based on MEMSIC's Proprietary thermal technology that is built with $0.18\mu\text{m}$ standard CMOS process and the most advanced Wafer Level Packaging. This device contains no moving sensor parts and thus eliminates field reliability and repeatability issues associated with competitive products. For example,

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MEMSIC MXC400xXC Datasheet Rev.B

there is no measurable resonance (immunity to vibration), no stiction, and no detectable hysteresis. It also eliminates the "click" sounds typically heard in ball based orientation sensors. Shock survival of the MEMS sensing structure is greater than 200,000g. This sensor provides X/Y/Z axis acceleration signals with very low 0g offset, and temperature signal with high accuracy. In addition, it detects six orientation positions, X/Y shake and shake directions.

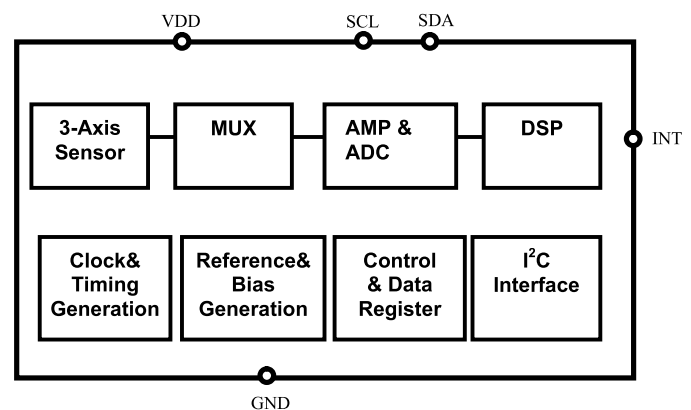


Figure 1: MXC400xXC Functional block diagram

The MXC400xXC is the World's only monolithic and WLP three-axis accelerometer with smallest profile of $1.18\text{mm} \times 1.70\text{mm} \times 0.85\text{mm}$ that is perfectly suitable for mobile applications. It is available in operating temperature range of -40°C to $+85^{\circ}\text{C}$.

The MXC400xXC provides I²C digital output with 400 KHz fast mode operation. And an interrupt pin (INT) is provided for orientation and X/Y shake detections. The device also has a power-down mode enabled through the I²C interface.





Digital Three-Axis Accelerometer

MXC6655XA

FEATURES

- Ultra Low Cost
- Most Advantaged Technology in Industry
- MEMS Sensor with On-Chip Signal Processing
- MEMSIC Proprietary Technology with No Moving Parts
- >200,000g Shock Survival Rating of Sensing Structure
- 12-bit Signal Output for X, Y and Z Axes
- Full Scale Range $\pm 2g$, $\pm 4g$ and $\pm 8g$
- 8-bit Temperature Output
- 12-pin LGA 2mm \times 2mm \times 1mm Package
- 6-Position Orientation Detection
- Shake Detection with Interrupt
- Programmable Shake Detection Threshold
- I²C Slave, FAST (≤ 400 KHz) Mode Interface
- 1.8~3.6V Single Supply Continuous Operation
- 1.8V Compatible I/O
- Self-test
- Embedded Power Up/Down Mode
- RoHS Compliant

APPLICATIONS

- Information Appliances – Cell Phones, Tablets, PDA's, Computer Peripherals
- Consumer – LCD Projectors, Pedometers, DSC/DVC, MP3/MP4
- Gaming – Joystick, Toys
- Household Safety – Heating Fan, Iron, Cooling Fan

DESCRIPTION

The MEMSIC Three-Axis Thermal Accelerometer is based on MEMSIC's Proprietary thermal technology that is built with 0.18 μ m standard CMOS process. This device contains no moving sensor parts and thus eliminates field reliability and repeatability issues

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MEMSIC MXC6655XA Datasheet Rev A



associated with competitive products. For example, there is no measurable resonance (immunity to vibration), no stiction, and no detectable hysteresis. It also eliminates the "click" sounds typically heard in ball based orientation sensors. Shock survival of the MEMS sensing structure is greater than 200,000g. This sensor provides X/Y/Z axis acceleration signals with very low 0g offset, and temperature signal with high accuracy. In addition, it detects six orientation positions, X/Y shake and shake directions.

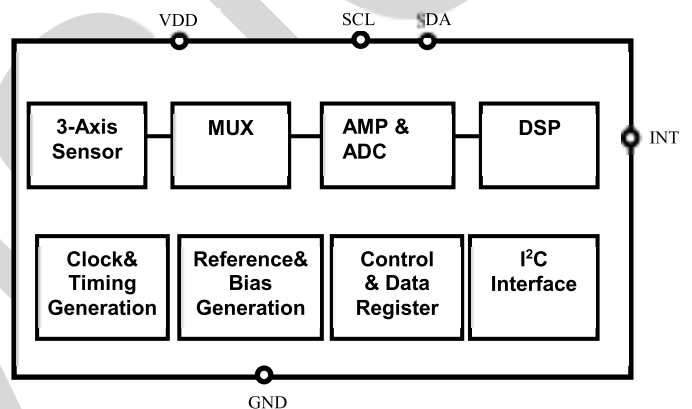


Figure 1: MXC6655XA Functional block diagram

It is available in operating temperature range of -40 $^{\circ}$ C to +85 $^{\circ}$ C.

The MXC6655XA provides I²C digital output with 400 KHz fast mode operation. And an interrupt pin (INT) is provided for orientation and X/Y shake detections. The device also has a power-down mode enabled through the I²C interface.



Monolithic and Wafer Level Packaged Three-Axis Accelerometer

MXC488xXC

FEATURES

- Ultra Low Cost
- Most Advantaged Technology in Industry
- Monolithically-Integrated Single Chip MEMS Sensor with On-Chip Signal Processing
- MEMSIC Proprietary Technology with No Moving Parts
- >200,000g Shock Survival Rating of Sensing Structure
- 12-bit Signal Output for X, Y and Z Axes
- Full Scale Range $\pm 2g$, $\pm 4g$ and $\pm 8g$
- 8-bit Temperature Output (-50°C to $+100^{\circ}\text{C}$)
- Smallest Wafer Level Package (WLP) Footprint $1.18\text{mm}\times 1.70\text{mm}\times 0.85\text{mm}$
- 6-Position Orientation Detection
- Shake Detection with Interrupt
- Programmable Shake Detection Threshold
- I²C Slave, FAST (≤ 400 KHz) Mode Interface
- 1.8~3.6V Single Supply Continuous Operation
- 1.8V Compatible I/O
- Embedded Power Up/Down Mode
- Eight I²C Addresses Pre-settable by User
- RoHS Compliant

APPLICATIONS

- Information Appliances – Cell Phones, Tablets, PDA's, Computer Peripherals
- Consumer – LCD Projectors, Pedometers, DSC/DVC, MP3/MP4
- Gaming – Joystick, Toys
- Household Safety – Heating Fan, Iron, Cooling Fan

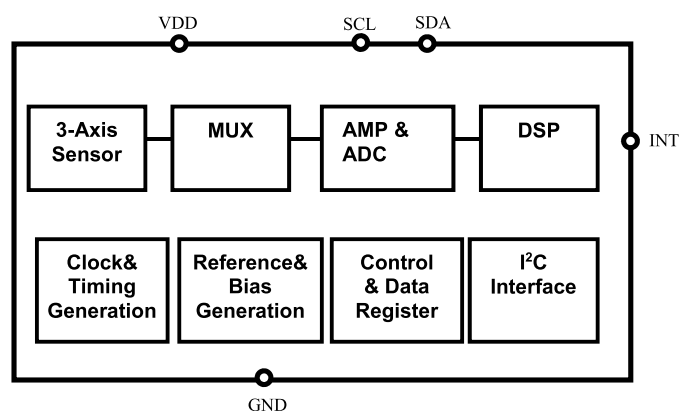
DESCRIPTION

The MEMSIC Three-Axis Thermal Accelerometer is based on MEMSIC's Proprietary thermal technology that is built with $0.18\mu\text{m}$ standard CMOS process and the most advanced Wafer Level Packaging. This device contains no moving sensor parts and thus eliminates field reliability and repeatability issues associated with competitive products. For example,

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MEMSIC MXC488xXC Rev.B (3/8/2018)

there is no measurable resonance (immunity to vibration), no stiction, and no detectable hysteresis. It also eliminates the "click" sounds typically heard in ball based orientation sensors. Shock survival of the MEMS sensing structure is greater than 200,000g. This sensor provides X/Y/Z axis acceleration signals with very low 0g offset, and temperature signal with high accuracy. In addition, it detects six orientation positions, X/Y shake



and shake directions.

Figure 1: MXC488xXC Functional block diagram

The MXC488xXC is the World's only monolithic and WLP three-axis accelerometer with smallest profile of $1.18\text{mm}\times 1.70\text{mm}\times 0.85\text{mm}$ that is perfectly suitable for mobile applications. It is available in operating temperature range of -40°C to $+85^{\circ}\text{C}$.

The MXC488xXC provides I²C digital output with 400 KHz fast mode operation. And an interrupt pin (INT) is provided for orientation and X/Y shake detections. The device also has a power-down mode enabled through the I²C interface.

