

MMA Series Acceleration Sensors

Freescale Semiconductor's micromachined accelerometer (MMA) series acceleration sensors are designed for end products and embedded systems that require measurement of forces resulting from fall, tilt, motion, positioning, shock or vibration. We offer a broad portfolio of acceleration sensors from 1.5g to 250g for applications ranging from highly sensitive seismic detection to robust collision detection.

Freescale's MMA series acceleration sensing capabilities are derived from micro-electromechanical systems (MEMS) technology. The acceleration sensors incorporate a surface micromachined structure. The g-cell is coupled with an application-specific integrated circuit (ASIC), which provides the accelerometer with amplification, signal conditioning, low-pass filter and temperature compensation. This two-chip solution serves as a system-in-a-package.

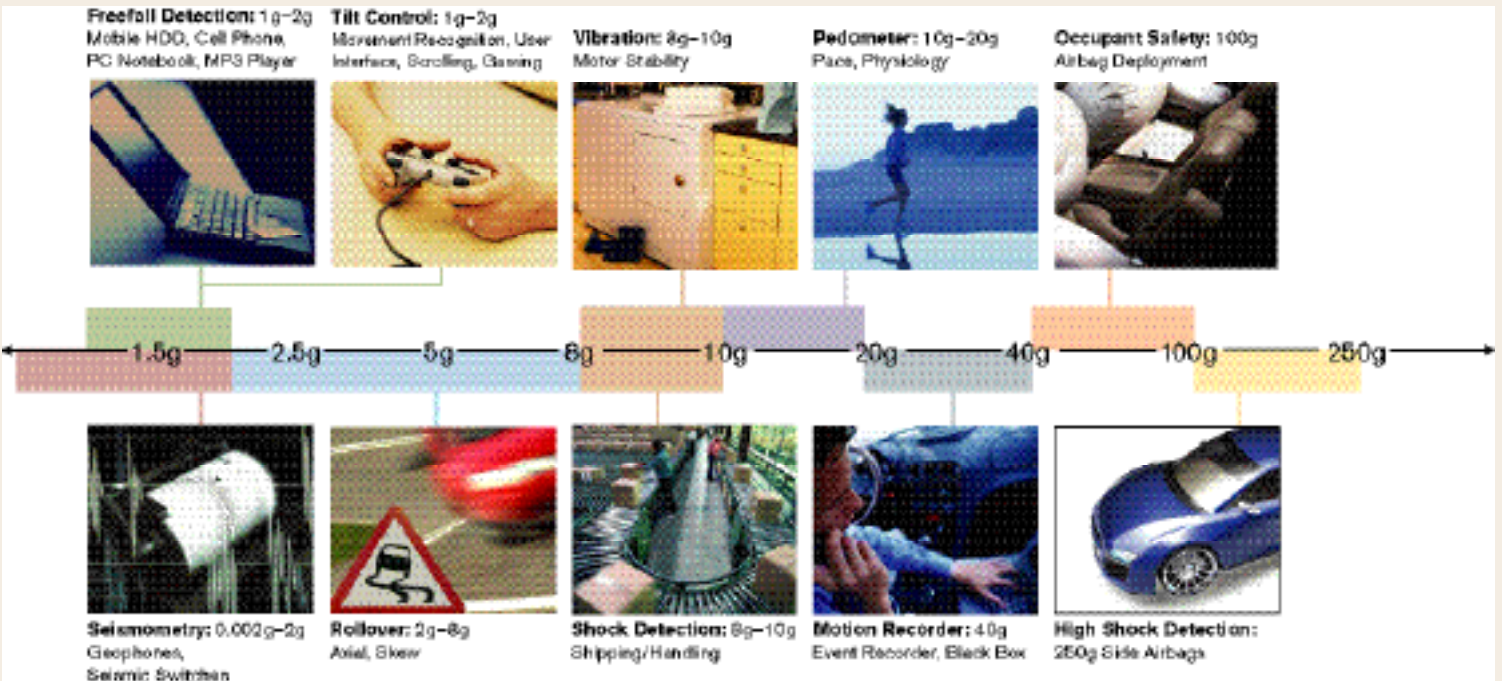
Device	Acceleration (g)	Sensing Axis	Sensitivity (mV/g)	Frequency (Hz)	VDD Supply Voltage (Typ) (V)	Zero g Output (Typ) (V)	Packaging
MMA7260Q*	1.5/2/4/6	XYZ	800/600/300/200	350/150	3.3	1.65	16-pin QFN
MMA7261Q*	2.5/3.3/6.7/10	XYZ	480/360/180/120	350/150	3.3	1.65	16-pin QFN
MMA6280Q*	1.5/2/4/6	XZ	800/600/300/200	350/150	3.3	1.65	16-pin QFN
MMA6281Q*	2.5/3.3/6.7/10	XZ	800/600/300/200	350/150	3.3	1.65	16-pin QFN
MMA6270Q*	1.5/2/4/6	XY	800/600/300/200	350	3.3	1.65	16-pin QFN
MMA6271Q*	2.5/3.3/6.7/10	XY	800/600/300/200	350	3.3	1.65	16-pin QFN
MMA6261Q	1.5	XY	800	300	3.3	1.65	16-pin QFN
MMA6262Q	1.5	XY	800	150	3.3	1.65	16-pin QFN
MMA6263Q	1.5	XY	800	900	3.3	1.65	16-pin QFN
MMA2260D	1.5	X	1200	50	5.0	2.5	16-pin SOIC
MMA1260D	1.5	Z	1200	50	5.0	2.5	16-pin SOIC
MMA1270D	2.5	Z	750	50	5.0	2.5	16-pin SOIC
MMA1250D	5	Z	400	50	5.0	2.5	16-pin SOIC
MMA1220D	8	Z	250	250	5.0	2.5	16-pin SOIC
MMA6231Q	10	XY	120	300	3.3	1.65	16-pin QFN
MMA6233Q	10	XY	120	900	3.3	1.65	16-pin QFN
MMA3201D	40	XY	50	400	5.0	2.5	20-pin SOIC
MMA2201D	40	X	50	400	5.0	2.5	16-pin SOIC
MMA2202D	50	X	40	400	5.0	2.5	16-pin SOIC
MMA1213D	50	Z	40	400	5.0	2.5	16-pin SOIC
MMA2204D	100	X	20	400	5.0	2.5	16-pin SOIC
MMA1210D	100	Z	20	400	5.0	2.5	16-pin SOIC
MMA1211D	150	Z	13	400	5.0	2.5	16-pin SOIC
MMA1212D	200	Z	10	400	5.0	2.5	16-pin SOIC
MMA2300D	250	X	8	400	5.0	2.5	16-pin SOIC
MMA1200D	250	Z	8	400	5.0	2.5	16-pin SOIC

*This device has selectable sensitivity

Features

- > X, XY, XZ, XYZ and Z axes of sensitivity
- > 1.5g–250g for a wide variety of applications
- > Sensitivity as high as $\pm 1,200$ mV/g
- > Signal conditioned with internal filter
- > Calibrated self-test for functional verification
- > Linear output
- > Ratiometric, ideally suited to interface with analog-to-digital converters
- > Hermetically sealed g-cell
- > Cost-effective plastic packages in low-dimension quad flat no-lead (QFN) Pb-free package (6 mm x 6 mm x 1.45 mm) or SOIC-16 or 20 with through hole or surface mount available

**SUGGESTED g LEVELS
FOR VARIOUS APPLICATIONS**

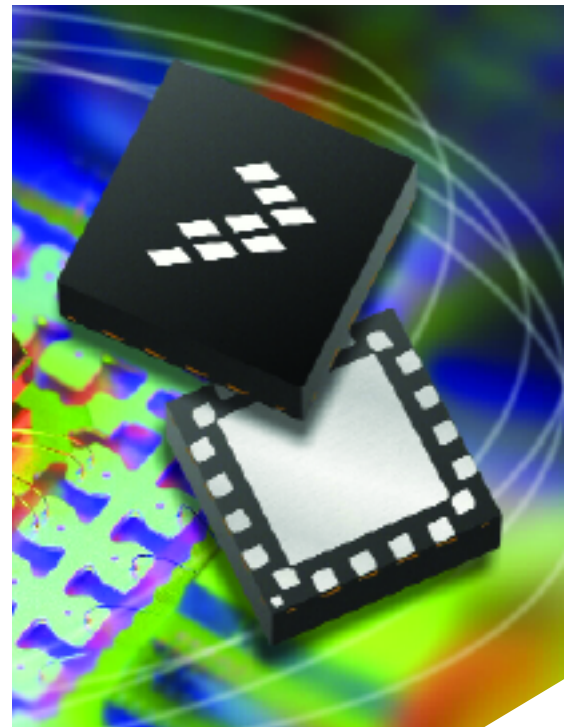


Typical Applications

- > Anti-theft devices
- > Appliance balance/monitoring
- > Automobile rollover detection
- > Automotive crash detection and suspension control
- > Back-up GPS
- > Exercise equipment
- > Fall detection
- > HDD protection
- > Health care applications
- > Image stability
- > Motion control
- > Physical therapy
- > Portable electronics
- > Robotics
- > Seismic monitoring
- > Shipping/handling monitor
- > Smart motor maintenance
- > Sports diagnostic systems
- > Vehicle dynamic control
- > Vibration monitoring

Benefits

- > Single board 3-D sensing
- > Bidirectional multi-axis sensing
- > Design flexibility
- > Small package



Learn More: For more information about Freescale products, please visit www.freescale.com/sensors.