

MMA Series Acceleration Sensors

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

Freescale's MMA series acceleration sensing capabilities derive from micro-electromechanical systems (MEMS) technology. The acceleration sensors incorporate a surface micromachined structure.

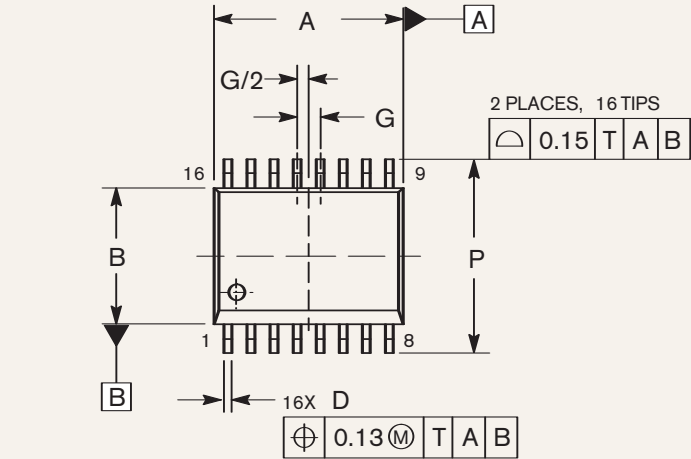
The g-cell is coupled with an ASIC, which provides the accelerometer with amplification, signal conditioning, low-pass filter and temperature compensation. This two-chip solution serves as a system-in-a-package (SIP).

Device	Acceleration (g)	Sensing Axis	Sensitivity (mV/g)	Frequency (Hz)	VDD Supply Voltage (Typ) (V)	Zero g Output (Typ) (V)	Packaging
MMA6260Q	1.5	XY	800	50	3.3	1.65	Quad Flat No-Lead (QFN)
MMA6261Q	1.5	XY	800	300	3.3	1.65	Quad Flat No-Lead (QFN)
MMA6262Q	1.5	XY	800	150	3.3	1.65	Quad Flat No-Lead (QFN)
MMA6263Q	1.5	XY	800	900	3.3	1.65	Quad Flat No-Lead (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	Quad Flat No-Lead (QFN)
MMA6233Q	10	XY	120	900	3.3	1.65	Quad Flat No-Lead (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

Features

- > X, XY and Z axis 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 A to D 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 1.98 mm) or SOIC-16 or 20 with through hole or surface mount available

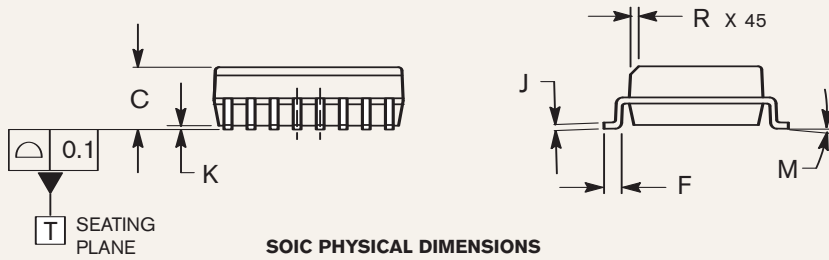
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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
3. DIMENSIONS "A" AND "B" DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS. MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.15 PER SIDE.
4. DIMENSION "D" DOES NOT INCLUDE DAMBAR PROTRUSION. PROTRUSIONS SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED 0.75.

DIM	MILLIMETERS	
	MIN	MAX
A	10.15	10.45
B	7.40	7.60
C	3.30	3.55
D	0.35	0.49
F	0.76	1.14
G	1.27 BSC	
J	0.25	0.32
K	0.10	0.25
M	0°	7°
P	10.16	10.67
R	0.25	0.75



Benefits

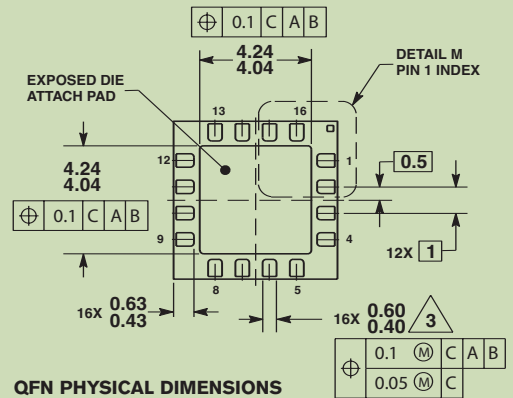
- > Single board 3-D sensing
- > Bi-directional multi-axis sensing
- > Design flexibility
- > Small package

Typical Applications

- > Smart portable electronics
- > Vibration monitoring
- > Computer hard drive protection
- > Sports diagnostic systems
- > Appliance balance and vibration controls

- > Seismic detection
- > Health care applications
- > Robotics
- > Automotive crash detection and suspension control
- > Motion control
- > Back-up GPS
- > Fall log
- > Smart motor maintenance

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