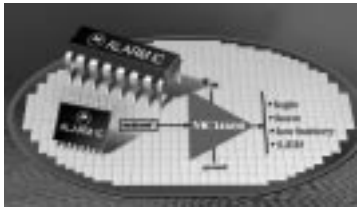
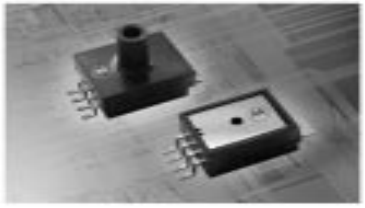
SG162/D
REV 33

MOTOROLA





SENSOR PRODUCTS DIVISION
QUARTER 3, 2000

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SENSOR PRODUCT SELECTOR GUIDE

SENSOR PRODUCTS

Contents **Page**

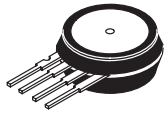
ACCELERATION/INERTIAL SENSORS

Product	Acceleration Range (g)	Vdd Supply Voltage (Typ) (V)	Zero g Output (Typ) (V)	Sensing Axis	Package
MMA1201P	±38	5.0	2.5	Z–axis	P–Dip
MMA2200W	±38	5.0	2.5	X–axis	Wingback
MMA2201D	±38	5.0	2.5	X–axis	SOIC

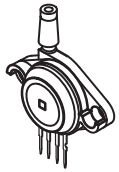
PRESSURE SENSORS

Pressure Packaging Options
(Sizes Not to Scale)

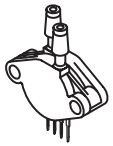
4–PIN



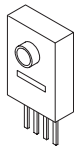
BASIC ELEMENT*
CASE 344–15
SUFFIX A / D



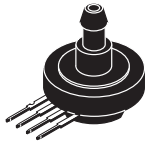
GAUGE PORT*
CASE 344B–01
SUFFIX AP / GP



DUAL PORT*
CASE 344C–01
SUFFIX DP

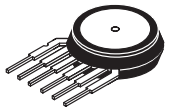


MEDICAL CHIP PAK*
CASE 423A–03



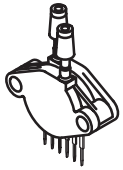
STOVEPIPE PORT
CASE 344E–01
SUFFIX AS/GS

6–PIN

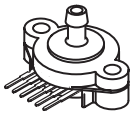


BASIC ELEMENT*
CASE 867–08
SUFFIX A / D

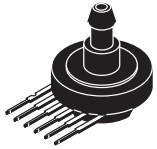
GAUGE PORT*
CASE 867B–04
SUFFIX AP / GP



DUAL PORT*
CASE 867C–05
SUFFIX DP

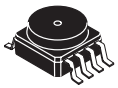


AXIAL PORT
CASE 867F–03
SUFFIX ASX / GSX

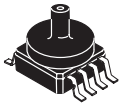


STOVEPIPE PORT
CASE 867E–03
SUFFIX AS / GS

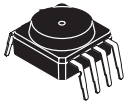
8–PIN



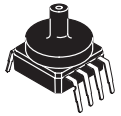
SMALL OUTLINE
(SURFACE MOUNT)*
CASE 482–01



SMALL OUTLINE
(PORTED/SURFACE MOUNT)*
CASE 482A–01



SMALL OUTLINE
(DIP)*
CASE 482B–03



SMALL OUTLINE
(PORTED/DIP)*
CASE 482C–03

*Indicates preferred packaging options

PRESSURE SENSORS (Continued)

Compensated Pressure Sensors

Product	Pressure Rating (Max) (psi)	Pressure Rating (Max) (kPa)	Pressure Rating (Max) (in*H2O)	Pressure Rating (Max) (cm*H2O)	Pressure Rating (Max) (mm*Hg)	Over Pressure (kPa)	Offset (mV)	Full Scale Span (Typ) (mV)	Sensitivity (mV/kPa)	Linearity (Min) (% of VFSS)	Linearity (Max) (% of VFSS)
MPX2010	1.45	10	40	102	75	75	±1.0	25	2.5	–1.0	1.0
MPX2053	7.25	50	201	510	375	200	±1.0	40	0.8	–0.6	0.4
MPX2102A	14.5	100	401	1020	750	200	±2.0	40	0.4	–1.0	1.0
MPX2102D	14.5	100	401	1020	750	200	±1.0	40	0.4	–0.6	0.4
MPX2202A	29	200	803	2040	1500	400	±1.0	40	0.2	–1.0	1.0
MPX2202D	29	200	803	2040	1500	400	±1.0	40	0.2	–0.6	0.4

PRESSURE SENSORS (Continued)

Compensated Medical Grade Pressure Sensors

Product	Pressure Rating (Max) (psi)	Pressure Rating (Max) (kPa)	Pressure Rating (Max) (in*H2O)	Pressure Rating (Max) (cm*H2O)	Pressure Rating (Max) (mm*Hg)	Supply Voltage (Typ) (Vdc)	Offset (Max) (mV)	Sensitivity (μV/V/mmHg)	Output Impedance (Max) (Ohms)	Linearity (Min) (% of VFSS)	Linearity (Max) (% of VFSS)	Case #	Package
MPXC2011DT1	1.45	10	40	102	75	3.0	1.0	–	3000	–1.0	1.0	423A-03	Chip Pak
MPX2300D	5.8	40	161	408	300	6.0	–	5.0	330	–2.0	2.0	423A-03	Chip Pak
MPX2300DT1	5.8	40	161	408	300	6.0	0.75	5.0	330	–1.5	1.5	423A-03	Chip Pak

Uncompensated Pressure Sensors

Product	Pressure Rating (Max) (psi)	Pressure Rating (Max) (kPa)	Pressure Rating (Max) (in*H2O)	Pressure Rating (Max) (cm*H2O)	Pressure Rating (Max) (mm*Hg)	Over Pressure (kPa)	Offset (Typ) (mV)	Full Scale Span (Typ) (mV)	Sensitivity (mV/kPa)	Linearity (Min) (% of VFSS)	Linearity (Max) (% of VFSS)
MPX10	1.45	10	40	102	75	75	20	35	3.5	–1.0	1.0
MPXV10	1.45	10	40	102	75	75	20	35	3.5	–1.0	1.0
MPX12	1.45	10	40.1	102	75	75	20	55	3.5	–1.0	1.0
MPX53	7.25	50	201	510	375	200	20	60	1.2	–0.6	0.4

PRESSURE SENSORS (Continued)

Integrated Pressure Sensors

Product	Pressure Rating (Max) (psi)	Pressure Rating (Max) (kPa)	Pressure Rating (Max) (in*H2O)	Pressure Rating (Max) (cm*H2O)	Pressure Rating (Max) (mm*Hg)	Over Pressure (kPa)	Full Scale Span (Typ) (Vdc)	Sensitivity (mV/kPa)	Accuracy 0 – 85°C (% of VFSS)
MPX4080A	11.6	80	321	815	600	400	4.32	54	±3.0
MPX4100A	15.2	105	422	1070	788	400	4.59	54	±1.8
MPXA4100A	15.2	105	422	1070	788	400	4.59	54	±1.8
MPX4101A	14.8	102	410	1040	765	400	4.59	54	±1.8
MPX4105A	15.2	105	422	1070	788	400	4.59	51	±1.8
MPX4115A	16.7	115	462	1174	863	400	4.59	45.9	±1.5
MPXA4115A	16.7	115	462	1174	863	400	4.59	45.9	±1.5
MPXV4115V	16.7	115	462	1174	863	400	4	38.26	1.5
MPX4200A	29	200	9–3	2040	1500	400	4.59	25.5	±1.5
MPX4250A	36	250	1004	2550	1880	400	4.692	20	±1.5
MPX4250D	36	250	1004	2550	1880	400	4.705	18.8	±1.4
MPX4250G	36	250	1004	2550	1880	400	4.705	18.8	±1.4
MPXV4006G	0.87	6	24.1	61	45	10	4.6	766	±5.0
MPXV5004G	0.57	3.9	15.7	40	29	10	3.9	1000	±2.5
MPX5010	1.45	10	40	102	75	75	4.5	450	±5.0
MPXV5010	1.45	10	40	102	75	75	4.5	450	±5.0
MPX5050	7.25	50	201	510	375	200	4.5	90	±2.5
MPX5100	14.5	100	401	1020	750	400	4.5	45	±2.5
MPX5500	72.5	500	2007	5100	3750	2000	4.5	9.0	±2.5
MPX5700	102	700	2810	7140	5250	2800	4.5	6.4	±2.5
MPX5999D	150	1000	4152	10546	7757	4000	4.5	4.5	±2.5

SMOKE INTEGRATED CIRCUITS

Ion

Product	Operating Voltage (V)	Horn Modulation	Primary Power Source	Package Options	Interconnectable
MC14467	6 – 12	4/6	DC	DIP	No
MC14468	6 – 12	4/6	AC	DIP	Yes
MC145017	6 – 12	NFPA (new tone)	DC	DIP	No
MC145018	6 – 12	NFPA (new tone)	AC	DIP	Yes

Photoelectric

Product	Operating Voltage (V)	Horn Modulation	Primary Power Source	Package Options	Interconnectable
MC145010	6 – 12	4/6	AC/DC	DIP/SOIC	Yes
MC145011	6 – 12	4/6	AC	DIP/SOIC	Yes
MC145012	6 – 12	NFPA (new tone)	AC/DC	DIP/SOIC	Yes

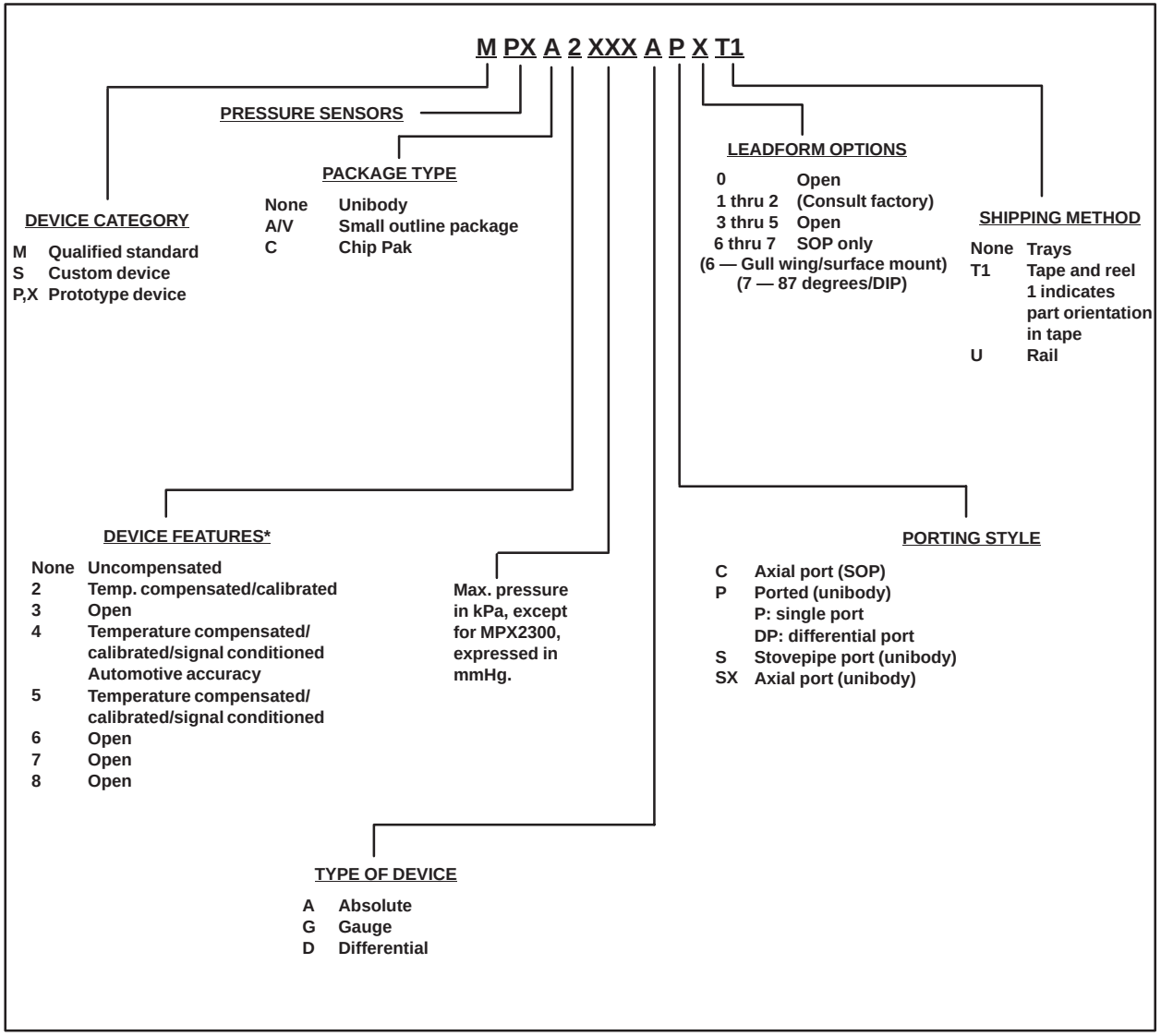
Comparator

Product	Operating Voltage (V)	Horn Modulation	Primary Power Source	Package Options	Interconnectable
MC14578	3.5 – 14	No Horn Driver	DC	DIP	No

ALARM INTEGRATED CIRCUITS

Product	Operating Voltage (V)	Horn Modulation (ms)	Primary Power Source	Description
MC14600	6.0 – 12	160 ON, 80 OFF	DC	Alarm Detection, Horn Driver, Low Battery Detection, LED Driver

DEVICE NUMBERING SYSTEM FOR PRESSURE SENSORS



Note: Actual device marking may be abbreviated due to space constraints but packaging label will reflect full part number.

*Only applies to qualified and prototype devices. This does not apply to custom devices.

Examples: MPX10DP 10 kPa uncompensated, differential device in minibody package, ported, no leadform, shipped in trays.

MPXA4115A6T1 115 kPa automotive temp. compensated and calibrated device with signal conditioning, SOP surface mount with gull wing leadform, shipped in tape and reel.

REFERENCE TABLE

Pressure Unit Conversion Constants

(Most Commonly Used — Per International Conventions)

	PSI(1)	in. H_2O(2)	in. Hg(3)	K Pascal	millibar	cm H_2O(4)	mm Hg(5)
PSI(1)	1.000	27.681	2.036	6.8948	68.948	70.309	51.715
in. H_2O(2)	3.6126×10^{-2}	1.000	7.3554×10^{-2}	0.2491	2.491	2.5400	1.8683
in. Hg(3)	0.4912	13.595	1.000	3.3864	33.864	34.532	25.400
K Pascal	0.14504	4.0147	0.2953	1.000	10.000	10.1973	7.5006
millibar	0.01450	0.40147	0.02953	0.100	1.000	1.01973	0.75006
cm H_2O(4)	1.4223×10^{-2}	0.3937	2.8958×10^{-2}	0.09806	0.9806	1.000	0.7355
mm Hg(5)	1.9337×10^{-2}	0.53525	3.9370×10^{-2}	0.13332	1.3332	1.3595	1.000

NOTES: 1. PSI — pounds per square inch; 2. at 39°F; 3. at 32°F; 4. at 4°C; 5. at 0°C

EVALUATION TOOLS

Literature

Call your local Motorola Sales Office or authorized distributor to receive more information.

Tool Set	Description
ASB200 ASB201 ASB202 ASB205 ASB210 KIT14600/D	Motorola Sensor Development Board Uncompensated Series Sensor Module MPX2000 Series Sensor Module MPX5000 Series Sensor Module 10″ H_2O Sensor Module Alarm IC Sample Kit
Marketing Literature	**Description**
DL200/D HB218/D SG162/D	Sensor Device Data Book, Rev 4 Pressure Sensor Distributor Handbook SPD Selector Guide, Current Rev 30
Application Notes	**Description**
AN935/D AN936/D AN962/D AN1082/D AN1097/D	Compensating for Nonlinearity in the MPX10 Series Pressure Transducer Mounting Techniques, Lead Forming and Testing of Motorola's MPX Series Pressure Transducers MPX Pressure Sensors Used for Switch Applications Simple Design for a 4 – 20mA Transmitter Interface Using a Motorola Pressure Sensor Calibration–Free Pressure Sensor System

LITERATURE (Continued)

Application Notes	Description
AN1100/D	Analog to Digital Converter Resolution Extension Using a Motorola Pressure Sensor
AN1302/D	Motorola Pressure Sensors – Recommended Housing for Very Low Absolute Pressure Measurements
AN1303/D	A Simple 4 – 20mA Pressure Transducer Evaluation Board
AN1304/D	Integrated Sensor Simplifies Bar Graph Pressure Gauge
AN1305/D	An Evaluation System for Direct Interface of the MPX5100 Pressure Sensor with a Microprocessor
AN1307/D	A Simple Pressure Regulator Using Semiconductor Pressure Transducers
AN1309/D	Compensated Sensor Bar Graph Pressure Gauge
AN1315/D	An Evaluation System Interfacing the MPX2000 Series Pressure Sensors to a Microprocessor
AN1316/D	Frequency Output Conversion for MPX2000 Series Pressure Sensor
AN1318/D	Interfacing Semiconductor Pressure Sensors to Microcomputers
AN1322/D	Applying Semiconductor Sensors to Bar Graph Pressure Gauges
AN1324/D	A Simple Sensor Interface Amplifier
AN1325/D	Amplifiers for Semiconductor Pressure Sensors
AN1326/D	Barometric Pressure Measurement Using Semiconductor Pressure Sensors
AN1513/D	Mounting Techniques and Plumbing Options of Motorola's MPX Series Pressure Sensors
AN1516/D	Liquid Level Control Using a Motorola Pressure Sensor
AN1517/D	Pressure Switch Design with Semiconductor Pressure Sensors
AN1518/D	Using a Pulse Width Modulated Output with Semiconductor Pressure Sensors
AN1525/D	The A–B–C's of Signal–Conditioning Amplifier Design for Sensor Applications
AN1535/D	Semiconductor Sensors Provide a Hot Temperature Sensing Solution at a Cool Price
AN1536/D	Digital Boat Speedometers
AN1551/D	Low Pressure Sensing with the MPX2010 Pressure Sensor
AN1556/D	Designing Sensor Performance Specifications for MCS–Based Systems
AN1557/D	A Cookbook Approach to Designing a Differential–Signal Amplifier for Sensor Applications
AN1559/D	Application Considerations for a Switched Capacitor Accelerometer
AN1571/D	Digital Blood Pressure Meter
AN1573/D	Understanding Pressure and Pressure Measurement
AN1584/D	"Very Low–Pressure'' Smart Sensing Solution with Serial Communications Interface
AN1585/D	High–Performance, Dynamically–Compensated Smart Sensor System
AN1586/D	Designing a Homemade Digital Output for Analog Voltage Output Sensors
AN1611/D	Impact and Tilt Measurement
AN1612/D	Shock and Mute Pager Applications Using Accelerometer
AN1622/D	EMC Considerations for Automotive Sensors
AN1635/D	Baseball Pitch Speedometer Featuring Motorola's 250g Accelerometers
AN1636/D	Implementing Auto Zero for Integrated Pressure Sensors
AN1638/D	Offset Calibration of Gauge Pressure Sensors Using Parallel I/O Ports
AN1646/D	Noise Considerations for Integrated Pressure Sensors
AN1651/D	Uncompensated Series Sensor Module
AN1652/D	MPX2000 Series Sensor Module
AN1653/D	MPX5000 Series Sensor Module
AN1654/D	10″ H_2O Sensor Module
AN1655/D	ASB200 Motorola Sensor Development Controller Board (MC68HC705JP7)
AN1660/D	Compound Coefficient Pressure Sensor PSPICE Models
AN1668/D	Washing Machine Sensor Selection
AN1690/D	Alarm IC General Applications Overview
AN4004/D	+2g Acceleration Sensing Module Based on a +40g Integrated Accelerometer
AN4007/D	New Small Amplified Automotive Vacuum Sensors, A Single Chip Sensor Solution for Brake Booster Monitoring
AN4009/D	Alarm IC Sample Applications

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ASIA / PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre, 2, Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong. 852–26668334

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