

# MPXY8000 SERIES

## TIRE PRESSURE MONITORING SENSOR



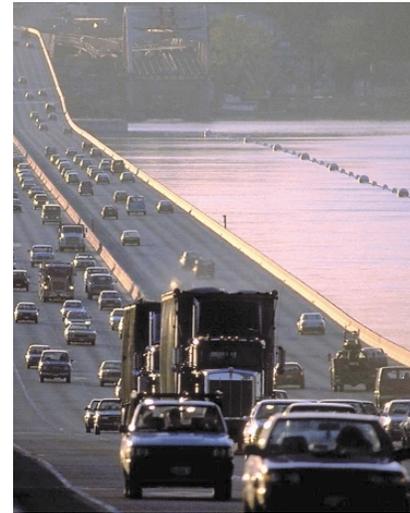
### Features

- Pressure and Temperature Sensor, and Interface Circuit with wake-up feature, all on a single chip
- Automotive grade temperature specification (-40°C to +125°C)
- Pressure ranges available from 0 to 1275 kPa
- ± 4°C temperature sensor accuracy over entire application range
- Digital (8-bit) Serial Protocol Interface (SPI) output for both temperature and pressure sensor
- Ratiometric to supply voltage, from 2.1V to 3.6V
- SSOP package offering robust media protection and small footprint
- 3 second wake-up for module level energy management
- On-chip power management via separate operating modes, fast response times, and low current draw. (See table below for operation at 3.0V, 25°C.)

### TIRE PRESSURE MONITORING SENSOR

Motorola introduces the MPXY8000 series family of tire pressure monitoring sensors that are comprised of a capacitive pressure sensing element, a temperature-sensing element, and an interface circuit with wake-up feature, all on a single chip. This chip is housed in Motorola's SSOP (super small outline package) package. The SSOP's size and enhanced media protection make it the perfect package solution for Tire Pressure Monitoring System (TPMS) remote sensing modules, mounted on valve stems or wheel wells.

The series consists of four devices, listed below, which are defined by pressure ranges for vehicles from small cars to trucks.

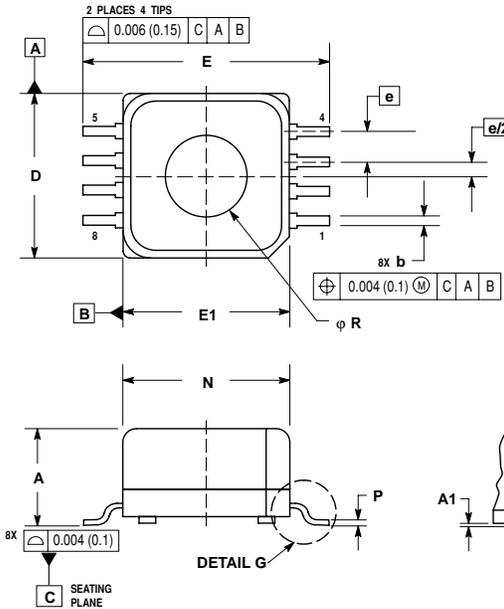


Device	Maximum Operating Pressure (kPa)	Full Scale Span Output	Sensitivity (kPa/bit)	Maximum Pressure Accuracy (-20°C to +70°C)	Temperature Accuracy (-40°C to +125°C)	Supply Voltage Range (V)
MPXY8010	450	8-bit Digital	2.5	+ 7.5 kPa	+ 4°C	2.1 to 3.3
MPXY8020	637	8-bit Digital	2.5	+ 7.5 kPa	+ 4°C	2.1 to 3.6
MPXY8030	900	8-bit Digital	5.0	+ 15 kPa	+ 4°C	2.1 to 3.3
MPXY8040	1275	8-bit Digital	5.0	+ 15 kPa	+ 4°C	2.1 to 3.6

Operating Mode	Typical Response Time (μ sec)	Typical Current (μA)
Standby/Reset	-	0.6
Measure Temp	70	500
Measure Pressure	100	1400
Output Read	50	500



## SSOP PHYSICAL DIMENSIONS



- NOTES:
1. CONTROLLING DIMENSION: INCH.
  2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994.
  3. DIMENSIONS "D" AND "E1" DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS. MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.006 (0.152) PER SIDE.
  4. ALL VERTICAL SURFACES TO BE 5° MAXIMUM.
  5. DIMENSION "b" DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.008 (0.203) MAXIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.155	0.175	3.93	4.44
A1	0.002	0.010	0.05	0.25
b	0.014	0.019	0.35	0.48
D	0.280	0.300	7.11	7.62
E	0.420	0.420	10.16	10.67
E1	0.280	0.300	7.11	7.62
e	0.050 BSC 1.27 BSC			
L	0.013	0.023	0.33	0.58
N	0.272	0.292	6.91	7.41
P	0.009	0.011	0.23	0.28
R	0.140	0.160	3.55	4.06
θ	9°	7°	0°	7°

## TIRE PRESSURE MONITOR SYSTEM

The MPXY8000 series is compatible with Tire Pressure Monitoring Systems using a Remote RF Sensing approach, and is ideal for integration with existing Remote Keyless Entry (RKE) systems. In addition, Motorola offers a comprehensive chip set for a TPMS-RKE system that eliminates the need for an additional TPM specific receiver. This chip set is comprised of:

- MPXY80xx - Pressure and Temperature Sensor, and Interface Circuit
- 68HC908RF2 - MCU+RF Transmitter housed in a single package
- MC33591 - RF Receiver
- MC9S12DP256 - Microprocessor

The features of this chipset enable a system to identify individual tires (including the spare), as well as to detect both "over-pressure" and "under-pressure" conditions. The system also has the ability to compensate for changes in cargo load, and monitor tire temperature. The module level energy management features support extended battery life, and signals a low battery condition. Furthermore the system is compatible across vehicle platforms and tire technologies (run-flat tires).

### PROTOTYPE PART NUMBERS AND ORDERING INFORMATION

Planned for September 2002

Shipped in  
Rails

PPXY8010A6U  
PPXY8020A6U  
PPXY8030A6U  
PPXY8040A6U

Shipped in  
Tape & Reel

PPXY8010A6T1  
PPXY8020A6T1  
PPXY8030A6T1  
PPXY8040A6T1

### PRODUCTION PART NUMBERS AND ORDERING INFORMATION

Planned for November 2002

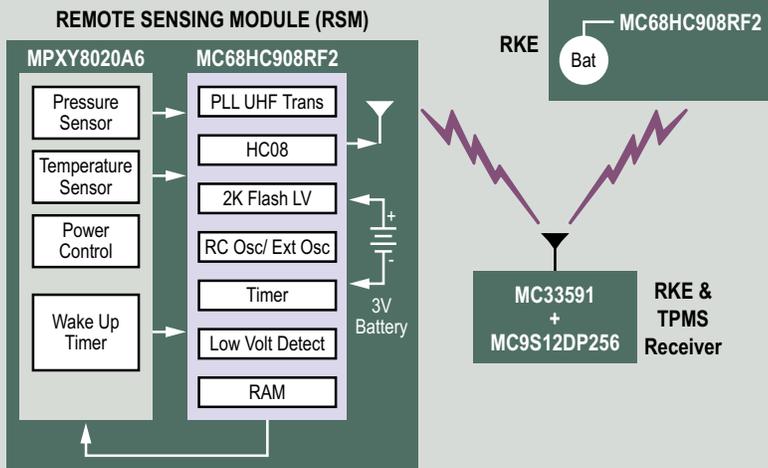
Shipped in  
Rails

MPXY8010A6U  
MPXY8020A6U  
MPXY8030A6U  
MPXY8040A6U

Shipped in  
Tape & Reel

MPXY8010A6T1  
MPXY8020A6T1  
MPXY8030A6T1  
MPXY8040A6T1

## Tire Pressure Monitoring System Enabling Chip Set



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