Freescale’s MPXY8300 tire pressure monitoring system (TPMS) chipset is designed to enable a timely warning to the driver in the case of under-inflated or over-inflated tires on cars, trucks or buses—even while in motion. It is the first of its kind to offer capacitive sensor technology with full integration of a pressure sensor, an 8-bit S08 microcontroller (MCU), a radio frequency (RF) transmitter and a 2-axis accelerometer with X and Z axis in one package.

**Key Features**
- Pressure and temperature sensors
- Accelerometers for motion detection
- Integrated 315/434 MHz PLL-based RF transmitter
- Multiple baud rate and modulation scheme
- 8-bit MCU with 512B RAM and 16 KB flash
- Single-channel LF input with detector/decoder
- Over-temperature shutdown
- Supply voltage measurement
- Low-power wake-up timer and periodic reset driver by low frequency oscillations (LFO)
- Selective encapsulation for media protection

**Design Considerations**
- Power management specific to TPMS for long battery life
- Robust sensing accuracy in harsh environments during vehicle operation
- Fully integrated device in single package reduces system cost and development cycle time
- Precise tire pressure measurement
- Complies with the U.S. Federal Motor Vehicle Safety Standard (FMVSS) 138
- MCU, RF transmitter, LF receiver, pressure sensor and accelerometer integrated in a single small outline wide body, 20-pin package (SOIC 20 WB) minimizing components and space needed
- RF transmission/protocol can be used globally with regional variation
- Customizable and programmable

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**Fact Sheet**

**MPXY8300 Tire Pressure Monitoring System**

**TPMS All-in-One Package Block Diagram**

- Pressure Sensor: CMOS P-Cell, Signal Conditioning, Trim, Power Control
- RF Transmitter: PLL, XTL OSC, VCO, Data Buffer, RF Out, Bit Rate Gen., SPI Slave
- MCU: LF Det/Dec, 16 KB Flash, 512B RAM, 32-bit Register, Wake-up Timer, 8-bit ADC, 8 MHz Osc, LFO, S08 MCU Core, C-to-V Accelerometer Interface

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X-Axis and Z-Axis Accelerometer
### MPXY8300 Selector Guide

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<th>Root Part Number</th>
<th>MPXY8310A</th>
<th>MPXY8310B</th>
<th>MPXY8310C</th>
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<td>512B</td>
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*Conditions: 0ºC to 70ºC*

### TPMS Architecture Block Diagram

#### Wheel Module
- TPMS Wheel Module (x4)
  - Sensors P, T and V
  - Motion Sensor
  - Signal Conditioning and Protocol
  - LF Receiver
  - RF Tx

#### Car Body
- TPMS (RKE) Receiver
  - Body Controller MCU
  - RF Receiver
  - Phys I/F

### TPMS Development Tools

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### Learn More:
For current information about Freescale products and documentation, please visit [www.freescale.com/tpms](http://www.freescale.com/tpms).