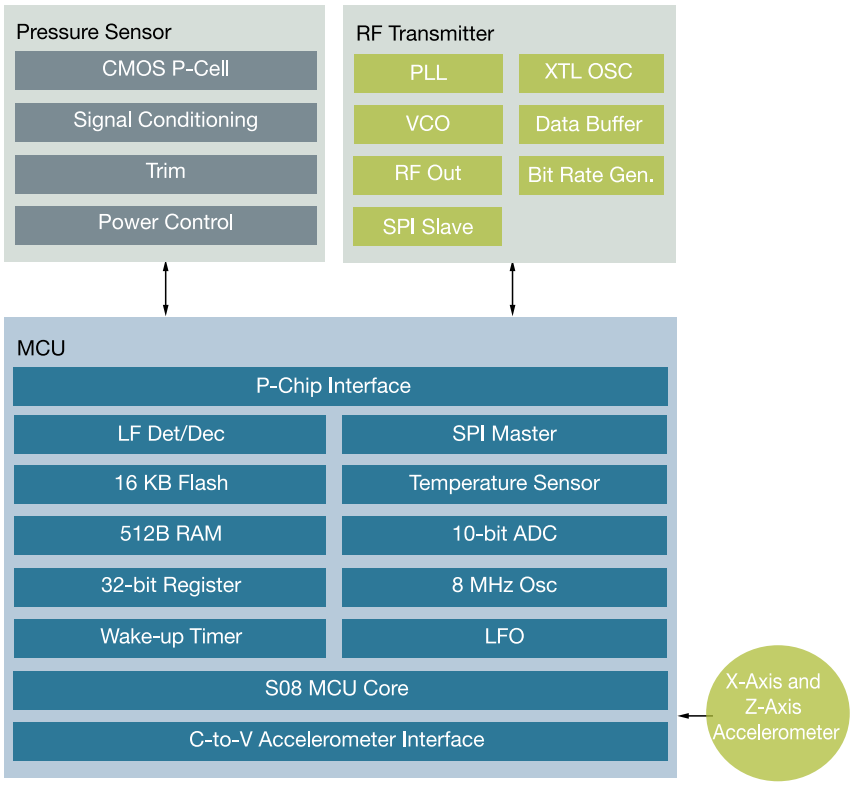
Fact Sheet

MPXY8300 Tire Pressure Monitoring System

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.

TPMS All-in-One Package Block Diagram



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

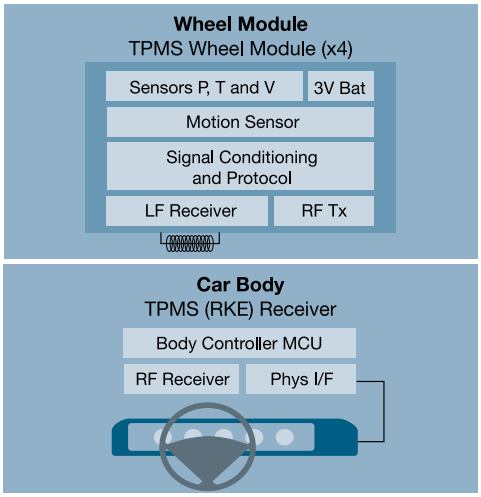
freescale semiconductor

MPXY8300 Selector Guide

Root Part Number	MPXY8310A	MPXY8310B	MPXY8310C	MPXY8300A	MPXY8300B	MPXY8300C	MPXY8320A	MPXY8320B	MPXY8320C
Automotive Pressure Range	√	√	√	√	√	√			
Truck Tire Pressure Range							√	√	√
Pressure Range	100–450 kPa	100–450 kPa	100–450 kPa	100–800 kPa	100–800 kPa	100–800 kPa	100–1500 kPa	100–1500 kPa	100–1500 kPa
Pressure Sensor Accuracy*	±7 kPa	±7 kPa	±7 kPa	±10 kPa	±10 kPa	±10 kPa	±20 kPa	±20 kPa	±20 kPa
Z-axis Accelerometer Measuring Range	0g–60g	0g–60g		0g–60g	0g–60g		0g-60g	0g-60g	
Z-axis Accelerometer Accuracy	±5g offset ±9g sensitivity	±5g offset ±9g sensitivity		±5g offset ±9g sensitivity	±5g offset ±9g sensitivity		±5g offset ±9g sensitivity	±5g offset ±9g sensitivity	
X-axis Accelerometer Measuring Range	-10g–10g			-10g–10g			-10g–10g		
X-axis Accelerometer Accuracy	±2g offset ±2g sensitivity			±2g offset ±2g sensitivity			±2g offset ±2g sensitivity		
Accelerometer Physical Self Test	√	√		√	√		√	√	
RF Type	Transmitter								
Flash	16 KB								
RAM	512B								
RF Frequency	315 MHz/434 MHz RF Transmitter								
Protocols Supported	ASK and FSK Modulation								
Clock Type	OSC								
ADC	4-ch., 10-bit								
SPI	1								
Timer	2-ch., 16-bit Timer/Pulse-Width Modulator								
Package	SOIC 20 WB								
Temperature Range	-40°C to +125°C								

* Conditions: 0°C to 70°C

TPMS Architecture Block Diagram



TPMS Development Tools

Product	Part Numbers
TPMS Evaluation Kit	315 MHz Kit—KIT315MPXY8300A 434 MHz Kit—KIT434MPXY8300A
TPMS MPXY8300 Module Board	315 MHz Board—EVB315MPXY8300A1 434 MHz Board—EVB434MPXY8300A1
TPMS RF Receiver USB Demonstration Board	315 MHz Board—EVB315MPXY8300A2 434 MHz Board—EVB434MPXY8300A2
TPMS 125 kHz LF Transmitter Evaluation Board	EVBMPXY8300A3
TPMS RF Receiver Evaluation Board	315 MHz Board—MC33696MOD315EV 434 MHz Board—MC33696MOD434EV
BDM Multilink	USBMULTILINKBDM
CodeWarrior™ Development Studio and Service Pack V 6.0	CWX-HXX-SE

Learn More: For current information about Freescale products and documentation, please visit **www.freescale.com/tpms.**

Document Number: MPXY8300TPMSFS
REV 5

freescale semiconductor