



TPMS Family Selector Guide

Tire Pressure Monitoring Sensors

OVERVIEW

NXP's FXTH87 family of tire pressure monitoring sensors (TPMS) is a fully integrated 7 x 7 mm package footprint on the market which is 40% smaller than NXP's previous-generation QFN 9 x 9 mm package. It also provides the low transmitting power consumption (less than 8 mA I_{dd}), large customer memory size (8 kB) and unique dual-axis accelerometer architecture. NXP's TPMS solution integrates an 8-bit microcontroller (MCU), pressure sensor, XZ-axis or Z-axis accelerometer and RF transmitter.

NXP's portfolio can support cars and light trucks with pressure ranges of 100–500 kPa and 100–900 kPa. It can also support heavy trucks or buses with pressure range of 100–1800 kPa. These TPMS markets are mainly regulation driven with new mandates, resulting in significant growth. NXP continues to produce TPMS products that meet the latest mandates with ease to accommodate customer requirements.

PRODUCT DIFFERENTIATION

Features	Benefits
Small, fully integrated package size	Enables small module design for lighter weight and space-constrained applications
Dual-axis XZ inertial sensor	Enables easier tire localization capability
Same package height and similar firmware as QFN 9 x 9 solutions	Easy transition from QFN 9 x 9 solutions
8 kB customer memory/capability of interfacing with external memory	Flexibility of software development and time to market
Low RF power consumption	Long battery life
High production capacity (QFN 7 x 7)	Secured supply and short lead time

TARGET APPLICATIONS

- ▶ Tire pressure monitoring systems
- ▶ Ultra low-power wireless sensing

IMPLEMENTATIONS

- ▶ Measures dual-axis acceleration
- ▶ Measures temperature
- ▶ Measures battery voltage
- ▶ Bi-directional communication
- ▶ Measures tire pressure for passenger/ light duty or heavy duty vehicles



PRODUCT SPECIFICATIONS

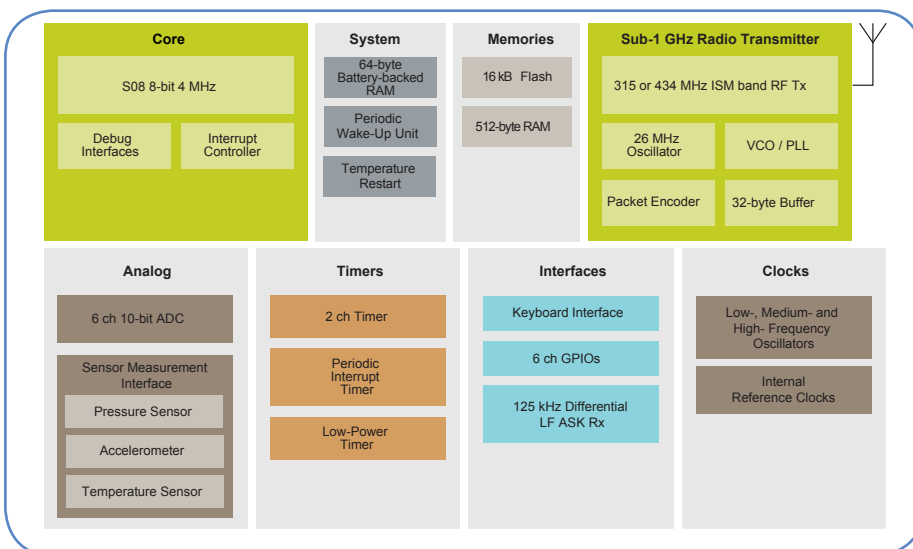
Part number	Pressure Range (kPa)	Pressure Accuracy (-40°C ≤ Ta ≤ 85°C)	Temperature Range (°C)	Temperature Accuracy (-20°C ≤ Ta ≤ 70°C)	Z-axis Accelerometer Range (g)	Z-axis Accelerometer Accuracy (-40°C ≤ Ta ≤ 125°C)	X-axis Accelerometer Range (g)	X-axis Accelerometer Accuracy (-40°C ≤ Ta ≤ +125°C)
Standard Tolerances								
FXTH87EG02DT1	100-500	± 5 kPa from 100 to 500 kPa	-40 to 125	± 3°C	-285 to 400	± 6g	NA	NA
FXTH87EG11DT1					-215 to 305	± 5g	-80 to 90	± 4g
FXTH87EH02DT1	100-900	± 5 kPa from 100 to 900 kPa			-285 to 400	± 6g	NA	NA
FXTH87EH11DT1					-215 to 305	± 5g	-80 to 90	± 4g
FXTH87EH12DT1				-285 to 400	± 6g			
Precision Tolerances								
FXTH87EG026T1	100-500	± 5 kPa from 100 to 500 kPa	-40 to 125	± 3°C	-285 to 400	± 3g	NA	NA
FXTH87EG116T1					-215 to 305	± 3g	-80 to 90	± 3g
FXTH87EH026T1	100-900	± 5 kPa from 100 to 900 kPa			-285 to 400	± 3g	NA	NA
FXTH87EH116T1					-215 to 305	± 3g	-80 to 90	± 3g
FXTH87EH126T1				-285 to 400	± 3g			

Part number	Pressure Range (kPa)	Pressure Accuracy (-0°C ≤ Ta ≤ 70°C)	Temperature Range (°C)	Temperature Accuracy (-20°C ≤ Ta ≤ 70°C)	Z-axis Accelerometer Range (g)	Z-axis Accelerometer Accuracy (-40°C ≤ Ta ≤ 125°C)	X-axis Accelerometer Range (g)	X-axis Accelerometer Accuracy (-40°C ≤ Ta ≤ +125°C)		
Standard Tolerances										
FXTH871502DT1	100-1500	± 20 kPa from 100 to 500 kPa	-40 to 125	± 3°C	-270 to 400	± 6g	NA	NA		
FXTH871511DT1					-210 to 300	± 5g	-80 to 90	± 4g		
Precision Tolerances										
FXTH8715026T1	100-1500	± 20 kPa from 100 to 1500 kPa			-40 to 125	± 3°C	-285 to 400	± 3g	NA	NA
FXTH8715116T1			-215 to 305	± 3g			-80 to 90	± 3g		
FXTH8718026T1	100-1800	± 25 kPa from 100 to 1500 kPa	-285 to 400	± 3g			NA	NA		
FXTH8718116T1			-215 to 305	± 3g			-80 to 90	± 3g		
High Precision Tolerances										
FXTH8715027T1	100-1500	± 17 kPa	-40 to 125	± 3°C	-270 to 400	± 3g	NA	NA		
FXTH8715117T1					-210 to 300	± 3g	-80 to 90	± 3g		

COMMON ATTRIBUTES

Voltage Measurement Range	1.8 V to 3.6 V
Voltage Resolution (8-bit)	10 mV / LSB
Voltage Accuracy (>2.1 V supply)	± 100 mV
Temperature Measurement Range Run Mode	-40 °C to +125 °C
Temperature Resolution (8-bit unsigned)	1 °C / LSB
Temperature Offset Accuracy (-20 °C ≤ TA ≤ 70 °C)	± 3 °C

FXTH87 TPMS FAMILY BLOCK DIAGRAM



NXP: A LEADER IN SENSING SOLUTIONS

With successful experiences over 30 years and over 3 billion units shipped worldwide, NXP is a leader serving applications in the automotive, medical and industrial market spaces. NXP's Sensor solutions include a breadth of accelerometers, gyroscopes, magneto-resistive and pressure solutions covering different performance, sensing ranges and form factors. The portfolio is complemented with class leading development and enablement support spanning hardware tools, software tools and use case algorithms. It leverages secure computing and connectivity from the greater NXP portfolio to facilitate speedy sensor system development for the IoT.

www.nxp.com/TPMS

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Document Number: FXTH87A4FS REV 5