

TPMS sensor | SMP290

Bluetooth Low Energy

enables bi-directional communication & cyber security

Ultra-low power

fully integrated sensor solution for TPMS

Function



The SMP290 is a fully integrated one-chip solution. The sensor measures pressure, temperature, acceleration in x/z directions, and monitors the battery health status. The sensor is equipped with an integrated 32-bit MCU and Bluetooth 5.4.

Its ultra-low power consumption and small size make it ideal for valve and in-tire TPMS applications.

Application



Vehicle type

SMP290 is suited for two-wheelers (bicycles and bikes), passenger cars, as well as commercial vehicle (trucks, buses, trailers) applications.

Mounting

Thanks to its small size the sensor module can be mounted in any variant of sensor device: valve-based, cap, or in-tire.

Key Features



Ultra-low energy consumption: dedicated ASIC for TPMS with power optimized architecture.

Extra-lean BOM: only 12 passive components for application circuitry necessary.

Over-the-Air Updatability: Fast and easy integration of updates / upgrades / data / new features over the air

UX Features: tire inflation monitoring; tire status notifications to driver via mobile

Smart embedded algorithms: phase angle location, wheel rotation direction, rotation period, etc.

Cyber Security & Safety



Bluetooth provided encrypted messages/ comply with ISO21434

The SMP290 is developed according to ASIL QM process (ISO26262:2018)



Technical features

Package	17 pin DFN, 3.5 x 4.5 mm
Supply voltage	1.9 3.6 V
Current consumption	< 0.3µA (deep sleep)
Operating temperature	-40 to +125 °C
Thermal Shut Down	+125°C to +150°C
Radio Interface	BLE 5.4
Wired Interface	I2C UART
Transmission Power	-28 dBm to +6 dBm
Data resolution	11 bit
Flash memory with SECDEC	256 kB

Performance over temperature

Pressure sensor	typ	unit
Range 1	90 – 920	kPa
Range 2	90 - 1500	kPa
Accuracy (core Range 1)	1.7	kPa
Accuracy (core Range 2)	5	kPa
Accelerometer	typ	unit
Range (z) (SW configurable)	+/- 960 (+/- 320)	g g
Range (x) (SW configurable)	+/- 330 (+/- 110)	g g
Sensitivity (wrt. nominal range)	5	%
Offset	1	g