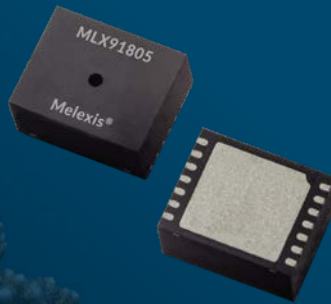


MLX91805

INTEGRATED

SMART TIRE
SENSOR



The small sized butterfly fish can detect subtle changes in water pressure through a lateral line system. Their pressure sensing organs help to avoid collisions, participate in schooling behavior, orient to water currents, elude predators, and detect prey.

SMART TIRE SENSOR SOLUTION

MLX91805

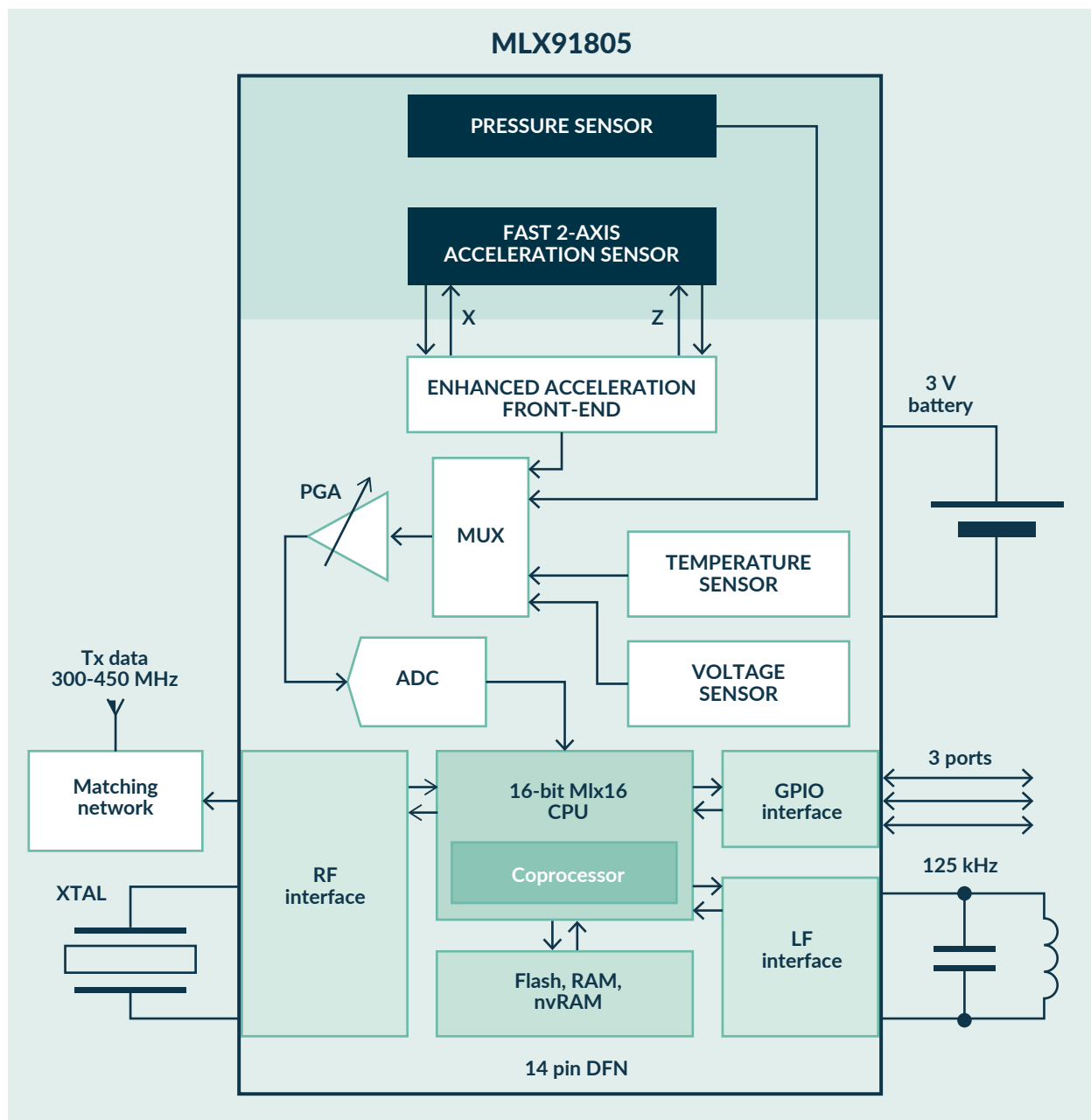
The MLX91805 is a highly integrated System in a Package (SIP) combining an 800g XZ-axis accelerometer that senses up to 10,000 samples per second and pressure sensors with an ultra-low-power sensor interface under control of 16-bits RISC MCU in a custom, pressure ported plastic DFN14 package. Wireless communication is ensured by an embedded 315/433 MHz RF transmitter and 125 kHz LF transceiver. Together with a few external components and a battery the MLX91805 is the most optimal solution for smart tire sensor applications.

CUSTOMER BENEFITS

1. Implementation of new value added features such as tire load, tire wear, road conditions estimation and more
 - Up to 10 kHz accelerometer sampling frequency
2. Measurements at high vehicle speed
 - 800 g acceleration sensing range
3. Extended battery lifetime
 - Industry's lowest current draw - 90 nA in sleep mode
4. Implementation of compact and low weight sensor modules
 - Tiny 4 x 5 mm sensor IC package



BLOCK DIAGRAM



COMPREHENSIVE FEATURE SET

- ✓ 800 g XZ-axis accelerometer, sensing up to 10,000 samples per second
- ✓ Tiny 4 mm x 5 mm wettable flanks DFN-14 package
- ✓ Ultra-low power operation from 3.6 V down to 1.8 V
 - 90 nA sleep current (LFO and timer running, memory retention)
- ✓ Power efficient 315/433 MHz RF transmission up to 150 kbps data rate
- ✓ Pressure measurement ranges: 100 - 900 kPa and 100 - 1,400 kPa
- ✓ 16-bit RISC MCU with coprocessor including:
 - 16 KB FLASH, 512 B SRAM, 64 B NVRAM
 - 47 B register memory (On during sleep)
 - 3 GPIOs
- ✓ Ultra-low power LFO and wake-up scheduler
- ✓ Built-in diagnostics and fault detection
- ✓ -40 to 135 °C operating temperature range
- ✓ Automotive qualified

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