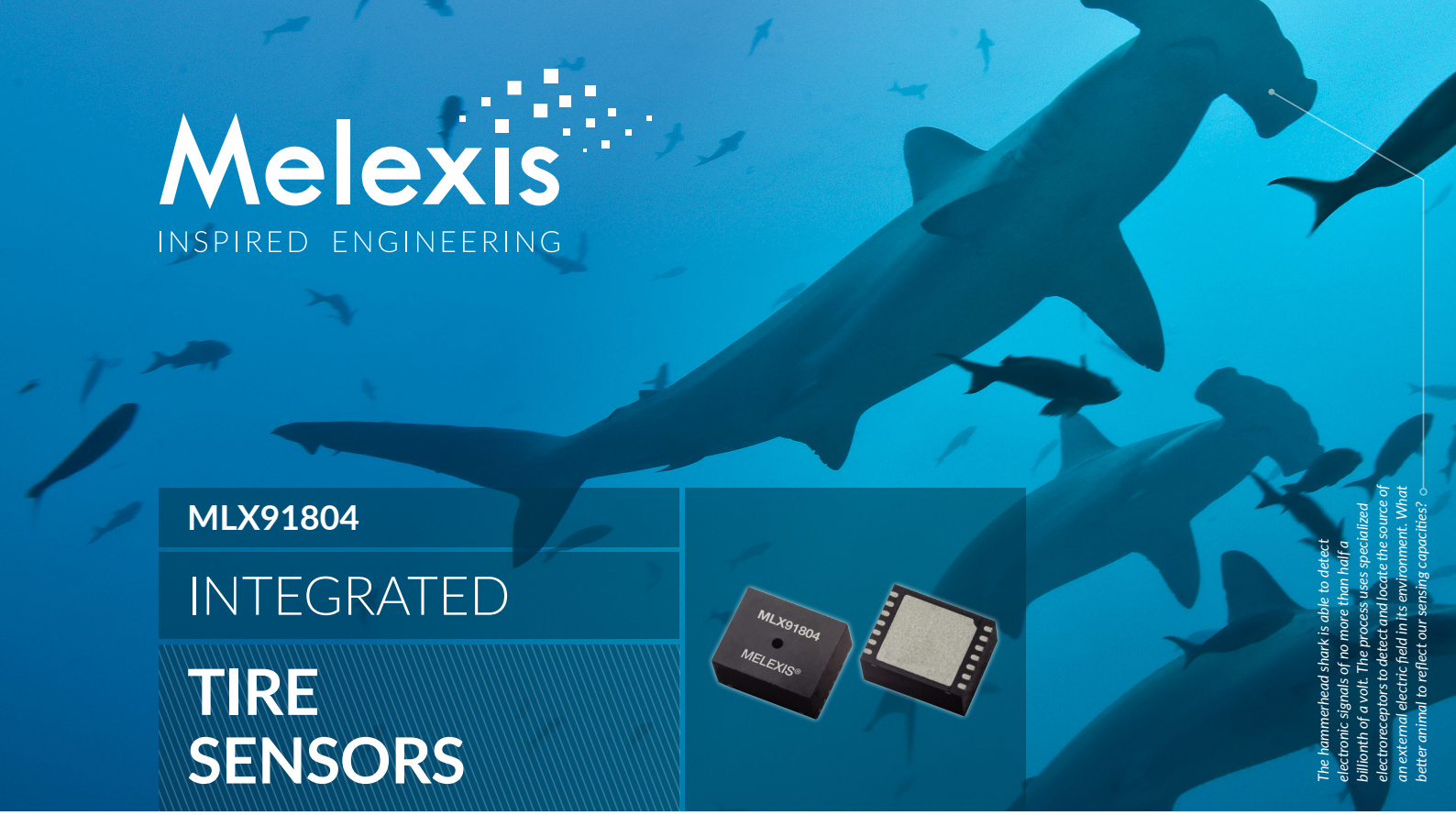
Melexis
INSPIRED ENGINEERING



MLX91804

INTEGRATED TIRE SENSORS

The hammerhead shark is able to detect electronic signals of no more than half a billionth of a volt. The process uses specialized electroreceptors to detect and locate the source of an external electric field in its environment. What better animal to reflect our sensing capacities?

SMALLEST TPMS SENSOR SOLUTION

One of the most fully featured, ultra-low power tire pressure measurement system (TPMS) solutions available today, the new MLX91804 integrates all the electronic sub-systems required to develop a high performance TPMS with a minimum of external components. Pressure and acceleration sensors, an LF transceiver and RF transmitter circuits combine with a low power MLX16 RISC microcontroller in a single tiny form factor.

With a height of less than 2.5 mm, the ultra-compact 14 pin wettable flanks DFN package has been specially engineered to limit real estate demanded to a minimal 20 mm^2 (that's 60% smaller than current alternatives). This helps leading TPMS and smart tire system suppliers meet or exceed the most stringent size, weight and cost constraints in their next generation designs.

The MLX91804 can be powered from typical small Lithium button cells such as CR2032/CR1632 types.

CUSTOMER BENEFITS

- Industry's lowest current draw
  Extended operation from a single CR1632 cell
- Smallest and lightest autonomous TPMS solution
  Designed to support direct tire attach strategies (TMS)
- Broad feature set including multi-mode sensing (pressure & acceleration)
  Enables advanced, high value solution development
- Highly ruggedized
  Long service life
  Insensitive to tire mounting soap and moisture residues
- Specialized design-in support includes:
  - Firmware development & design-in
  - Field based application experts
  - Powerful MLX16 TPMS code libraries available - speeds application

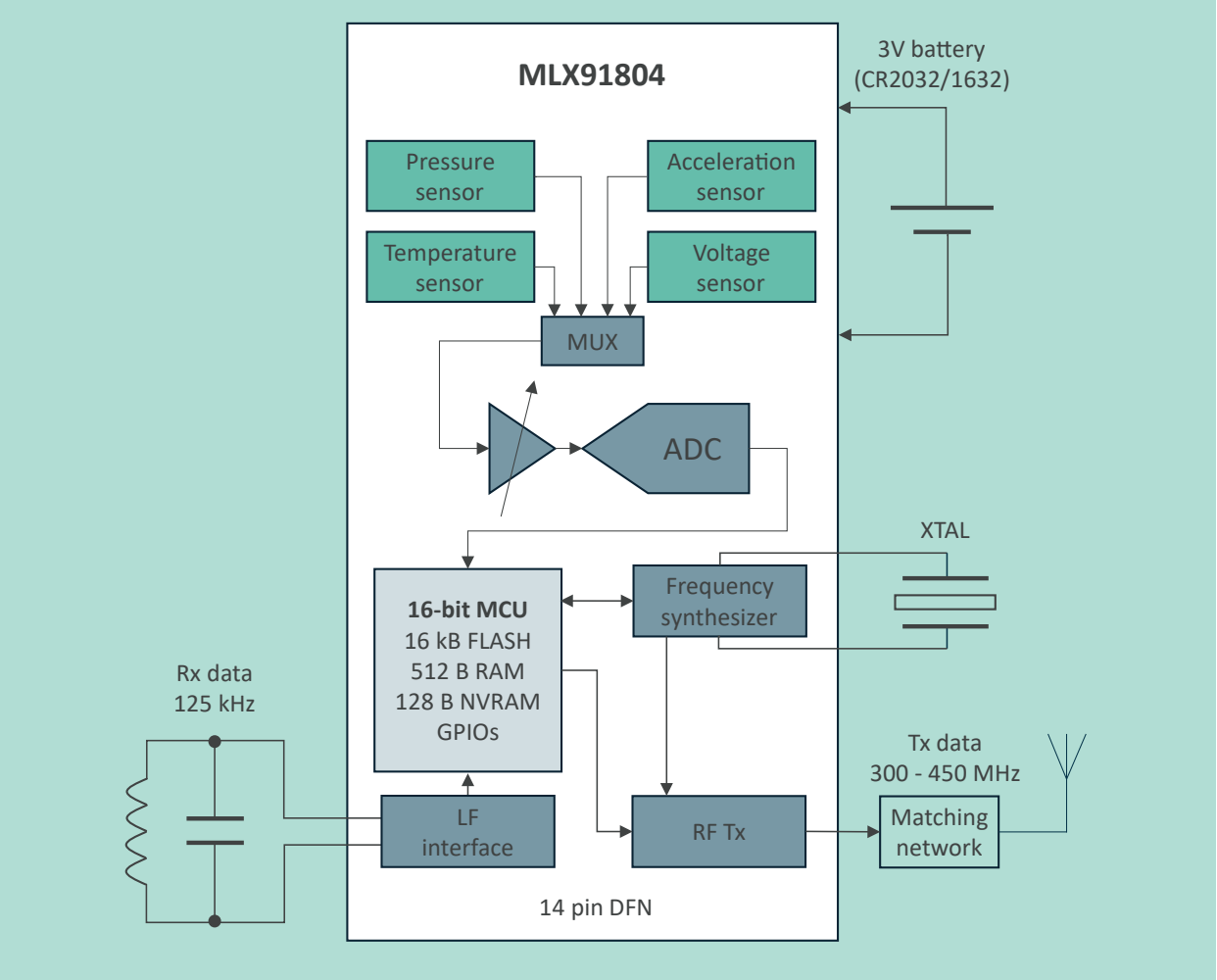
FOR MORE INFORMATION: WWW.MELEXIS.COM/MLX91804

Melexis

APPLICATIONS

- Tire pressure monitoring systems for passenger and commercial vehicles
- Supports tire mounted systems (TMS) and enhanced car telematics
- Ideal for use in low power, micro-miniature pressure & acceleration sensing environments

BLOCK DIAGRAM



COMPREHENSIVE FEATURE SET

- Integrated multi-function sensing:
  pressure, acceleration, temperature & voltage
- Different pressure ranges up to 1400 kPa
  - Down to ±4 kPa accuracy and 0.2 kPa resolution
- Integrated multi-axis accelerometer (X, Z or XZ)
  - Up to 700 g measurement range
- Ultra-low power operation from 3.6 down to 1.8V
  - 90 nA sleep current (LFO and timer running, memory retention)
- Power efficient 315/433 MHz RF transmission
  - Up to 150 kbps data rate
- Tiny 4 x 5 mm, wettable flanks DFN-14 package
- Integrated 16-bit RISC MCU including:
  - 16 kB FLASH, 512 B SRAM, 128 B NVRAM
  - 47 B register memory (On during sleep)
  - 3 GPIOs
- Ultra-low power LFO and wake-up scheduler
- Built-in self-test features with fault detection
- - 40 to 125 °C operating temperature range
- RoHS compliant green packaging
- Automotive qualified with PPAP