We provide innovative analog solutions to the most challenging applications in sensor and sensor interfaces, power management, and wireless.

SL900A – EPC Gen2 Sensor Tag IC

- Single-chip RFID data logger
- On-chip temperature sensor
- Analog inputs for external sensors
- Works with or without battery (semi-passive or fully passive)
- 9k-bit EEPROM for data storage

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General Description

Sensor tags are RFID tags, which incorporate sensory functionality in addition to merely providing a unique ID. This allows validating the origin of any object as well as verifying the environmental conditions to which the object has been exposed. Adding sensor functions to the RFID technology opens new horizons for complex applications such as tracking and monitoring of objects and environments in any location.

The SL900A is such sensor tag adding a new dimension to the RFID technology. The chip is based on EPC Gen2 and incorporates a temperature sensor and an interface to various external sensors. The integrated real-time clock (RTC) time stamps the events. The SL900A has an integrated shelf life algorithm that can dynamically calculate the remaining shelf life of a product based on the Arrhenius equation.

Applications

- Perpetual tracking and recording of medication
- Perpetual tracking and monitoring of transportation
- Shelf-life monitoring
- Tracking condition and history of constructions (buildings, bridges, roads, etc.)
- Contactless metering
- Tire pressure monitoring systems (TPMS)
- Environmental monitoring

Features

- Logging storage capacity: max. 841 events with time stamp
- Compatible with EPC Gen2 and cool-Log™
- Analog inputs for external sensors (resistive, capacitive, opto or resistive bridge)
- Supports fast direct communication via SPI port
- Alarm function for shelf-life monitoring
- Event-driven alerts
- 9k-bit EEPROM
- Supply voltage range 1.2 to 3.6V
- Typical current consumption (@1.5V):
  - Standby (RTC Running): 1.6 µA
  - Operating (logging, 25ms): 200 µA
- Temperature range: -40°C to 125°C
- Works with 1.5V (single-cell) or 3V battery
- Energy harvesting from reader field to support external circuitry

SL900A Block Diagram

The diagram shows the SL900A block diagram, including the EPC Gen2 Class 3 data logging and control, 9k-bit EEPROM, AFE, MUX, and A/D interfaces.