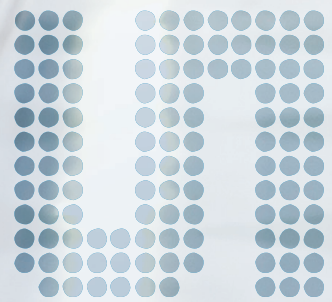


Product Document

RFID with Senses

www.ams.com/SL900A



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

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

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.

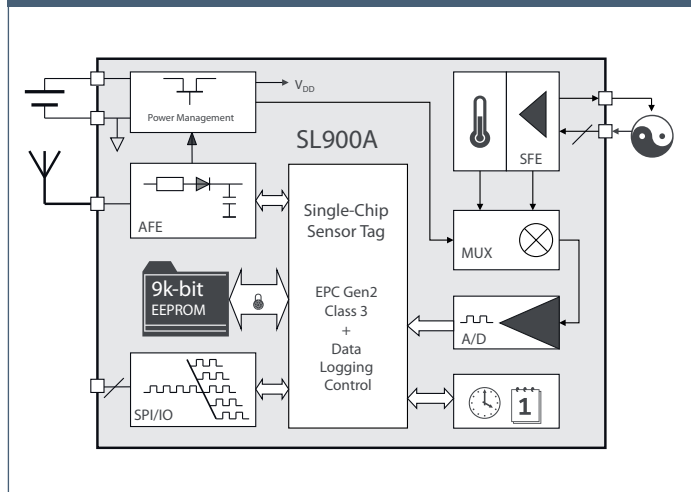
It has an automatic alarm function for the shelf life expiration. The sensor tag works in fully passive as well as in semi-passive mode (so-called battery-assisted passive or BAP). A battery is used to support autonomous data logging with the on-chip RTC. In passive mode, the reader provides the time stamp, and the energy to the sensors is extracted from the reader's field (radio waves).

Collected and logged data are protected with passwords to preclude manipulation and unauthorized usage of the data. A perpetual protection is available through a permanent lock command, which inhibits changing of stored data independent of passwords.

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

SL900A Block Diagram



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

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