

RFID with Senses

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SL13A – ISO 15693 Sensor Tag IC

- Single-chip RFID data logger
- On-chip temperature sensor
- Analog input for external sensor
- Works with or without battery (semi-passive or fully passive)
- 8k-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 SL13A is such sensor tag adding a new dimension to the RFID technology. The chip is based on ISO 15693 / NFC-V and incorporates a temperature sensor and an interface to various external sensors. The integrated real-time clock (RTC) time stamps the events.

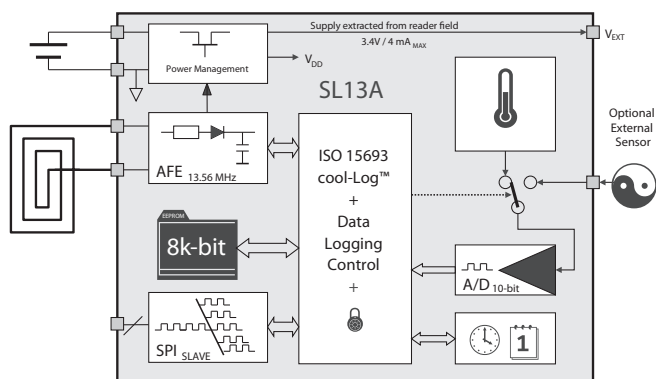
The sensor tag works in fully passive as well as in semi-passive mode (so-called battery-assisted passive or BAP). A battery is used to support autonomous data logging with the on-chip RTC. In passive mode, the reader provides the time stamp, and the energy to the sensors is extracted from the reader's 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
- Process control in factory automation
- Tracking condition and history of constructions (buildings, bridges, roads, etc.)
- Contactless metering
- Environmental monitoring

SL13A Block Diagram



Features

- Logging storage capacity: max. 762 events with time stamp
- Compatible with ISO 15693 and cool-Log™
- Analog input for external sensor (resistive)
- SPI is used for control and register setting
- 8k-bit EEPROM
- Supply voltage range 1.2 to 3.3V
- Typical current consumption (@1.5V):
 - Standby (RTC Running): 2 μ A
 - Operating (logging, 20ms): 150 μ A
- Temperature range: -40°C to 110°C
- Works with 1.5V (single-cell) or 3V battery
- Energy harvesting from reader field to support external circuitry
- Compatible with ISO 15693 / NFC-V and cool-Log™

cool-Log™

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