em microelectronic

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www.emmicroelectronic.com

512 bit Read/Write Contactless Identification Device

General Description

EM4205/4305 is a CMOS integrated circuit intended for use in electronic Read/Write RF transponders. It is suitable for low cost solutions like animal tagging applications. The IC communication protocol is compatible with the EM4469/4569 family.

The main difference between the EM4205 and EM4305 is that:

- EM4305 are bumped with enlarged pads for the two coil inputs. The enlarged bumped pads of the EM4305 transponder are intended for direct antenna connection avoiding the need of a module.
- EM4305 offers a 330pF resonant capacitor version

The IC is powered by picking up energy from a continuous 125 kHz magnetic field via an external coil, which together with the integrated capacitor form a resonant circuit. The IC reads out data from its internal EEPROM and sends it out by switching on and off a resistive load in parallel to the coil using a large modulation index. Commands and EEPROM data updates can be executed by 100% AM modulation of the 125 kHz magnetic field.

The EM4205/4305 supports bi-phase and Manchester data encodings.

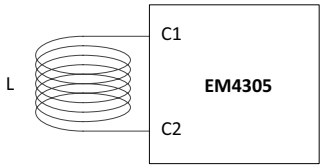
The EM4205/4305 operating modes are stored in the EEPROM configuration word. All EEPROM words can be write-protected by setting protection bits.

The IC contains a factory programmed 32 bit unique identifier number (UID).

Applications

- Animal Identification according to ISO FDX-B
- Pigeon races standard
- Waste management standard (BDE)
- Access Control
- Industrial

Typical Configuration



Features

- 512 bit EEPROM organized in 16 words of 32 bit
- 32 bit unique identifier (UID)
- 32 bit Password read and write protection
- ISO 11784 / 11785 Standard Compliant
- Lock feature converts EEPROM words into Read Only
- Two data encodings: Manchester and Bi-phase
- Multi-purpose data rate: 8, 16, 32, 40 and 64 RF clocks
- Reader Talk First feature
- Compatible with EM4469/EM4569 communication protocol
- 100 to 150 kHz frequency range
- On-chip rectifier and voltage limiter
- No external supply buffer capacitor needed
- -40 °C to +85 °C temperature range
- Very low power consumption
- Enlarged bumped pads (200 µm x 400 µm) for direct connection of coil (EM4305)
- EM4205: 2 resonant capacitor versions 210pF or 250pF selectable by mask option. The resonant capacitor can be trimmed, at factory level, to offer accuracy on the tolerance of 3%.
- EM4305: 3 resonant capacitor versions 210pF, 250pF or 330pF selectable by mask option
- Available in plastic extremely thin small outline package; 2 terminals; body 1.1 * 1.4 * 0.46 mm

Ordering Information

The versions below are considered standards and should be readily available. For other versions or other delivery form, please contact EM Microelectronic-Marin S.A.

Part Number	Package	Delivery Form
EM4205V2WS11	sawn wafer	Wafer on frame
EM4305V1WS11E	sawn wafer	Wafer on frame
EM4305V2WS11E	sawn wafer	Wafer on frame
EM4305V3WS11E	sawn wafer	Wafer on frame
EM4305V7WS6E	sawn wafer	Wafer on frame
EM4305V8WS6E	sawn wafer	Wafer on frame
EM4305VXYYY-%%%	Custom	Custom