



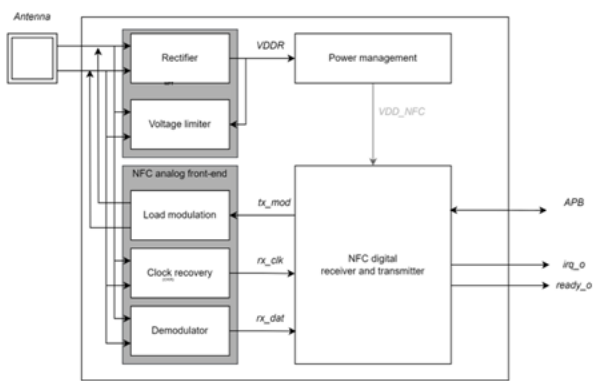
NFC Tag IP for Proximity Integrated Circuit Cards (PICC) and Vicinity Integrated Circuit Cards (VICC)

Connectivity Solutions With Our NFC Tag IP in 22 nm CMOS

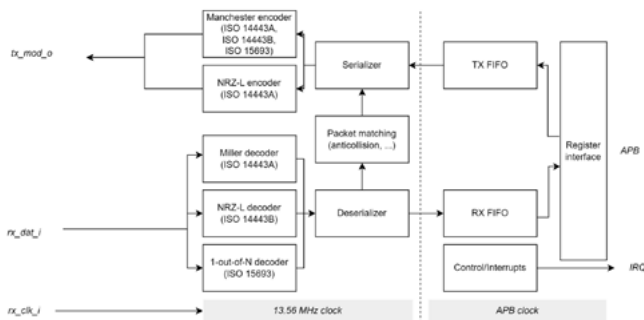
Our state-of-the-art NFC tag IP integrates seamlessly with ISO 14443-A, 14443-B, and 15693 standards. Ideal for both battery-less and battery-operated devices, this technology ensures best-in-class performance and versatility.

Building Blocks of CSEM's NFC Tag IP

- **Analog Front-End**
 - Energy efficient communication handling (RX, TX and clock recovery, CKR)
 - Energy harvesting (WPT) to power the system.
 - Fully compatible with all three ISO standards with four dedicated pads (two antenna pads, optional VDDR/VSSR).



- **Digital Baseband**
 - Configurable soft IP supporting ISO 14443A, ISO 14443B, or ISO 15693.
 - Dual modes: Autonomous mode for independent NFC command handling, and microcontroller mode for streamlined NFC functionality.



Key Features

- **Energy Harvesting:** Efficiently powers both the analog front-end and digital receiver/transmitter.
- **Overvoltage Protection:** Safeguards the analog front-end in strong fields, while allowing seamless Tx/Rx
- **Accurate Clock Recovery:** Captures the 13.56 MHz clock and provides envelope information to the digital baseband.
- **High-Speed Data Rates:** Achieve data rates from 106 kbps to 848 kbps (ISO 14443A and ISO 14443B) between PCD and PICC, and data rates from 1.66 kbps to 26.48 kbps (VCD to VICC) and 6.62 kbps to 211.88 kbps (VICC to VCD) for ISO 15693.

Technical Specifications

Parameters	Value
Typical Load Capacitance	2.2 nF
Maximum Magnetic Field Strength (peak) with Credit Card Sized Antenna	10.7 A/m
Voltage on ant_p, ant_n	-0.7 V to 1.98 V
Input AM Modulation	7% to 100%
Power Consumption* (WPT and Analog Core (RX/TX/CKR))	40 µA
Data Rate	fc/128 to fc/8
Rectifier Output Supply Level	0.9 V to 1.98 V
LDO Output Supply Level	0.72 V to 0.88 V, Typ 0.8 V
Time Delay Until POR Release (Delay from RF Field Appearance)	up to 200 µs
Area Analog Front End Including WPT and Power Management	123,000 µm ²
Area Digital Base Band (depending on e.g. protocol Support FIFO size)	25 kGE

*In typical applications where the analog and digital front-end are field-supplied, power consumption is provided. For battery-operated systems without harvesting, a low-power sleep mode is available at CSEM.

Applications

Perfect for applications in various fields, including portable devices, IoT, medical devices, automotive, industrial systems, and more.

Why Choose CSEM?

Partner with CSEM to develop custom ASIC and SoC solutions while utilizing our cutting-edge NFC IP. Our expertise ensures that your designs achieve the highest performance and reliability.

Contact us today to unlock the full potential of your products with CSEM's NFC technology!

