

### General Description

This IP Cell implements the analog and digital building blocks of a 13,56MHz Tag. Analog components consist of rectifier for the operating voltage, regulator for the digital supply voltage, a demodulator with reset and a modulator for communication from Tag IC to Reader. Furthermore the analog front-end consist of a clock extractor and a power on reset (POR).

The digital core implements the **ISO15693** protocol with EEPROM interface. The EEPROM is flexible in size and fully accessible through the RFID field as well as the SPI. The tag is designed to operate potentially with PE's digital "DATAMONITOR" and can be used for smart RFID applications that employ sensor and communication technology, e.g. in medical applications or logistics control.

Additional functions and components are usable via  $\mu$ C conform SPI interface. This serial interface is designed to communicate directly and indirectly to EEPROM and PE's digital "DATAMONITOR".

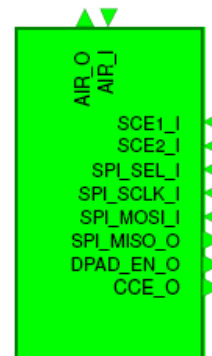
### Typical Ratings, Parameters and Condition

| Parameter                     | Symbol          | Min | Typ    | Max   | Unit    | Comment                 |
|-------------------------------|-----------------|-----|--------|-------|---------|-------------------------|
| Operation temperature         | $T_{op}$        | -40 | 27     | 80    | °C      |                         |
| Frequency                     | $f_{CLK}$       |     | 13.560 |       | MHz     |                         |
| Antenna voltage               | $V_{ANT}$       |     |        | 5,5   | V       |                         |
| Rectified voltage             | $V_{DD}$        |     |        | 4,7   | V       |                         |
| Digital supply voltage        | $V_{DDD}$       | 1,8 | 2      | 2,2   | V       |                         |
| Ripple digital supply voltage | $V_{DDDripple}$ | 20  |        | 300   | mV      |                         |
| Current consumption           | $I_{DD}$        | 15  | 20     | 30    | $\mu$ A |                         |
| Active current                | $I_{DDD}$       | 30  |        |       | $\mu$ A |                         |
| Power on Reset                | $t_{POR}$       | 45  |        |       | us      |                         |
| Load modulation frequency     | $f_{Mod}$       |     | 423,75 |       | kHz     | ISO15693 (1 subcarrier) |
|                               | $f_{Mod}$       |     | 484,28 |       | kHz     | ISO15693 (2 subcarrier) |
| ASK modulation                | $t_{Demod}$     | 6   |        | 13,94 | us      | ISO15693                |

### IO-Description

| Interface | I/O    | Function | Comment             |
|-----------|--------|----------|---------------------|
| ANT1      | In/Out | Antenna  |                     |
| ANT2      | In/Out | Antenna  |                     |
| SPI_SEL   | In     | Digital  | select signal       |
| SPI_SCLK  | In     | Digital  | clock signal        |
| SPI_MOSI  | In     | Digital  | serial data in      |
| SPI_MISO  | Out    | Digital  | serial data out     |
| DPAD_EN   | Out    | Digital  | serial data out en. |
| SCE1      | In     | Digital  | ext. enable SPI     |
| SCE2      | In     | Digital  | ext. enable SPI     |
| CCE       | Out    | Digital  | enable ext. comp    |
|           |        |          |                     |

### Symbol / external schematic



Dieses Projekt wird mit Mitteln des Europäischen Sozialfonds (ESF) gefördert. Es erzeugt einen gemeinschaftlichen Mehrwert „Investition in Ihre Zukunft“.