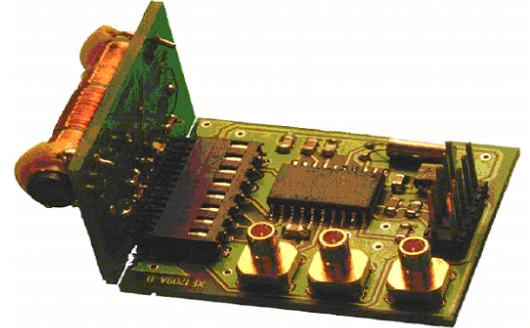


Product Brief



SEMTECH ADVANCED COMMUNICATION & SENSING



XM1209

Ultra Low Power NFC Inductive Transceiver Module

General Description:

The XM1209 is an ultra low frequency NFC transceiver module based on Semtech's XE1209 single chip low-power transceiver IC. It allows for demonstration and evaluation of the XE1209 short-range transceiver.

The XM1209 includes a separate ferrite antenna board which is connected to the main module via an 8-pin SIL connector. The separate interface allows for a number of antennas to be evaluated to optimize range and form factor for a particular application. With the ferrite antenna supplied, the measured range is typically 2m.

XM1209 is a CMOS Ultra Low-Power transceiver for short-range low frequency RF data communications system. It uses 2-level Continuous Phase FSK modulation. The receiver section includes the preamplifier, the down-converter, and the channel filters, the demodulator and the bit synchronizer, which delivers synchronized data at the output. The transmitter section is composed of a Direct Digital Synthesizer (DDS), and the power amplifier generating a square-wave output current.

The XE1209 has carrier detector to detect the presence of a signal at the carrier frequency. The local clock is based on a 32kHz crystal oscillator and a PLL to generate the required Local Oscillator (LO) frequency.

Key Product Features:

- 3 Meters Communication range
- 200 μ A active receiver current
- 95 μ A carrier detect mode current consumption
- 150 nA sleep mode current consumption
- 70 μ V sensitivity level with 200 μ V carrier detect threshold
- Optimized 36 kHz operating frequency
- DDS Transmitter for accurate data transmission
- 32.768 kHz low power reference oscillator
- 1820 bps robust FSK modulation

Applications:

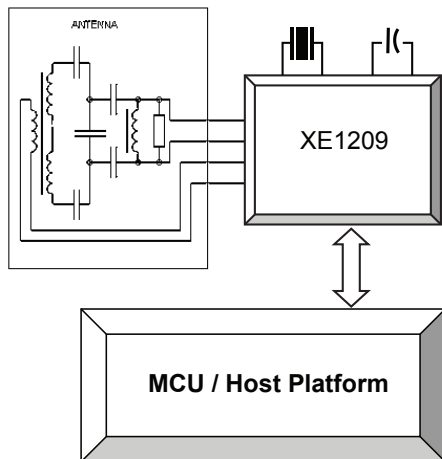
- Low data rate NFC
- BodyLAN
- Access and Security Control
- Short Range Wireless Data

Product Brief

XM1209 – Ultra Low Power Low Frequency NFC Transceiver Module

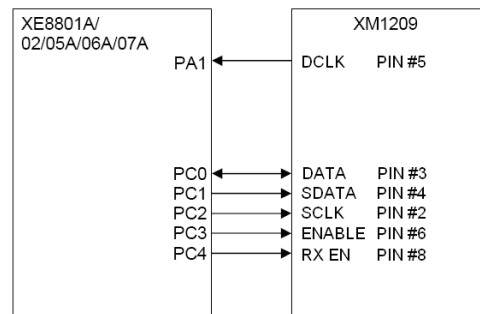
| Characteristics | | | | | |
|--|-----|------|-----|------|-------------------------|
| Parameter | Min | Typ | Max | Unit | Condition |
| Operating Conditions | | | | | |
| Operating temperature range | -10 | | +60 | °C | |
| Operating supply voltage | 2 | | 3.2 | V | |
| Digital input level high - VIH | 75 | | | % | Percentage of Vdd |
| Digital input level low - VIL | | | 25 | % | Percentage of Vdd |
| Current Consumption | | | | | |
| Sleep mode | | 150 | | nA | |
| Standby mode | | 1 | 2 | μA | |
| Carrier detect | | 95 | 120 | μA | |
| Receiver mode | | 200 | 300 | μA | |
| Low power transmit mode | | 1.8 | | mA | |
| High power transmit mode | | 110 | | mA | |
| RF Characteristics | | | | | |
| Frequency range | 30 | | 70 | kHz | With 32.768 Khz Crystal |
| Date rate | | 1820 | | Bps | |
| R _x sensitivity | | 70 | | μV | Source impedance=100Ω |
| Conditions: Supply Voltage = 2.6 V, Temperature = 25 °C, Carrier Frequency = 36.86 kHz, Bit Rate = 1820 bps, BER = 0.01% | | | | | |

XE1209 Block Diagram



Pin Configuration

| I/O pin | Description | |
|---------|-------------|-----------------------------------|
| 1 | NC | Not Connected |
| 2 | SCLK | Serial Bus Clock (Input) |
| 3 | DATA | DATA Input TX Data/Output RX Data |
| 4 | SDATA | Serial Bus Data (Input) |
| 5 | DCLK | RX Data Clock (Output) |
| 6 | ENABLE | Serial Bus Enable (Input) |
| 7 | GND | Ground |
| 8 | RX EN | RX Enable (Input) |
| 9 | VDD | Supply Voltage |
| 10 | NC | Not Connected |



Ordering Information

| Part Number | Pin Package |
|-------------|-------------------|
| XM1209 | 10 Pin DIL Header |

Visit our website to locate the most current product specifications, datasheets and contact information for your local Semtech Field Applications Engineer.