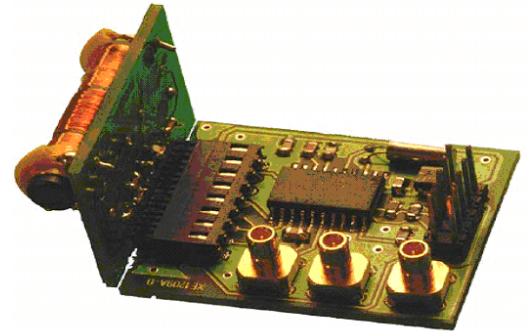


# Product Brief



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  $\mu$ A active receiver current
- 95  $\mu$ A carrier detect mode current consumption
- 150 nA sleep mode current consumption
- 70  $\mu$ V sensitivity level with 200  $\mu$ 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



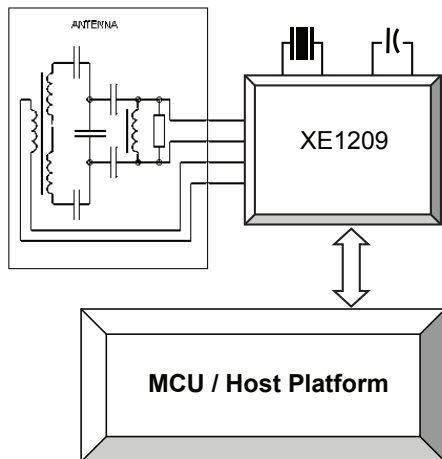
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# Product Brief

## XM1209 – Ultra Low Power Low Frequency NFC Transceiver Module

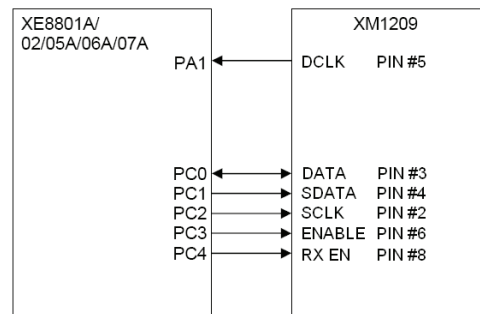
Characteristics					
Parameter	Min	Typ	Max	Unit	Condition
<b>Operating Conditions</b>					
Operating temperature range	-10		+60	°C	
Operating supply voltage	2		3.2	V	
Digital input level high - VIH	75			%	Percentage of Vdd
Digital input level low - VIL			25	%	Percentage of Vdd
<b>Current Consumption</b>					
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	
<b>RF Characteristics</b>					
Frequency range	30		70	kHz	With 32.768 Khz Crystal
Date rate		1820		Bps	
R <sub>x</sub> 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.