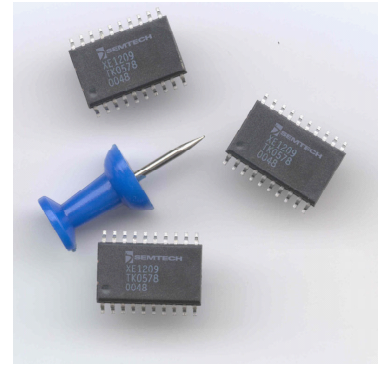


# Product Brief



SEMTECH ADVANCED COMMUNICATION & SENSING



## XE1209

Ultra-Low Power 30 – 70 kHz Transceiver

### Low Power Near Field Communication Transceiver

The XE1209 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. The XE1209 has a simple interface with an external microcontroller.

#### Key Product Features:

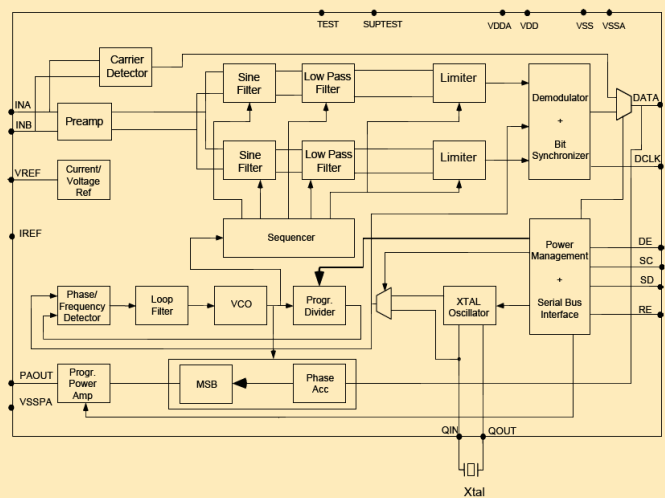
- Unlicensed ISM band
- Short range communications from 1 to 3 meters
- 200  $\mu\text{A}$  active receiver current
- 95  $\mu\text{A}$  carrier detect mode current consumption
- 150 nA sleep mode current consumption
- 70  $\mu\text{V}$  sensitivity level with 200  $\mu\text{V}$  carrier detect threshold
- Fully synthesized 30 kHz – 70 kHz operating frequency
- DDS Transmitter for accurate data transmission

- 32.768 kHz low power reference oscillator
- 1820 bps robust FSK modulation
- Low external component count
- SSOP / QFN Package RoHS-compliant “green package”

#### Applications:

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

#### Block Diagram:

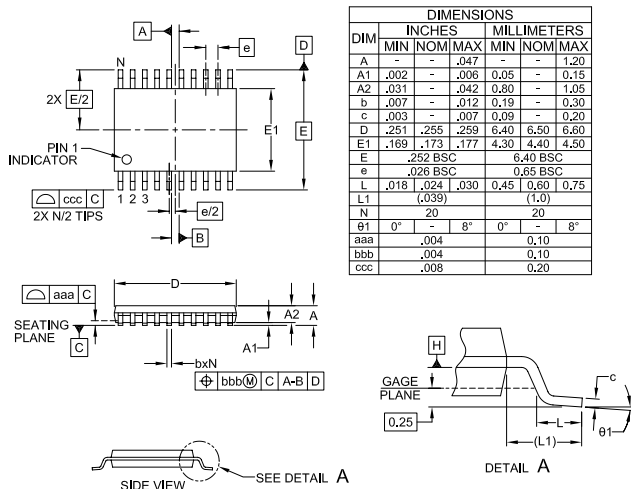


# Product Brief

## XE1209 – Ultra Low Power Low Frequency NFC Transceiver

Characteristics						
Parameter	Min	Typ	Max	Unit	Condition	
<b>Operating Conditions</b>						
Operating temperature range	-10		+60	°C		
Operating supply voltage	2		3.2	V		
<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		
Rx 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%						

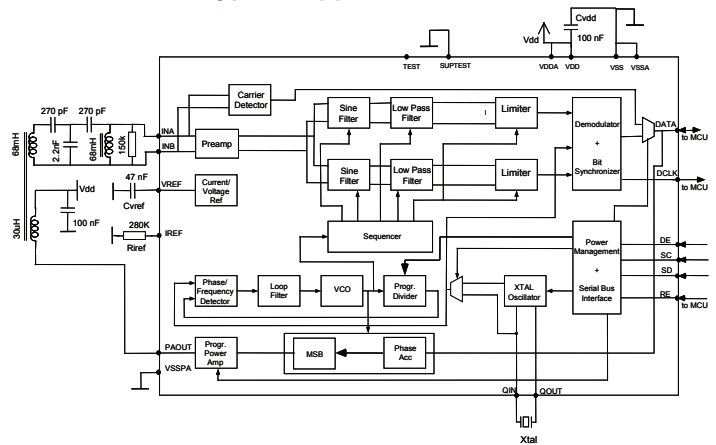
### XE1209 Package Drawing



#### NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DATUMS [-A-] AND [-B-] TO BE DETERMINED AT DATUM PLANE [-H-]
3. DIMENSIONS "E1" AND "D" DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
4. REFERENCE JEDEC STD MO-153, VARIATION AC.

### Typical Application Circuit



### Ordering Information

Part Number	Package
XE1209C012TRLF	SOP-20 Lead-Free RoHS-1000 pieces on Tape & Reel
XE1209C061TRLF	VQFN-28 Lead-Free RoHS-2300 pieces on Tape & Reel

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