



# Bluetooth™ RF Transceiver Family

## CX72303/CX72304

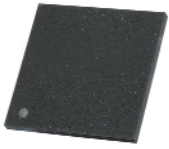
The Conexant CX72303 Bluetooth™ RF Transceiver is a 2.4GHz, frequency-hopping, spread-spectrum radio optimized for use with Bluetooth technology-based systems, boasting the lowest power consumption in the industry. The CX72303 radio is compliant with the Bluetooth Special Interest Group (SIG) specification version 1.1, and is ideal for use in hand-held terminals for third generation (3G) and GSM-based wireless networks, as well as other devices that require extended battery life, small form factors, and low power consumption, including headsets, earpieces, and Personal Digital Assistants (PDAs). The CX72303 and CX81400 Baseband Controller are offered as part of Conexant's two-chip Bluetooth System Solution, as well as standalone components, which interface to a variety of the industry's baseband solutions.

The Conexant Bluetooth RF Transceiver family of devices is highly integrated, including an on-chip voltage-controlled oscillator (VCO), power amplifier, Low Noise Amplifier (LNA), intermediate frequency filters, received signal strength indicator, and fractional-N synthesizer. The devices are designed to meet Bluetooth Class 2 and Class 3 specifications and enable an operating range greater than 10 meters. Fast frequency hopping (1,600 hops per second) with 79 channels available (2.402 to 2.480 GHz) and a maximum transmit (Tx) and receive (Rx) rate of 1 Mbps utilizes the maximum channel bandwidth allowed in the Industrial Scientific Medical (ISM) band. The implemented modulation technique is Gaussian Frequency Shift Keying (GFSK), with a modulation index of 0.3. The channel bandwidth is 1 MHz and the frequency deviation is 140 to 175 KHz. The Bluetooth RF Transceiver devices are fabricated using a high performance silicon germanium (SiGe) BiCMOS process, and enclosed in BCC++ 48-pin packages.



### Distinguishing Features

- Fully integrated single-chip transceivers with on-chip voltage-controlled oscillator (VCO), synthesizer, power amplifier (PA), low noise amplifier (LNA), intermediate frequency (IF) filters, received signal strength indicator (RSSI) and bit slicer
- Low voltage supply (1.8V)
- 19/25 mA Tx/Rx peak current consumption
- Radio frequency (RF) sensitivity to -80 dBm



The Bluetooth RF Transceiver Family was designed using advanced circuit implementation, to enable:

- A Delta-Sigma synthesizer incorporating two-point angle modulation
- A transmitter Power Amplifier (PA) featuring programmable output levels from -10 to +2 dBm
- A receiver architecture based on cascaded complex Automatic Gain Control (AGC)/filtering stages and a complex Phase Lock Loop (PLL) demodulator
- A fast dynamic-threshold Multiple Frequency Shift Keying (MFSK) bit slicer

For manufacturers looking to integrate Bluetooth RF technology into their CDMA handset designs, Conexant offers the CX72304 Bluetooth RF Transceiver. In addition to the features listed above, the CX72304 supports multiple crystal reference frequencies (12.0 MHz, 19.2 MHz, 19.68 MHz and 19.8 MHz), a clock output that's usable by a CDMA baseband controller, and a Serial Bus Interface (SBI) that, along with an additional single control line, constitutes the main interface for controlling and programming the device.

## System Implementation

The CX72303 features differential RF inputs and outputs, enabling direct connection to an external PA for higher output power. A Conexant PA (RF110) is available today for Class 1 operation. The completely digital RF to baseband interface provides both the data demodulation and Direct Current (DC) estimator functions. Correlator and data clock extraction functions (i.e., timing recovery) can then be implemented in the baseband, optimizing cost and power consumption as well as performance.

## Development Support

Conexant's Bluetooth product portfolio includes a Bluetooth 1.1 certified product development station that consists of a motherboard containing the Bluetooth baseband device (CX81400) and a series of daughter boards providing RF and voice functionality. Also available from Conexant are a series of system evaluation modules and reference designs.

The flexibility of our Bluetooth offering, from a single-chip radio to a complete system solution with voice support, is designed to meet the individual needs of manufacturers within the Bluetooth market, and hasten the introduction of cost-effective, innovative devices based on this exciting wireless technology.

## Product Features

- Fully integrated single-chip transceiver with on-chip VCO, synthesizer, PA, LNA, IF filters, RSSI and bit slicer
- Complies with the Bluetooth version 1.1 specification
- Class 2/3 performance
- >10-meter operating range
- Low voltage supply (1.8V)
- 19/25 mA Tx/Rx peak current consumption
- Radio frequency (RF) sensitivity to -80 dBm
- +2 dBm RF output power
- Crystal-independent fractional-N synthesizer
- Digital crystal frequency error compensation
- Programmable Tx power control
- No external shielding required
- 48 BCC++ package — 7mm x 7mm

## Applications

- ISM 2.4 GHz frequency band applications
- Personal area wireless networking
- Wireless handsets/terminals
- Headsets, earpieces, PDAs, mobile computers and peripherals

Note: The CX72304 is designed specifically for CDMA cellular handsets.

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01-1062

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