CONEXANT™

Silicon Germanium CDMA Transmit/Dual PLL RFIC

CX74002

Conexant Delivers RF Chipsets for 2G and 3G CDMA Applications

The CX74002 device offers the highest level of integration a tri-mode, dual-band CDMA transmit RFIC. The device is designed to meet the needs of both 2G and 3G CDMA systems. Specifically targeting the cdmaOne, cdma2000, and AMPS markets in the U.S. and Korean cellular, Japan cellular, Korean PCS and U.S. PCS bands. The CX74002 is also designed to be suitable for wideband CDMA (WCDMA) applications in the IMT-2000 band. The device is built using Conexant's advanced silicon germanium (SiGe) bipolar complementary metal oxide semiconductor (BiCMOS) process technology. This process results in best-in-class current consumption performance, hence increasing cellular phone talk time.

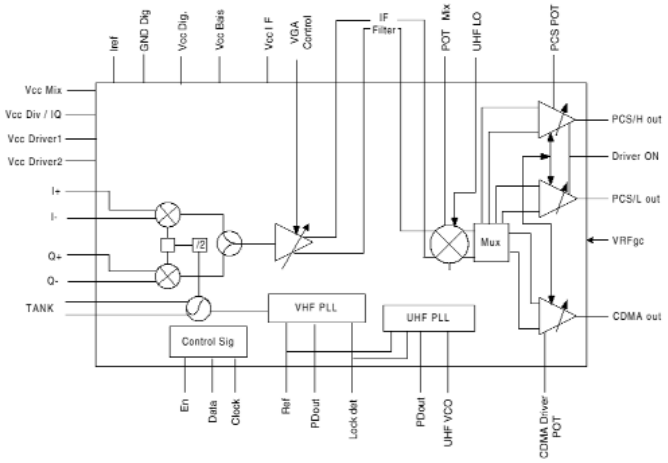
The CX74002 is a highly integrated super-heterodyne transmitter (Tx) that incorporates all the active functional blocks up to the antenna: an In-phase and Quadrature (I/Q) modulator that accepts the analog I and Q outputs from the baseband analog processor and converts them to intermediate frequency (IF) signals; a voltage controlled oscillator (VCO) and very high-frequency (VHF) synthesizer to generate the local oscillator (LO) signal for the quadrature demodulators for the cellular and PCS bands; a UHF synthesizer to control the UHF oscillator; and a variable gain amplifier (VGA), which is required in CDMA systems to provide linear variable output power at the antenna.

The output of the VGA is fed to the image reject mixer. The output of the image reject mixer is fed directly to the PA pre-driver without the need for external SAW filters, resulting in a reduction of overall cellular phone bill-of-material cost.

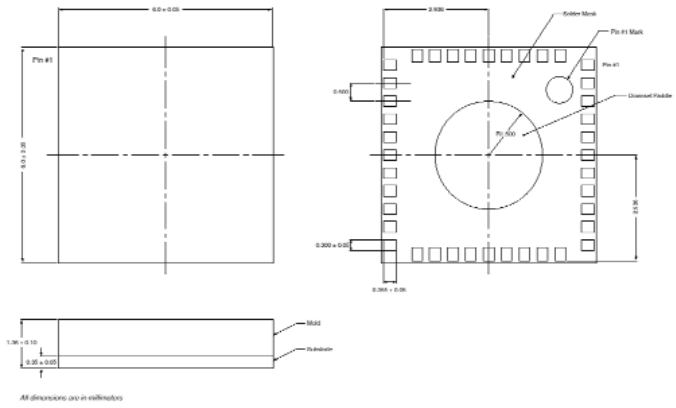
Distinguishing Features

- Best-in-class current consumption
- Tri-mode, dual-band functionality
- I/Q to RF integration
- Image-reject mixer
- Three battery-cell operation (2.7V < VCC < 3.6V)
- Split-band PCS drivers to improve Rx Band noise performance
- Tx power control with 90 dB dynamic range
- Variable-gain RF block to meet in-band signal-to-noise ratio (SNR)
- 6mm x 6mm land grid array (LGA) chipscale package

The CX74002, along with Conexant's CX74001 receive RFIC, a Conexant power amplifier module, and Conexant's baseband analog processor forms a complete RF subsystem that interfaces with the most common cdma baseband devices.



CX74002 Tx ASIC block diagram



Package dimensions — 40-pin 6mm x 6mm LGA package

Product Features

- **Image reject upconverter saves two RF surface acoustic waves (SAWs) filters in dual-band applications**
- **Driver gain can be changed either by a continuous signal or by a step signal through the driver gain control signal**
- **100-800 MHz oscillator (external tank)**
- **VCO_ON feature to increase the talk time of the radio**
- **Two separate phase lock loop (PLL) synthesizers**
- **Dual-loop multiband operation**
- **Power-save mode for both standby and lower-frequency operation**
- **Fully programmable PLL dividers**
- **Selectable charge–pump currents for multi-VCO applications controlled via serial bus interface**

Applications

- **cdmaOne, cdma2000 and AMPS modes in the following bands:**
  - U.S. cellular
  - Japan cellular
  - U.S. PCS
  - Korea PCS
- **WCDMA in the IMT-2000 band**

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