



# CDMA Receive RFIC

## CX74001

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

The CX74001 offers the highest level of integration in a tri-mode, dual-band receiver (Rx) 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 CX74001 is also designed to be suitable for wideband CDMA (WCDMA) applications in the IMT-2000 band. Programmable linearity is included in the RF front end to optimize power consumption at various input levels. A three-step cellular LNA, bypass PCS LNA, and a separate enable for the internal VCO increases system performance and standby times.

The device is a highly integrated super-heterodyne receiver. It incorporates all the components required to implement the receiver front end and the In-phase and Quadrature (I/Q) demodulator stages, except for the filter blocks. It has two internal LNAs — one for the cellular band and another for the PCS band.

The device also has separate mixers for the AMPS, CDMA and PCS bands. The AMPS mixer has differential outputs that are combined externally as a single-ended output for the intermediate frequency (IF) surface acoustic wave (SAW) filter. The cellular and PCS mixers have balanced outputs for the CDMA IF SAW filters. The mixers are followed by an IF variable gain amplifier (VGA) and an I/Q demodulator.

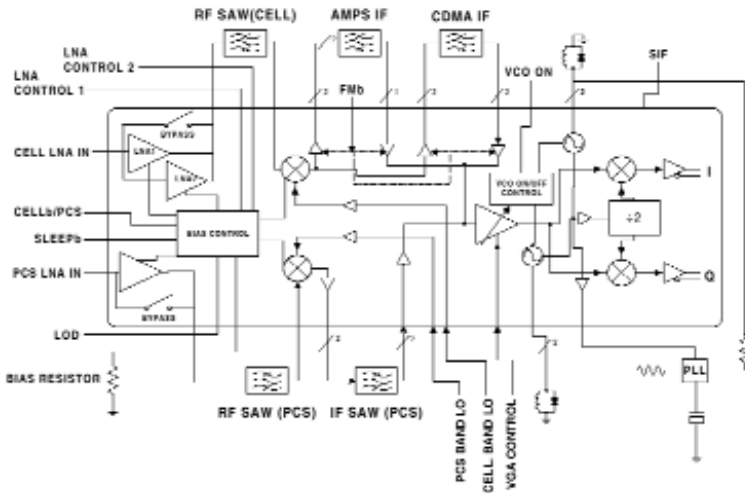
The outputs from the filters are combined through separate buffers at the input of the VGA. The buffers are enabled depending on the selected mode. The VGA has a gain control range greater than 90 dB. The device has two very high-frequency (VHF) oscillators that operate with external tank circuits. They provide signals to the local oscillator (LO) for the I/Q demodulator in the cellular and PCS bands.



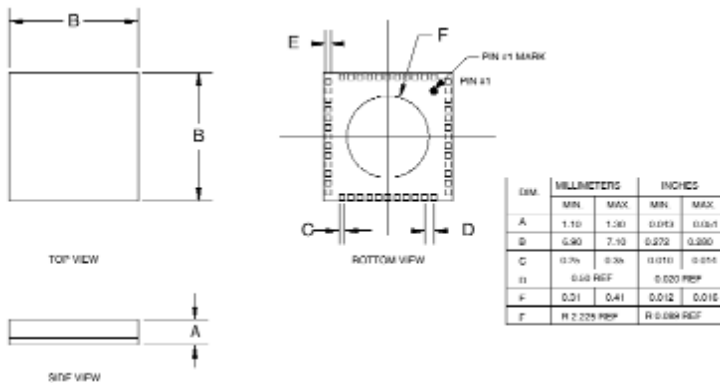
### Distinguishing Features

- Tri-mode, dual-band functionality
- RF to I/Q integration
- Three battery-cell operation (2.7V < VCC < 3.6V)
- PCS bypass LNA with NF 1.9 dB typical
- Three-step cellular LNA with NF 1.8 dB typical at maximum gain
- Dual 200 to 600 MHz 2nd IF Oscillators
- 7mm x 7mm land grid array (LGA) chipscale package

The CX74001, along with Conexant's CX74002 transmit 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.



**CX74001 Rx ASIC block diagram**



**CX74001 48-pin 7mm x 7mm LGA package**

**Product Features**

- Two on-chip oscillators, one for cellular and one for PCS bands
- VGA has a minimum dynamic range of 90 db with a control voltage range of 0.2 to 2-7 volts
- The appropriate signal path is switched internally to the device, eliminating the need for off-chip switching
- Three-step gain LNA designed to meet intermodulation distortion specifications for CDMA applications
- Three independent mixers, one for the PCS band and two for the cellular band, designed to operate with very low LO power of -10dBm

**Applications**

- Cellular and PCS-band phones
- 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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