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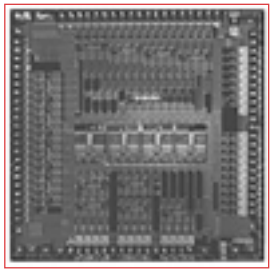
BCM2002
PRODUCT Brief



BCM2002 2.4 GHZ BLUETOOTH™ RADIO

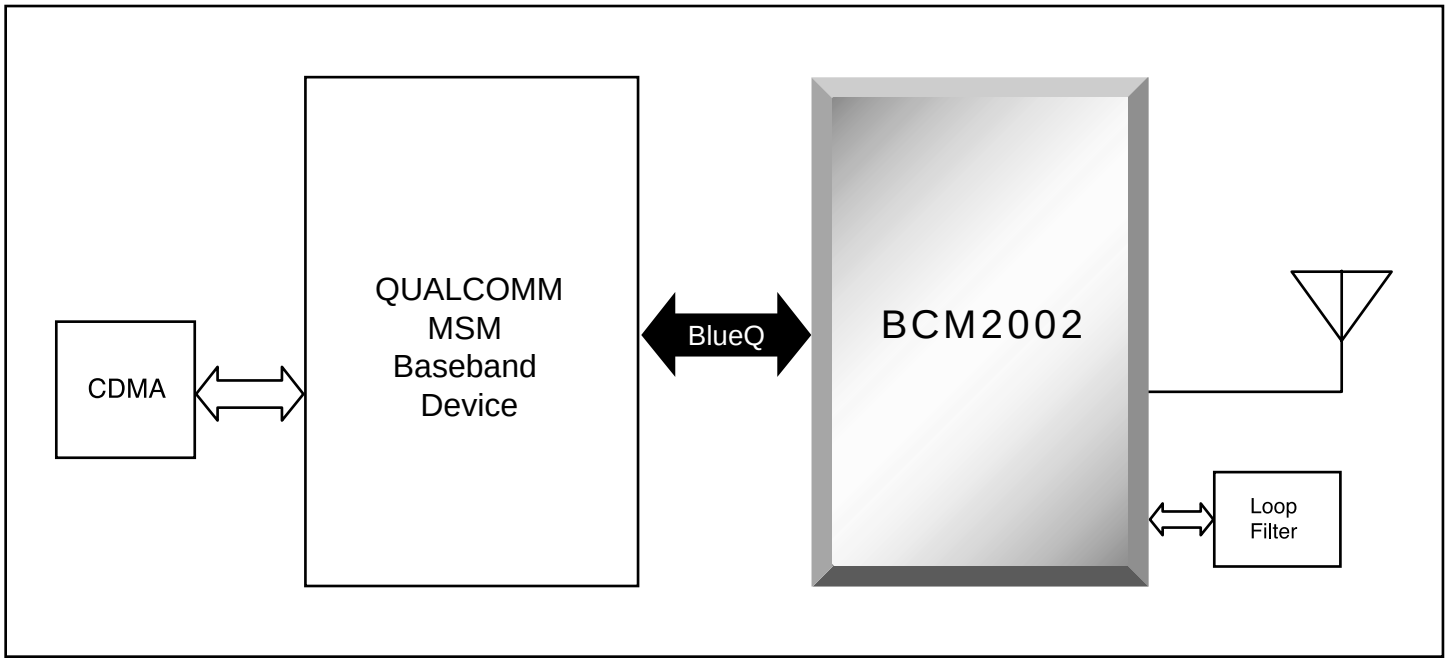
BCM2002 FEATURES

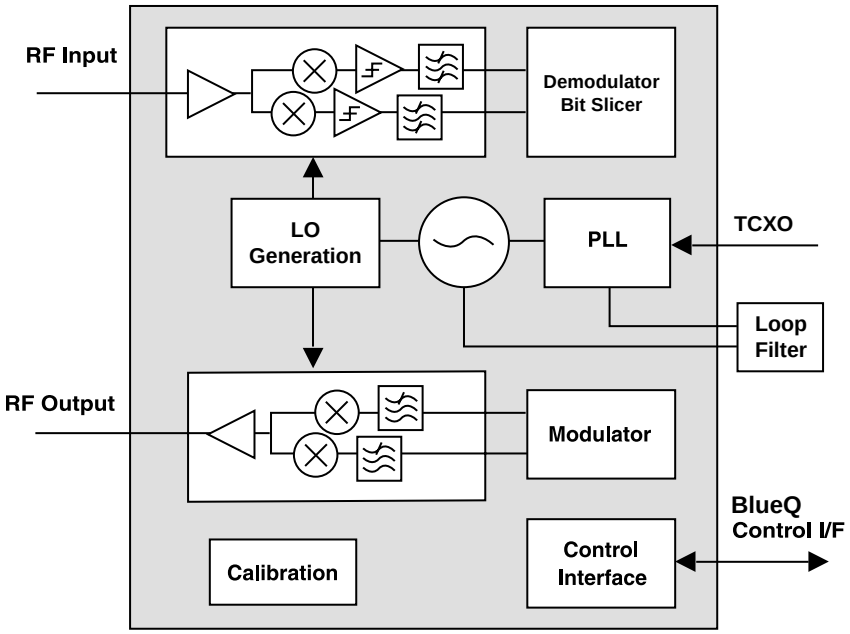
- **BQB qualified Bluetooth™ V1.1 radio transceiver**
- **Compatible with QUALCOMM Bluetooth-enabled MSM baseband chips**
- **Fractional-N frequency generation**
- **Differential RF interface**
- **Typical -80 dBm receiver sensitivity under high interference environments**
- **Typical 0 dBm RF output power satisfies requirements for Class 2 or Class 3 operation**
- **Strong spurious emissions performance**
- **Excellent blocking performance**
- **Highly linear receiver exceeds Bluetooth specifications**
- **Low power consumption**
- **Built-in digital RSSI**
- **Programmable PA gain**
- **8mm x 8mm, 52-pin LPCC standard package**
- **6mm x 6mm, 68-pin LCSP chip scale package**

SUMMARY OF BENEFITS

- **Designed for operation with QUALCOMM MSM3300 and MSM5100 CDMA baseband devices.**
- **Ideal for mobile phone integration**
  - Designed to handle the very harsh environment of mobile phones while maintaining high radio performance and optimizing overall phone performance.
  - In-band and out-of-band blocking performance significantly exceeds Bluetooth™ requirements.
  - Fractional-N frequency generation technology eliminates the need for a dedicated reference crystal, which is an additional source of RF noise.
- **Standard digital CMOS process**
  - Most cost-effective, widely available semiconductor process
- **On-chip auto calibration eliminates process variation across components and mitigates temperature variation, enabling it to be used in high-volume applications.**

BCM2002 Frac-N Radio Application Example





The **BCM2002** Bluetooth™ transceiver is an integrated radio transceiver that is optimized for use in 2.4-GHz Bluetooth wireless systems. The transceiver is Bluetooth 1.1 compliant and is designed to be compatible with Bluetooth-enabled CDMA chipsets.

The **BCM2002** is a high-performance radio implemented in digital CMOS. It incorporates fractional-N frequency generation technology to synthesize the various reference frequencies for mobile phone applications. A proprietary self-calibrating VCO structure allows for both excellent phase noise and fast frequency hopping covering the entire band.

The receiver front end consists of a low noise amplifier and an image reject mixer, which provide good performance without a costly RF band pass filter. Balanced mixer structures fed by accurate quadrature LO signals allow an excellent noise figure and strong image rejection.

A low IF frequency allows for high performance amplifier and filter designs in CMOS. The bandpass filter structure features self-calibration circuitry that automatically adjusts circuit elements to compensate for any process variation. This eliminates tuning and ensures that process and temperature variation are uniform across the devices. The IF amplifiers provide a limiting function so that the following stages always get a constant signal level regardless of the RF input level. An RSSI signal is also generated in these amplifiers for the system to determine signal strength. The signal is then filtered further, demodulated, and finally sent to a bit slicer to generate logic level data output.

The GFSK transmit signal is first generated at baseband in a proprietary modulator. It is then filtered and upconverted to RF using the quadrature LO signals. The signal is then boosted to the class 2 Bluetooth 1 mW output power level by a power amplifier. Four output power levels are digitally programmable from full power to low power in 4-dB steps.

The **BCM2002** is controlled via a baseband interface. This interface provides control for the various sections of the chip, defines data transfers, and allows access to the various internal registers of the device.

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