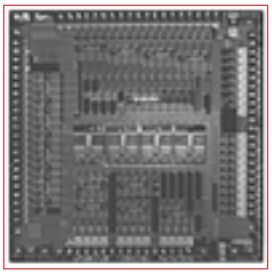
BROADCOM®

BCM2013 PRODUCT Brief



INTEGRATED BLUETOOTH™ HEADSET PROCESSOR

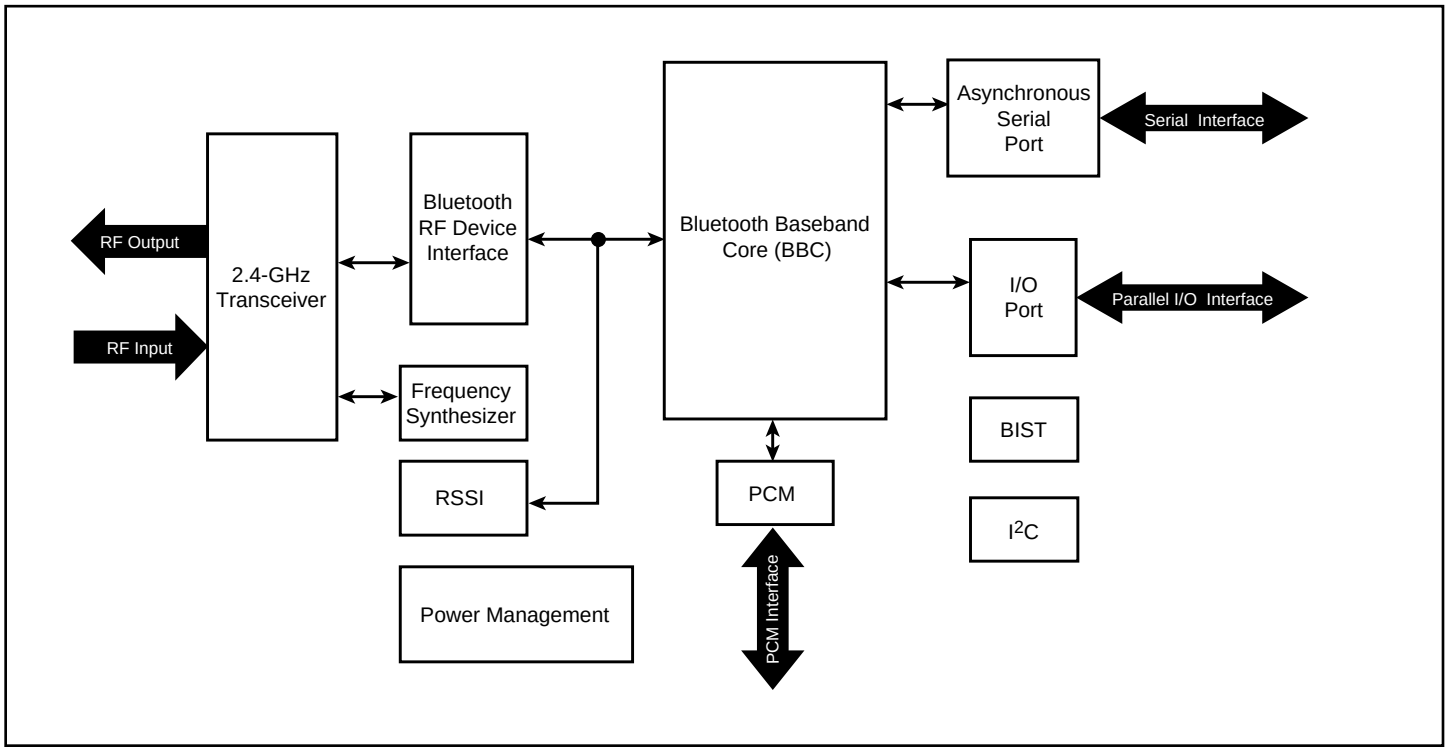
BCM2013 FEATURES

- **Bluetooth 1.1 specification compliant**
- **On-chip audio filtering and smoothing algorithms**
- **Complete receiver/transmitter Radio**
  - < -82 dBm receiver sensitivity
  - Transmitter power: -23 dBm to +3 dBm, typical
  - On-chip auto-calibration eliminates tuning
- **Software-controlled power management unit**
  - Programmable power control for Class 2 or Class 3
- **Microcoded microsequencer**
  - Code runs in on-chip RAM
- **All ACL/SCO packet types supported**
- **CODEC interface Support**
  - 8-bit A-LAW, 8-bit µ-LAW and CVSD audio/data transcoded to 13-bit linear PCM
- **Parallel and Serial I/O**
  - 8-bit data I/O port
  - Asynchronous serial, programmable to 921.6 Kbps
- **I²C interface**
- **7mm x 7 mm 84-pin fpBGA package**

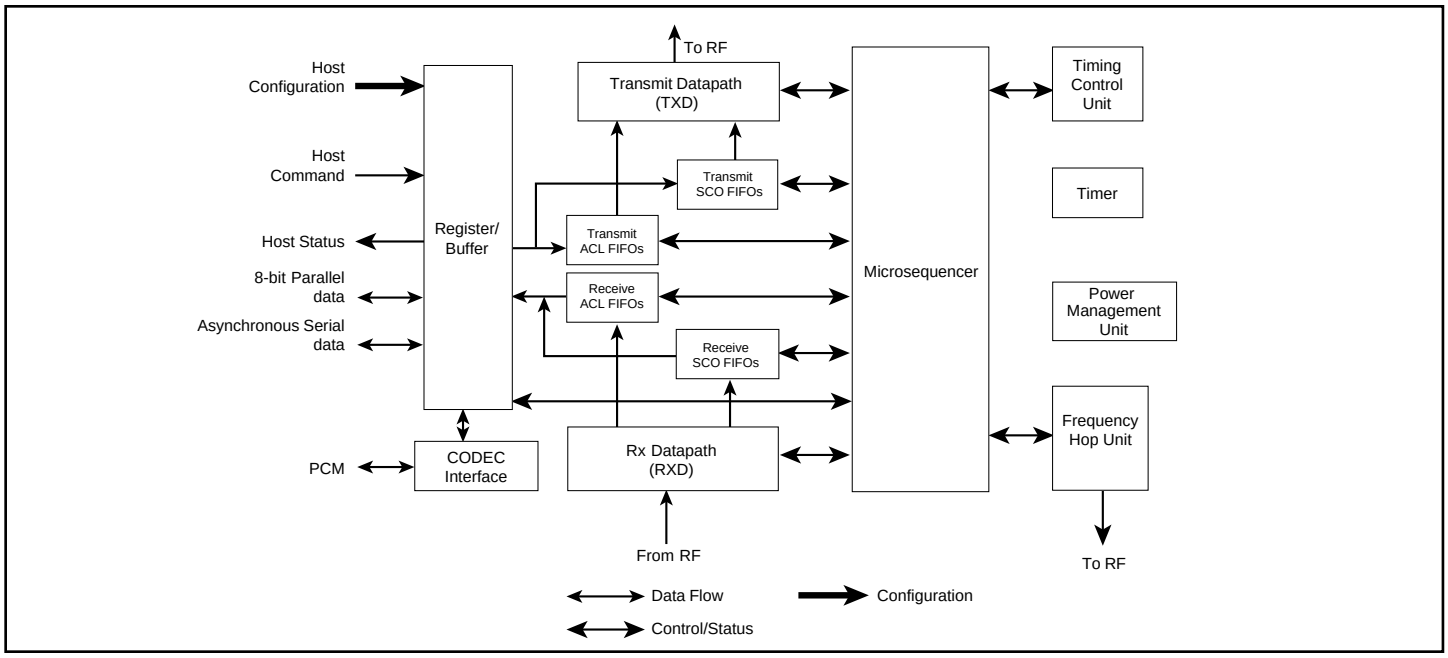
SUMMARY OF BENEFITS

- **Better audio quality than wired headsets**
- **Long talk time and battery life**
  - 8+ hours talk-time with 190 mAh Li-Ion
- **Microcoded = quick updates**
  - Specification updates with same silicon
  - Fix cell phone vendor Bluetooth bugs yourself
  - Changes made in days rather than months
- **Self-loading microcode on power up**
- **SwitchBox™ enables instant conferencing**
- **Development support available**
  - Evaluation kit available (BCM92013)
  - Reference design available: samples, schematics, layout, gerber files and BOM all provided
- **Broadcom software support**
  - Front-end GUI for radio evaluation
  - Interface to PC for product development
  - Back-end code for production testing

BCM2013 Controller-Less Single-Chip Bluetooth Application Example



BCM2013 OVERVIEW



The **BCM2013** is a Bluetooth 1.1 compliant, single-chip, Headset Processor. The radio, baseband and headset control functionality are integrated into the **BCM2013**. It is a complete Bluetooth solution capable of running profiles. The entire stack and Headset profile run directly on the **BCM2013**.

The **BCM2013's** excellent radio performance combined with proprietary, on-chip, audio filtering and smoothing algorithms provide unmatched voice quality that is better than *wired* headsets on the market.

The software controlled Power Management Unit enables unmatched talk-time and battery life. Depending on your choice of battery, talk times of 10+ hours can be economically achieved.

The baseband controls all Bluetooth functionality from the physical layer radio interface to the link control layer, including all bit-level processing, voice/data flow, and on-chip parallel, serial and audio PCM interfaces.

The radio incorporates the complete receive and transmit paths, including PLL, VCO, LNA, PA, upconverter, downconverter, modulator, demodulator, and channel select filtering.

The baseband's core is a microcoded microsequencer. There is no on-chip microcontroller, and no need for one. This dedicated Bluetooth microsequencer makes the **BCM2013** the most efficient headset solution available.

Because the **BCM2013** is microcoded, upgrades and additions are mere software changes. This unmatched flexibility allows the **BCM2013** to be upgraded in the field to accommodate specification changes, add features or address potential cell-phone vendors' compatibility issues.

All headset specific control functionality is integrated into the **BCM2013**, including automatic self-loading of microcode on power up and eight general purpose I/O pins for user control features such as buttons and LEDs.

The BCM92013 Evaluation Kit and a ready-to-manufacture reference design, including sample reference boards, schematics, layout, gerber files and low-cost BOM are available to help improve your time to market. Audio Gateway and charger reference designs are also available.

On-chip parallel and serial I/O ports are available and can be used in conjunction with Broadcom Software to: a) test the radio performance (requires a BCM92013 Evaluation Kit); b) connect to a PC for application development (requires a BCM92013 Evaluation Kit); c) test fully assembled production headsets.

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