



## BLUETOOTH® 2.0 EDR WIRELESS AUDIO PROCESSOR

### FEATURES

- Single-chip Bluetooth 2.0 transceiver supporting enhanced data rate (EDR) backward compatibility with Bluetooth 1.2 and Bluetooth 1.1
- High-performance ARM7TDMI® processor with 120 KB of on-chip SRAM eliminating need for separate DSP
- Low-power 2.0V operation
- On-chip support for battery monitoring and charging control
- Fully configurable pulse code modulation (PCM) and I<sup>2</sup>S interfaces with on-chip phase-locked loop (PLL) to interface with a variety of high-quality audio codecs
- Up to 27 fully configurable GPIOs to address applications with sophisticated user interfaces
- ZSound™ audio software package including application, upper layer stack with profiles, and lower layer stack
- Available in 7 mm x 7 mm BGA, RoHS compliant package with integrated RF

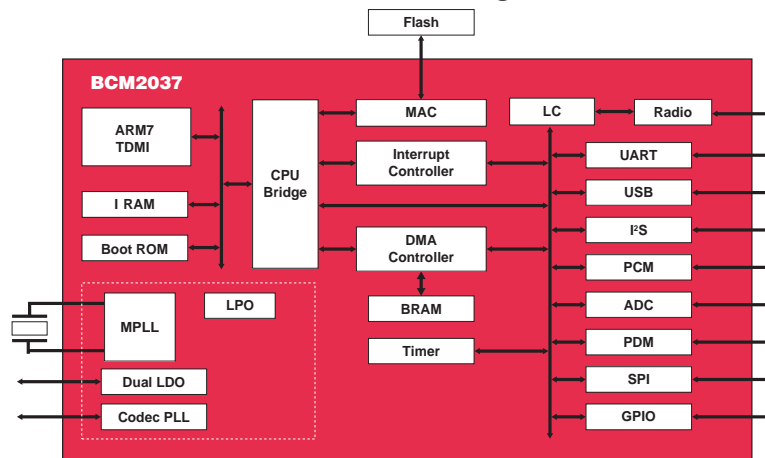
### SUMMARY OF BENEFITS

- **Bluetooth 2.0 EDR enables:**
    - Lower power consumption
    - Multilink stereo
    - Increasingly complex Bluetooth systems
    - Lower latency
    - Improved robustness
  - **2.0V operation:**
    - Longer play and talk time
  - **High quality:**
    - Near CD quality streaming stereo
    - Choice of best-in-class stereo codecs
  - **Low cost:**
    - Single-chip Bluetooth transceiver
    - Integrated RF, battery monitor, and charging controls
- Time-to-market:**
- HW reference designs for common wireless audio applications
  - Includes ZSound software suite

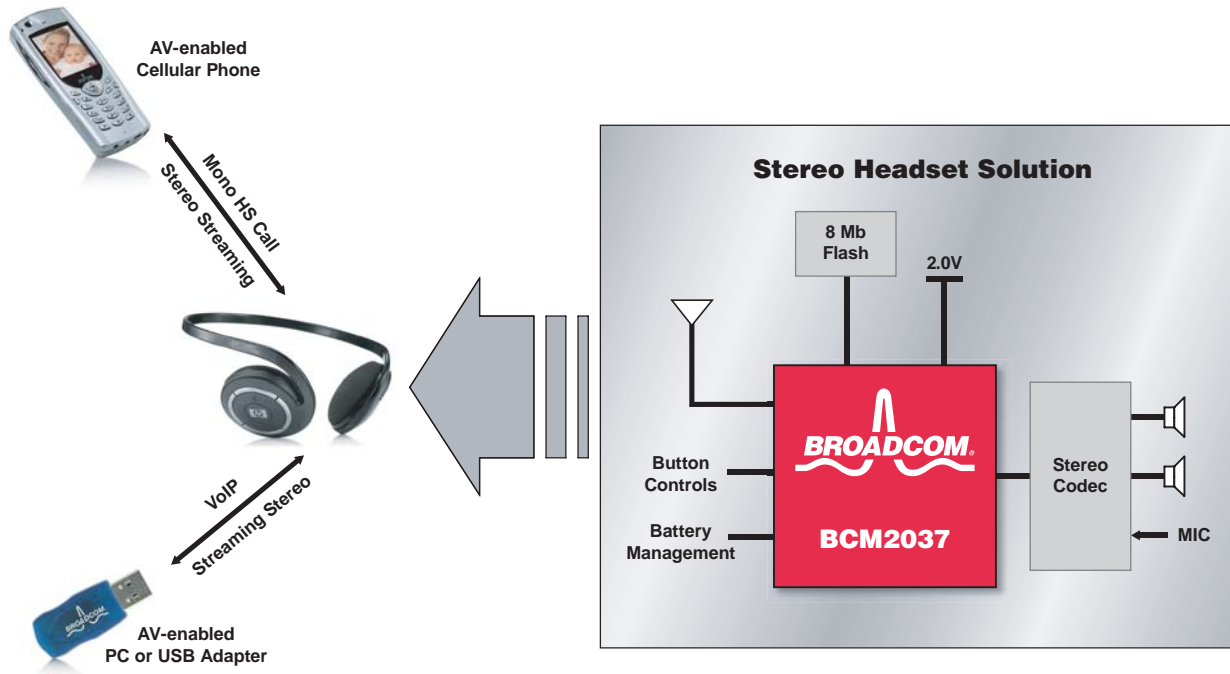
### APPLICATIONS

- Wireless headphones (stereo)
- Wireless stereo headsets (stereo plus mono)
- Wireless mono headsets
- Wireless stereo adapters
- Portable audio devices
- Embedded Bluetooth application

### BCM2037 Block Diagram



## OVERVIEW



### Stereo Headset Solution

The BCM2037 wireless audio processor supports the Bluetooth 2.0 specification, with EDR technology enabling peak data rates of 3 Mbps, while providing full backward compatibility to Bluetooth 1.2 and Bluetooth 1.1 specifications. High integration with low-power operation make this family of chips ideal for incorporation into high volume, battery-operated wireless stereo and wireless mono consumer audio applications. Used in conjunction with a high quality external stereo codec, the BCM2037 solution delivers end-to-end streaming digital stereo at near CD audio quality. In addition, support for the remote control profile (AVRCP) allows a stereo headset to control a variety of remote music sources.

The BCM2037 is capable of transmitting using EDR permitting lower power, increased robustness, and lower latency as compared to Bluetooth 1.2-based audio solutions. Additional bandwidth of EDR enables complex Bluetooth environments with multiple active Bluetooth devices and provides support for multiple simultaneous stereo links.

A stereo headset combining mono and stereo functions can be accomplished by combining the BCM2037 with a codec that has stereo output and MIC input. An audio gateway can be implemented by combining the BCM2037 with a codec that has stereo outputs and stereo

inputs. A USB plug-and-play adapter can be implemented without using a codec by using the built-in USB interface on the BCM2037.

The BCM2037 has sufficient processing performance to simultaneously manage the user interface, maintain full Bluetooth protocol stack operation, and execute key audio algorithms. This high performance is enabled by a 32-bit ARM7<sup>®</sup> CPU with high-peak clock speeds and deep on-chip memory, allowing zero-wait-state execution of computationally intensive audio algorithms.

Key algorithms are supported by application-specific hardware accelerators, further increasing BCM2037 computational capabilities, while reducing system power consumption. These powerful features eliminate the need for a separate external DSP, reducing the bill of materials, power consumption, and total footprint.

The BCM2037 can be bundled with ZSound, a complete production-ready, qualified software package including starting applications, Bluetooth profiles, and protocol stack that facilitates time-to-market. This complete solution makes the BCM2037 an excellent choice for a wide variety of wireless audio applications.

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