



SINGLE-CHIP BLUETOOTH® WIRELESS AUDIO SOLUTION WITH INTEGRATED DSP

FEATURES

- Single-chip Bluetooth® 2.0 + EDR solution in 0.13 um CMOS
- Capable of supporting Bluetooth 2.1 features
- High-performance ARM7TDMI® processor
- On-chip SRAM and boot ROM
- Integrates a variety of peripherals including: USB, UART, SPI, I²S, GPIO, and button matrix scanner.
- Fully integrated switching regulator
- Integrated battery charger
- High-quality stereo codec with dual microphone paths
- OptimoDE signal processing engine (VLIW DSP)
- Low-power operation
- 146-pin FBGA RoHS lead-free package
- Full application Software Development Kit (SDK) support with Widcomm® BTE-Audio
- SBC, MP3, and AAC audio decoding support
- Support for echo cancellation and noise suppression

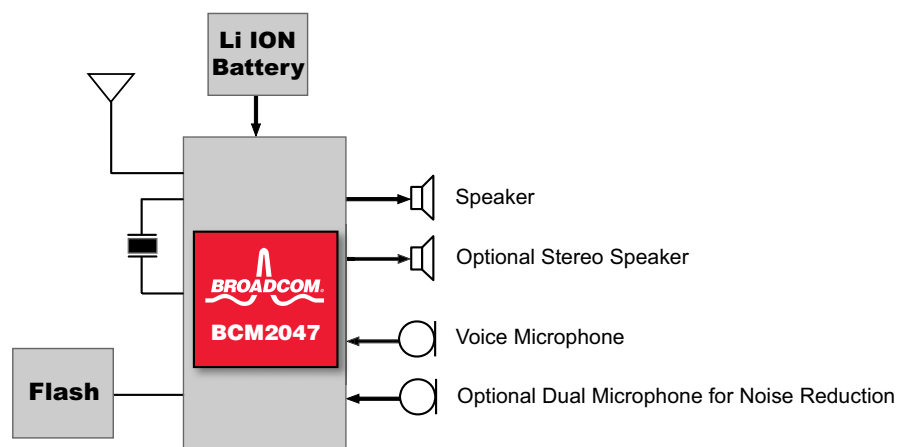
SUMMARY OF BENEFITS

- Bluetooth 2.0 + EDR compliant with easy migration to future specification
- Cost-optimized solution for headset applications
- Best-in-class RF performance for longest range and ease of system integration
 - Superior receiver sensitivity
 - Integrated balun
- Fullest featured power management unit
- SmartAudio algorithms for best audio quality

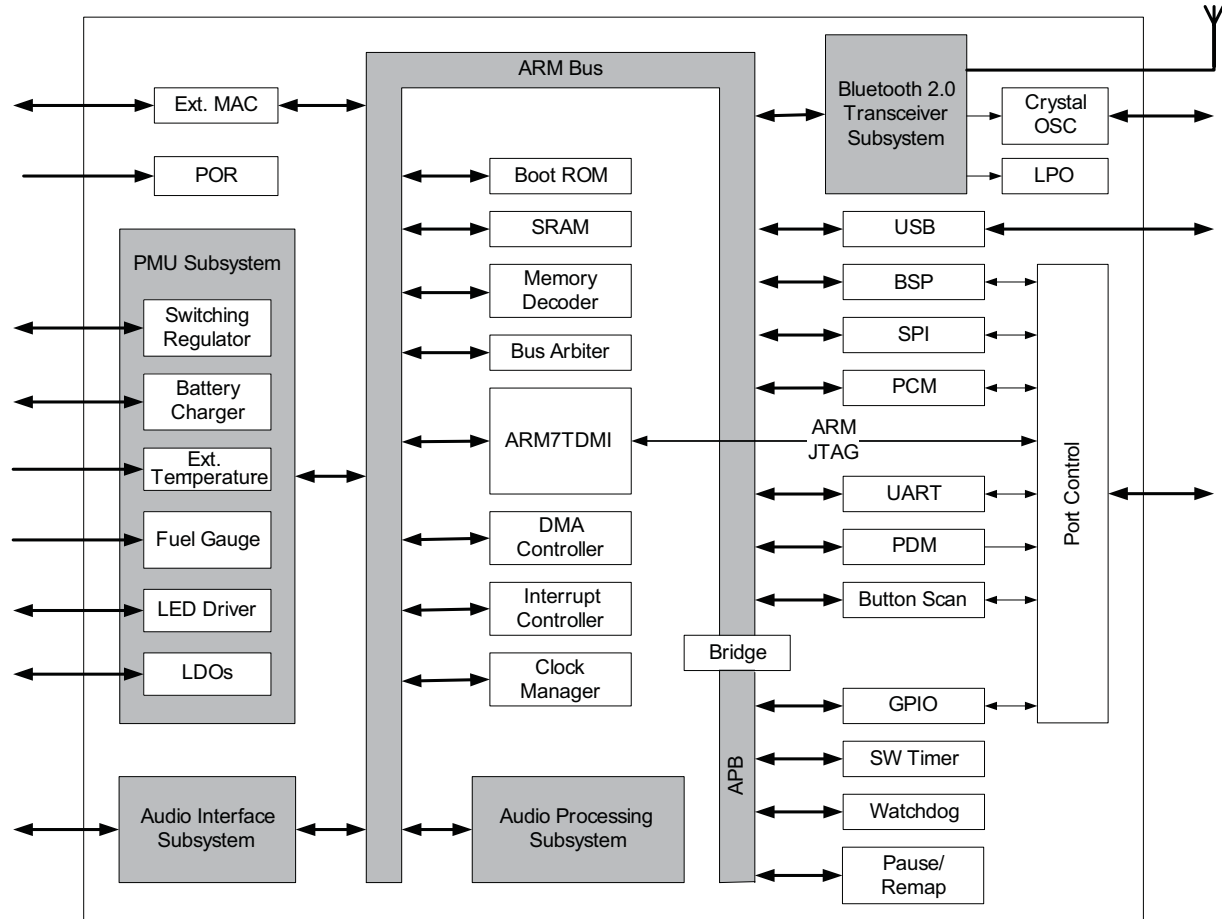
APPLICATIONS

- Mono headset
- Stereo headset with switching to voice (same or different source)
- Gaming headset with simultaneous stereo playback and voice
- Adapter for audio player headphone socket

Mono/Stereo Headset Applications



OVERVIEW



BCM2047 Block Diagram

The Broadcom BCM2047 is a monolithic 0.13 um, single-chip Bluetooth 2.0 + EDR wireless audio solution with integrated DSP. This solution has been designed to be firmware-upgradable to future specifications and is fully compliant and backward compatible with prior Bluetooth version 1.1- or 1.2-based systems. The BCM2047 offers the highest level of functional integration to deliver a cost-optimized bill of materials (BOM) and the most flexible platform for headset development.

The BCM2047 transceiver subsystem delivers a highly integrated radio with superior receiver sensitivity. The performance of this subsystem enables greater range and more robust link performance while being powered by a highly efficient switching regulator.

The BCM2047 power management subsystem offers the highest level of integration. This subsystem includes the switching regulator, battery charger, fuel gauge, LED driver, and support for external temperature

sensor. The BCM2047 also integrates independent LDO regulators for improved isolation and system performance.

The audio interface subsystem integrates a very high performance audio codec. The audio codec has a dual ADC and a dual DAC that support multiple sample rates while operating at low power. The architecture of this system is designed to maximize immunity to external noise and frequency plan adjusted to avoid on-chip noise sources. This highly integrated subsystem only requires one external capacitor.

The BCM2047 audio processing subsystem is powered by the ARM OptimoDE data engine. The OptimoDE utilizes a VLIW architecture that has been targeted at audio compression algorithms such as SBC, MP3, and AAC. The architecture is also optimized for the Broadcom family of SmartAudio algorithms for the best speech quality.

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BROADCOM CORPORATION
16215 Alton Parkway, P.O. Box 57013
Irvine, California 92619-7013

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Phone: 949-450-8700
Fax: 949-450-8710
E-mail: info@broadcom.com
Web: www.broadcom.com

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