

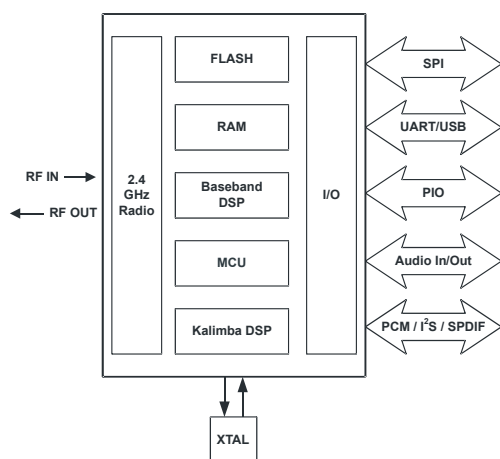
Features

- Fully Qualified Bluetooth v2.0+EDR system
- Kalimba DSP Co-Processor
- 16-bit Internal Stereo CODEC - 95dB SNR for DAC
- Low-Power 1.5V Operation, 1.8V to 3.6V I/O
- Integrated 1.5V and 1.8V Linear Regulators
- Integrated Switched-Mode Regulator
- Integrated Battery Charger
- USB and UART with Dual Port Bypass Mode to 4Mbps/s
- 16Mbits of Internal Flash Memory
- Multi-configurable I²S, PCM or SPDIF Interface
- Enhanced Audibility and Noise Cancellation
- 10 x 10 x 1.6mm 96-ball LFBGA, 0.8mm pitch
- Support for 802.11 Co-existence
- RF Plug-n-Go Package

General Description

The **BlueCore™5-Multimedia Plug-n-Go** is a single-chip radio and baseband IC for Bluetooth 2.4GHz systems.

BlueCore5-Multimedia Plug-n-Go contains 16Mbit internal Flash memory. When used with CSR Bluetooth stack, it provides a fully compliant Bluetooth system to v2.0+EDR of the specification for data and voice.



System Architecture

BlueCore™5-Multimedia Plug-n-Go

Single Chip Bluetooth® v2.0+EDR System

Advance Information Product Brief for

BC57F687A

June 2006

Applications

- Bluetooth-Enabled Automotive Wireless Gateways
- High-End Stereo Wireless Headsets
- High-End Mono Headsets
- Hands-Free Car Kits
- Wireless Speakers
- VOIP Handsets
- Analogue and USB Multimedia Dongles

BlueCore5-Multimedia Plug-n-Go contains the Kalimba DSP co-processor with double the MIPS and double the memory of BlueCore3-Multimedia Plug-n-Go, supporting enhanced audio applications.

BlueCore5-Multimedia Plug-n-Go is designed to reduce the number of external components required which ensures production costs are minimised.

The device incorporates auto-calibration and built-in self-test (BIST) routines to simplify development, type approval and production test.

To improve the performance of both Bluetooth and 802.11b/g co-located systems a wide range of co-existence features are available including a variety of hardware signalling: basic activity signalling and Intel WCS activity and channel signalling.

1 Device Details

Radio

- Common TX/RX terminal simplifies external matching; eliminates external antenna switch
- BIST minimises production test time
- Antenna matching and filtering within the IC

Transmitter

- +6dBm RF transmit power with level control from on-chip 6-bit DAC over a dynamic range >30dB
- Class 2 and Class 3 support without the need for an external power amplifier or TX/RX switch

Receiver

- Integrated channel filters
- Digital demodulator for improved sensitivity and co-channel rejection
- Real time digitised RSSI available on HCI interface
- Fast AGC for enhanced dynamic range

Synthesiser

- Fully integrated synthesiser requires no external VCO, varactor diode, resonator or loop filter
- Compatible with crystals between 8 and 32MHz (in multiples of 250kHz) or an external clock
- Accepts 7.68, 14.44, 15.36, 16.2, 16.8, 19.2, 19.44, 19.68, 19.8 and 38.4MHz TCXO frequencies for GSM and CDMA devices with sinusoidal or logic level signals

Baseband and Software

- Internal 16Mbit Flash
- Internal 48Kbyte RAM, allows full speed data transfer, mixed voice/data and full piconet support
- Logic for forward error correction, header error control, access code correlation, CRC, demodulation, encryption bit stream generation, whitening and transmit pulse shaping
- Transcoders for A-law, μ -law and linear voice from host and A-law, μ -law and CVSD voice over air

Physical Interfaces

- Serial peripheral interface up to 4Mbps/s data rate
- Optional I²C compatible interface (master/slave)
- Two UART interfaces with programmable data rate up to 3Mbps/s with an optional bypass mode
- Full speed USB v1.1 interface
- Bi-directional serial programmable audio interface supporting PCM, I²S and SPDIF formats
- Two LED drivers with faders

Kalimba DSP

- Very low power Kalimba DSP co-processor, 64MIPS, 24-bit fixed point core
- SBC decode takes approximately 4mW power consumption while streaming music
- Single cycle MAC; 24 x 24-bit multiply and 56-bit accumulator
- 32-bit instruction word, dual 24-bit data memory
- 24Kbyte (6Kword) program RAM, 36Kbyte + 48Kbyte (16Kword + 12Kword) data RAM
- 64words x 32-bit program memory cache when executing from Flash or SDRAM

Stereo Audio CODEC

- 16-bit internal stereo CODEC
- Dual ADC and DAC for stereo audio
- Integrated amplifiers for driving 16 Ω speakers; no need for external components
- Support for single-ended speaker termination and line output
- Integrated low-noise microphone bias
- Standard sample rates of 8kHz, 11.025kHz, 16kHz, 22.05kHz, 32kHz, 44.1kHz and 48kHz (DAC only)

Auxiliary Features

- User space on processor for customer applications
- Crystal oscillator with built-in digital trimming
- Power management includes digital shutdown and wake up commands with an integrated low power oscillator for ultra-low power Park/Sniff/Hold mode
- Clock request output to control external clock
- On-chip regulators: 1.5V output from 1.8V to 2.7V input and 1.8V output from 2.7V to 4.5V input
- On-chip high-efficiency switched-mode regulator; 1.8V output from 2.7V to 4.4V input
- Power-on-reset cell detects low supply voltage
- 10-bit ADC and 8-bit DAC available to applications
- On-chip charger for lithium ion/polymer batteries

Bluetooth Stack

CSR's Bluetooth Protocol Stack runs on the on-chip MCU in a variety of configurations:

- Standard HCI (UART or USB)
- Complete stack and application running on chip
- Audio CODEC and echo-noise suppression or customer-specific algorithms running on the DSP

2 Ordering Information

Interface Version	Package			Order Number
	Type	Size	Shipment Method	
UART and USB	96-Ball LFBGA	10 x 10 x 1.6mm, 0.8 pitch	Tape and reel	BC57F687A-INN-E4 ^(a)
AEC-Q100 part				
UART and USB	96-Ball LFBGA	10 x 10 x 1.6mm, 0.8 pitch	Tape and reel	BC57F687A-ANN-E4 ^(a)

^(a) Until BC57F687A reaches **Production** status order number for both parts is BC57F687A-ES-INN-E4.

Note:

All devices Lead free

Minimum Order Engineering Sample Quantity

2kpcs taped and reeled

To contact a CSR representative, send e-mail to sales@csr.com or go to www.csr.com/contacts.htm.

3 Document History

Revision	Date	History
a	2 JUNE 06	Original publication of this document.

BlueCore™5-Multimedia Plug-n-Go

Product Brief

bc05-pb-003Pa

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