

## Features

- Single-chip Bluetooth® mono headset solution
- Low power consumption: up to 12 hours talk time from a 120mAh battery
- Support for Secure Simple Pairing
- Proximity Pairing (headset initiated pairing)
- Best-in-class Bluetooth radio with 5.5dBm transmit power and -88dBm receive sensitivity
- Minimum external components
- Configurable mono headset software
- HFP v1.5 and HSP v1.1 support
- Low-power 1.8V operation
- Integrated switch-mode regulator
- Integrated battery charger with programmable current
- Integrated high-quality mono codec
- 56-lead 8 x 8 x 0.9mm, 0.5mm pitch QFN
- Green (RoHS compliant and no antimony or halogenated flame retardants)
- A complete BC6110 low-cost mono headset solution development kit is available, order code DK-BC-6110-1A

## General Description

BC6110™ is a low-cost fully featured ROM chip solution for mono headsets with low power consumption. It includes a Bluetooth radio, baseband, DAC/ADC, switch-mode power supply and battery charger in a compact QFN package for low-cost designs.

BC6110 supports the latest Bluetooth v2.1 + EDR specification which includes Secure Simple Pairing, greatly simplifying the pairing process, making it even easier for users to get up and running with a Bluetooth headset.

## BlueCore® BC6110™ Fully Qualified Single-chip Bluetooth® v2.1 + EDR System

Production Information

BC6110A14

Issue 2

## Applications

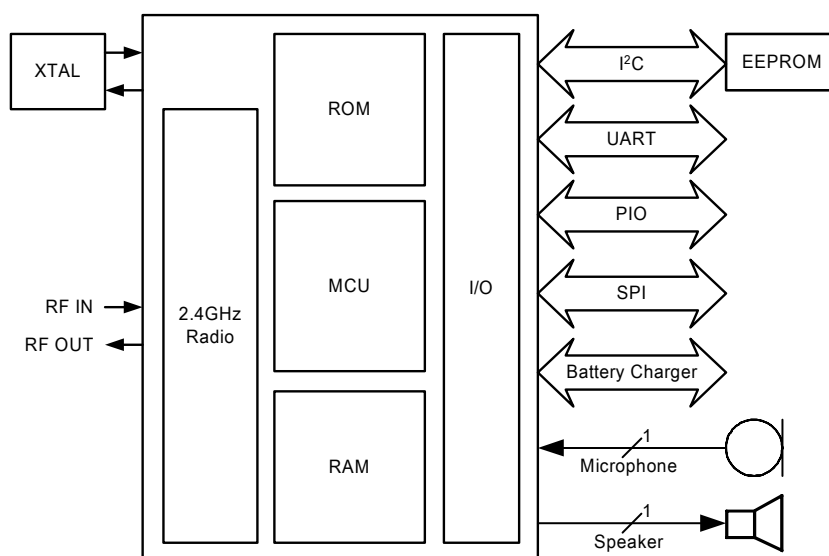
- Low-cost mono headset solution

The device incorporates auto-calibration and BIST routines to simplify development, type approval and production test.

BC6110 has been designed to reduce the number of external components required which ensures production costs are minimised.

All hardware and device firmware is fully qualified to the Bluetooth v2.1 + EDR specification (all mandatory features).

See *CSR Glossary* on [www.csrsupport.com](http://www.csrsupport.com).



# 1 Device Details

## Radio

- Common TX/RX terminal simplifies external matching; eliminates external antenna switch
- BIST minimises production test time. No external trimming is required in production
- Bluetooth v2.1 + EDR specification qualified

## Transmitter

- 5.5dBm 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

- Receiver sensitivity of -88dBm
- 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 8MHz to 32MHz

## Audio Codec

- 15-bit resolution, 8kHz sampling frequency
- Digital enhancements to add bass cut, side tone and treble boost
- Analogue enhancements to support single-ended speaker drive capability and reference availability

## Physical Interfaces

- Synchronous serial interface up to 4Mbaud for system debugging
- UART interface with programmable baud rate up to 3Mbaud with an optional bypass mode
- I<sup>2</sup>C compatible interface used to communicate with an external EEPROM which contains all of the device configuration (PS Keys)

## Auxiliary Features

- 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 linear regulator; 1.8V output from a 2.2 to 4.2V input, can also be used to generate microphone bias
- Power-on-reset cell detects low supply voltage
- Arbitrary power supply sequencing permitted
- Battery charger with programmable current (25 to 100mA) for Lithium Ion/Polymer battery
- LED intensity control for dedicated LED[1] and LED[0] outputs

## Baseband and Software

- Internal ROM
- 48KB internal RAM to support EDR. Allows full speed data transfer, mixed voice and data, and full Piconet operation
- 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,  $\mu$ -law and linear voice from host and A-law,  $\mu$ -law and CVSD voice over air
- Proximity Pairing (headset initiated pairing)

## Bluetooth Stack

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

- Embedded Bluetooth mono headset solution
- Standard HCI

## Package Option

- 8 x 8 x 0.9mm, 0.5mm pitch QFN

## 2 Ordering Information

Interface Version	Package			Order Number
	Type	Size	Shipment Method	
UART	QFN 56-lead (Pb free)	8 x 8 x 0.9mm, 0.5mm pitch	Tape and reel	BC6110A14-IQQA-R

### Note:

BC6110 is a ROM-based device where the product code has the form BC6110Axx. Axx is the specific ROM-variant, A14 is the ROM-variant for BC6110 Low-cost Mono Headset Solution.

Minimum order quantity is 2kpcs taped and reeled.

**Supply chain:** CSR's manufacturing policy is to multisource volume products. For further details, contact your local sales account manager or representative.

To contact a CSR representative, email [sales@csr.com](mailto:sales@csr.com) or go to [www.csr.com/contacts](http://www.csr.com/contacts)

## Document History

Revision	Date	Change Reason
1	02 JUN 09	Original publication of this document.
2	09 JUL 09	Proximity Pairing wording updated. Ordering Information Notes updated. Minor editorial changes. If you have any comments about this document, email <a href="mailto:comments@csr.com">comments@csr.com</a> giving the number, title and section with your feedback.

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