



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## Features

- Fully qualified Bluetooth® v4.1 system
- Full-speed Bluetooth operation with full piconet and scatternet support
- Class 1 Bluetooth power level supported
- High-sensitivity Bluetooth receiver
- On-chip SBC encoding
- On-chip balun
- Low-power selectable 1.2 to 3.6V I/O
- Integrated I/O and core regulators
- High-speed UART port (up to 4Mbps)
- PCM/I<sup>2</sup>S digital audio interface
- Support for IEEE 802.11 coexistence
- HFP v1.6 wide-band speech supported on-chip
- Optimised for use on low-cost PCBs
- 28-ball 2.57 x 3.21 x 0.6mm 0.5mm pitch WLCSP
- Green (RoHS compliant and no antimony or halogenated flame retardants)

## General Description

The CSR8811 WLCSP is a product from CSR's Connectivity Centre. It is a single-chip radio and baseband IC for Bluetooth 2.4GHz systems including EDR to 3Mbps/s and Bluetooth low energy.

CSR8811 WLCSP's dual-mode radio enables it to connect to the billions of Bluetooth products already on the market, as well as a new generation of Bluetooth low energy devices.

When used with CSR Synergy® Software and a CSR UniFi® wireless chip, CSR8811 WLCSP provides a system fully qualifiable to the Bluetooth v4.1 for faster file transfer.

This family of Bluetooth products includes:

- CSR8811 A12 for automotive applications

Products requiring a standalone Bluetooth low energy radio should use products of the CSR101x™ family.

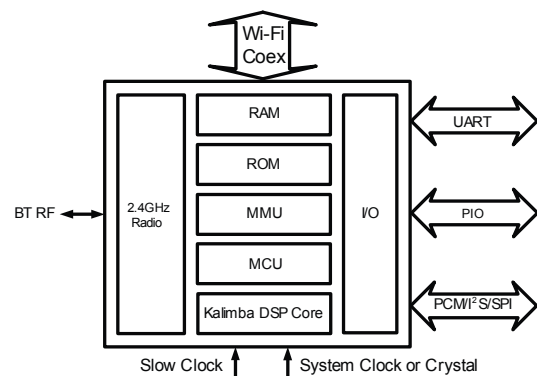
## BlueCore® CSR8811 WLCSP

### Bluetooth® v4.1 Specification Bluetooth Smart Ready

CSR8811A12

Production Information

Issue 1



## Applications

Consumer electronics devices, for example:

- Portable navigation devices
- Point of sale terminals
- Personal media players

CSR designed CSR8811 WLCSP to reduce PCB area and the number of external components:

- The high-power Class 1 Bluetooth transmitter removes the requirement for external amplification.
- The balun is integrated, which results in a single-ended 50Ω port that does not require additional matching components.
- Integrated LDOs, with minimum decoupling components required, allow the chip to be operated directly from a battery or regulated supply.
- No requirement for external inductors.

This ensures that production costs are minimised.

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

To improve the performance of both Bluetooth and IEEE 802.11b/g/n co-located systems a wide range of coexistence features are supported.

## Device Details

### Bluetooth low energy

- Dual-mode Bluetooth low energy radio
- Support for Bluetooth basic rate/EDR and Bluetooth low energy connections.
- Support for on-chip AES encryption
- Adaptive Bluetooth/Bluetooth low energy scheduler
- On-chip whitelist support

### Bluetooth Radio

- Integrated balun (50Ω impedance in TX and RX modes)
- No external trimming is required in production
- Bluetooth v4.1 specification compliant

### Bluetooth Transmitter

- 9dBm (typical) RF transmit power (basic rate) with level control from on-chip DAC
- Class 1, Class 2 and Class 3 support without need for external power amplifier or TX/RX switch
- DQPSK and 8DPSK

### Bluetooth Receiver

- -95dBm (typical)  $\pi/4$  DQPSK sensitivity
- 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
- Channel classification for AFH
- DQPSK and 8DPSK

### Baseband and Software

- Internal RAM enables full-speed data transfer, mixed voice and data, and full piconet operation, including all medium rate packet types
- Logic for forward error correction, header error control, access code correlation, CRC, demodulation, encryption bit stream generation, whitening and transmit pulse shaping. Includes support for eSCO and AFH
- Transcoders for A-law,  $\mu$ -law and linear voice from host and A-law,  $\mu$ -law and CVSD voice over air

### Bluetooth Stack

- CSR's Bluetooth Protocol Stack runs up to HCI on the on-chip MCU

### Synthesiser

- Fully integrated synthesiser requires no external VCO varactor diode, resonator or loop filter
- Compatible with external clock 19.2MHz to 40MHz
- Can be operated from external crystal

### Physical Interfaces

- UART interface with programmable baud rate up to 4Mbps
- BCSP, H4, H4DS and H5 support
- PCM interface/I<sup>2</sup>S interface
- Synchronous serial interface up to 4Mbps for system debugging

### Auxiliary Features

- Power management includes digital shutdown and wake up commands with an integrated low power oscillator for ultra low power Park/Sniff/Hold mode
- Auto Baud Rate setting, depending on host interface
- Integrated linear regulators:
  - 1.8V output from typical 2.5 to 4.8V (5.5V for short periods) input (load current 100mA)
  - Low dropout linear regulators producing internal supply voltages from 1.8V, and allowing operation directly from a battery
- Arbitrary sequencing of power supplies is permitted

### Package

- 28-ball 2.57 x 3.21 x 0.6mm, 0.5mm pitch WLCSP

#### Note:

This IC has the same package size as the previous CSR8811 WLCSP 0.5mm pitch versions and the CSR8810 WLCSP 0.5mm pitch ICs.

- Low-cost PCB with no laser via needed

# 1 Ordering Information

Device	Package			Order Number
	Type	Size	Shipment Method	
CSR8811 WLCSP	WLCSP-28-ball (Pb free)	2.57 x 3.21 x 0.6mm 0.5mm pitch	Tape and reel	CSR8811A12-ICXR-R

**Note:**

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

## 1.1 Contacts

General information	<a href="http://www.csr.com">www.csr.com</a>
Information on this product	<a href="mailto:sales@csr.com">sales@csr.com</a>
Customer support for this product	<a href="http://www.csrsupport.com">www.csrsupport.com</a>
Details of compliance and standards	<a href="mailto:product.compliance@csr.com">product.compliance@csr.com</a>
Help with this document	<a href="mailto:comments@csr.com">comments@csr.com</a>

## Document History

Revision	Date	Change Reason
1	12 MAR 15	Original publication of this document.

## Trademarks, Patents and Licences

Unless otherwise stated, words and logos marked with ™ or ® are trademarks registered or owned by CSR plc or its affiliates. Bluetooth® and the Bluetooth® logos are trademarks owned by Bluetooth® SIG, Inc. and licensed to CSR. Other products, services and names used in this document may have been trademarked by their respective owners.

The publication of this information does not imply that any license is granted under any patent or other rights owned by CSR plc and/or its affiliates.

CSR reserves the right to make technical changes to its products as part of its development programme.

While every care has been taken to ensure the accuracy of the contents of this document, CSR cannot accept responsibility for any errors.

Refer to [www.csrsupport.com](http://www.csrsupport.com) for compliance and conformance to standards information.