



**CHIPSIP**  
Technology Co., Ltd.

TEL: (886)-2-8227-1799  
FAX: (886)-2-8227-1798  
E-mail: Sales@ChipSiP.com  
Address: 8F, No.186, JianYi Road  
ChungHo City, Taipei, TAIWAN 235

## Datasheet

Rev. 1.0.d990928

**PRODUCT:** CWFA10x Series

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**DESCRIPTION:** 2.4GHz 802.11b/g/n Wi-Fi

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<b>Approved Signatures</b>	<b>鉅景科技</b> 股份有限公司
	<b>Contact Person:</b>

## Item Numbering

<u>Item Number</u>	<u>Description</u>
CWFA101	2.4GHz 802.11 b/g/n Wi-Fi, Shielding case
CWFA102	2.4GHz 802.11 b/g/n Wi-Fi + WAPI, Shielding case

When communication services are getting popular and cheaper, consumers desire to purchase mobile devices with more integrated functions and compact size. For this reason, it is always a highly challenge to R&D engineers on embedding more state-of-art futures and shrinking devices' sizes.

Generally, engineers try to employ the latest IC components with more embedded functions for future products, and, thus, the process technology of IC components is the key on embedding more functions onto an IC chip. However, not all circuits, especially RF circuits, can be shrunk by the latest process technology. RF circuits require more layout areas for higher yields, and are frequently produced on individual IC chips. As the influences, engineers have to spend more time on routing and debugging circuit boards. Also, the costs of circuit boards are increased dramatically.

For the solutions, ChipSiP introduces the highly integrated CWFA10x for 802.11b/g/n WLAN communication applications. The CWFA10x is a system-in-a-package (SiP) module, which is highly integrated several IC chips, filters and RLC components into a chip-like SMT package. For engineers, CWFA10x can simplify circuit designs and miniaturize circuit boards. Moreover, adopting CWFA10x can lower down BOM cost and shorten R&D time.

## **Key Features**

- **Embedded Low Noise Amplifier, harmonic filter, Power Amplifier and Bluetooth port for RF transceiving circuit**
- **Embedded Positive Slope Power Detector (PSPD)**
- **Single antenna port for both Bluetooth and Wi-Fi signals**
- **Pre-amplified RX signal for Wi-Fi**
- **Simultaneous receiving mode for both Bluetooth and Wi-Fi**
- **Embedded ultra small multilayer Band-Pass filter.**
- **Embedded 16 kbits I<sup>2</sup>C bus EEPROM at 100 kHz standard mode or 400 kHz fast mode for storing parameters**
- **Compatible with 802.11b/g/n in the 2.4 GHz license-free band**
- **802.11n single spatial stream 2.4 GHz up to 72.2 Mbps**
- **WFA, WPA, WPA2 and WAPI security features for 802.11**
- **SDIO interface for Host application**

- **802.11n with MPDU, SDU, PSMP, STBC, RIFS, L-SIG TXOP, immediate block acknowledgement and link adaptation using MCS feedback for improved rates, ranges and performances**

## **Applications**

- **802.11 b DSSS WLAN**
- **802.11 g/n OFDM WLAN**
- **Embedded applications with Bluetooth**
- **PDA's**
- **MP3 players**
- **Digital still cameras**
- **WLAN televisions**
- **WLAN refrigerators**
- **WLAN web cameras**
- **Voice over Wi-Fi phones**
- **Personal video recorders**
- **Personal gaming devices**
- **WLAN monitoring cameras**
- **Cellular and FMC handsets**
- **WLAN Security alarm systems**
- **Network digital video recorders**
- **Other portable devices**

## **General Descriptions**

The chip, CWFA10x, provides a complete 2.4 GHz WLAN solution in an ultra compact package. Also, this chip is designed for ease of use; all the critical matching and harmonic filters are embedded. In addition, the antenna port is set at 50  $\Omega$  for most of typical antennas. The chip, CWFA10x, shown in figure 1, is compatible with 802.11b/g/n WLAN and is highly integrated with RF front-end circuit, digitalized baseband circuit and a Bluetooth coexistence function.

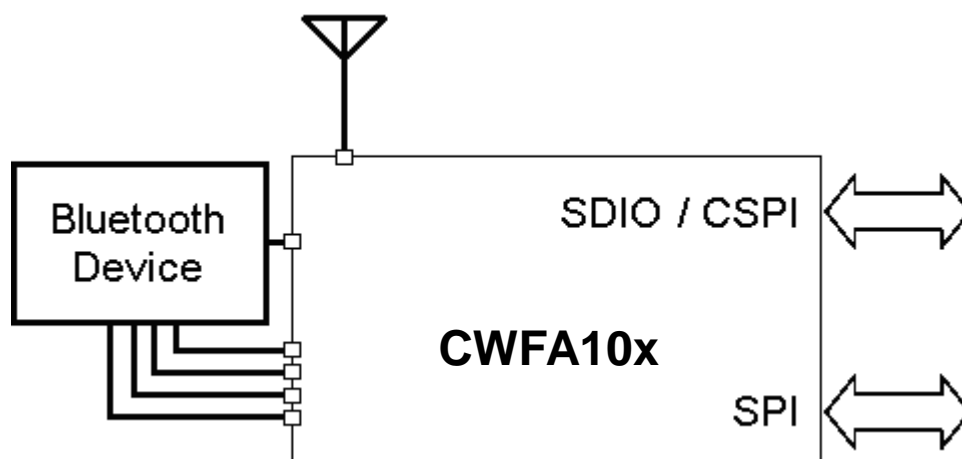


Figure 1: CWFA10x block diagram

Moreover, this chip is built up by the latest process-technology IC components for less power consumption and higher performance. Because of the smallest components are selected, the chip requires only 49 LGA pins. In addition, the chip size is limited at 9.0mm (length) x 9.0mm (width) x 1.2mm (height) for most of portable device designs.

For the RF front-end circuit, CWFA10x provides a single antenna port for both Wi-Fi and Bluetooth signals. An ultra-small two-way multilayer band pass filter is deployed at the antenna port for filtering out undesired frequencies and noises.

A two-way RF selector is set after BPF for selecting RF signals, Wi-Fi and Bluetooth. Therefore, only a single antenna is required for both Wi-Fi and Bluetooth. The CWFA10x includes a low noise amplifier (LNA) to increase the receive sensitivity of embedded solutions to improve receiving range or to overcome the insertion losses from circuit board.

Also, a power detector, filter and power amplifier is adopted for raising the power level of TX signal. The positive slope power detector, for TX signal, can detect 22 dB of dynamic power range and digitally control the power ramp; the typical raise or fall time of power ramp is 0.5 $\mu$  Second, fast enough for most of application.

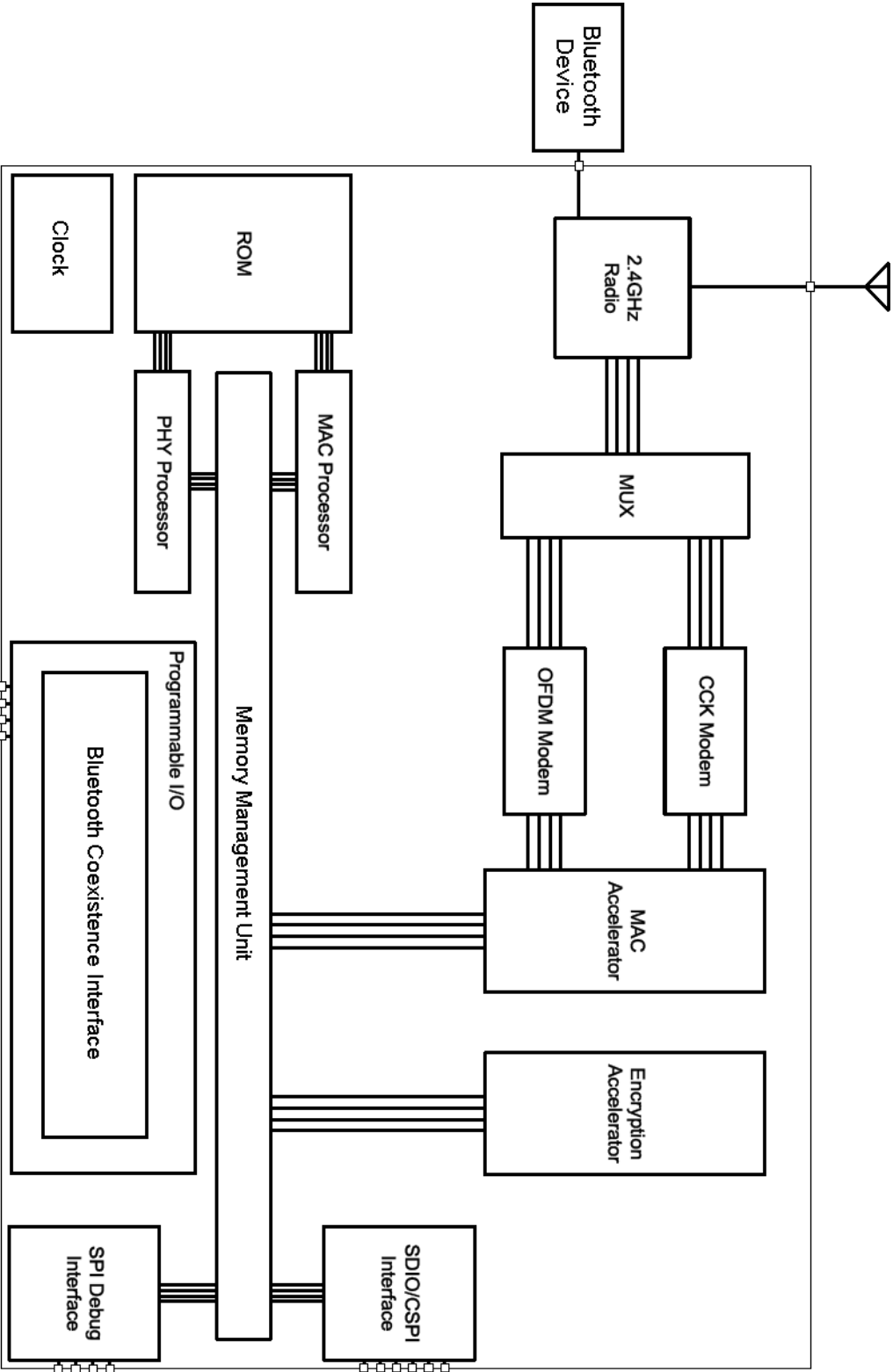
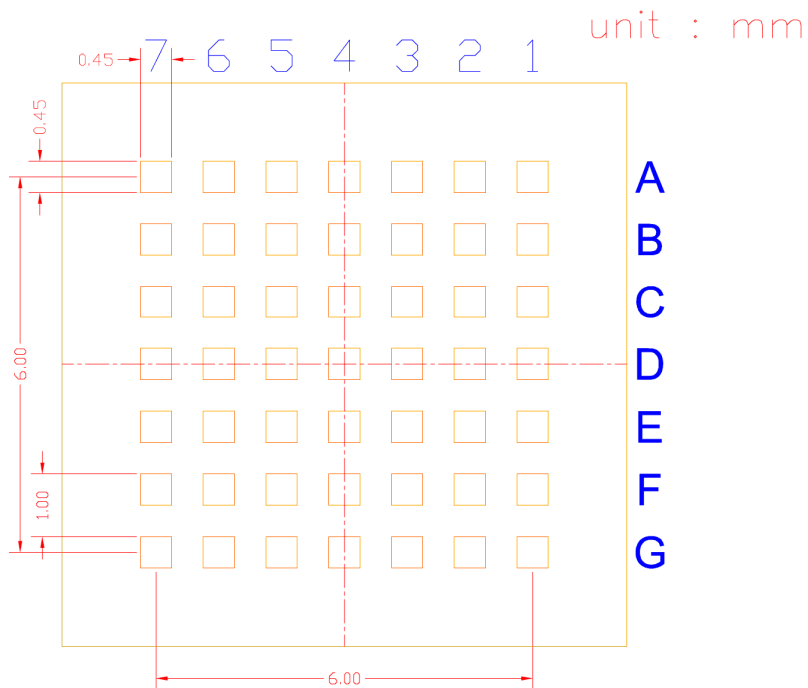
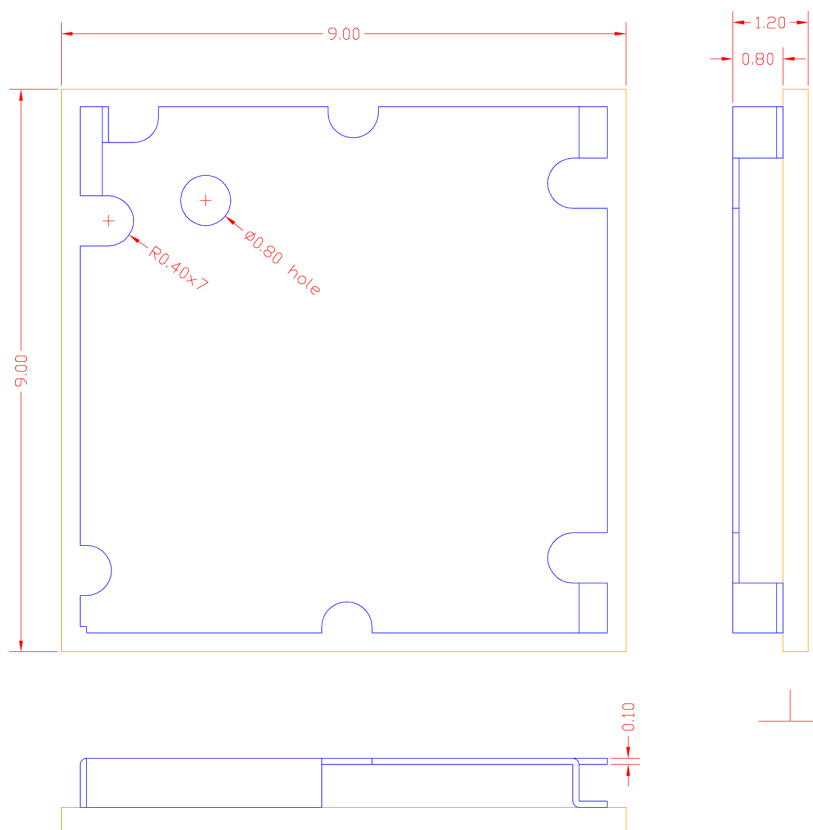


Figure 2: RF and baseband block diagram

### Package Dimension

Top view



Bottom view

## **Status Information**

The status of this data brochure is brief Information.

### **Information for designers concerning ChipSiP products in development.**

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