

# CYPRESS CYW43012

Single-Chip, Ultra-Low Power, IEEE 802.11n-compliant, IEEE 802.11ac-friendly Wi-Fi with Integrated Bluetooth® 5.0 for IoT Applications



## INTRODUCTION:

CYW43012 is a 28-nm, ultra-low power device that integrates a single-stream, dual-band IEEE 802.11n compliant, IEEE 802.11ac friendly Wi-Fi sub-system, a Bluetooth 5.0-compliant BT sub-system, and an advanced coexistence engine for maximum combined performance. The 28-nm architecture enables CYW43012 to offer best-in-class power consumption in active and power saving modes. 802.11ac friendliness enables CYW43012 to guarantee superior performance in terms of throughput and power consumption compared to 802.11n products when operating in 802.11ac networks.



## KEY WI-FI FEATURES:

- Full IEEE 802.11a/b/g/n compatibility with enhanced performance
- 802.11ac-friendly™, MCS8 (256-QAM) for 20 MHz channels
- Single spatial stream with PHY data rates of up to 72.2 Mbps with 802.11n (MCS7) and 78 Mbps with 802.11ac (MCS8)
- 20 MHz channels with optional SGI support for MCS0-MCS7
- IEEE 802.11ac explicit beamformee support
- TX and RX low-density parity check (LDPC) support for improved range and power efficiency
- On-chip power amplifier/low-noise amplifier for both 2.4 GHz and 5 GHz bands
- Embedded IPV6 network stack for use with WICED SDK and low-cost MCUs
- Open-source FMAC driver for Linux/Android hosts
- Supports standard SDIO v2.0 and SDIO v3.0 (up to SDR40 at 80 MHz and DDR40 at 40 MHz)

## KEY BLUETOOTH FEATURES:

- Bluetooth 5.0 compliant with LE 2 Mbps data rate for Bluetooth Low Energy
- Supports all optional Bluetooth 4.2 features – LE Secure Connections, LE Privacy 1.2, and LE Data Packet Length Extensions
- Bluetooth Class 1 or Class 2 transmitter operation
- Supports BDR (1 Mbps), EDR (2/3 Mbps), BLE (1/2 Mbps)
- Adaptive frequency hopping (AFH) for reducing radio frequency interference
- Host controller interface (HCI) using a high-speed UART interface as well as embedded Bluetooth host stack in ROM
- WICED SDK for low cost MCUs and WICED X APIs for Linux/Android hosts
- PCM/I2S interface for audio data
- Supports extended synchronous connections (eSCO) for enhanced voice quality by allowing retransmission of dropped packets
- Supports multiple simultaneous Advanced Audio Distribution Profiles (A2DP) for stereo sound

## COEXISTENCE:

- Built-in advanced coexistence engine for optimal Wi-Fi and Bluetooth performance
- 2-wire SECI for external Cypress Bluetooth/802.15.4 radios
- 2-wire WCI-2 for LTE radios
- 3-wire legacy coex interface for third-party Bluetooth/802.15.4 radios

## FEATURES

### ULTRA-LOW POWER 28NM DESIGN:

#### WI-FI

- Full IEEE 802.11a/b/g/n compatibility
- 802.11ac-friendly™
- Dual-band 2.4 GHz/5 GHz radio
- 20 MHz channels
- PHY data rates up to 78 Mbps
- 256-QAM for MCS8
- WPA/WPA2 and WPS support
- IPV6 network stack for WICED SDK

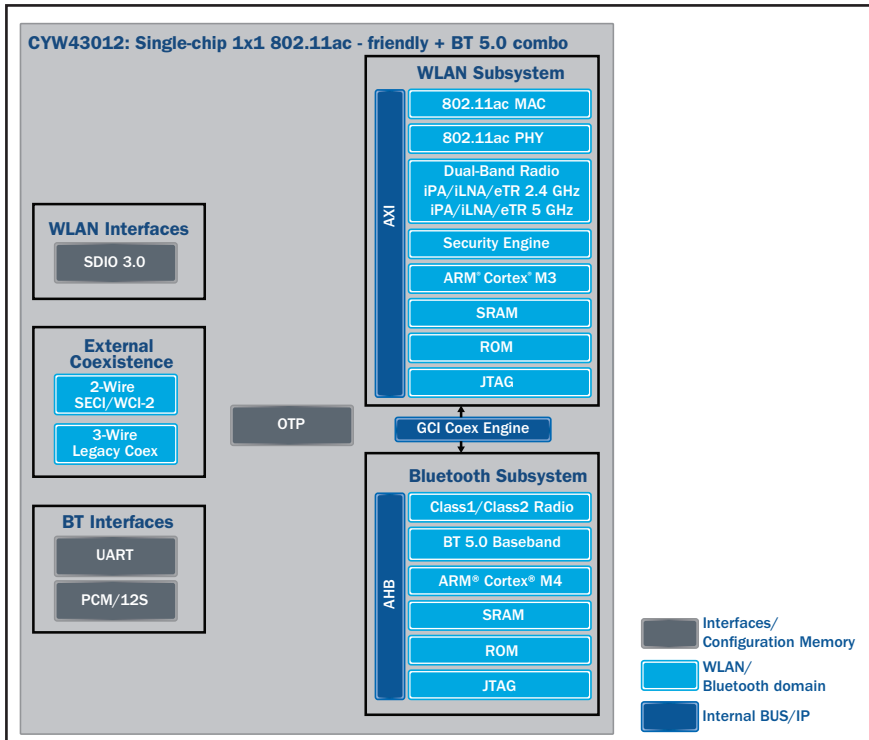
#### BLUETOOTH

- Bluetooth 5.0 compliant
- LE 2 Mbps data rate
- All Bluetooth 4.2 optional features
- Class 1/Class 2 transmitter
- PCM, I2S, and UART host interface
- Embedded Bluetooth host, link layer, and radio

#### COEXISTENCE

- Built-in advanced coexistence engine
- External 2-wire/3-wire interfaces

## CYW43012 BLOCK DIAGRAM



## PACKAGE

251-pin WLCSP package - available in certified partner modules

106-ball WLBGA package - coming soon

## APPLICATIONS

Battery powered IoT/embedded applications like:

IP Cameras | Wearables | Smart Home |

Audio | Enterprise IoT

## ORDERING INFORMATION

| Part Number        | Pin/Package  | Availability                          |
|--------------------|--|---------------------------------------|
| CYW43012C0WKWBGT   | 251-bump WLCSP package<br>(3.76 mm × 4.27 mm, 0.2mm pitch) | Sampling in certified partner modules |
| CYW43012TC0EKUBGTT | 106-ball WLBGA package<br>(3.76mm X 4.43mm, 0.35mm pitch)  | Coming Soon                           |



**GET STARTED NOW**

For more details, please contact us at:  
[www.cypress.com/products/wireless-connectivity](http://www.cypress.com/products/wireless-connectivity)

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