

# SmartConnect ATWILC3000

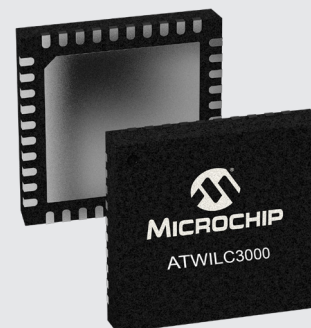
## Wireless Network Controller

### Summary

The SmartConnect ATWILC3000A is a single-chip IEEE 802.11 b/g/n RF/Baseband/MAC network controller and Bluetooth® 5.0 Low Energy (BLE) compliant module optimized for low-power mobile applications. It supports single stream 1 x 1 802.11n mode. The device features a fully integrated power amplifier, LNA, switch and power management. The ATWILC3000 delivers very-low power consumption while simultaneously providing high performance and a minimal bill of materials.

The ATWILC3000 wireless network controller utilizes highly optimized 802.11 Bluetooth coexistence protocols. It provides SPI and SDIO host interfaces. The only external clock source needed for the ATWILC3000 is a high-speed crystal or oscillator with a 26 MHz reference clock frequency and a 32.768 kHz clock for sleep operation. The device is available in QFN packaging.

ATWILC3000 is supported by various development environments such as Linux, Free RTOS and Baremetal. It can be easily integrated to a host system and the drivers are provided on the product web page.



### Key Features

#### IEEE 802.11

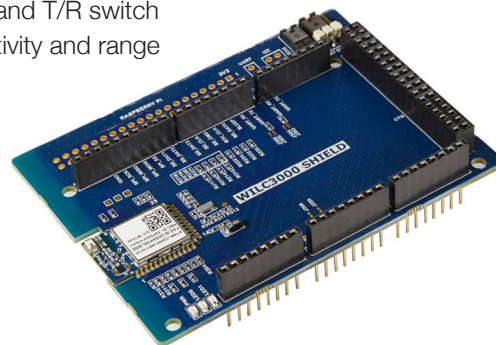
- IEEE 802.11 b/g/n RF/PHY/MAC SoC
- IEEE 802.11 b/g/n (1 x 1)
- Single spatial stream in 2.4 GHz ISM band
- Integrated PA and T/R switch
- Superior sensitivity and range via advanced PHY signal processing
- Advanced equalization and channel estimation
- Advanced carrier and timing synchronization
- Wi-Fi® Direct and Soft-AP support
- Supports IEEE 802.11 WEP, WPA, WPA2 and enterprises security
- Superior MAC throughput via hardware accelerated two-level A-MSDU/A-MPDU frame aggregation and block acknowledgement
- On-chip memory management engine to reduce host load
- SPI and SDIO host interfaces
- Operating temperature range of -40°C to +85°C

### Target Applications

- IoT applications
- Smart appliances
- Healthcare
- Home automation
- Consumer electronics
- Industrial automation
- Mobile applications

### Bluetooth

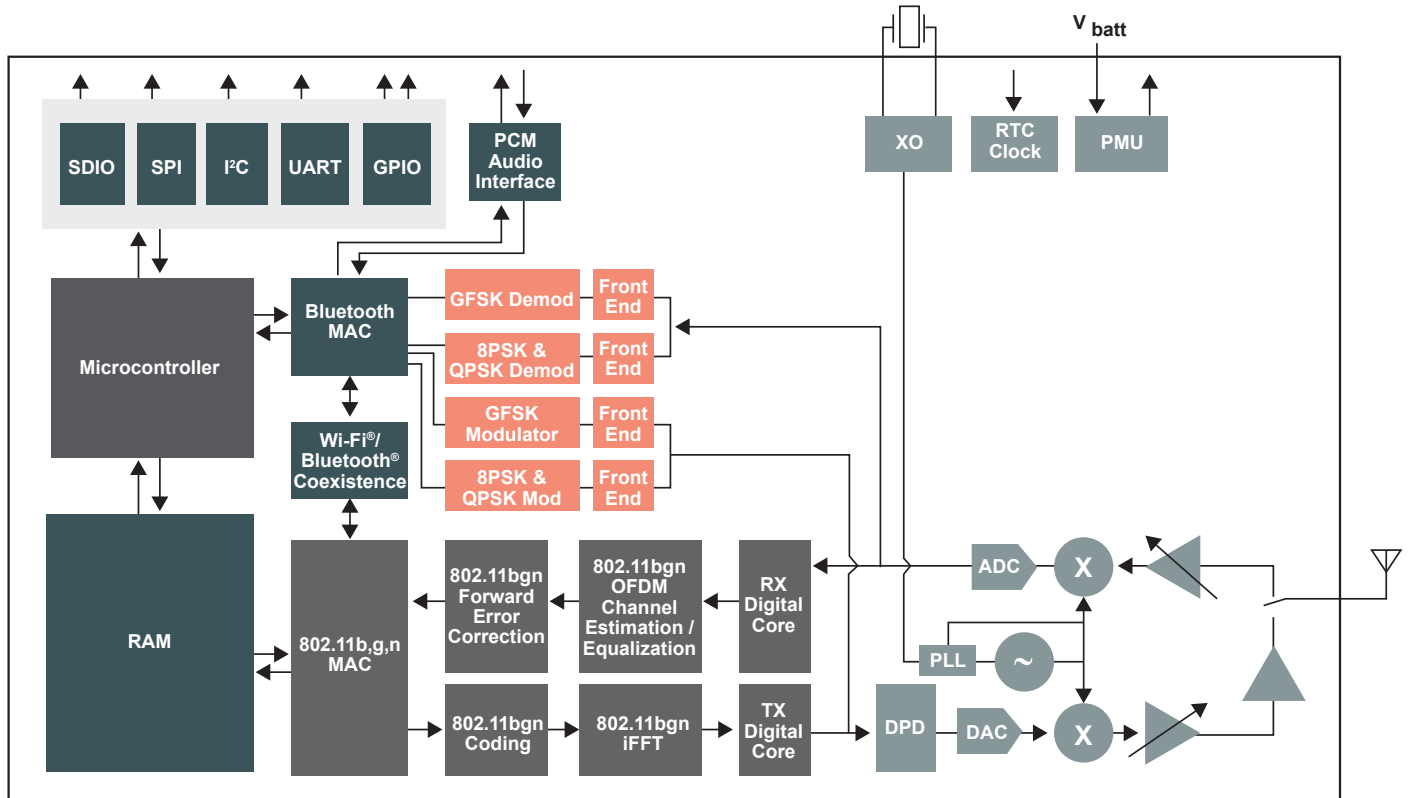
- Bluetooth 5.0
- High speed
- Bluetooth Low Energy (BLE)
- Adaptive frequency hopping
- Host Control Interface (HCI) via high-speed UART
- Integrated PA and T/R switch
- Superior sensitivity and range
- UART host



## Power Architecture and Consumption

The ATWILC3000 has multiple device states, depending on the state of the 802.11 and Bluetooth subsystems. It is possible for both subsystems to be active at the same time. To simplify the device power consumption breakdown, the following basic states—for which only one subsystem be active at a time—are defined as follows:

- Wi-Fi\_ON\_Transmit: Device is actively transmitting an 802.11 signal
- Wi-Fi\_ON\_Receive: Device is actively receiving an 802.11 signal
- BT\_ON\_Transmit: Device is actively transmitting a Bluetooth signal
- BT\_ON\_Receive: Device is actively receiving a Bluetooth signal
- Doze: Device is neither transmitting nor receiving (device state is retained)
- Power\_Down: Device is powered down with CHIP\_EN low and supplies connected



## Accelerating RF Design

To help designers accelerate development, the ATWILC3000A-MU is offered as a single chip, certified modules with integrated antenna and the development boards ATWILC3000-SHLD and ATWILC3000 SD are also available.

Ordering Codes Description	
ATWILC3000A-MU	Single-chip IEEE 802.11 b/g/n RF/Baseband/MAC network controller and Bluetooth 5.0
ATWILC3000-MR110CA	Fully certified ATWILC3000 module with chip antenna
ATWILC3000-SHLD	Evaluation kit, fully certified ATWILC3000 with chip antenna
ATWILC3000-SD	Fully certified evaluation Kit, connect to any AVR® or SMART MCU with minimal resources

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