

WFI32E01

Industrial-Strength Embedded Wi-Fi® MCU Module With optional Trust&Go



Summary

Microchip's highly integrated Wi-Fi MCU module, the WFI32E01, contains the PIC32MZW1 series Wi-Fi SoC, which is a 200 MHz high performance MCU with industrial leading Wi-Fi connectivity, rich peripheral options, and low power consumption. This not only provides a robust Wi-Fi connection, but also serves as a powerful MCU core for the entire IoT system. The WFI32E01PC/UC module variants feature the Trust&Go platform, which are pre-provisioned for cloud platforms like Google Cloud, Amazon AWS and Microsoft® Azure.

Example Applications

- IoT Applications
- Industrial Automation
- Wire Replacement
- Automotive Diagnostics Port
- Security Systems, CCTV
- Protocol Gateway/Bridging
- Industrial Wi-Fi Dongles
- Home Automation

Key Features

MCU Features

- 200 MHz, MIPS32-bit MCU
- 1 MB Embedded Flash
- 256 KB SRAM for Program and Data
- 64 KB RAM for Data Buffer
- Full-speed USB
- CAN and CAN-FD
- 10/100 MAC
- 12-bit dual ADCs
- 6 CVD Touch inputs
- 3xUART, 2xI2C, 2xSPI
- 37 GPIOs

Wi-Fi and Networking Features

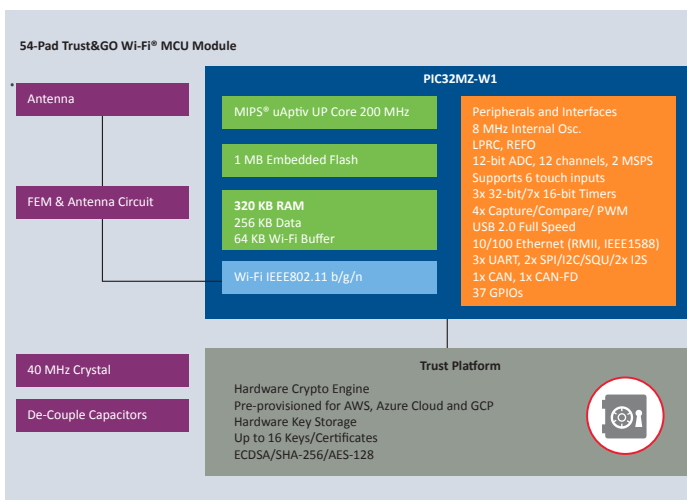
- Single-band 2.4 GHz 802.11b/g/n
- Wi-Fi Security protocols supported: WPA/WPA2/WPA3, TLS, SSL, Enterprise Security
- Support for AP, STA, SoftAP, Wi-Fi Direct modes
- Optional Full Featured Hardware Crypto Accelerator
- Antenna Type: PCB/uFL

Other Features

- Certifications: FCC, CE, IC (China, Taiwan, Japan, Korea Planned)
- 54-PIN SMD, 24.5 x 20.5 x 2.5 mm
- 3.0V to 3.63V, -40°C to +85°C
- Extreme deep sleep current consumption down to 0.7uA

Trust&GO Feature

Implement secure authentication for your Internet of Things (IoT) design. The Trust&GO platform inside the WFI32E01PC and WFI32E01UC is designed to streamline the process of enabling network authentication using hardware secure element technology, which is pre-configured and pre-provisioned for Cloud Authentication.



Development Tools

The PIC32 WFI32 Curiosity Board to help the customer fully evaluate and quickly prototype the features of WFI32E01 module. The board has an In-Circuit Serial Programming Header (ICSP) for adding an external debugger such as MPLAB® SNAP, PICKit™ 4, or MPLAB ICD 4.

Microchip provides another development board, the WFI32-IoT Board, which is a compact and easy-to-use development board with on board temperature sensor and light sensor. It provides the most simple and effective way to connect your embedded application to cloud IoT servers such as AWS and Azure. The board also includes an on-board debugger, PICKit On-board 4 (PKOB4), and requires no external programmer or debugger.

WFI32E01's software development tools include Microchip's MPLAB X Integrated Development Environment (IDE) and MPLAB Harmony v3. All WLAN software libraries, MCU peripheral drivers, complementary device drivers and rich application examples are located in Harmony v3, where users can easily integrate the needed functions into their applications. Featured demonstration and software examples include:

1. Secure AWS Cloud connection
2. Secure Azure Cloud connection
3. Connect to any IoT cloud servers with AT-command
4. Ethernet to Wi-Fi Bridging Software
5. CAN Bus to Wi-Fi Bridging Software

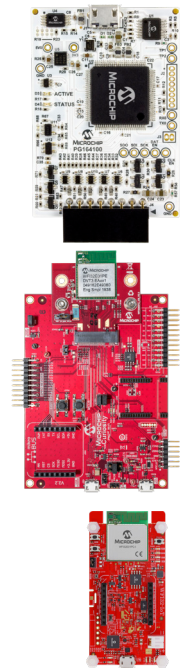


Table of Products

CPN	Trust&GO	Antenna Type	Regulatory
WFI32E01PE-I	No	PCB	FCC, RED, IC, SRRC, Taiwan, Japan, Korea, WFA
WFI32E01UE-I	No	U.FL connector	FCC, RED, IC
WFI32E01PC-I	Yes	PCB	FCC, RED, IC, SRRC, Taiwan, Japan, Korea, WFA
WFI32E01UC-I	Yes	U.FL connector	FCC, RED, IC

Wi-Fi MCU with Robust Performance

Robust Wi-Fi software: Microchip has conducted intensive testing on the interoperability of the WFI32 module to ensure it can communicate properly with other Wi-Fi products such as home Wi-Fi routers in the market.

Robust RF performance: The WFI32 has stable RF power over changes in environmental temperature. Additionally, it has excellent capability in Adjacent Channel Rejection, making it a reliable RF receiver even in the presence of high-level interfering signals in adjacent channels. In summary, even in environments with high noise and extreme temperatures, the WFI32 can still maintain a stable and robust Wi-Fi connection.

Robust MCU performance: The robustness, reliability, and safety of end-products are becoming increasingly important. As a 32-bit MCU, the WFI32 supports IEC60730, the functional safety standard used in appliances such as washing machines, ovens, and microwaves. IEC 60730 defines standards that address the safety of electronic controls in appliances and contains effective test and diagnostic methods that ensure manufacturers have designed their products to operate safely. Currently it is mandatory for appliances sold in Europe and widespread adoption is likely.

A Complete Solution for Faster Time to Market

System integration can be difficult due to the need to develop drivers and circuits for chips from multiple vendors. And it is difficult to receive system level help from vendors as their expertise is in their products. With a diverse product portfolio, Microchip can provide a total solution by offering the key electronic components needed in the design. This leads to a simplified IoT system design when using the WFI32E01 module with Microchip's other market leading components such as Ethernet PHY, CAN transceivers, sensors, and other BLE, LoRa or 802.15.4 radios. Microchip's system solution provides ready-to-use software drivers and hardware reference designs, significantly reducing the project risks and enables getting market faster.

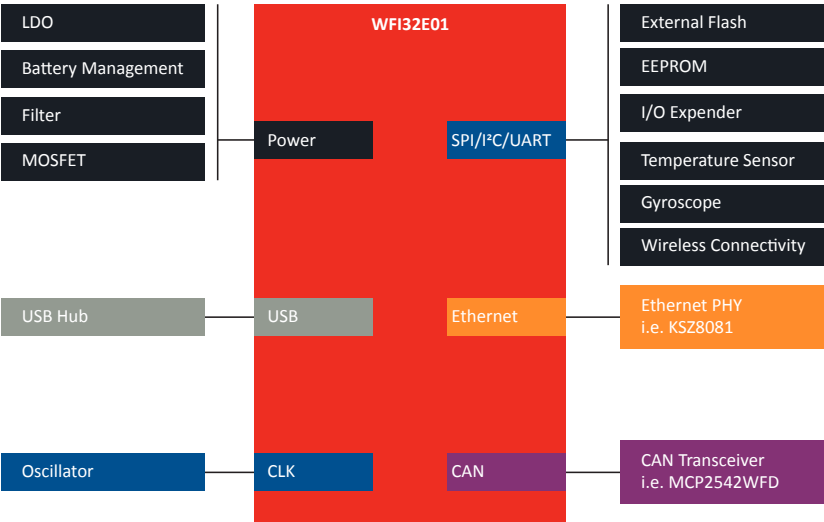


Figure 1: Possible Microchip products that can be used together with WFI32W01