

RISC-V CONTROLLER

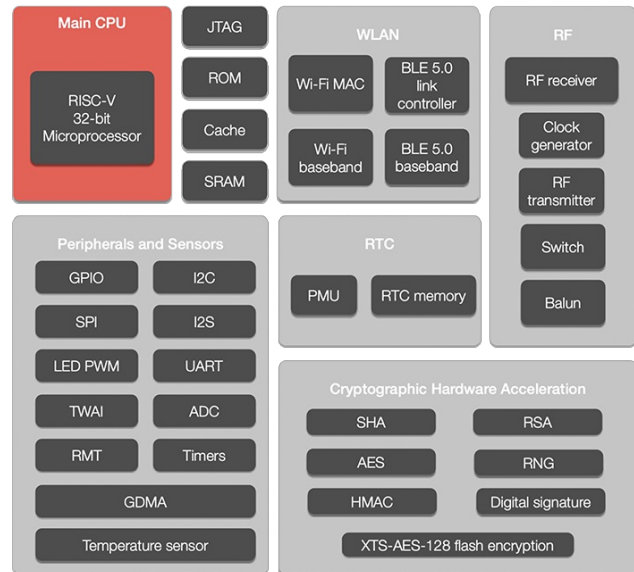
Made in China: 32-bit security MCU with CAN

Espressif (China) has launched the Risc-V-based MCU (micro-controller unit) featuring WLAN and Bluetooth connectivity. The ESP32-C3 chip comes with a CAN module on chip.

Located in Shanghai, the Chinese chipmaker has developed the ESP32 series of Risc-V-based micro-controllers. The version C3 provides wireless connectivity combined with security features. The product is intended for IoT (Internet of Things) applications. It comes with multiple-wired interfaces including CAN. However, the CAN module is named TWAI (two-wire automotive interface). This is confusing. The implemented protocol controller complies with ISO 11898-1, but does not support the optional CAN FD protocol. In a [Github forum](#), some contributors guess that the Chinese company does not want to pay license royalties and have given another name to the CAN module. But since 2015, there are no patents on the Classical CAN protocol; and no intellectual property right protects the name CAN (Controller Area Network).

The launched single-core 160-MHz MCU comes with a 400-KiB SRAM. It comprises an integrated 2,4-GHz WLAN interface and a Bluetooth LE 5.0 port. The chip has 22 programmable GPIOs (general-purpose input/output channels) and several interfaces (SPI, UART, I²C, I²S, and PWM).

The 1-Mbit/s CAN interface supports the normal frame format (11-bit ID) and extended frame format (29-bit ID). Listen-only mode as well as self-test mode are configurable. In these modes received data and remote frames are not acknowledged. The CAN module features a 64-byte FIFO acceptance filter. Error counters are readable and the error interrupt threshold is configurable. Other special functions include error-code and arbitration-lost capturing.



The TWAI module is a Classical CAN protocol engine not supporting the CAN FD protocol (Source: Espressif)

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