

PAN9520

Embedded Wi-Fi Module



[OVERVIEW]

The PAN9520 is a 2.4 GHz 802.11 b/g/n embedded Wi-Fi module based on Espressif's ESP32-S2 that includes the powerful Xtensa® 32-bit LX7 CPU. An integrated chip antenna and QSPI memory enable the module to be used in a variety of stand-alone or host-controlled applications. The integrated crystal ensures connection performance over full temperature range and lifetime. Although the PAN9520 is one of the smallest modules on the market, this offers a rich set of peripherals like full-speed USB OTG, SPI, UART, I²C, and many more.

The PAN9520 combines a high-performance CPU, high-sensitivity wireless radio, baseband (BB) processor, Medium Access Controller (MAC), encryption unit, ROM bootloader, chip-internal SRAM, and module-internal QSPI flash and PSRAM. Features as CCMP, TKIP, WAPI, WEP, BIP, and an AES accelerator enable the usage of secure data connections.

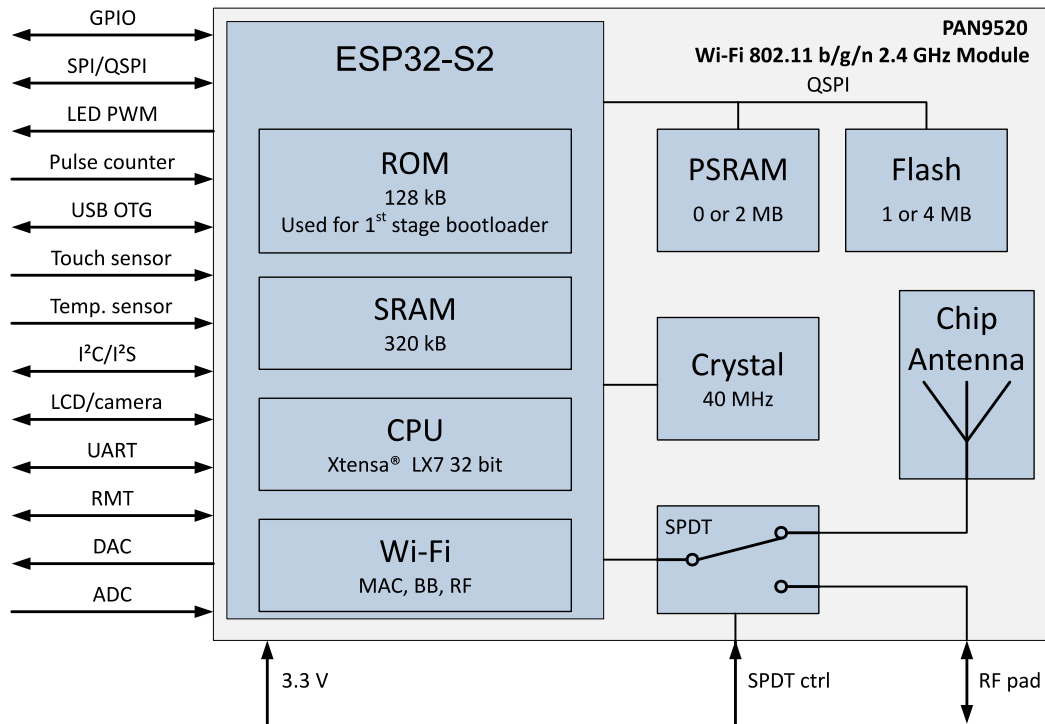
Parallel support of access point and station mode allows easy setup of simultaneous Wi-Fi connections from the module to smart devices and home network routers.

With the Espressif Integrated Development Framework (ESP-IDF), software can be developed for a wide range of applications. At the same time, a huge number of software examples can be used as starting point for the development.

[FEATURES]

- Embedded 2.4 GHz Wi-Fi 802.11 b/g/n module
- Xtensa single-core 32-bit LX7 microprocessor, up to 240 MHz
- Chip internal 128 kB ROM, 320 kB SRAM, and 16 kB low power SRAM
- Integrated QSPI Flash and PSRAM (a variety of memory densities are available)
- Ultra-Low Power (ULP) co-processor usable in deep sleep mode
- All security features required for WPA2 and WPA3 personal
- Espressif Integrated Development Framework (ESP-IDF) with a multitude of examples available for software development
- Supports 20 MHz and 40 MHz bandwidths in 2.4 GHz band with data rates up to 150 Mbps
- Simultaneous support for Infrastructure Station, SoftAP, and Promiscuous modes
- 802.11mc Fine Time Measurement (FTM)
- 36x programmable GPIOs with a rich set of alternative functionalities

[BLOCK DIAGRAM]



[TECHNICAL CHARACTERISTICS]

- Surface Mount Type (SMT): 24 mm × 13 mm × 3.1 mm
- Tx power: up to 19.5 dBm at IEEE 802.11b 1 Mbps
- Rx sensitivity: -97 dBm at IEEE 802.11b 1 Mbps
- Power supply 3 V to 3.6 V
- Current consumption: 210 mA Tx (average at 11b, 1 Mbps), 76 mA Rx (40 MHz channel), 310 mA Tx peak
- Deep sleep mode: <100 μA typical power consumption (RTC timer only and V_{DD_SPI} disconnected)
- Wide temperature range from -40 °C to 85 °C