ESP8266 ESP-12S Wifi Module

Ai Thinker ESP-12S ESP8266 Serial WiFi Module has a highly competitive package size and ultra-low power technology. ESP-12S can be widely used in a variety of networking, for home automation, industrial wireless control, baby monitors, wearable electronic products, wireless location sensing devices, and wireless positioning system signals.

The core processor ESP8266 integrates the industry-leading Tensilica L106 ultra-low-power 32-bit micro MCU in a small package with 16-bit Lite mode, clocked at Supports 80 MHz and 160 MHz, supports RTOS, and integrates Wi-Fi MAC/BB/RF/PA/LNA.

ESP-12S is packaged in SMD, through the standard SMT equipment to achieve rapid production of products, to provide customers with high reliability of the connection, especially for automation, large-scale, low-cost modern production methods, It's suitable for all kinds of Internet of things hardware terminal occasions.

FEATURES:

- The smallest 802.11b/g/n Wi-Fi SOC module
- Low power 32-bit CPU, can also serve as the application processor
- Up to 160MHz clock speed
- Built-in 10bit high precision ADC
- Supports UART/GPIO/IIC/PWM/ADC

- SMD-16 package for easy welding

- Integrated Wi-Fi MAC/BB/RF/PA/LNA

- Support multiple sleep patterns. Deep sleep current as low as 20uA

- UART baud rate up to 4Mbps

- Embedded LWIP protocol stack

- Supports STA/AP/STA + AP operation mode

- Support Smart Config/AirKiss technology

- Supports remote firmware upgrade (FOTA)

- General AT commands can be used quickly

- Support for the two development, integration of windows, Linux development environment

SPECIFICATIONS:

- Module Model: ESP-12F

- Package/Case: SMD22

- Antenna Type: PCB

- Power Supply Range: Voltage 3.0V ~ 3.6V˙Typical 3.3V˙ Current >500mA

- Transmit Power: 802.11b: 16±2 dBm (@11Mbps)

  802.11g: 14±2 dBm (@54Mbps)

  802.11n: 13±2 dBm (@HT20, MCS7)

- Receiving Sensitivity: 54 Mbps (3/4 64-QAM): -70dBm

 6 Mbps (1/2 BPSK): -88dBm

 CCK, 1 Mbps: -90dBm

  CCK, 11 Mbps: -85dBm

HT20, MCS7 (65 Mbps, 72.2 Mbps): -67dBm

- UART Baudrate: Support 300 ~ 4608000 bps 'Default 115200 bps

- Operating Temperature (°C): -20 °C to 85 °C

- Frequency Range: 2412 ~ 2484MHz

- Operating Current: 80mA

- Operating Voltage: 3.0-3.6V

- Security: WEP/WPA-PSK/WPA2-PSK

- IO Port: 9

- Interface: UART/GPIO/ADC/PWM

- Length (mm): 24

- Width (mm): 16

- Height(mm): 3

- Weight (gm): 3

SCHEMATIC DIAGRAM:
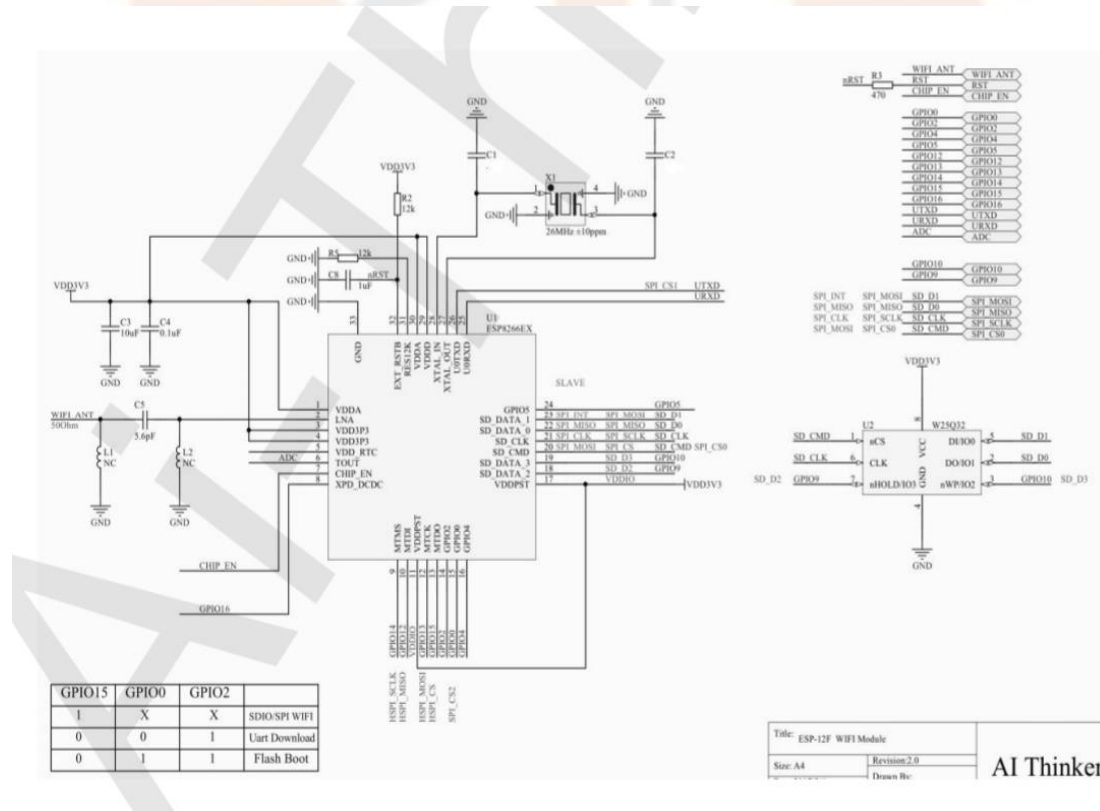
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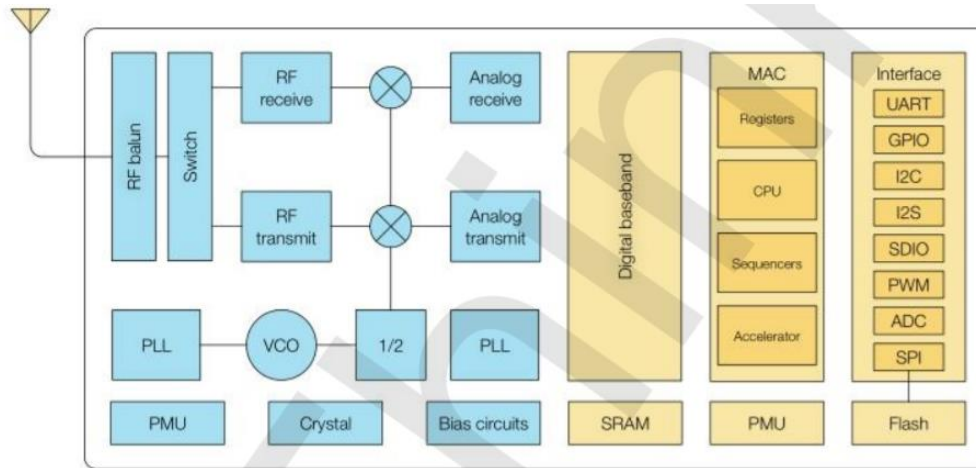
- The ESP-12S WiFi module was developed by Ai-Thinker Technology. The core processor ESP8266 integrates the industry-leading Tensilica L106 ultra-low-power 32-bit micro MCU in a small package with 16-bit Lite mode, clocked at Supports 80 MHz and 160 MHz, supports RTOS, and integrates Wi-Fi MAC/BB/RF/PA/LNA.

- The ESP-12S WiFi module supports the standard IEEE802.11 b/g/n protocol, a complete TCP/IP protocol stack. Users can use this module to add networking capabilities to existing devices or to build separate network controllers.

- The ESP8266 is a high-performance wireless SOC that offers maximum utility at the lowest cost and unlimited possibilities for embedding WiFi functionality into other systems

- The ESP8266 is a complete and self-contained WiFi network solution that can operate independently or as a slave running on other host MCUs. The ESP8266 is capable of booting directly from an external flash memory when it is powered by an application and is the only application processor in the device. The built-in cache helps improve system performance and reduce memory requirements.

- In another case, the ESP8266 is responsible for wireless Internet access. When it comes to the task of the WiFi adapter, it can be added to any micro controller-based design. The connection is simple and easy, just by SPI / SDIO interface or I2C / UART port.

- The ESP8266's powerful on-chip processing and storage capabilities allow it to integrate sensors and other application-specific devices through the GPIO port, minimizing system resources during minimal up-front development and operation.

PIN FUNCTION:

Pin No	Pin Name	Description
1	RST	Reset pin, Active low
2	ADC	AD conversion, input voltage range 0~1V, the value range is 0~1024
3	EN	Chip enabled pin, Active high
4	IO16	Connect with RST pin to wake up deep sleep
5	IO14	GPIO14; HSPI_CLK
6	IO12	GPIO12; HSPI_MISO
7	IO13	GPIO13; HSPI_MOSI; UART0_CTS
8	VCC	Module power supply pin, voltage 3.0~3.6V
9	GND	Ground
10	IO15	GPIO15; MTD0; HSPICS; UART0_RTS
11	IO2	GPIO2; UART1_TXD
12	IO0	GPIO0; HSPI_MISO; I2SI_DATA
13	IO4	GPIO4
14	IO5	GPIO5; IR_R
15	RXD	UART_RXD; GPIO3
16	TXD	UART0_TXD; GPIO1

APPLICATION:

- Weather station
- IoT applications
- Home appliances
- Toys and Gaming applications
- Wireless control systems
- Home automation
- Security ID tags

DIMENSION: