



WiFi Module - ESP8266-12



By

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DESCRIPTION

The ESP8266 WiFi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware, meaning, you can simply hook this up to your Arduino device and get about as much WiFi-ability as a WiFi Shield offers (and that's just out of the box)! The ESP8266 module is an extremely cost effective board with a huge, and ever growing, community.

This module has a powerful enough on-board processing and storage capability that allows it to be integrated with the sensors and other application specific devices through its GPIOs with minimal development up-front and minimal loading during runtime. Its high degree of on-chip integration allows for minimal external circuitry, including the front-end module, is designed to occupy minimal PCB area. The ESP8266 supports APSD for VoIP applications and Bluetooth co-existence interfaces, it contains a self-calibrated RF allowing it to work under all operating conditions, and requires no external RF parts.

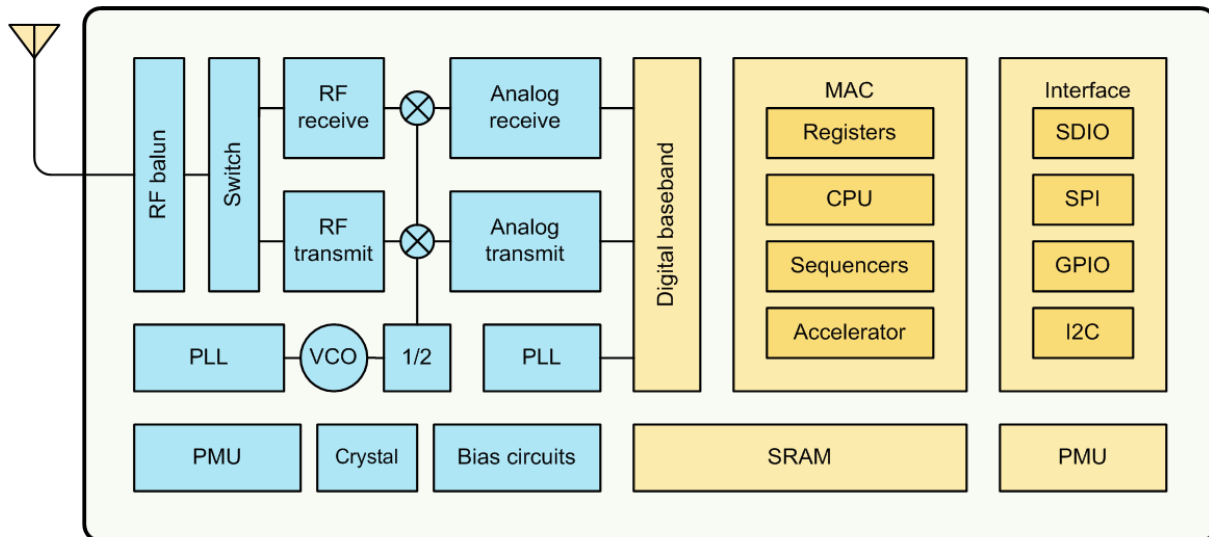


Figure 1:ESP8266EX Block Diagram

FEATURES

- support wireless 802.11 b/g/n standard
- support the STA/AP/STA + AP three work modes
- support rich Socket the AT command
- support UART/GPIO data communication interface
- support Smart Link intelligent networking
- support the STA/AP/STA + AP three work modes
- built-in 32-bit MCU and can be applied as processor
- low power consumption, suitable for battery-powered applications
- Single 3.3 V power supply

PINS OUT

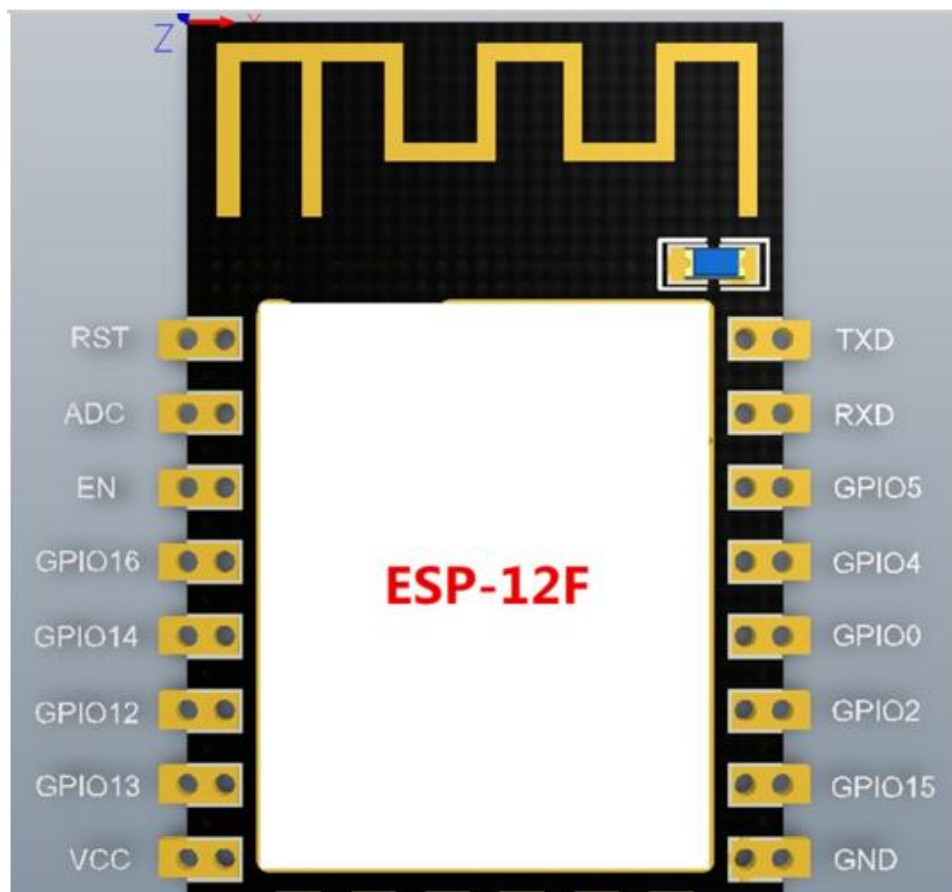


Figure 2: pins out

PINS CONNECTION

Microcontroller(Atmega32,TivaC,Arduino UNO)	ESP8266-12
3.3v (external power supply is recommended)	VCC & EN & GPIO2 & GPIO0
GND	GND & GPIO15
TX	PIN(16) RX
RX	PIN(17) TX

Table 1: pins connection

AT COMMANDS

Function	AT Command	Response
Working	AT	OK
Restart	AT+RST	OK [System Ready, Vendor:www.ai-thinker.com]
Firmware	AT+GMR	AT+GMR 0018000902 OK
List Access Points	AT+CWLAP	AT+CWLAP +CWLAP:(4,"RocheFortSurLac",-38,"70:62:b8:6f:6d:58",1) +CWLAP:(4,"LiliPad2.4",-83,"f8:7b:8c:1e:7c:6d",1) OK
Join Access Point	AT+CWJAP? AT+CWJAP="SSID","Passw	Query AT+CWJAP? +CWJAP:"RocheFortSurLac" OK
Quit Access Point	AT+CWQ AP=?	Query OK
Get IP Address	AT+CIFSR	AT+CIFSR 192.168.0.105 OK
Set Parameters of	AT+ CWSAP? AT+ CWSAP= <ssid>,<pwd>,<chl>, <ecn>	Query ssid, pwd chl = channel, ecn = encryption
WiFi Mode	AT+CWMODE? AT+CWMODE DE=1	Query STA AP BOTH
Set up TCP or UDP connection	AT+CIPSTART=? (CIPMUX=0) AT+CIPSTART = <type>,<addr>,<port> (CIPMUX=1)	Query id = 0-4, type = TCP/UDP, addr = IP address, port= port
TCP/UDP Connections	AT+ CIPMUX? AT+	Query Single Multiple
Check join	AT+CWLIF	
TCP/IP Connecti	AT+CIPSTATUS	AT+CIPSTATUS? no this fun
Send TCP/IP data	(CIPMUX=0) AT+CIPSEND=<length>; (CIPMUX=1) AT+CIPSEND=	

Close TCP /	AT+CIPCLOSE=<id> or AT+CIPCLOSE	
Set as server	AT+ CIPSERVER= <mode>[,<port>]	mode 0 to close server mode; mode 1 to open; port = port
Set the	AT+CIPSTO? AT+CIPSTO=<ti	Query <time>0~28800 in seconds
Baud Rate*	AT+CIOBAUD? Supported: 9600, 19200, 38400, 74880, 115200, 230400, 460800, 921600	Query AT+CIOBAUD? +CIOBAUD:9600 OK
Check IP address	AT+CIFSR	AT+CIFSR 192.168.0.106 OK
Firmware Upgrade (from Cloud)	AT+CIUPDATE	1. +CIPUPDATE:1 found server 2. +CIPUPDATE:2 connect server 3. +CIPUPDATE:3 got edition 4. +CIPUPDATE:4 start update
Received data	+IPD	(CIPMUX=0): + IPD, <len>: (CIPMUX=1): + IPD, <id>, <len>: <data>
Watchdog	AT+CSYSWDTENABLE	Watchdog, auto restart when program errors occur: enable
Watchdog	AT+CSYSWDTDISABLE	Watchdog, auto restart when program errors occur: disable