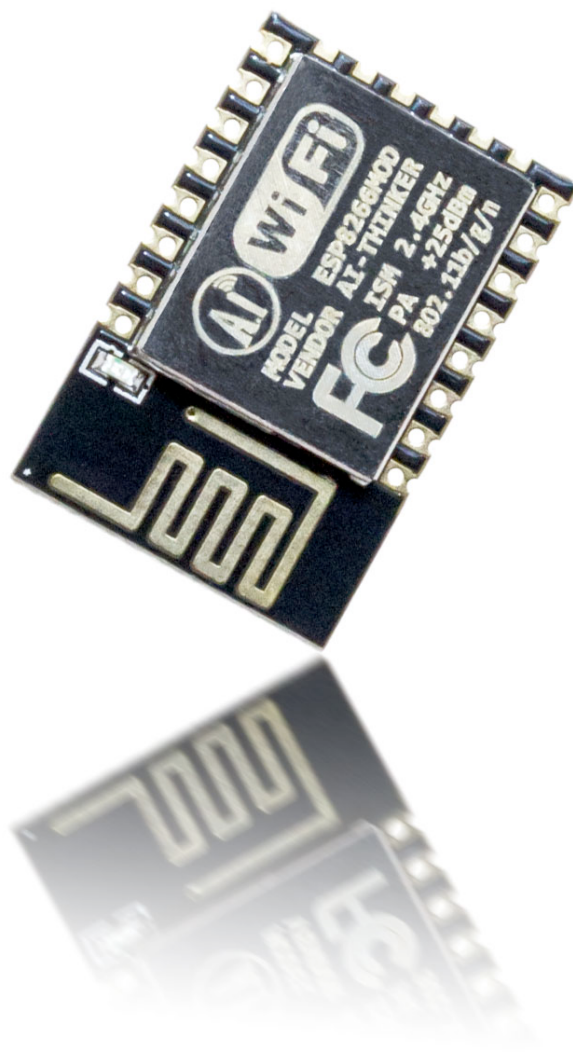


ESP8266 ESP12F



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Technical Informations:

ESP-12F is based on ESP-12E with amplified antenna output.

Features:

- ✓ 802.11 b/g/n protocol
- ✓ Wi-Fi Direct (P2P), soft-AP
- ✓ Integrated TCP/IP protocol stack
- ✓ +25.0 dBm output power in 802.11b mode
- ✓ Power down leakage current of < 10uA
- ✓ Integrated low power 32-bit MCU
- ✓ SDIO 2.0, SPI, UART
- ✓ STBC, 1x1 MIMO, 2x1 MIMO
- ✓ A-MPDU & A-MSDU aggregation & 0.4µs guard interval
- ✓ Wake up and transmit packets in < 2ms
- ✓ Standby power consumption of < 1.0mW (DTIM3)

Dimensions:

length	24 mm
width	16 mm
height	4 mm
weight	3 gr.

Electrical Features:

Parameter	Symbol	min.	max.	Unit
InputLow voltage	Vil	-0.3	0.25xViO	Volt
InputHighVoltage	Vih	0.75xVio	3,3	Volt
InputLeakageCurrent	Iil		50	nA
OutputLowVoltage	Vol		0.1 xVio	Volt
OutputHighVoltage	Voh	0.8xVio		Volt
InputPinCapacitance Cpad VDDIO			5 pF	Farad
	Vio	1.8	3.3	Volt
MaximumDriveCapability	I _{max}		12 mA	Ampere
Temperature	T _{amb}	-40	+125	°Celsius

Processor:

Parameter	Symbol
CPU / MPU	Vil
Frequency	80 / 160 MHz.
Risk	32-bit
Instruction Ram	64 Kb
Data Ram	96 Kb

SPI Flash:

Parameter	Symbol
Flash memory	32Mb
clock frequency	75 MHz. max.
Supply Voltage	2.7 - 3.6 Volt
Page program	up to 256 bytes in 0.64ms (TYP)
Sector erase	512Kb in 0.6s
Bulk erase	17 - 23 s
Hardware write protection	protected area size defined by nonvolatile bits BP0, BP1, BP2
Deep power-down	1 μ A (TYP)
Electronic signature	JEDEC-standard 2-byte signature (2016h)
	Unique ID code (UID) and 16 bytes of common Flash interface (CFI)
	RES command, one-byte signature (15h) for backward-compatibility
Write Cycles	> 100,000 write cycles per sector
Data retention	> 20 Years
RoHS-compliant Packages	SO8W (MW) 208 mils
	SO16 (MF) 300 mils
	VFQFPN8 (MP) MLP8 6mm x 5mm
	VFDFPN8 (MP) MLP8 8mm x 6mm

Wifi Receiver Sensitivity

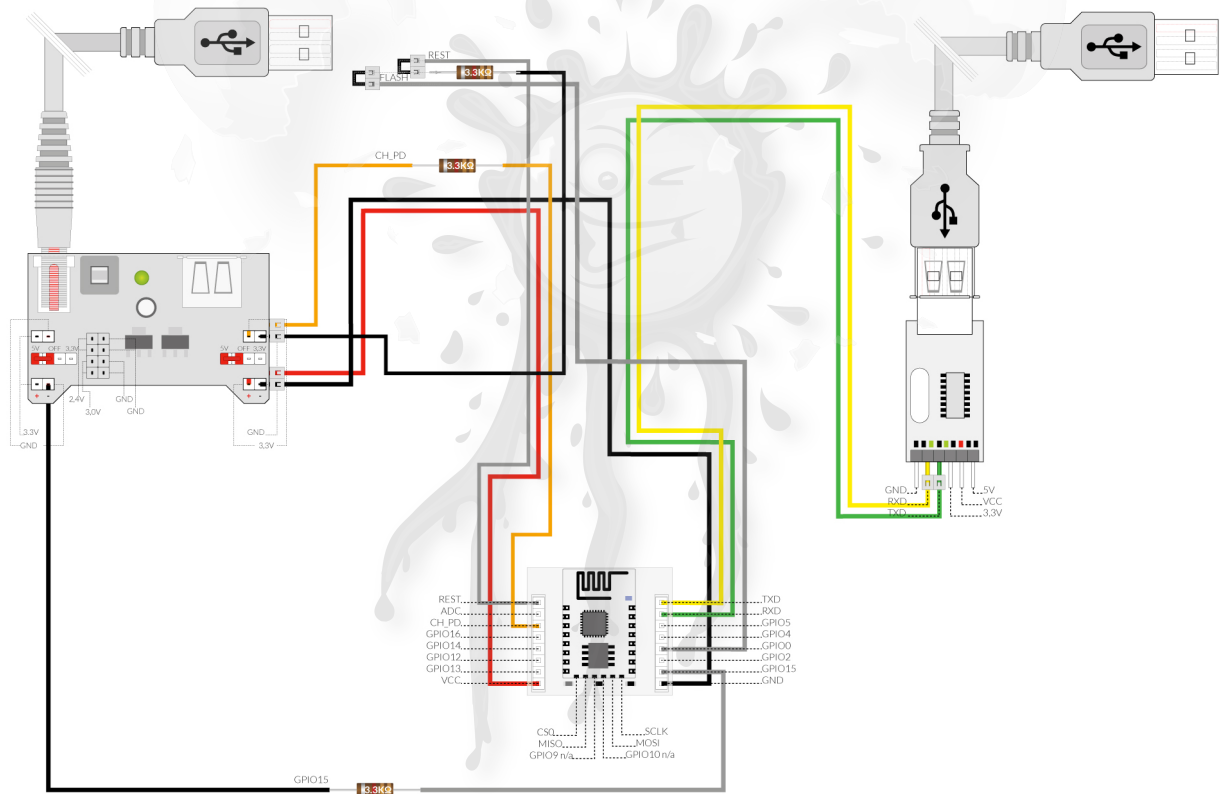
Parameter	MIN:	TYP.	MAX.	Unit
Input frequency	2412		2484	MHz.
Input impedance		50		Ω
Input reflection			-10	dB
Output power of PA for 72.2Mbps	14	15	16	dBm
Output power of PA for 11b mode	20.0	22.5	25.0	dBm
Sensitivity				
CCK 1Mbps		-98		dBm
CCK 11Mbps		-91		dBm
6Mbps(1/2BPSK)		-93		dBm
54Mbps(3/4 64-QAM)		-75		dBm
HT20, MCS7 (65Mbps, 72.2Mbps)		-71		dBm
Adjacent Channel Rejection				
OFDM, 6Mbps		37		dB
OFDM, 54Mbps		21		dB
HT20, MCS0		37		dB
HT20, MCS7		20		dB
Current Consumption				
Send 802.11b, CCK 1Mbps, Pout=+24.5dBm		319		mA
Send 802.11b, CCK 1Mbps, Pout=+22.5dBm		282		mA
Send 802.11b, CCK 1Mbps, Pout=+ 20.0dBm		224		mA
Send 802.11b, CCK 11Mbps, Pout=+18.5dBm		197		mA
Receive 802.11b, Length 1024 Byte, -80dBm		100		mA
Receive 802.11g, Length 1024 Byte, -70dBm		100		mA
Receive 802.11n, Length 1024 Byte, -65dBm		102		mA
Standby		70		mA
Power Down		0.5		μ A

Pinout Table Function Espressif NodeMCU

PIN ID	Function	Description / Mode		
1	RST	Reset (10 K Ω Resistor to Ground)	NC / external MCU Control	
2	ADC/TOUT	10 bit Analog Digital Converter Input from 0-1 Volt		
3	EN	Module / Chip (10 K Ω Resistor to 3,3 Volt recommended)		
4	GPIO16	GPIO Low / High Level	wake up (see documentation deep sleep)	
5	GPIO14	GPIO Low / High Level	HSCLK	
6	GPIO12	GPIO Low / High Level	HMISO	
7	GPIO13	GPIO Low / High Level	RXD2	HMOSI
8	VDD	3,3 Volt input		
9	CS0	CS0 Chip selection of SPI Interface		
10	MISO	MISO of SPI Interface		
11	GPIO9	not available		
12	GPIO10	not available		
13	MOSI	MOSI of SPI Interface		
14	SCLK	Clock of SPI Interface		
15	GND	Ground		
16	GPIO15	GPIO Low / High Level	TXD2	HCS
17	GPIO2	GPIO Low / High Level		
18	GPIO0	Flash Mode (10 K Ω Resistor to Ground)	GPIO Low / High Level	
19	GPIO4	GPIO Low / High Level		
20	GPIO5	GPIO Low / High Level		
21	RXD0	RXD0		
22	TXD0	TXD0		

Wiring Schematic ESP-12F Adapterplate

ESP8266 ESP-12F Wiring Schematic with typical Adapter



Wiring Schematic ESP-12F

ESP8266 ESP-12F Wiring Schematic without I/O Adapter

