

Datasheet

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Functional Description

Overview

HW12F2G4E is an ultra-low power WiFi module. It has a very competitive package size and ultra-low energy consumption technology. It is designed for mobile devices and Internet of Things applications. It can connect users' physical devices to Wi-Fi wireless networks, communicate with the Internet or LAN, and realize networking functions. HW12F2G4E is packaged with low cost PCB antenna, which brings very low cost to customers' products.

Product Features

- Integrates a Tensilica L106 32-bit RISC processor, maximum clock speed of 160 MHz.
- 32Mbit SPI NOR FLASH, 250KRAM
- Support 802.11 b/g/n
- Support STA, AP, STA+AP
- Installed TCP/IP
- Support Enrich Socket AT
- Support UART, SPI, IIC, SDIO, GPIO
- Support ESP Touch, AI Link, Airkiss
- Support OTA
- Low power
- 3.3V Single Power

Subject of Application

- Smart Plug
- Home Automation
- Mesh Net
- Smart light
- Baby monitor
- Sensor network
- Wireless Location Sensing Device
- Security ID tag
- Wireless Positioning System Signal

Electrical Characteristics

Basic electrical parameters

Char	MIN	MAX	UNIT
Vil	-0.3	0.25xVio	V
Vih	0.75xVio	3.3	V
Iil		50	nA
Vol		0.1 xVio	V
Voh	0.8xVio		V
Cpad		5	pF
Vio	1.8	3.3	V
I _{max}		12	mA
Tamb	-40	125	°C

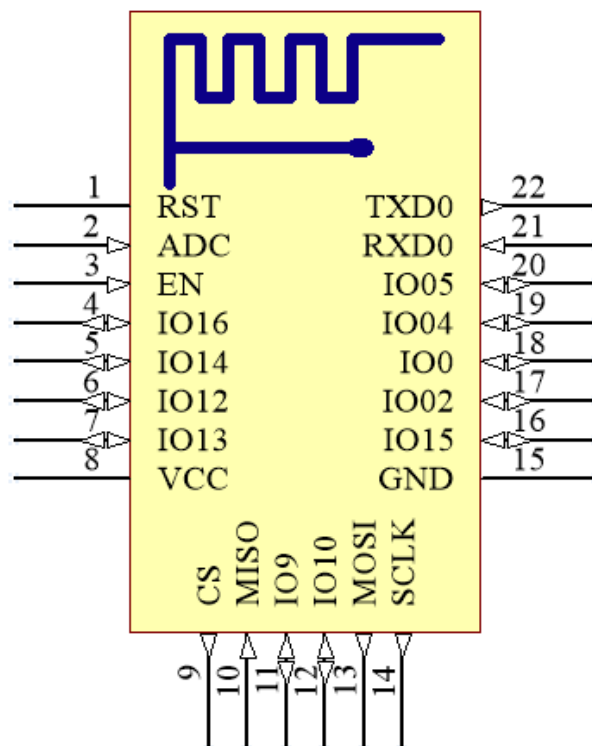
RF Parameter

describe	Min	Typ	Max	Unit
IN Frequency	2412		2484	MHz
IN impedance		50		Ω
IN Reflect			-10	dB
PA Power @72.2Mbps	14	15	16	dBm
PA Power @802.11b	17.5	18.5	19.5	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 frequency suppression				
OFDM, 6Mbps		37		dB
OFDM, 54Mbps		21		dB
HT20, MCS0		37		dB
HT20, MCS7		20		dB

Power

Mode	Min	Typ	Max	Unit
Send802.11b, CCK 1Mbps, Pout=+19.5dBm		215		mA
Send802.11b, CCK 11Mbps, Pout=+18.5dBm		197		mA
Send802.11g, OFDM54 Mbps, Pout=+16dBm		145		mA
Send802.11n, MCS7, Pout=+14dBm		135		mA
Receive 802.11b, Lenth1024Byte, -80dBm		100		mA
Receive 802.11g, Lenth1024 Byte, -70dBm		100		mA
Receive 802.11n, Lenth1024 Byte, -65dBm		102		mA
System Standby Mode		70		mA
power off		0.5		μA

Pin

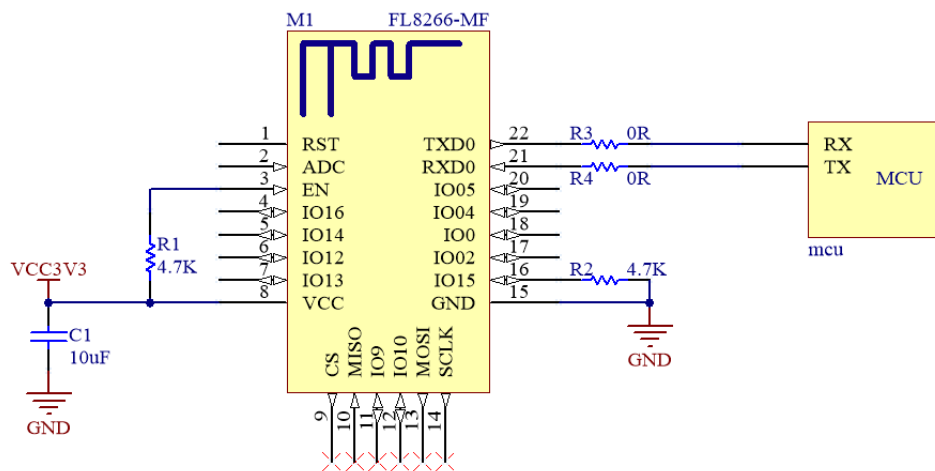


PIN	Function	Description
1	RST	1) Resets
2	ADC	1) Analog to Digital
3	EN	1) Enabled
4	IO16	1) GPIO
5	IO14	1) GPIO
6	IO12	1) GPIO
7	IO13	1) GPIO
8	VCC	1) VCC
9	CS	NC
10	MISO	NC
11	IO9	NC
12	IO10	NC
13	MOSI	NC
14	SCLK	NC
15	GND	1) Ground
16	IO15	1) GPIO
17	IO02	1) GPIO
18	IO0	1) GPIO
19	IO04	1) GPIO
20	IO05	1) GPIO
21	RXD0	1) UART-RX
22	TXD0	1) UART-TX

Boot

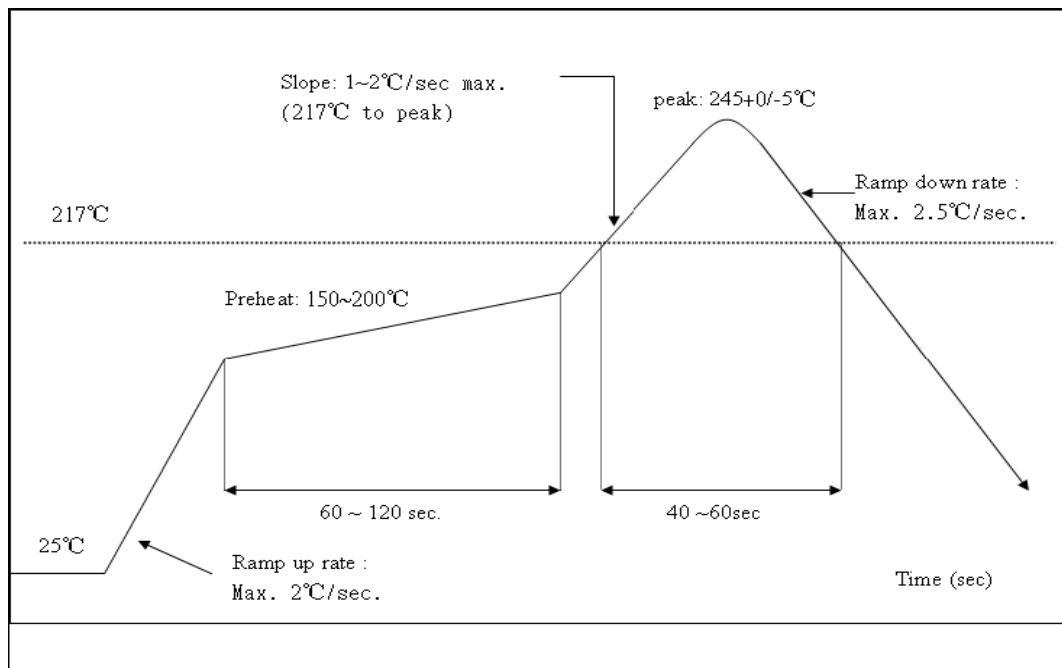
GPIO15	GPIO0	GPIO2	
1	X	X	SDIO/SPI WIFI
0	0	1	UART Download
0	1	1	Flash BOOT

Minimum system schematic diagram



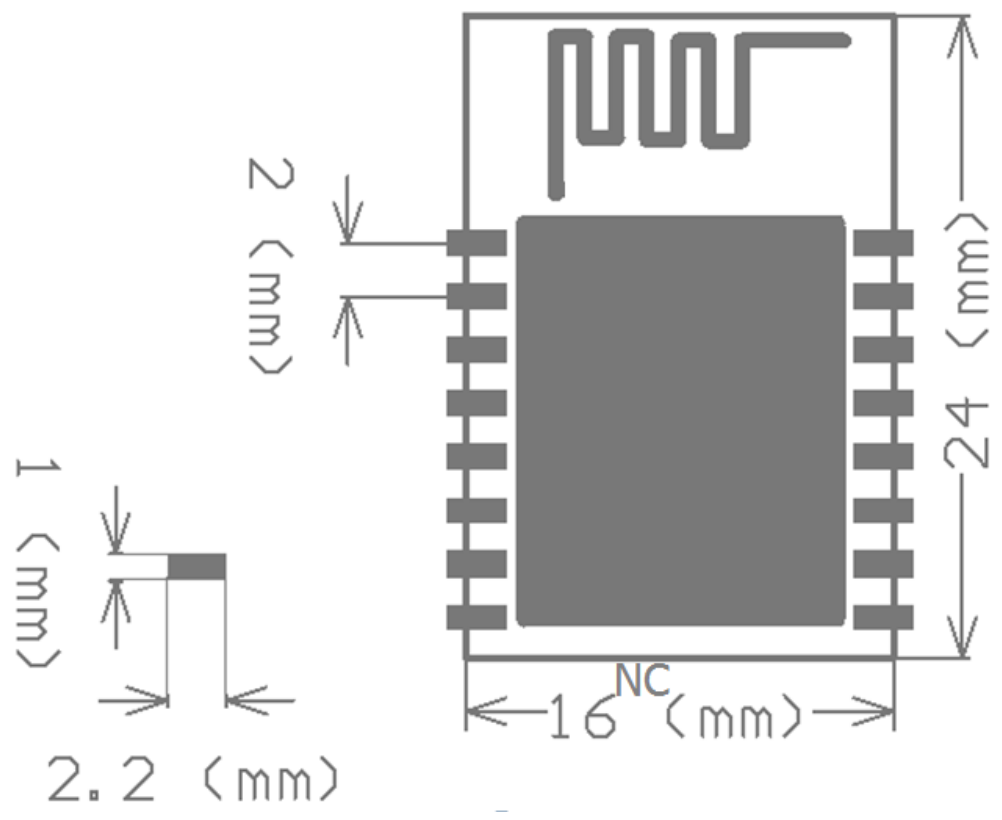
Welding Temperature Curve

Refer to IPC/JEDEC standard; Peak Temperature : <250°C; Number of Times: ≤2 times;



Dimensions

Size



FCC WARNING

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

15.105 Information to the user.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination.

The firmware setting is not accessible by the end user.

The final end product must be labelled in a visible area with the following:

“Contains Transmitter Module 2ATRF-HW12F”