

ES826FPC Wi-Fi Data Module

Features

- Pin-to-pin compatible with ESP-31 and ESP-31-S
- Fully compliant to Wi-Fi Alliance
- High efficiency on-module printed PCB RF antenna
- Very few external BOM-count to create a fully functional application circuit
- Espressif ESP8266 Wi-Fi Soc
- 80MHz Tensilica L106 Diamond series low power 32-bit RISC MCU core
- 64-KB instruction RAM and 96-KB data RAM
- 64-KB boot ROM, and 4-MB flash for applications and data
- +20dBm output power in 802.11b mode
- Hardware accelerator engine for encryption and authentication operations
- Wake up and transmit packets in < 2ms
- UART, SPI, I2C, SDIO, 10-bit ADC, PWM and GPIO interface
- 802.11 b/g/n protocol
- Wi-Fi 2.4 GHz, support WPA / WPA2
- Full Wi-Fi and TCP/IP (Ipv4) protocol stack
- Support TCP, UDP, HTTP, FTP Internet protocol
- Station / softAP / Station+AP mode support
- Wi-Fi Direct (P2P) support
- Cloud Connectivity
- Integrated RF Shield can models available (ES826FPC-S)
- FCC Certification: Available for ES826FPC-S
- REACH / RoHS compliant
- Dimensions:
 - o 16.4 x 23.6 x 2.3 mm (ES826FPC)
 - o 16.4 x 23.6 x 2.8 mm (ES826FPC -S)



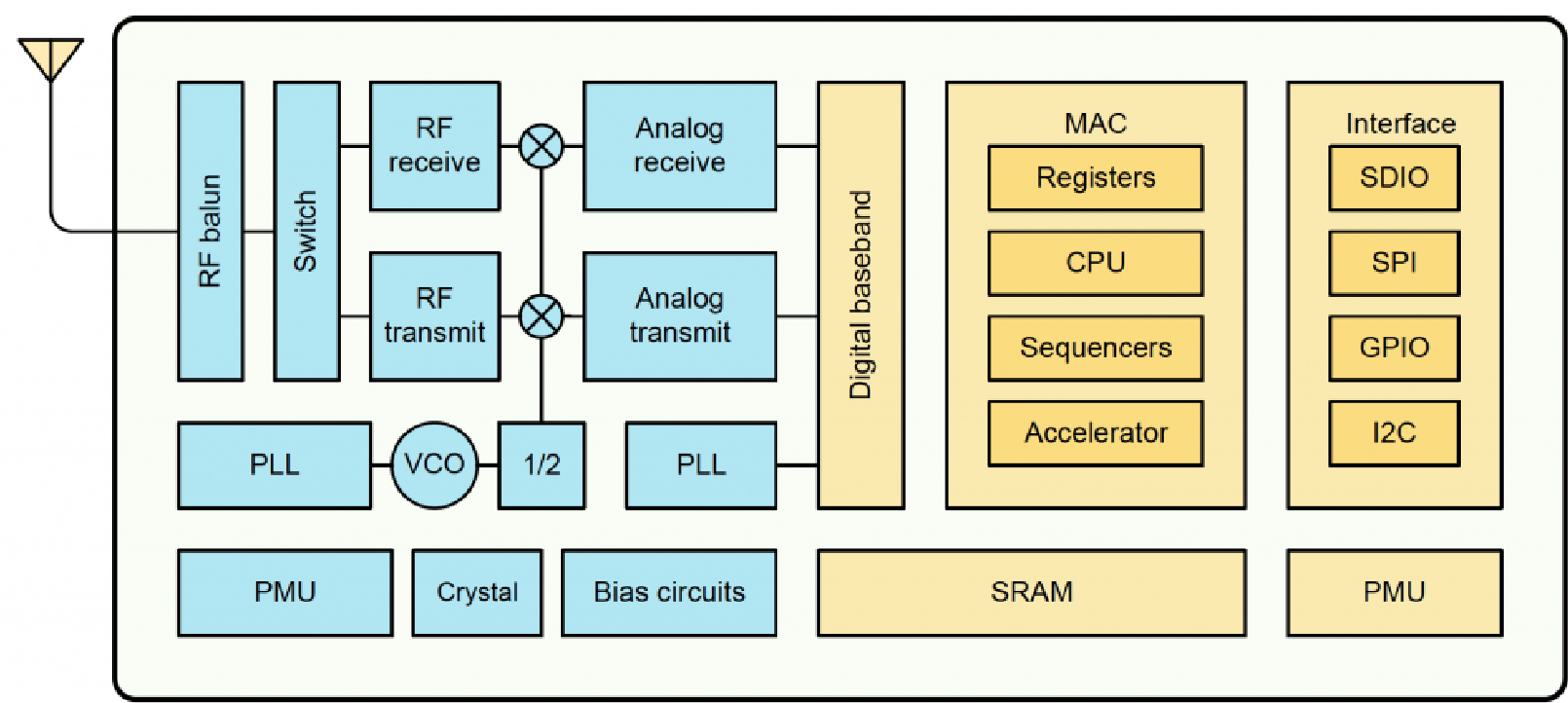
Applications

- Internet of Things (IoT) Devices
- Remote Control and Assisted Living
- Medical and Healthcare Monitors
- Sports and Fitness Equipments
- RC and Interactive Toys
- Home/Building Automation
- Machine-to-Machine Data Transfer
- Remote Sensor Networks
- Wireless Alarm and Security
- Message Display
- Lighting and HAVC Control

Standard Firmwares Available

- DxCloud IoT Gateway
- DataExchanger (serial data transfer)

Block Diagram



General Electrical Specification

Absolute Maximum Ratings		
Ratings	Min.	Max.
Storage Temperature	-40 °C	+90 °C
Supply Voltage VDD	-0.3 V	3.9 V
Recommended Operating Condition		
Operating Condition	Min.	Max.
Operating Temperature range – (C-grade)	-20 °C	+75 °C
Supply Voltage VDD, VDDIO	3.0 V	3.8 V

Parameter	Description	Min.	Typ.	Max.	Units
Operating Frequency		2412MHz-2484MHz			
Modulation Method	802.11b mode 802.11g mode 802.11n mode	DSSS OFDM OFDM			
Air transmission rate		Adaptive			
RF Output Power	802.11b mode 802.11g mode 802.11n mode			+20 +17 +14	dBm dBm dBm
RX Sensitivity	19.5dBm CCK-1Mbps 19.5dBm CCK-11Mbps			-98 -91	dBm dBm
Current Consumption – TX	19.5dBm CCK-1Mbps		215		mA
Current Consumption – RX			60		mA
Current Consumption – Standby	DTIM3		0.9		mA
Current Consumption – Deep Sleep			10		uA
Current Consumption – Shut Down			0.5		uA

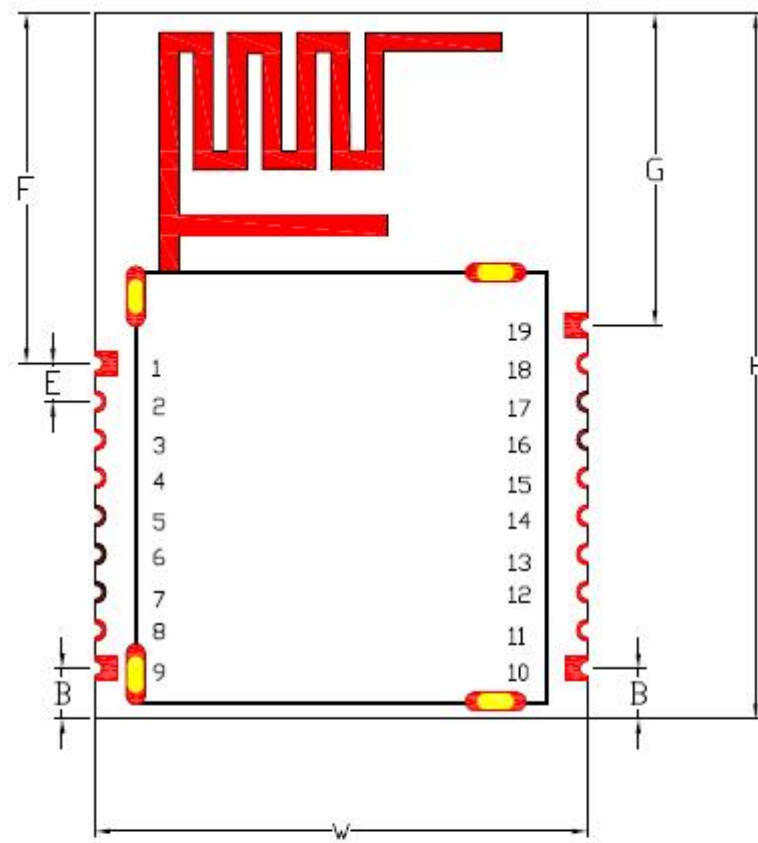
Pins Configurations

ES826FPC / ES826FPC-S

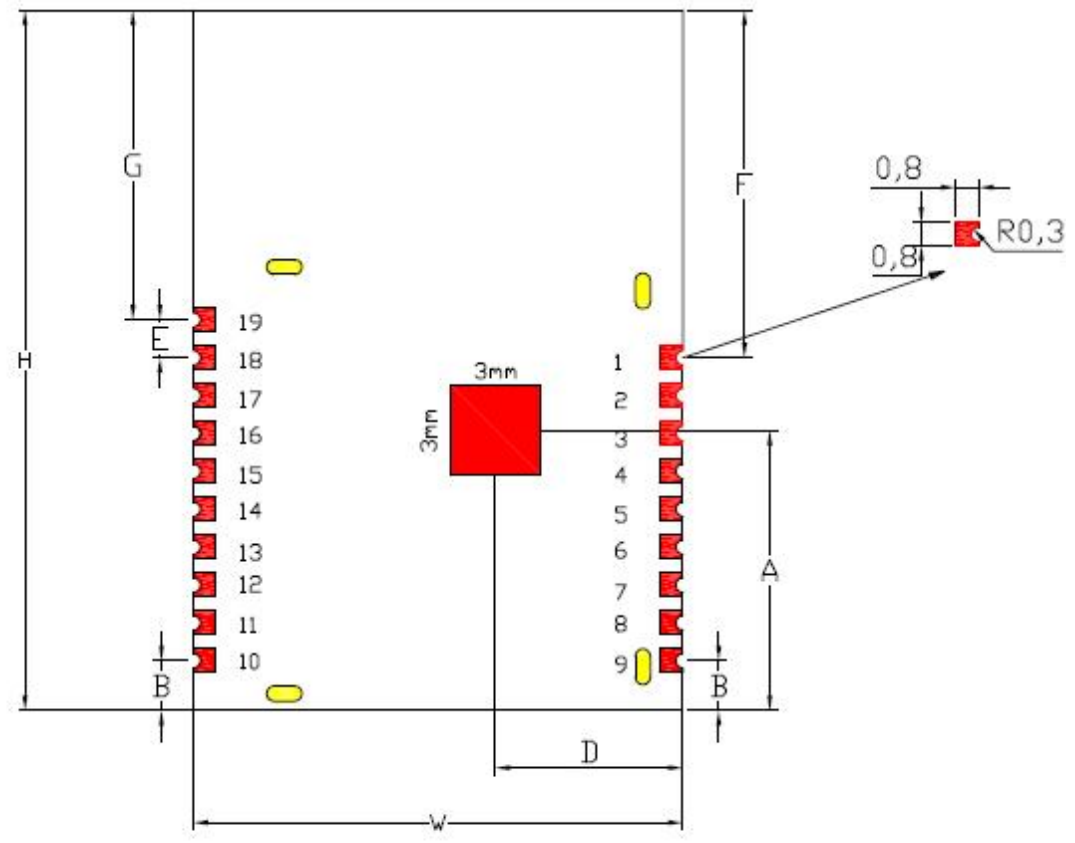
Pin No.	Pin Name	Pin No.	Pin Name
1	GND	11	MTCK_IO13
2	VDD33	12	MTDO_IO15
3	ADC	13	GPIO2
4	CH_PD	14	GPIO0
5	XPD_DCDC	15	GPIO4
6	RESET	16	GPIO5
7	MTMS_IO14	17	URXD
8	MTDI_IO12	18	RTXD
9	GND	19	GND
10	GND		

Module Outline

ES826FPC / ES826FPC-S Module Outline



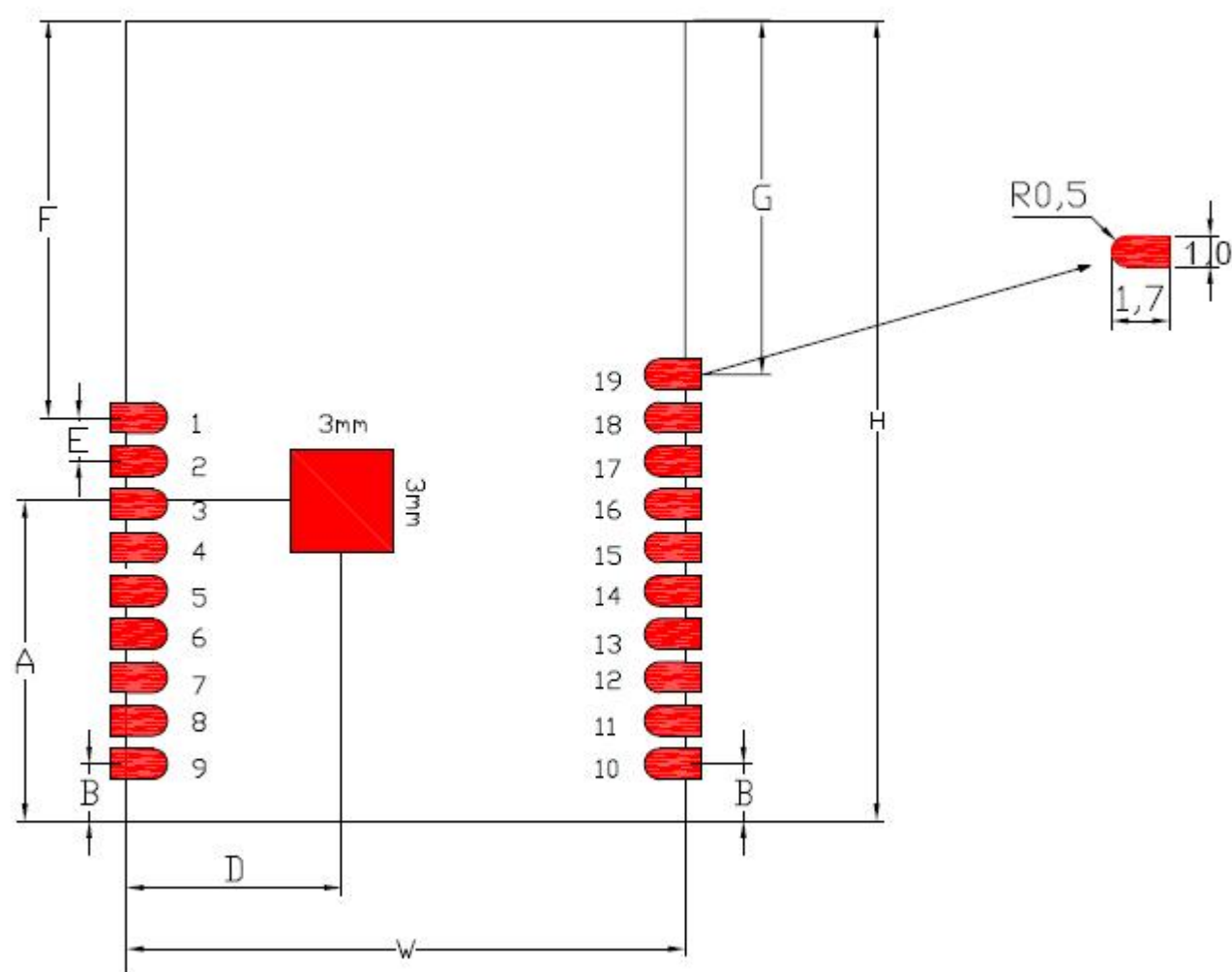
ES826FPC(ESP-31)
Module Top View



ES826FPC(ESP-31)
Module Bottom View

Remark : +/- 0.1mm or 1.5% whichever is greater for all module outline measurements.

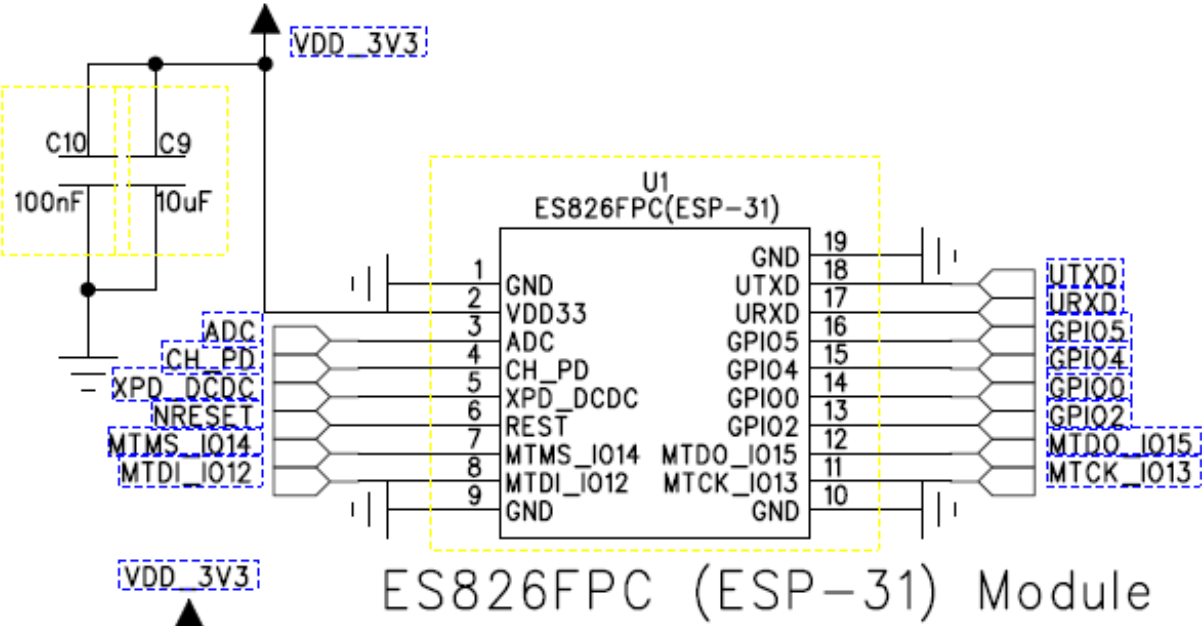
Recommended PCB Land Pattern



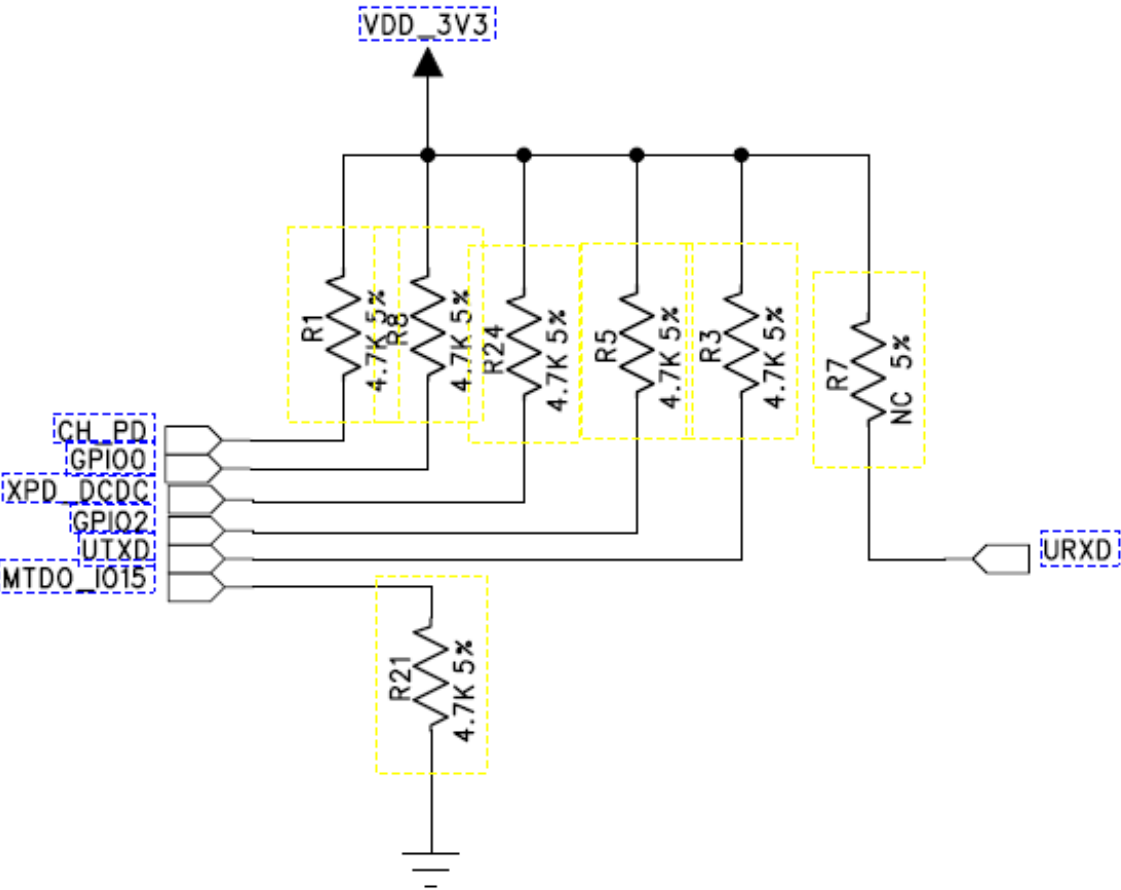
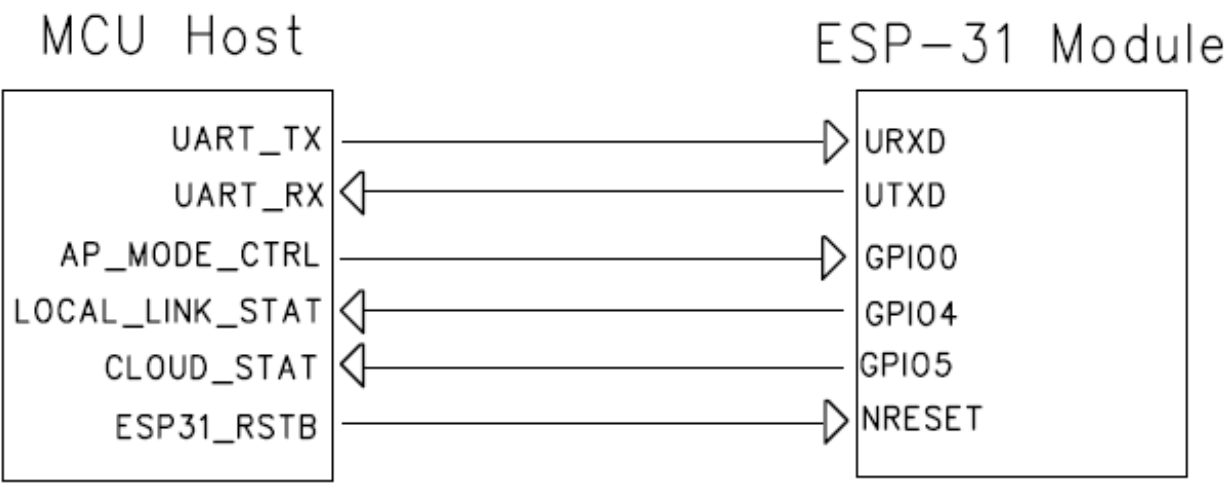
Symbol	Milimeter
A	9.40
B	1.70
D	6.30
E	1.27
F	11.70
G	10.43
H	23.50
W	16.40

Remark : +/- 0.1mm or 1.5% whichever is greater for all module outline measurements.

Reference Application Circuitry

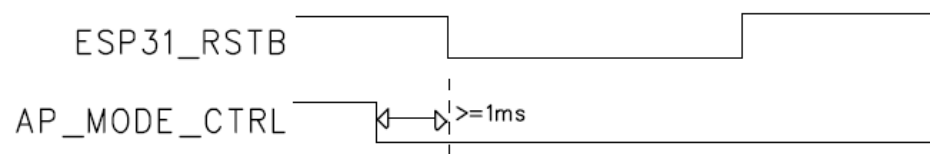


MCU Host Connections

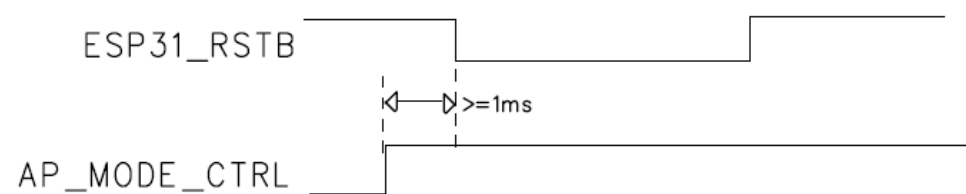


Application Notes

1. To enter flashing mode, hold AP_MODE_CTRL low during module reset



2. To boot up to normal mode, set AP_MODE_CTRL high during reset



3. To enter AP mode for configuration, assert a 100ms low pulse on AP_MODE_CTRL after normal boot up



4. When local wifi network is connected, LOCAL_LINK_STAT will change to high state
5. When cloud server is connected, CLOUD_STAT will change to high state

Precautions

- Storage Condition**

This product should be stored without opening the packing, and under temperature 0-60 °C and humidity 30-70% RH. It should be used within 15 months after reception.

- ElectroStatic Discharge (ESD)**

This product is sensitive to ElectroStatic Discharge (ESD). Observe precautions for handling electrostatic sensitive devices. Such precautions are described in the ANSI/ESD S20.20, IEC/ST61340-5, JESD625-A or equivalent standards.

- Module Reflow Installation**

For RoHS/Pb-free applications, Sn96.5/Ag3.0/Cu0.5 solder is recommended.

Profile Feature	Recommended Parameters
Ramp-up rate before liquidous	< 2°C / second
Preheat	150-200°C 60-90 seconds
Maximum time at liquidous	40 – 80 seconds
Maximum peak temperature	230° - 240°C (below 250°C)
Ramp-down rate	< 6°C / second

Ordering Information

Part Number	FW Code Available	Description
ES826FPC	Please check with your sales rep	Wi-Fi module with integrated PCB antenna
ES826FPC-S		Wi-Fi module with integrated PCB antenna and shield can
ES826FPC-P5	N/A	Wi-Fi module with integrated PCB antenna (5-pack)
ES826FPC-S5	N/A	Wi-Fi module with integrated PCB antenna and shield can (5-pack)

Revision History

Rev.	Date	Description	By
01	2015-09-17	Initial release	Paul
02	2016-04-20	Pin table corrections, module dimension diagrams revised	Paul
03	2016-04-29	Added Reference Application Circuitry	Paul
04	2017-07-27	Added new part numbers for multi-pack	Dominic