



PRODUCT SPECIFICATION

3243A-S

Wi-Fi Single -band 1T1R 802.11b/g/n/ax WIFI+BLE5.2

Combo Module

Version:v1.8

Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

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3243A-S Module Datasheet

Ordering Information	Part NO.	Description
	FG3243ASXX-00	Q35343S110,802.11b/g/n/ax ,WIFI+BLE5.2,1T1R,12X12mmNo shileding
	FG3243ASXX-01	Q35343S110,802.11b/g/n/ax ,WIFI+BLE5.2,1T1R,12X12mm,No shileding
	FG3243ASXX-02	Q35343S110,802.11b/g/n/ax ,WIFI+BLE5.2,1T1R,12X12mm,With shileding
	FG3243ASXX-03	Q35343S110,802.11b/g/n/ax ,WIFI+BLE5.2,1T1R,12X12mm,With shileding

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1. General Description

1.1 Introduction

3243A-S is a highly integrated 2.4GHz Wi-Fi, BLE Combo chip, integrated IEEE 802.11b/g/n/ax baseband and RF circuit, including power amplifier PA, low noise amplifier LNA, RF balun, antenna switch and power management module; support 802.11n 20MHz / 40 MHz width, 802.11ax 20MHz width, maximum 150Mbps physical layer rate and further coverage distance.

Wi-Fi baseband realizes orthogonal frequency division multiple access (OFDMA) technology, orthogonal frequency division multiplexing (OFDM) technology, downward compatible with direct sequence expansion frequency frequency (DSSS), complement keying (CCK) technology, supports various data rates of IEEE 802.11b/g/n protocol, and MCS 0 ~ MCS 9 rate of IEEE 802.11ax protocol.

Support BLE 1MHz / 2MHz bandwidth, support BLE 4.0/4.1/4.2/5.0/5.1/5.2 protocol, support BLE Mesh and BLE gateway function, maximum air port speed Rate of 2Mbps.

integrates high-performance 32bit microprocessor and secure processing engine; provides UART and GPIO interface, and supports high-speed SDIO 2.0 interface, maximum clock up to 50 MHz;

Support for OpenHarmony, FreeRTOS, Huawei LiteOS, Android, and Linux systems, providing a more open development environment and a faster system running environment.

Module is suitable for consumer IP Camera, dashcam, low-end intelligent TV, sweeping robot, UAV and other intelligent terminals of the Internet of Things.

1.2 Description

Model Name	3243A-S
Product Description	Support Wi-Fi/Bluetooth functionalities
Dimension	L x W x H: 12 x 12x 1.6 mm
Wi-Fi Interface	Support SDIO 2.0
BT Interface	SDIO
Operating temperature	-40°C to 85°C
Storage temperature	-40°C to 85°C

2. Features

General Features

- 802.11b/g/n/ax 1T1R WLAN and BLE 5.2 combo chip
- Complete 802.11n solution for both 2.4GHz(ch1-ch14) band
- Supports 802.11n 20MHz/40MHz bandwidth and 802.11ax 20MHz bandwidth
- Support maximum speed: 150Mbps@HT40 MCS7, 114.7Mbps@HE20 MCS9.

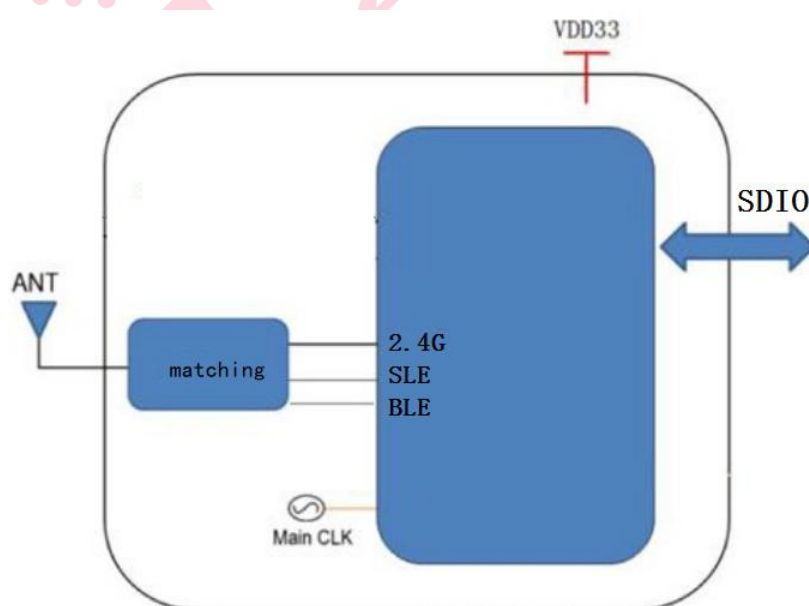
WLAN Interface

- Multi-Function

Bluetooth Features

- Supports BLE 4.0/4.1/4.2/5.0/5.1/5.2
- Supports speeds of 125Kbps, 500Kbps, 1Mbps, and 2Mbps.
- Supports high-power 20dBm

3. Block Diagram



4. General Specification

4.1 WI-FI 2.4GHz RF Specification

Feature	Description	
WLAN Standard	IEEE 802.11 b/g/n/ax Wi-Fi compliant	
Frequency Range	2.400 GHz ~ 2.4835 GHz (2.4 GHz ISM Band)	
Number of Channels	2.4GHz: Ch1 ~ Ch14	
Test Items	Typical Value	EVM
Output Power	802.11b /11Mbps : 20dBm $\pm$ 2 dB	EVM $\leq$ -9dB
	802.11g /54Mbps : 16dBm $\pm$ 2 dB	EVM $\leq$ -25dB
	802.11n /MCS7 : 15dBm+ $\pm$ 2 dB	EVM $\leq$ -28dB
	802.11ax HE20 MCS9: 14dBm $\pm$ 2 dB	EVM $\leq$ -32dB
Spectrum Mask	Meet with IEEE standard	
Freq. Tolerance	$\pm$ 20ppm	
Test Items	TYP Test Value	Standard Value
SISO Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps @ -94 dBm	$\leq$ -82 dBm
	- 11Mbps @ -85 dBm	$\leq$ -76 dBm
Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps @ -90 dBm	$\leq$ -82 dBm
	- 54Mbps @ -71 dBm	$\leq$ -65 dBm
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 @ -90 dBm	$\leq$ -82 dBm
	- MCS=7 @ -69 dBm	$\leq$ -64 dBm
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 @ -87 dBm	$\leq$ -79 dBm
	- MCS=7 @ -66 dBm	$\leq$ -61 dBm
Receive Sensitivity (11ax,20MHz) @10% PER	- MCS=0 @ -90 dBm	$\leq$ -82 dBm
	- MCS=9 @ -60 dBm	$\leq$ -57 dBm
Maximum Input Level	802.11b : -10 dBm	
	802.11g/n : -20 dBm	

Note: Other data rates transmit power are controlled by driver.

All rate power table

11b	1M	2M	5.5M	11M							
target_tx_power	20dBm	20dBm	20dBm	20dBm							
11g	6M	9M	12M	18M	24M	36M	48M	54M			
target_tx_power	19dBm	19dBm	19dBm	19dBm	18dBm	18dBm	17dBm	16dBm			
11n20	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	
target_tx_power	19dBm	19dBm	19dBm	19dBm	18dBm	17dBm	16dBm	15dBm	14dBm	14dBm	
11n40	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS32
target_tx_power	19dBm	19dBm	19dBm	19dBm	18dBm	17dBm	16dBm	15dBm			

Note: The power configuration profile is as follows: If you need to adjust the target power, you can do so in the ws73.cfg.ini file. The unit is 0.5 dBm, and the configuration range is 0~46.

```
## 1M 2M 5.5M 11M 11b
target_tx_power_2g_11b=0x28,0x28,0x28,0x28;
## 6M 9M 12M 18M 24M 36M 48M 54M 11g
target_tx_power_2g_11g=0x26,0x26,0x26,0x26,0x24,0x24,0x22,0x20;
## MCS0~MCS9 11n(MCS7)/11ax
target_tx_power_2g_20m=0x26,0x26,0x26,0x26,0x24,0x22,0x20,0x1E,0x1C,0x1C;
## MCS0~MCS9 11n(MCS7)/11ax MCS32 11n
target_tx_power_2g_40m=0x26,0x26,0x26,0x26,0x24,0x22,0x20,0x1E,0x1C,0x1C,0x1C;
# regulation power 0.5dBm
```

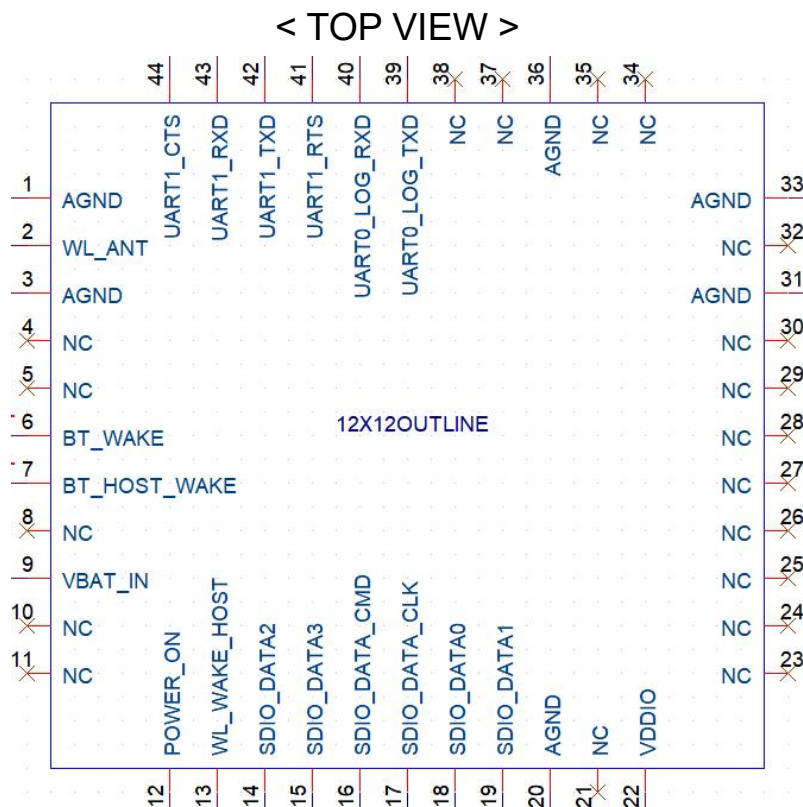
Note: Other data rates transmit power are controlled by Power-by-Rate function of the driver.

4.2 Bluetooth Specification

Feature	Description
General Specification	
Bluetooth Standard	LE(1M),2LE(2M)
Host Interface	SDIO
Frequency Band	2400 MHz ~ 2483.5 MHz
Number of Channels	40 channels for BLE
Modulation	GFSK
RF Specification	
Output Power , tolerance +/-3 dB	
	CL1(dBm)
BLE Output Power	20
Sensitivity, tolerance : /	
Sensitivity @ BLE=30.8% for LE (1Mbps)	-93
Sensitivity @ BLE=30.8% for 2LE (2Mbps)	-90
Maximum Input Level	GFSK (1Mbps):-20dBm

5. Pin Definition

5.1 Pin Outline



5.2 Pin Definition details

NO.	Name	Type	Description	Voltage
1	AGND	-	Ground connections	
2	WL_ANT	I/O	RF I/O, Wi-Fi 2.4G/BLE	
3	AGND	-	Ground connections	
4	NC	-	Floating or Ground connections	
5	NC	-	Floating (Don't connected to ground)	
6	BT_WAKE	I	Host to wake up Bluetooth device. GPIO02 (Hardware strap pin,don' t pull high on this pin during module power on)	VDDIO
7	BT_HOST_WAKE	-	Floating (Don't connected to ground)	
8	NC	-	Floating (Don't connected to ground)	
9	VBAT_IN	I	Main power voltage source input	3.3V±10%
10	NC	-	Floating (Don't connected to ground)	
11	NC	-	Floating (Don't connected to ground)	
12	POWER_ON	I	Power on enable	VDDIO

			0: power down 1: power on	
13	WL_WAKE_HOST	O	WLAN/BLE device to wake up host.GPIO10 (Hardware strap pin,don' t pull high on this pin during module power on)	VDDIO
14	SDIO_DATA2	I/O	SDIO data line 2. GPIO08	VDDIO
15	SDIO_DATA3	I/O	SDIO data line 3. GPIO07	VDDIO
16	SDIO_DATA_CMD	I/O	SDIO command line. GPIO06	VDDIO
17	SDIO_DATA_CLK	I/O	SDIO clock line. GPIO14	VDDIO
18	SDIO_DATA0	I/O	SDIO data line 0. GPIO13	VDDIO
19	SDIO_DATA1	I/O	SDIO data line 1. GPIO12	VDDIO
20	AGND	-	Ground connections	
21	NC	-	Floating (Don't connected to ground)	
22	VDDIO	I	IO power input	1.8V/3.3V
23	NC	-	Floating (Don't connected to ground)	
24	NC	-	Floating (Don't connected to ground)	
25	NC	-	Floating (Don't connected to ground)	
26	NC	-	Floating (Don't connected to ground)	
27	NC	-	Floating (Don't connected to ground)	
28	NC	-	Floating (Don't connected to ground)	
29	NC	-	Floating (Don't connected to ground)	
30	NC	-	Floating (Don't connected to ground)	
31	AGND	-	Ground connections	
32	NC	-	Floating (Don't connected to ground)	
33	AGND	-	Ground connections	
34	NC	-	Floating (Don't connected to ground)	
35	NC	-	Floating (Don't connected to ground)	
36	AGND	-	Ground connections	
37	NC	-	Floating (Don't connected to ground)	
38	NC	-	Floating (Don't connected to ground)	
39	UART0_LOG_TXD	O	UART0 Output. GPIO03	VDDIO
40	UART0_LOG_RXD	I	UART0 Input. GPIO11	VDDIO
41	UART1_RTS	O	UART1 RTS. GPIO00	VDDIO
42	UART1_TXD	O	UART1 Output. GPIO05 (Hardware strap pin,don' t pull high on this pin during module power on)	VDDIO
43	UART1_RXD	I	UART1 Input. GPIO04	VDDIO

44	UART1_CTS	I	UART1 CTS. GPIO01	VDDIO
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P:POWER I:INPUT O:OUTPUT

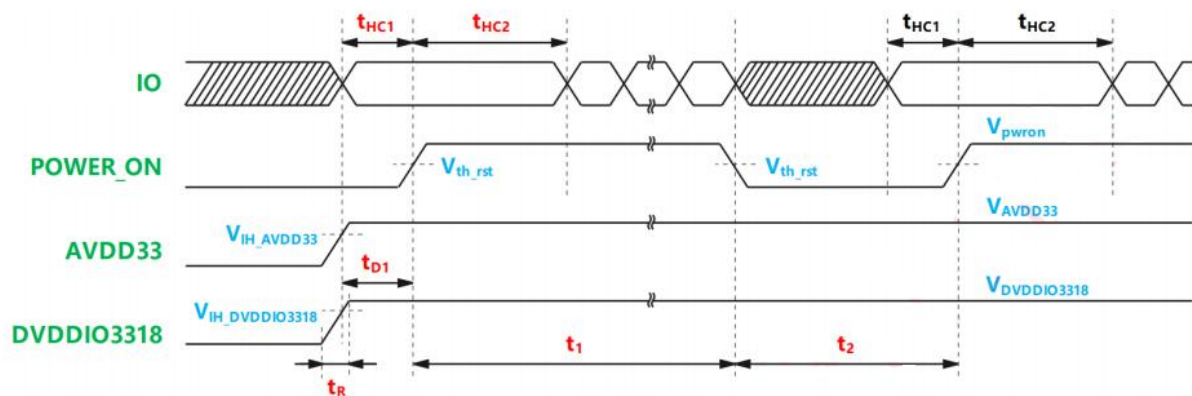
6. Electrical Specifications

6.1 Power Supply DC Characteristics

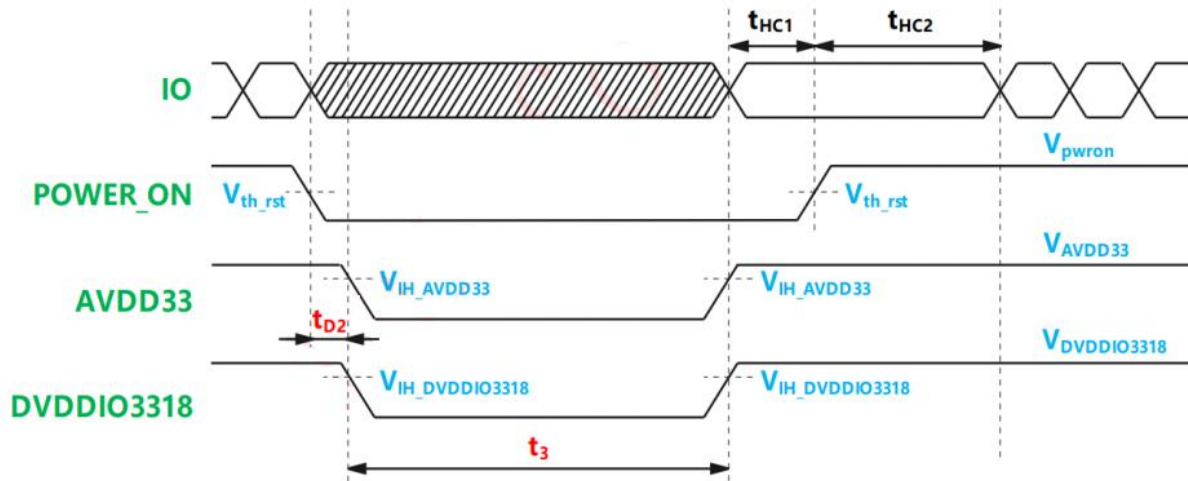
	MIN	TYP	MAX	Unit
Operating Temperature	-40	25	85	deg.C
VDD33	3.0	3.3	3.6	V
VDDIO	1.71	1.8/3.3	3.6	V

7. Timing information

Power-up sequence diagram

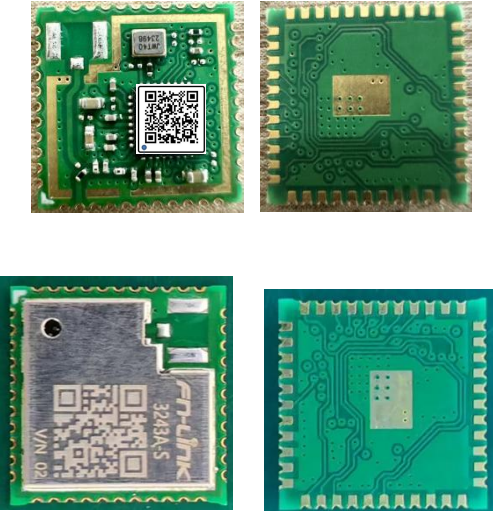
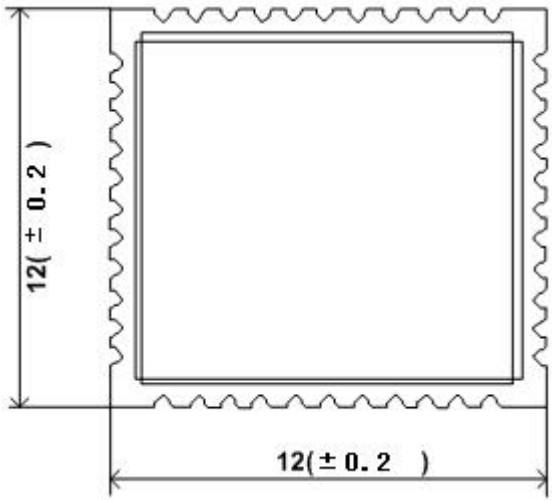
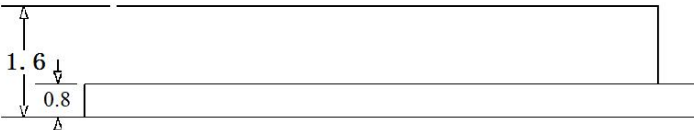


Power-off sequence diagram



8. Size reference

8.1 Module Picture

L x W : 12 x 12 (± 0.2) mm 	
H: 1.6 (± 0.2) mm With shielding: 3.05mm	
Weight	0.37g

8.2 Marking Description

-00

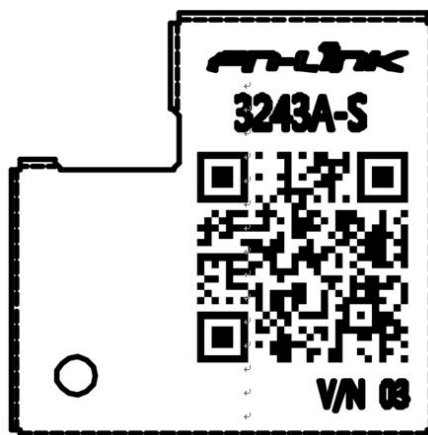


-01



-02

-03



Remarks:

QR Code Content: 112233445566;FG3243ASXX-02

Fn-Link Trademark Logo

Model: 3243A-S

QR Code: The encoding rule is "WiFi MAC; Finished Product Part Number"

Example: 112233445566;FG3243ASXX-02 (The MAC address shall be subject to the actual one)

----The BT MAC is obtained by adding 1 to the WiFi MAC. It does not need to be written into the module and will be automatically acquired by the driver.

Remarks:

QR Code Content: 112233445566;FG3243ASXX-034.

Fn-Link Trademark Logo5. Model: 3243A-S6.

QR Code: The encoding rule is "WiFi MAC; Finished Product Part Number"

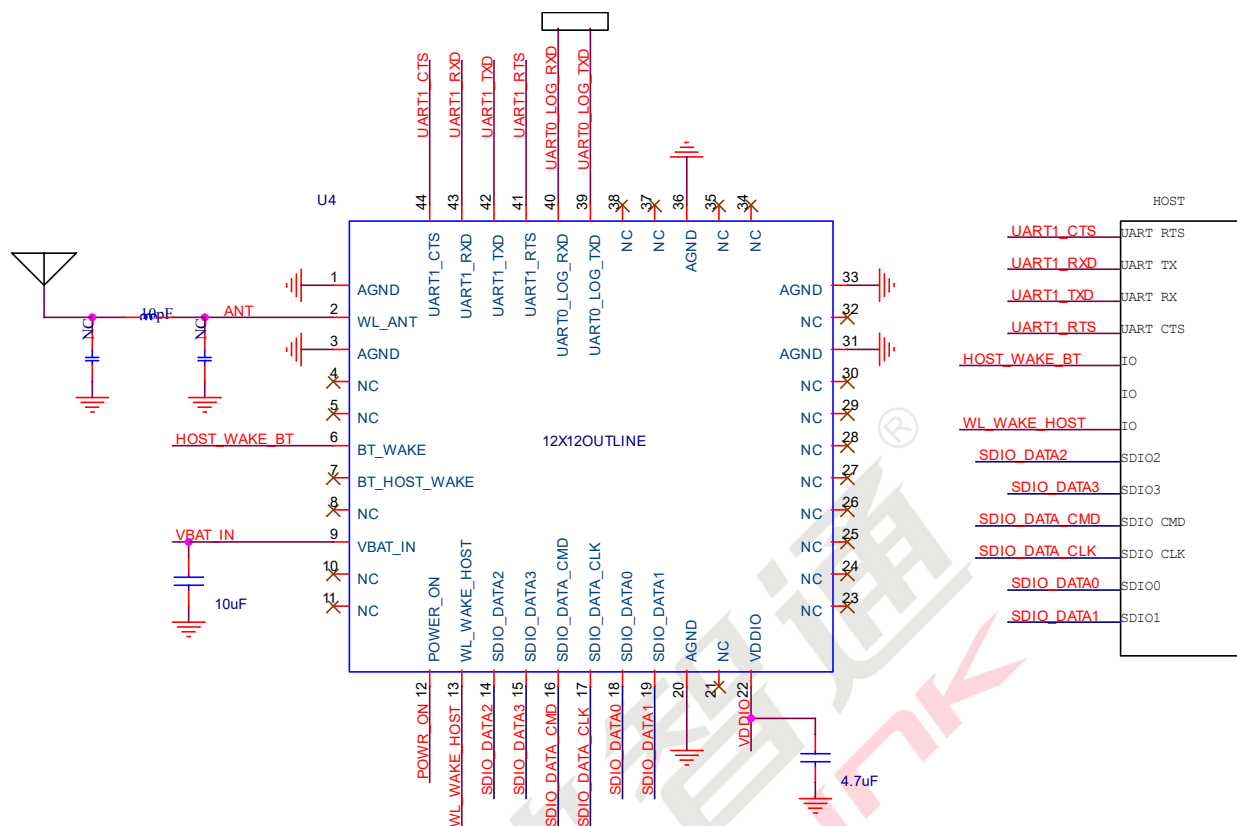
Example: 112233445566;FG3243ASXX-03 (The MAC address shall be subject to the actual one)

----The BT MAC is obtained by adding 1 to the WiFi MAC. It does not need to be written into the module and will be automatically acquired by the driver.

Technical drawing of a rectangular frame with dimensions and a central rectangular cutout. The overall dimensions are 12.0 by 12.0. The central cutout is 5.2 wide and 3.3 high. The frame consists of four vertical bars, each 2.4 wide, and four horizontal bars, each 2.4 wide. The vertical bars are spaced 1.5 apart, and the horizontal bars are spaced 1.5 apart. The central cutout is positioned 2.4 from the top and bottom edges. The frame is shown in a perspective view with a 4.6 depth dimension.

Item	Part Name	Description	Manufacturer
1	PCB	3243A-S ,FR4,TG150,12X12X0.8mm	XY-PCB, GDKX, Sunlord, SLPCB, Brainpower-PCB, TRULY, 中络
2	Crystal	2016 40MHZ,8PF,±10PPM	ECEC, Hosonic, TKD, JWT
3	Chipset	Q35343S110 QFN32	Hisilicon

10. Reference Design



Instructions:

For the SDIO CLK trace, it is recommended to reserve a series 33Ω/0Ω resistor on the HOST side, and a 10pF capacitor to ground near the module side.

For the SDIO CMD/DATA traces, it is recommended to reserve a series 33Ω/0Ω resistor on the HOST side, and a pull-up resistor for debugging purposes.

For pins 6, 13, and 42 of the module, they must not be pulled high during the startup phase and can be pulled low or left floating.

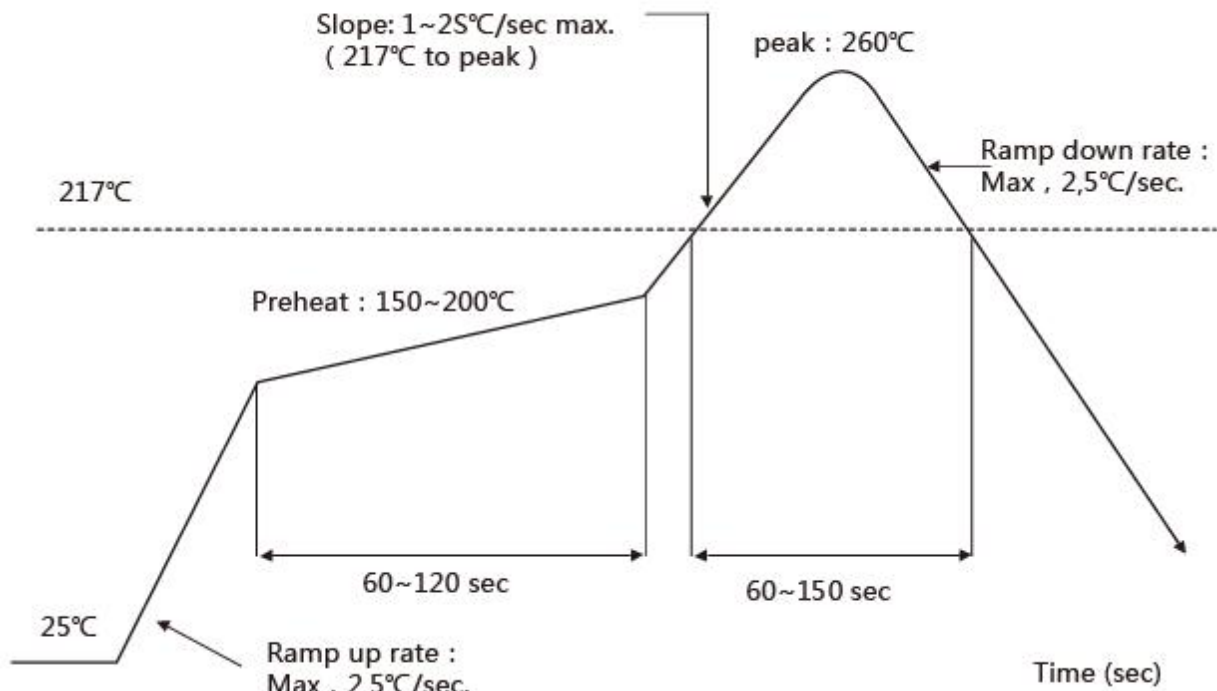
11. Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature: ≤260°C

Time within 5° C of peak temperature: ≥10s

Number of Times: ≤2 times



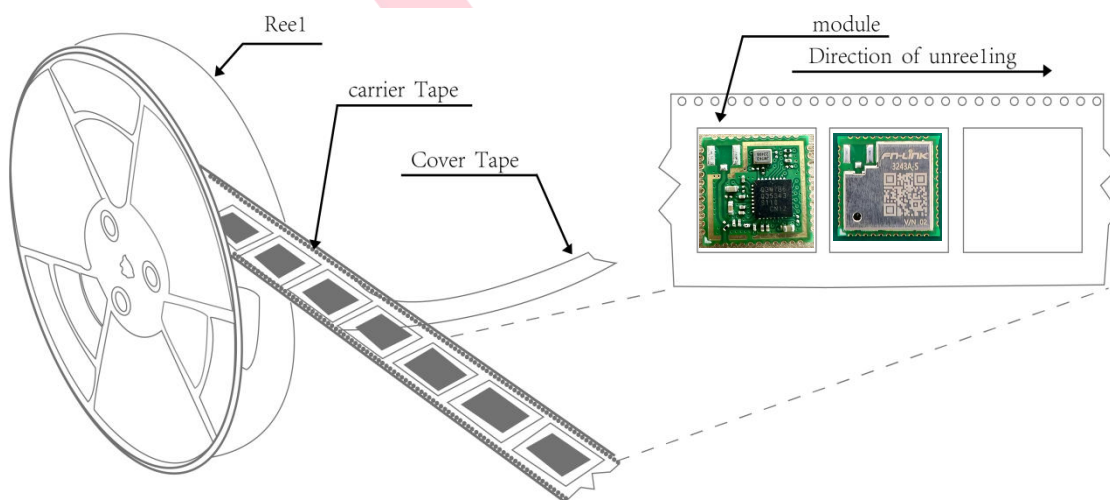
12. RoHS compliance

All hardware components are fully compliant with EU RoHS directive

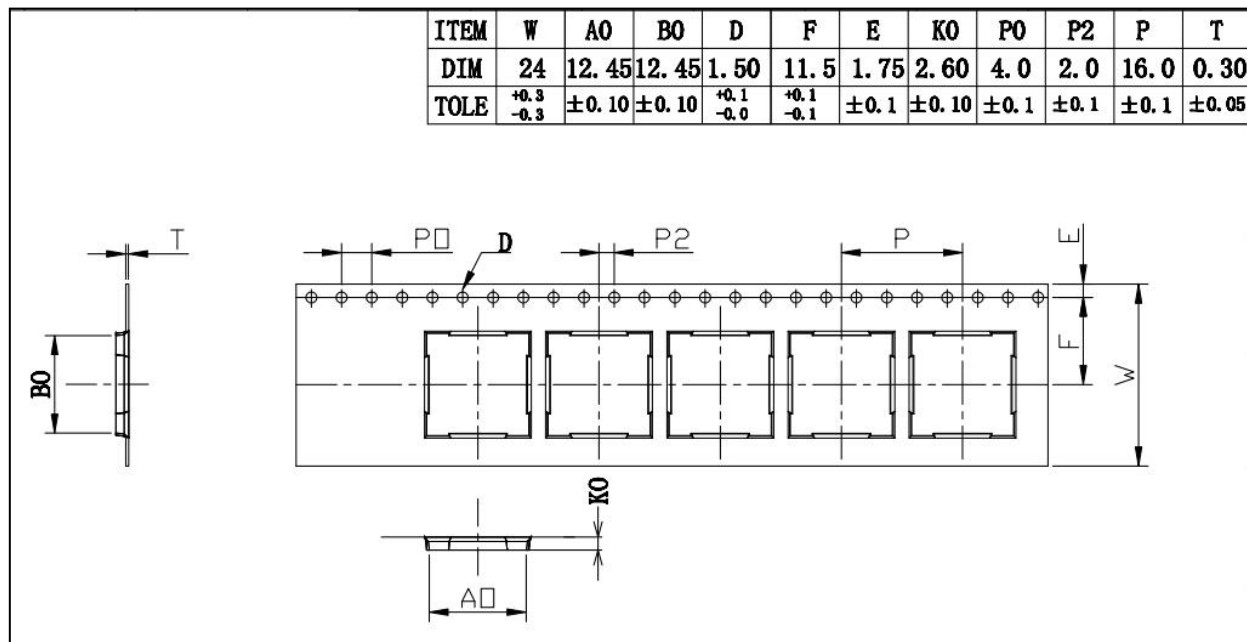
13. Package

13.1 Reel

A roll of 1500pcs



13.2 Carrier Tape Detail



13.3 Packaging Detail

the take-up package



Using self-adhesive tape

Size of black tape: 24mm*32.6m the cover tape :21.3mm*32.6m

Color of plastic disc: blue



NY bag size:450mm*415mm



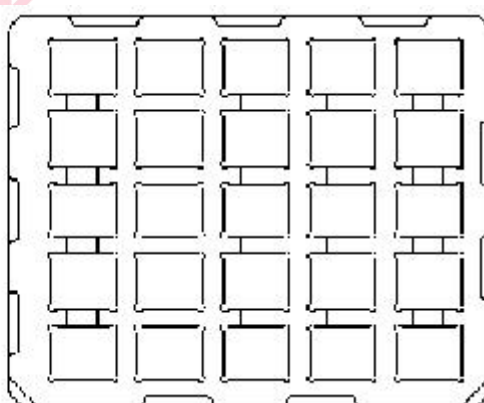
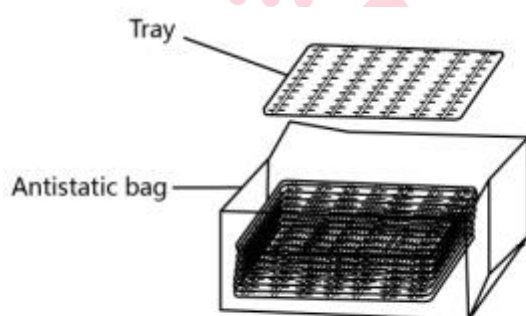
size : 350*350*35mm



The packing case size:360*210*370mm

13.4 Tray

Use pallet packaging for less than 300 pieces



14. Moisture sensitivity

The Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDEC J-STD-020, take care

all the relatives requirements for using this kind of components.

Moreover, the customer has to take care of the following conditions:

- a) Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)
- b) Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5
- c) The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition
- b) “IPC/JEDEC J-STD-033A paragraph 5.2” is respected
- d) Baking is required if conditions b) or c) are not respected
- e) Baking is required if the humidity indicator inside the bag indicates 10% RH or more

Caution:

RF exposure considerations

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

Antennas

No.	Antenna Type	Frequency Range	Max Gain	Impedance
1	FPC Antenna	2402MHz-2480MHz	3.39dBi	50ohm
2	FPC Antenna	2412MHz-2462MHz	3.39dBi	50ohm

Label and compliance information

FCC ID label on the final system must be labeled with “Contains FCC ID: 2AATL-3243A-S” or “Contains transmitter module FCC ID: 2AATL-3243A-S”.

Information on test modes and additional testing requirements

Contact FN-LINK TECHNOLOGY LIMITED will provide stand-alone modular transmitter test mode.

Additional testing and certification may be necessary when multiple modules are used in a host.

Additional testing, Part 15 Subpart B disclaimer

To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Supplier’s Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. Since this may depend on the details of how the module is integrated with the host, UConnect International Co.,Ltd. shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

FCC Warning

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.

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.

NOTE 1: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

This module certified that complies with RF exposure requirement under mobile or fixed condition, this module is to be installed only in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

A fixed device is defined as a device is physically secured at one location and is not able to be easily moved to another location.

Note 2: Any modifications made to the module will void the Grant of Certification, this module is limited to OEM installation only and must not be sold to end-users, end-user has no manual instructions to remove or install the device, only software or operating procedure shall be placed in the end-user operating manual of final products.

Note 3: Additional testing and certification may be necessary when multiple modules are used.

Note 4: The module may be operated only with the antenna with which it is authorized. Any antenna that is of the same type and of equal or less directional gain as an antenna that is authorized with the intentional radiator may be marketed with, and used with, that intentional radiator.

Note 5: For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.