



BL-M6158NS1

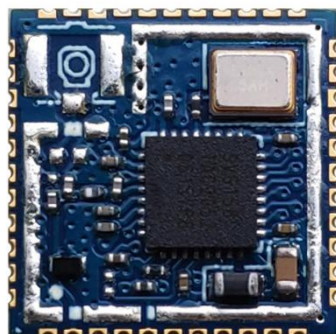
802.11n 150Mbps WLAN

SDIO Module Specification

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(Top View)



(Bottom View)

Module Name: BL-M6158NS1	
Module Type: 802.11b/g/n 150Mbps WLAN SDIO Module	
Revision: V1.2	
Customer Approval:	
Company:	
Title:	
Signature:	Date:
BL-link Approval:	
Title:	
Signature:	Date:

Revision History

Revision	Summary	Release Date	Revised By
1.0	Final release	2021-03-23	
1.1	Package update	2021-07-08	
1.2	Update Pin Definition of PIN4/5	2023-03-28	Cxf
	Optimize product Outline Drawing		

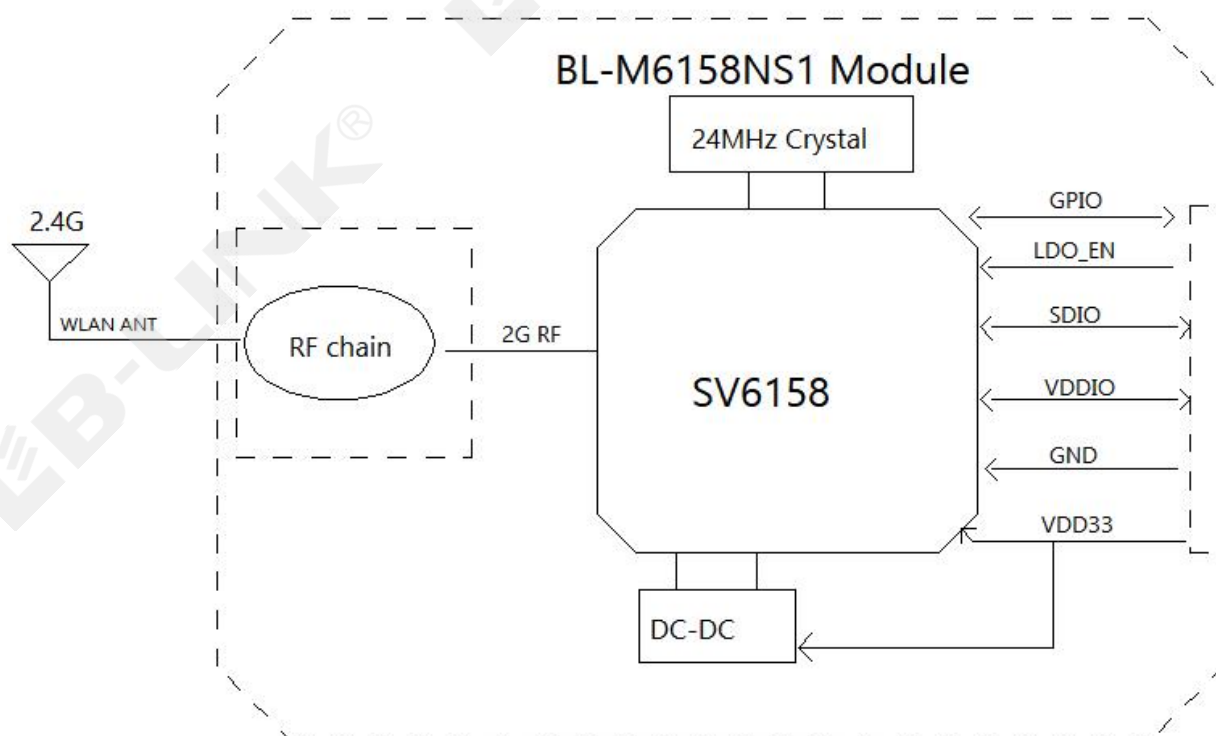
1. Introduction

BL-M6158NS1 wireless SDIO module is designed base on SV6158. It operates at 2.4~2.4835GHz supports IEEE802.11b/g/n 1T1R, wireless data rate can reach up to 150Mbps. The SDIO interface complies with SDIO 1.1/2.0 and SPI. It supports external antenna, which adapts different kinds of work environment. It' s easy and convenient to connect wireless network.

1.1 Features

- 2.4G single band with 2.4~2.4835GHz operating frequencies
- Host Interface is SDIO
- IEEE Standards: IEEE 802.11b/g/n
- Wireless PHY rate can reach up to 150Mbps
- Connect to external antenna through Half hole pad
- Power Supply: 3.3V±0.2V main power supply

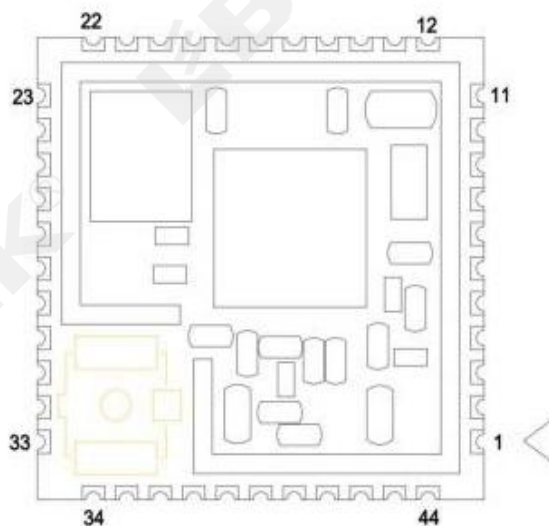
1.2 lock Diagram



1.3 General Specifications

Module Name	BL-M6158NS1
Chipset	SV6158
WLAN Standards	IEEE802.11b/g/n 1T1R, 2.4G, 150Mbps (Max)
Host Interface	SDIO 2.0 for WLAN
Antenna	Connect to external antenna through Half hole pad
Dimension	12.0*12.0*1.5mm (L*W*H)
Power Supply	DC 3.3V±0.2V @ 350 mA (Max) DC 3.3V±0.2V or 1.8V±0.1V I/O power supply
Operation Temperature	-20°C to +70°C
Operation Humidity	10% to 95% RH (Non-Condensing)

2. Pin Assignments



(Top view)

2.1 Pin Definition

No	Pin Name	Type	I/O Level	Description
1	GND	RF		RF Ground for WLAN_ANT
2	RF	RF		RF Pad for 2.4G WLAN_ANT
3	GND	RF		RF Ground for WLAN_ANT
4	NC	/		NC
5	GPIO12	I/O	VDDIO	Strapping Purpose I/O Pins
6	NC	/		NC
7	NC	/		NC
8	NC	/		NC
9	VDD33	P		DC3.3V power supply
10	NC	/		NC
11	NC	/		NC
12	LDO_EN	I	VDDIO	Reset signal to power down IC
13	WAKE_UP_HOST	I/O	VDDIO	General Purpose I/O Pins
14	SD_D2	I/O	VDDIO	SDIO data 2
15	SD_D3	I/O	VDDIO	SDIO data 3
16	SD_CMD	I/O	VDDIO	SDIO command
17	SD_CLK	I	VDDIO	SDIO clock
18	SD_D0	I/O	VDDIO	SDIO data 0
19	SD_D1	I/O	VDDIO	SDIO data 1
20	GND	P		Ground connections
21	NC	/		NC
22	VDDIO	P		1.8V or 3.3V power supply for digital I/O
23	NC	/		NC
24	NC	/		NC
25	NC	/		NC
26	NC	/		NC
27	NC	/		NC
28	NC	/		NC
29	NC	/		NC
30	NC	/		NC
31	GND	P		Ground connections
32	NC	/		NC
33	GND	P		Ground connections

34	NC	/		NC
35	NC	/		NC
36	GND	P		Ground connections
37	GPIO1/UART LOG TX	I/O	VDDIO	1. General Purpose I/O Pin GPIO1 2. UART_TXD for debug
38	GPIO0/UART LOG RX	I/O	VDDIO	1. General Purpose I/O Pin GPIO0 2. UART_RXD for debug
39	NC	/		NC
40	NC	/		NC
41	NC	/		NC
42	NC	/		NC
43	NC	/		NC
44	NC	/		NC

P: Power, I: Input, O: Output, I/O: In/Output, RF: Analog RF Port

3. Electrical and Thermal Specifications

3.1 Recommended Operating Conditions

Parameters		Min	Typ	Max	Units
Ambient Operating Temperature		-20	25	50	°C
External Antenna VSWR		/	1.7	2.0	/
Supply Voltage	VDD33	3.1	3.3	3.5	V
I/O Supply Voltage	VDDIO	1.75	3.3	3.5	V

3.2 Digital I/O DC Specifications

Symbol	Parameter	Min	Typ	Max	Units
VIH	Input High Voltage	2.0		3.6	V
VIL	Input Low Voltage	-0.3	0	0.8	V
VOH+	Output High Voltage	2.4			V
VOL-	Output Low Voltage			0.4	V

3.3 Current Consumption

Conditions : VDD33=3.3V ; Ta:25°C			
Use Case	VDD33 Current (average)		
	Typ	Max	Units
WLAN Unassociated(Linux Driver)	118	326	mA
2.4G WLAN TCP Throughput TRX 86Mbps (Linux Driver)	130	288	mA
2.4G 11b@1Mbps TX (RF-Test) 17dBm	212	220	mA
2.4G 11b@1Mbps RX (RF-Test)	80	85	mA
2.4G 11b@11Mbps TX (RF-Test) 17dBm	200	210	mA
2.4G 11b@11Mbps RX (RF-Test)	80	85	mA
2.4G 11g@6Mbps TX (RF-Test)16dBm	182	192	mA
2.4G 11g@6Mbps RX (RF-Test)	80	85	mA
2.4G 11g@54Mbps TX (RF-Test)14dBm	182	192	mA
2.4G 11g@54Mbps RX (RF-Test)	80	85	mA
2.4G 11n@HT20_MCS0 TX (RF-Test)16dBm	215	225	mA
2.4G 11n@HT20_MCS0 RX (RF-Test)	80	85	mA
2.4G 11n@HT20_MCS7 TX (RF-Test)14dBm	183	193	mA
2.4G 11n@HT20_MCS7 RX (RF-Test)	80	85	mA
2.4G 11n@HT40_MCS0 TX (RF-Test)16dBm	183	193	mA
2.4G 11n@HT40_MCS0 RX (RF-Test)	80	85	mA
2.4G 11n@HT40_MCS7 TX (RF-Test)14dBm	183	193	mA
2.4G 11n@HT40_MCS7 RX (RF-Test)	80	85	mA

4. WLAN RF Specifications

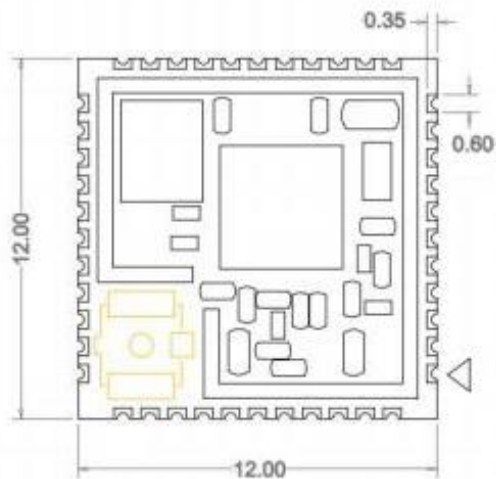
4.1 2.4G WLAN RF Specification

Conditions : VDD33=3.3V ; Ta:25°C	
Features	Description
WLAN Standard	IEEE 802.11b/g/n
Frequency Range	2.4~2.4835GHz (2.4GHz ISM Band)
Channels	Ch1~Ch13 (For 20MHz Channels)
Modulation	802.11b (DSSS): DBPSK, DQPSK, CCK; 802.11g (OFDM): BPSK, QPSK, QAM16, QAM64; 802.11n (OFDM): BPSK, QPSK, QAM16, QAM64;

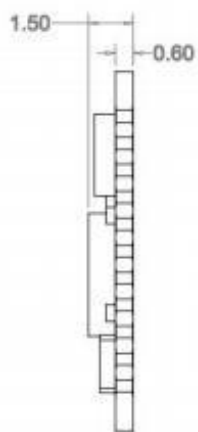
Data Rate	802.11b: 1, 2, 5.5, 11Mbps; 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps; 802.11n (HT20): MCS0~MCS7(1T1R_SISO) 6.5~72.2Mbps; 802.11n (HT40): MCS0~MCS7(1T1R_SISO) 13.5~150Mbps;		
Frequency Tolerance	≤ ±25ppm		
2.4G Transmitter Specifications (TX power tolerance calibrated, customers can define the target TX power by modifying configuration file of the driver software. Customers must define the TX power same or lower than recommended Target TX Power as below)			
TX Rate	Recommended Target TX Power (dBm)	TX Power Tolerance (dBm)	EVM (dB)
802.11b@1~11Mbps	17	±1.5	≤-10
802.11g@6Mbps	16	±1.5	≤-10
802.11g@54Mbps	14	±1.5	≤-25
802.11n@HT20_MCS0	16	±1.5	≤-10
802.11n@HT20_MCS7	14	±1.5	≤-27
802.11n@HT40_MCS0	16	±1.5	≤-10
802.11n@HT40_MCS7	14	±1.5	≤-27
2.4G Receiver Specifications			
RX Rate	Min Input Level(Typ,dBm)	Max Input Level(Typ,dBm)	PER
802.11b@1Mbps	-92	-10	< 8%
802.11b@11Mbps	-85	-10	< 8%
802.11g@6Mbps	-84	-10	< 10%
802.11g@54Mbps	-68	-10	< 10%
802.11n@HT20_MCS0	-84	-10	< 10%
802.11n@HT20_MCS7	-65	-10	< 10%
802.11n@HT40_MCS0	-84	-10	< 10%
802.11n@HT40_MCS7	-65	-10	< 10%

5. Mechanical Specifications

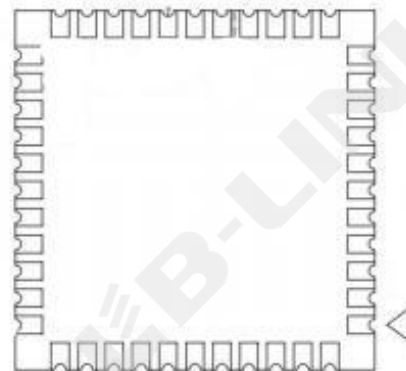
5.1 Module Outline Drawing



(Top View)

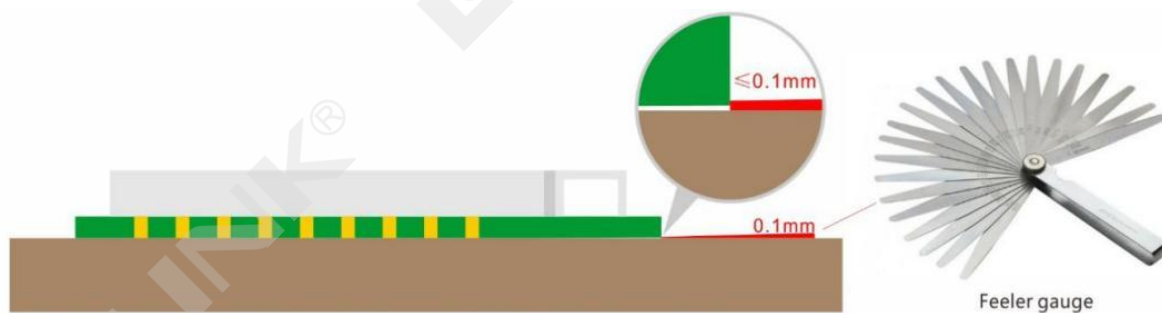


(Side View)



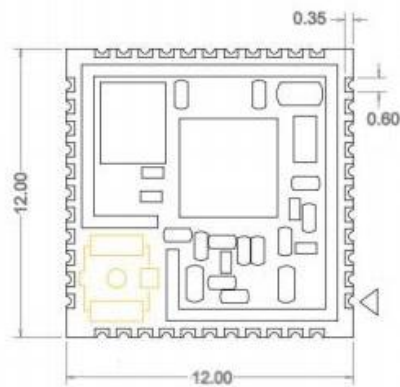
(Bottom View)

Module dimension: 12.0*12.0*1.5mm (L*W*H; Tolerance: $\pm 0.15\text{mm}$)

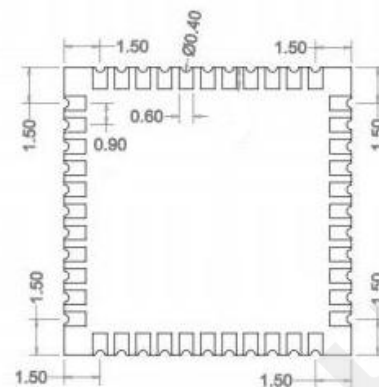


Module Bow and Twist: $\leq 0.1\text{mm}$

5.2 Mechanical Dimensions



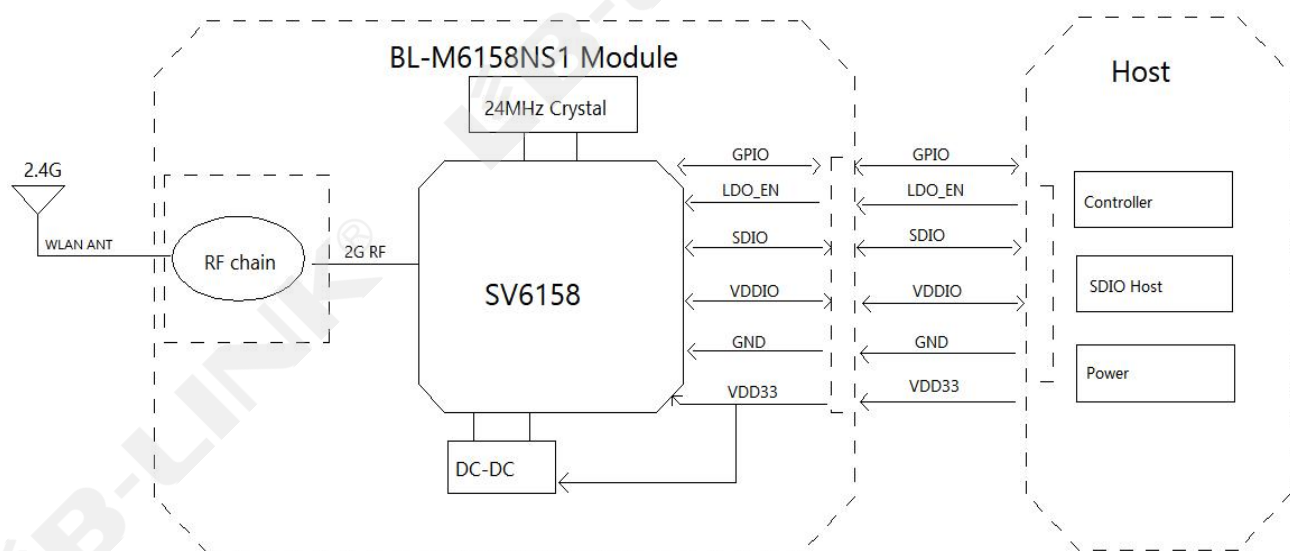
(Top View)



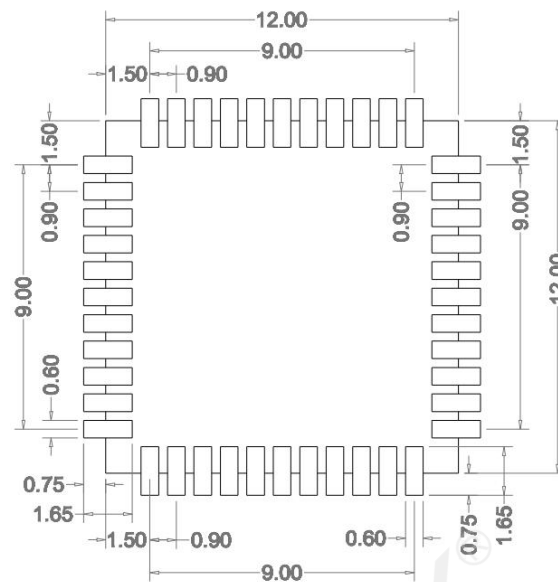
(Bottom View)

6. Application Information

6.1 Typical Application Circuit

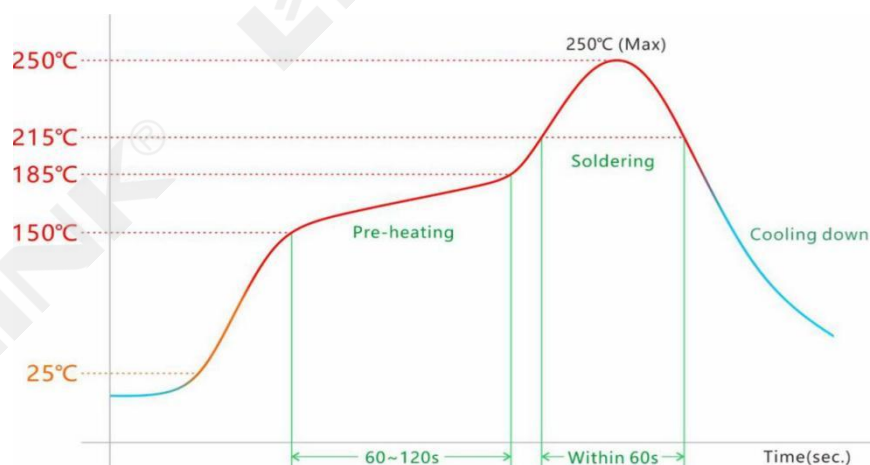


6.2 Recommend PCB Layout Footprint



(Design size: mm)

6.3 Reflow Soldering Standard Conditions



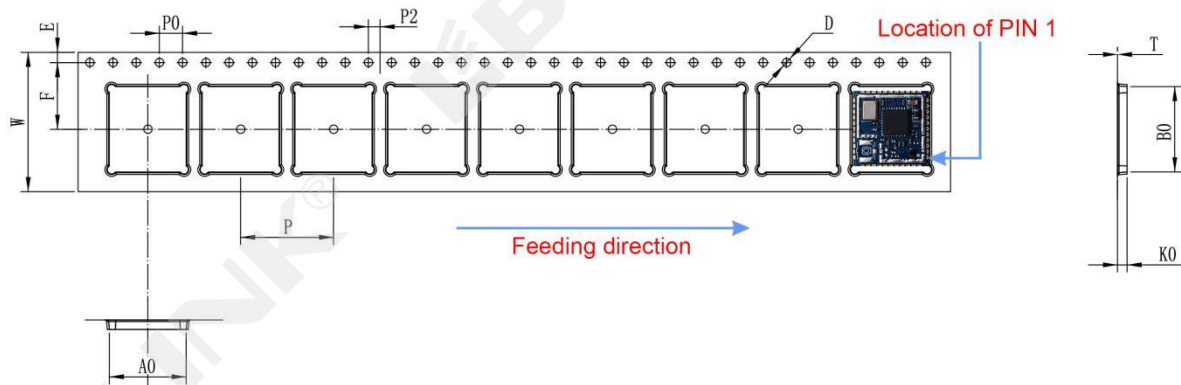
Please use the reflow within 2 times.
Set up the highest temperature within 250°C.

7. Key Components Of Module

No.	Parts	Specification	Manufacturer	Note
1	Chipset	SV6158	Shenzhen iComm Semiconductor CO.,LTD	
2	PCB	BL-M6158NS1	ShenZhen Tie Fa Technology Limited	
			Quzhou Sunlord Electronics Co.,Ltd	
			Jiangsu Lantek Electronics Tech Co.,LTD	
3	Crystal	24MHZ-3225	LUCKI CM ELECTRONICS CO.,LTD	
			SHENZHEN KAIYUEXIANG ELECTRONICS CO.,LTD	
			Chengde oscillator Electronic Technology CO.,LTD	

8. Package and Storage Information

8.1 Package Dimensions



ITEM	W	A0	B0	K0	E	F	P	P0	P2	D	T
DIM	24.00±0.3	12.20±0.1	12.20±0.1	1.80±0.1	1.75±0.1	11.5±0.1	16.00±0.1	4.00±0.1	2.00±0.1	Ø1.5±0.1	0.30±0.05

**Package specification:**

1. 2,000 modules per roll and 10,000 modules per box.
2. Outer box size: 37.5*36*29cm.
3. The diameter of the blue environment-friendly rubber plate is 13 inches, with a total thickness of 28mm (with a width of 24mm carrying belt).
4. Put 1 package of dry agent (20g) and humidity card in each anti-static vacuum bag.
5. Each carton is packed with 5 boxes.

8.2 Storage Conditions**Absolute Maximum Ratings:**

Storage temperature: -40°C to +85°C,
Storage humidity: 10% to 95 (Non-Condensing)

Recommended Storage Conditions:

Storage temperature: 5°C to +40°C,
Storage humidity: 20% to 90% RH

Please use this Module within 12month after vacuum-packaged.
The Module shall be stored without opening the packing.
After the packing opened, the Module shall be used within 72hours.
When the color of the humidity indicator in the packing changed,
the Module shall be baked before soldering.
Baking condition: 60°C, 24hours, 1time.

ESD Sensitivity:

ESD Protection: 3KV(HBM, Maximum rating)
The Module is a static-sensitive electronic device.
Do not operate or store near strong electrostatic fields.
Take proper ESD precautions!

**ESD CAUTION**