

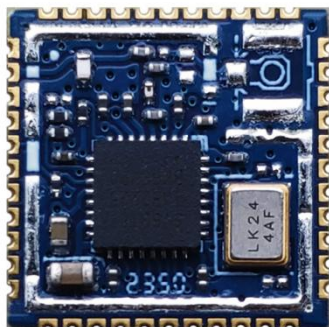


BL-M6318XS1

**802.11ax 229Mbps WLAN
SDIO Module Specification**

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(Top View)



(Bottom View)

Module Name: BL-M6318XS1	
Module Type: 802.11b/g/n/ax 229Mbps WLAN SDIO Module	
Revision: V1.0	
Customer Approval:	
Company:	
Title:	
Signature:	Date:
LB-link Approval:	
Title:	
Signature:	Date:

Revision History

Revision	Summary	Release Date	Revised By
0.1	Initial release	2024-02-20	Fnz
1.0	Official version	2024-03-20	Fnz

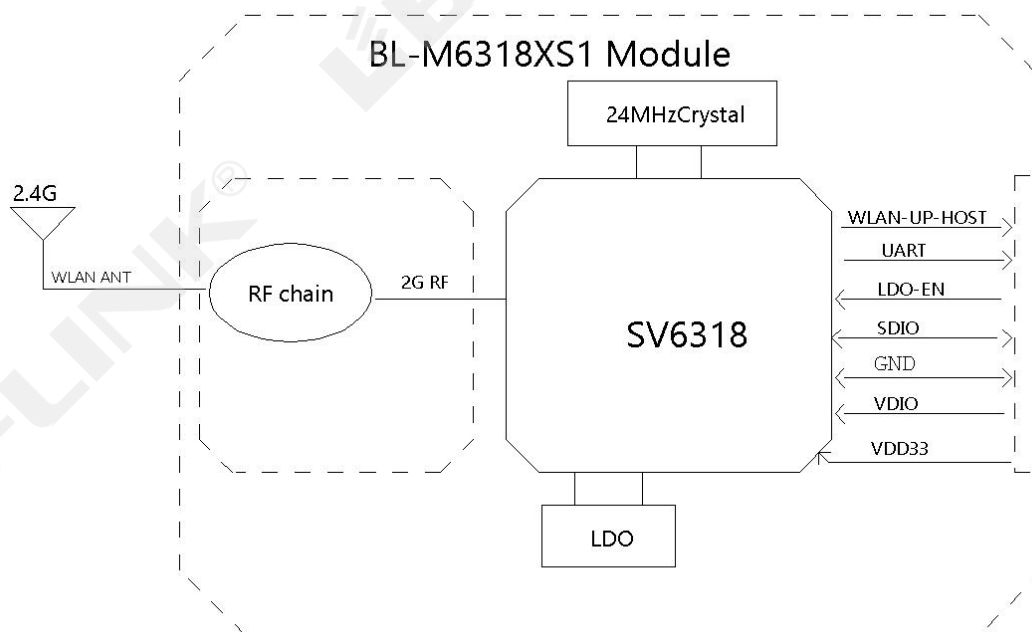
1. Introduction

BL-M6318XS1 is a highly integrated WLAN Module base on SV6318, which combines WLAN MAC, 1T1R Baseband and Radio in single chip. It supports IEEE 802.11b/g/n/ax standard and provides the maximum PHY rate up to 229Mbps. The module provides excellent WLAN performance and low-power cost ideal for wireless network applications such as OTT boxes, IP cameras, POS, and other devices that need wireless connection.

1.1 Features

- Operating Frequencies: 2.4~2.4835GHz
- Host Interface is SDIO
- Compatible IEEE802.11 b/g/n/ax with 20/40M bandwidth, PHY rate can reach up to 229Mbps
- Connect to external antenna through Half hole pad
- Power Supply: 3.3V main power and 1.8V/3.3V I/O power

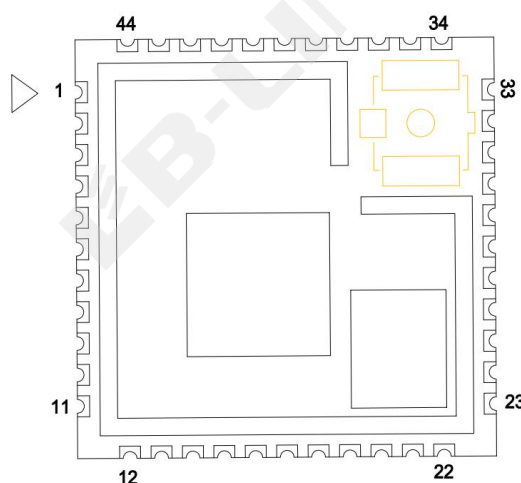
1.2 Block Diagram



1.3 General Specifications

Module Name	BL-M6318XS1
Chipset	SV6318
WLAN Standards	IEEE802.11b/g/n/ax
Host Interface	SDIO2.0 for WLAN
Antenna	Connect to external antenna through Half hole pad
Dimension	12.0*12.0*1.7mm (L*W*H)
Power Supply	3.3V±0.2V @500 mA (Max) main power; 3.3V±0.2V or 1.8V±0.1V for digital I/O power
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	GPIO13	I/O	VDIO	General Purpose I/O Pin GPIO13
6	NC	/		NC
7	NC	/		NC
8	NC	/		NC
9	VDD33	P		DC3.3V main power supply
10	NC	/		NC
11	NC	/		NC
12	LDO_EN	I	VDIO	Reset active low input signal to reset/power down the module , internal pull high by 390K and pull low by 300K resistor
13	WAKE_UP_HOST	I/O	VDIO	1.General Purpose I/O Pin GPIO14 2. WLAN wake up host output signal
14	SD_D2	I/O	VDIO	SDIO data 2
15	SD_D3	I/O	VDIO	SDIO data 3
16	SD_CMD	I/O	VDIO	SDIO command
17	SD_CLK	I	VDIO	SDIO clock
18	SD_D0	I/O	VDIO	SDIO data 0
19	SD_D1	I/O	VDIO	SDIO data 1
20	GND	P		Ground connections
21	NC	/		NC
22	VDIO	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	RX_IRQ	I/O	VDIO	1. General Purpose I/O Pin GPIO33 2. RX_IRQ (out_band)
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	VDIO	1.General Purpose I/O Pin GPIO1 2.UART_TX for debug

38	GPIO0/UART/LOG RX	I/O	VDIO	1. General Purpose I/O Pin GPIO0 2. UART_RX for debug
39	NC	/		NC
40	NC	/		NC
41	NC	/		NC
42	GPIO37/UART2_TX	I/O	VDIO	1.General Purpose I/O Pin GPIO37 2.UART2_TX reserved for test
43	GPIO36/UART2_RX	I/O	VDIO	1.General Purpose I/O Pin GPIO37 2.UART2_RX reserved for test
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	70	°C
External Antenna VSWR			1.7	2.0	/
Supply Voltage	VDD33	3.1	3.3	3.5	V
	VDIO	3.1	3.3	3.5	V
		1.7	1.8	1.9	V

3.2 Current Consumption

Conditions : VDD33=3.3V, VDIO=3.3V; Ta:25°C			
Use Case	VDD33 Current		
	Typ(I _{RMS})	Max(I _{Peak})	Units
WLAN Unassociated (Linux Driver)	110	130	mA
2.4G 11b@1Mbps TX@17dBm (TX RF test)	290	316	mA
2.4G 11b@1Mbps (RX RF test)	108	125	mA
2.4G 11b@11Mbps TX@17dBm (TX RF test)	272	324	mA
2.4G 11g@6Mbps TX@17dBm (TX RF test)	281	332	mA
2.4G 11g@6Mbps (RX RF test)	85	90	mA
2.4G 11g@54Mbps TX@16dBm (TX RF test)	217	325	mA

2.4G 11n@HT20_MCS0 TX@17dBm (TX RF test)	295	328	mA
2.4G 11n@HT40_MCS0 TX@17dBm (TX RF test)	251	325	mA
2.4G 11n@HT40_MCS7 TX@15dBm (TX RF test)	234	316	mA
2.4G 11ax@HE_SU 20M_MCS0 TX@16dBm (TX RF test)	278	340	mA
2.4G 11ax@HE_SU 20M_MCS9 TX@14dBm (TX RF test)	252	324	mA
2.4G 11ax@HE_SU 40M_MCS0 TX@16dBm (TX RF test)	291	340	mA
2.4G 11ax@HE_SU 40M_MCS9 TX@13dBm (TX RF test)	235	324	mA
2.4G 11ax@HE_SU 40M_MCS9 RX (RX RF test)	108	125	mA

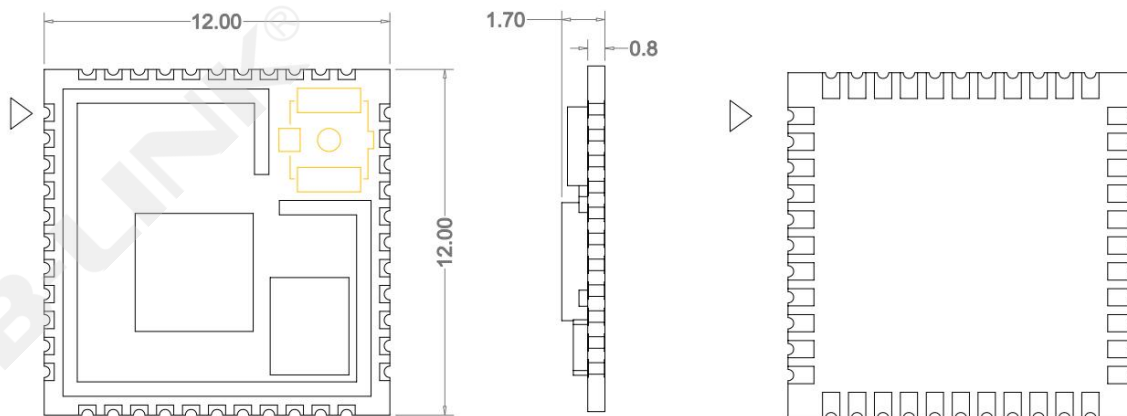
4. 2.4G WLAN RF Specifications

Conditions : VDD33=3.3V, VDIO=3.3V; Ta:25℃			
Features		Description	
WLAN Standard		IEEE 802.11b/g/n/ax	
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; 802.11ax (OFDMA): BPSK, BPSK_DCM, QPSK, QPSK_DCM, QAM16, QAM16_DCM, QAM64, QAM256	
Data Rate		802.11b: 1, 2, 5.5, 11Mbps; 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps; 802.11n (HT20): MCS0~MCS7 6.5~72.2Mbps; 802.11n (HT40): MCS0~MCS7 13.5~150Mbps; 802.11ax (HE_MU,OFDMA 26~242RU): MCS0~MCS9 0.4~114.7Mbps; 802.11ax (HE_SU, non-OFDMA 20MHz): MCS0~MCS9 3.6~114.7Mbps; 802.11ax (HE_SU, non-OFDMA 40MHz): MCS0~MCS9 7.3~229.4Mbps;	
Frequency Tolerance		≤ ±20ppm	
2.4G Transmitter Specifications (TX power tolerance calibrated, customers can define the target TX power within recommended range by modifying configuration file of the driver software)			
TX Rate	Recommended Target TX Power (dBm)	TX Power Tolerance (dBm)	EVM (dB)
802.11b@1~11Mbps	17	±2	≤-10
802.11g@6Mbps	17	±2	≤-10
802.11g@54Mbps	16	±2	≤-25
802.11n@HT20_MCS0	17	±2	≤-10

802.11n@HT20_MCS7	15	±2	≤-28
802.11n@HT40_MCS0	17	±2	≤-10
802.11n@HT40_MCS7	15	±2	≤-28
802.11ax@HE_SU 40M_MCS0	16	±2	≤-15
802.11ax@HE_SU 40M_MCS9	13	±2	≤-32
2.4G Receiver Specifications			
RX Rate	Min Input Level (Typ. dBm)	Max Input Level (Typ. dBm)	PER
802.11b@1Mbps	-95	-10	< 8%
802.11b@11Mbps	-85	-10	< 8%
802.11g@6Mbps	-88	-10	< 10%
802.11g@54Mbps	-71	-10	< 10%
802.11n@HT20_MCS0	-87	-10	< 10%
802.11n@HT20_MCS7	-68	-10	< 10%
802.11n@HT40_MCS0	-87	-10	< 10%
802.11n@HT40_MCS7	-66	-10	< 10%
802.11ax@HE_SU 40M_MCS0	-86	-10	< 10%
802.11ax@HE_SU 40M_MCS9	-61	-10	< 10%

5. Mechanical Specifications

5.1 Module Outline Drawing

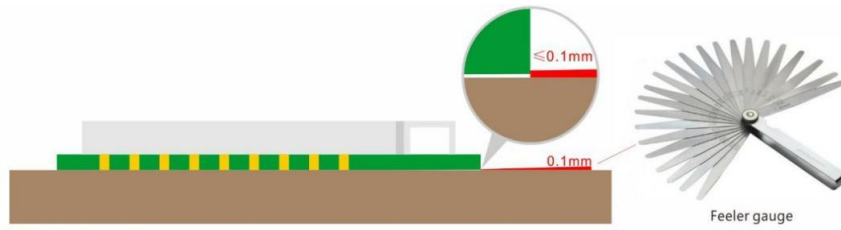


(Top View)

(Side View)

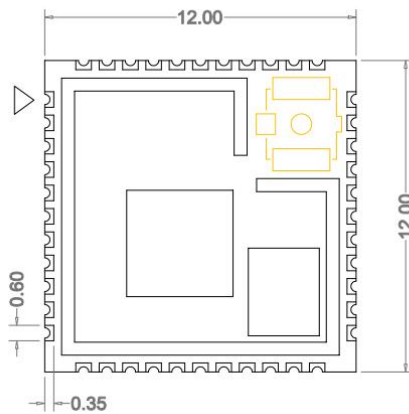
(Bottom View)

Module dimension: 12.0*12.0*1.7mm (L*W*H; Tolerance: ±0.3mm_L/W, ±0.2mm_H)

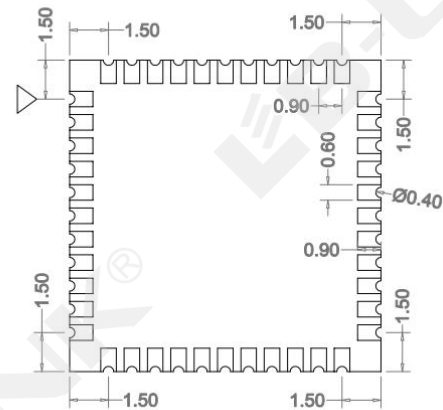


Module Bow and Twist: $\leq 0.1\text{mm}$

5.2 Mechanical Dimensions



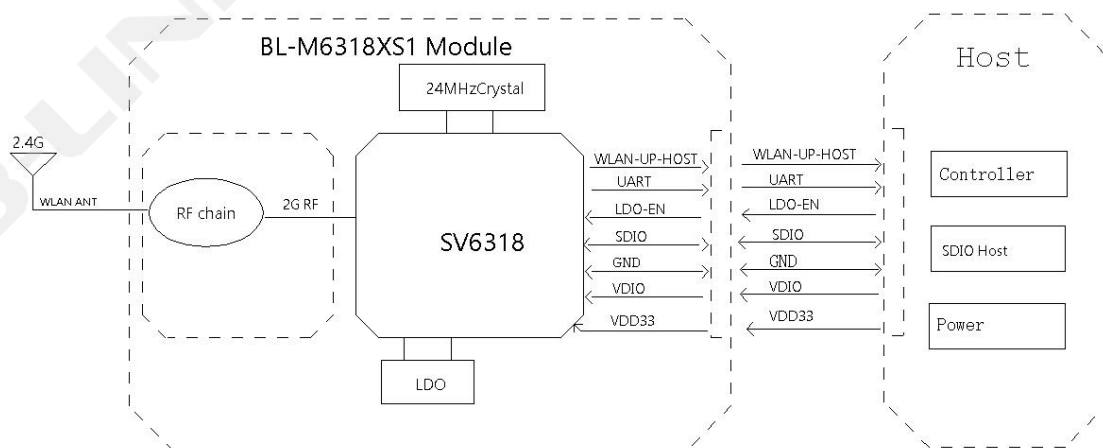
(Top View)



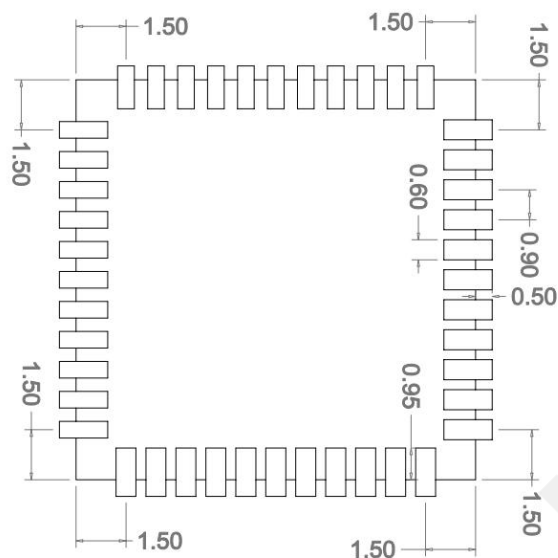
(Bottom View)

6. Application Information

6.1 Typical Application Circuit

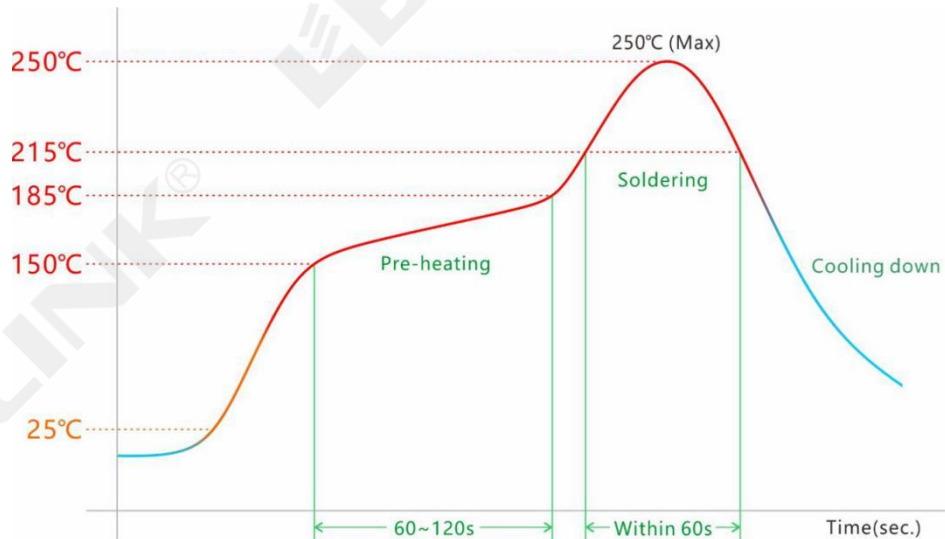


6.2 Recommend PCB Layout Footprint



(Design Units: mm)

6.3 Reflow Soldering Standard Conditions



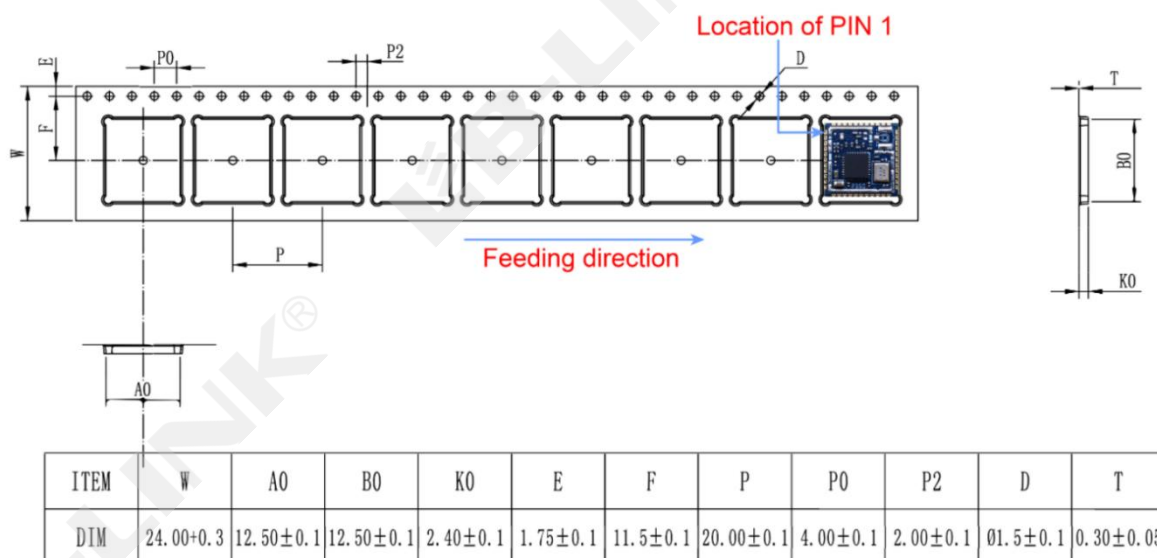
Please use the reflow within 2 times.
Set up the highest temperature within 250°C.

7. Key Components Of Module

No.	Parts	Specification	Manufacturer	Note
1	Chipset	SV6318	Shenzhen iComm Semiconductor Co.,Ltd	
2	PCB	BL-M6318XS1	SHEN ZHEN QILI ELECTRON CO.,LTD	
			Quzhou Sunlord Electronics Co.,Ltd	
			ShenZhen Tie Fa Technology Limited	
3	Crystal	24MHz-3225	Chengde oscillator Electronic Technology CO.,LTD	
			LUCKI CM ELECTRONICS CO.,LTD	
			JinHua East Crystal Electronic CO.,LTD	

8. Package and Storage Information

8.1 Package Dimensions





Package specification:

- 1,000 modules per roll and 5,000 modules per box.
- Outer box size: 37.5*36*29cm.
- 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).
- Put 1 package of dry agent (20g) and humidity card in each anti-static vacuum bag.
- 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: 2KV(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