

技术规格书

SPECIFICATION

WIFI模块

IEEE 802.11b/g/n 1T/1R USB Module

SDWF-8B1

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Revision History (版本记录)

版本	拟制/ 更改日期	主要更改内容	更改者	确认者
SDWF-8B	2013-07-01	Release new version		
SDWF-8B	2013-07-29	Add the interface schema label		

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1. Description

This document is to specify the product requirements for 802.11 b/g/n USB Module. This Card is based on Realtek RTL8188ETV chipset that complies with IEEE 802.11g, IEEE 802.11b, IEEE 802.11n standard from 2.4G-2.5GHz, and it can be used to provide up to 54Mbps for 802.11g, 11Mbps for 802.11b and 150Mbps for 802.11n to connect your wireless LAN.

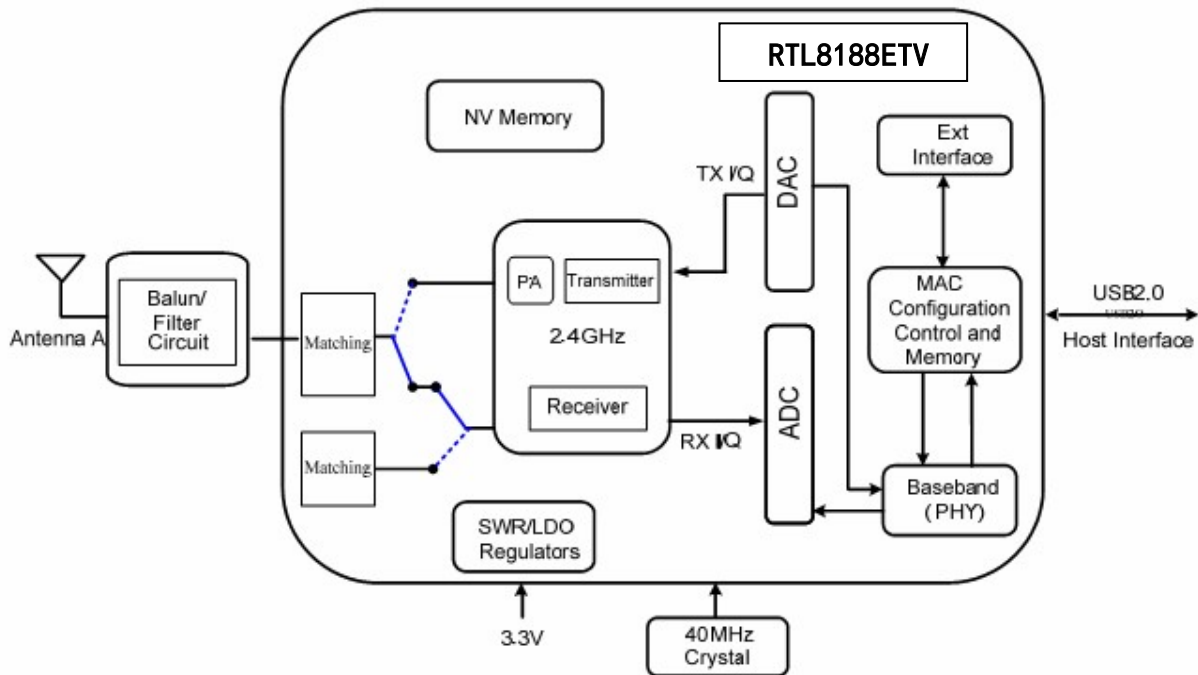
With seamless roaming, fully interoperability and advanced security with WEP standard, 802.11b/g/n USB Module offers absolute interoperability with different vendors 802.11b, 802.11g, 802.11n Access Points through the wireless LAN.

2. Features

- (1) Compatible with IEEE 802.11b standard to provide wireless 11Mbps data rate.
- (2) Compatible with IEEE 802.11g standard to provide wireless 54Mbps data rate.
- (3) Compatible with IEEE 802.11n standard to provide wireless 150Mbps data rate.
- (4) Operation at 2.4G-2.5GHz frequency band to meet worldwide regulations
- (5) Supports Windows XP, Win7, Linux OS
- (6) Dynamic data rate scaling at 6,9,12,18,24,36,48,54 for IEEE802.11g
- (7) Dynamic data rate scaling at 1,2,5.5, and 11Mbps for IEEE802.11b
- (8) Maximum reliability, throughput and connectivity with automatic data rate switching
- (9) Support wireless data encryption with 64/128-bit WEP for security
- (10) Support infrastructure networks via Access Point and ad-hoc network via peer-to-peer communication
- (11) Drivers support Windows 2000, XP, Vista
- (12) Compatible with USB 1.0/1.1/2.0 interface
- (13) RoHS compliant.

3. Application Diagrams

3.1 Functional Block Diagram



3.2 General Requirements

3.2.1 IEEE 802.11b Section

	Feature	Detailed Description
3. 2. 1. 1	Standard	IEEE 802.11b
3. 2. 1. 2	Radio and Modulation Schemes	DQPSK , DBPSK , DSSS , and CCK
3. 2. 1. 3	Operating Frequency	2400 ~ 2483.5MHz ISM band
3. 2. 1. 4	Channel Numbers	11 channels for United States 13 channels for Europe Countries 14 channels for Japan
3. 2. 1. 5	Data Rate	1,2, 5.5, and 11Mbps
3. 2. 1. 6	Media Access Protocol	CSMA/CA with ACK
3. 2. 1. 7	Transmitter Output Power at Antenna Connector	Typical RF Output Power at each RF chain,Data Rate and at roomTemp. 25degree C 16dBm(±2dB) at 1,2,5.5,11Mbps
3. 2. 1. 8	Receiver Sensitivity at Antenna Connector	Typical Sensitivity at Which Frame(10000-byte PDUs)Error Rate=8% -82dBm at 1Mbps -82dBm at 2Mbps -82dBm at 5.5Mbps -82dBm at 11Mbps

3.2.2 IEEE 802.11g Section

	Feature	Detailed Description
3.2.2.1	Standard	IEEE 802.11g
3.2.2.2	Radio and Modulation Type	QPSK , BPSK , 16QAM ,64QAM with OFDM
3.2.2.3	Operating Frequency	2400 ~ 2483.5MHz ISM band
3.2.2.4	Channel Numbers	11 channels for United States 13 channels for Europe Countries 13 channels for Japan
3.2.2.5	Data Rate	6,9,12,18,24,36,48,54Mbps
3.2.2.6	Media Access Protocol	CSMA/CA with ACK
3.2.2.7	ransmitter Output Power at Antenna Connector	Typical RF Output Power(tolerance±2dB) at each RF chain,Data Rate and at room Temp. 25degree C 15±2dBm at 6~18Mbps 15±2dBm at 36 and 24Mbps 14±2dBm at 54 and 48Mbps
3.2.2.8	Receiver Sensitivity at Antenna Connector	Typical Sensitivity at Which Frame(10000-byte PDUs)Error rate=10% -80dBm at 6Mbps -80dBm at 9Mbps -80dBm at 12Mbps -80dBm at 18Mbps -80dBm at 24Mbps -80dBm at 36Mbps -80dBm at 48Mbps -80dBm at 54Mbps

3.2.3 IEEE 802.11n draft 2.0 Section

	Feature	Detailed Description																																																	
3.2.3.1	Standard	IEEE 802.11n																																																	
3.2.3.2	Radio and Modulation Type	BPSK , QPSK , 16QAM ,64QAM with OFDM																																																	
3.2.3.3	Operating Frequency	2400 ~ 2483.5MHz ISM band Channel Frequency for HT20: 2412~2472MHZ Channel Frequency for HT40: 2422~2462MHZ																																																	
3.2.3.4	Data Rate(Mbps)	TX/RX: MCS0 ~MCS7 <table border="1" data-bbox="635 589 1476 1016"> <thead> <tr> <th rowspan="2">MCS</th> <th colspan="2">1</th> <th colspan="2">2</th> </tr> <tr> <th>20MHz</th> <th>40MHz</th> <th>20MHz</th> <th>40MHz</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>6.5</td> <td>13.5</td> <td>7.2</td> <td>15</td> </tr> <tr> <td>1</td> <td>13</td> <td>27</td> <td>14.4</td> <td>30</td> </tr> <tr> <td>2</td> <td>19.5</td> <td>40.5</td> <td>21.7</td> <td>45</td> </tr> <tr> <td>3</td> <td>26</td> <td>54</td> <td>28.9</td> <td>60</td> </tr> <tr> <td>4</td> <td>39</td> <td>□1</td> <td>43.□</td> <td>90</td> </tr> <tr> <td>5</td> <td>52</td> <td>108</td> <td>57.8</td> <td>120</td> </tr> <tr> <td>6</td> <td>58.5</td> <td>121.5</td> <td>65.0</td> <td>135</td> </tr> <tr> <td>7</td> <td>65</td> <td>135</td> <td>72.2</td> <td>150</td> </tr> </tbody> </table>	MCS	1		2		20MHz	40MHz	20MHz	40MHz	0	6.5	13.5	7.2	15	1	13	27	14.4	30	2	19.5	40.5	21.7	45	3	26	54	28.9	60	4	39	□1	43.□	90	5	52	108	57.8	120	6	58.5	121.5	65.0	135	7	65	135	72.2	150
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3.2.3.5	Media Access Protocol	CSMA/CA with ACK																																																	
3.2.3.6	Transmitter Output	Typical RF Output Power(tolerance±2dB) at each RF chain,Data																																																	
	Power at Antenna Connector	Rate and at room Temp. 25degree C --HT 20 <ul style="list-style-type: none"> ● 14±2dBm at MCS 0,1 ● 14±2dBm at MCS 2,3 ● 13±2dBm at MCS 4,5 ● 13±2dBm at MCS 6,7 --HT 40 <ul style="list-style-type: none"> ● 14±2dBm at MCS 0,1 ● 14±2dBm at MCS 2,3 ● 13±2dBm at MCS 4,5 ● 13±2dBm at MCS 6,7 																																																	
3.2.3.7	Receiver Sensitivity at Antenna Connector	Typical Sensitivity at Which Frame(10000-byte PDUs)Error Rate=10% --HT20 <ul style="list-style-type: none"> ● -76dBm at MCS0 ● -76dBm at MCS1 ● -76dBm at MCS2 ● -76dBm at MCS3 ● -76dBm at MCS4 ● -76dBm at MCS5 ● -76dBm at MCS6 ● -76dBm at MCS7 																																																	

		--HT40 <ul style="list-style-type: none"> • -74dBm at MCS0 • -74dBm at MCS1 • -74dBm at MCS2 • -74dBm at MCS3 • -74dBm at MCS4 • -74dBm at MCS5 • -74dBm at MCS6 • -74dBm at MCS7
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4. Electrical and Thermal Characteristics

4.1 Temperature Limit Ratings

Parameter	Minimum	Maximum	Units
Storage Temperature	-55	+125	°C
Ambient Operating Temperature	0	70	°C
Junction Temperature	0	125	°C

4.2 General Section

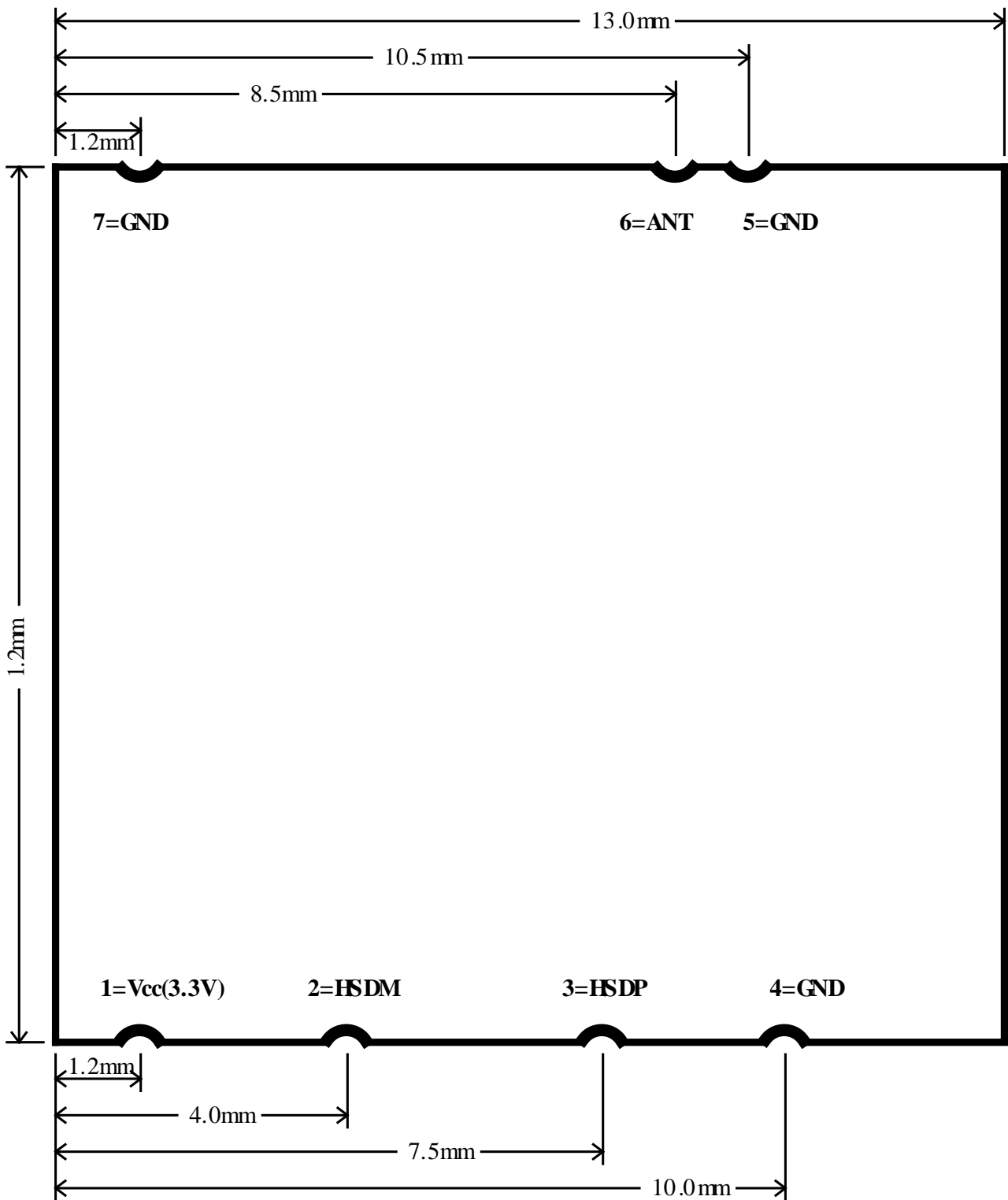
	Feature	Detailed Description
4.2.1	Antenna Type	Integrated antenna
4.2.2	Operating Voltage	3.3V±0.2V
4.2.3	Current Consumption	350mA at continuous transmit mode 220mA at receive mode w/o receiving packet
4.2.4	USB	High Speed USB2.0 Interface

4.3 Software

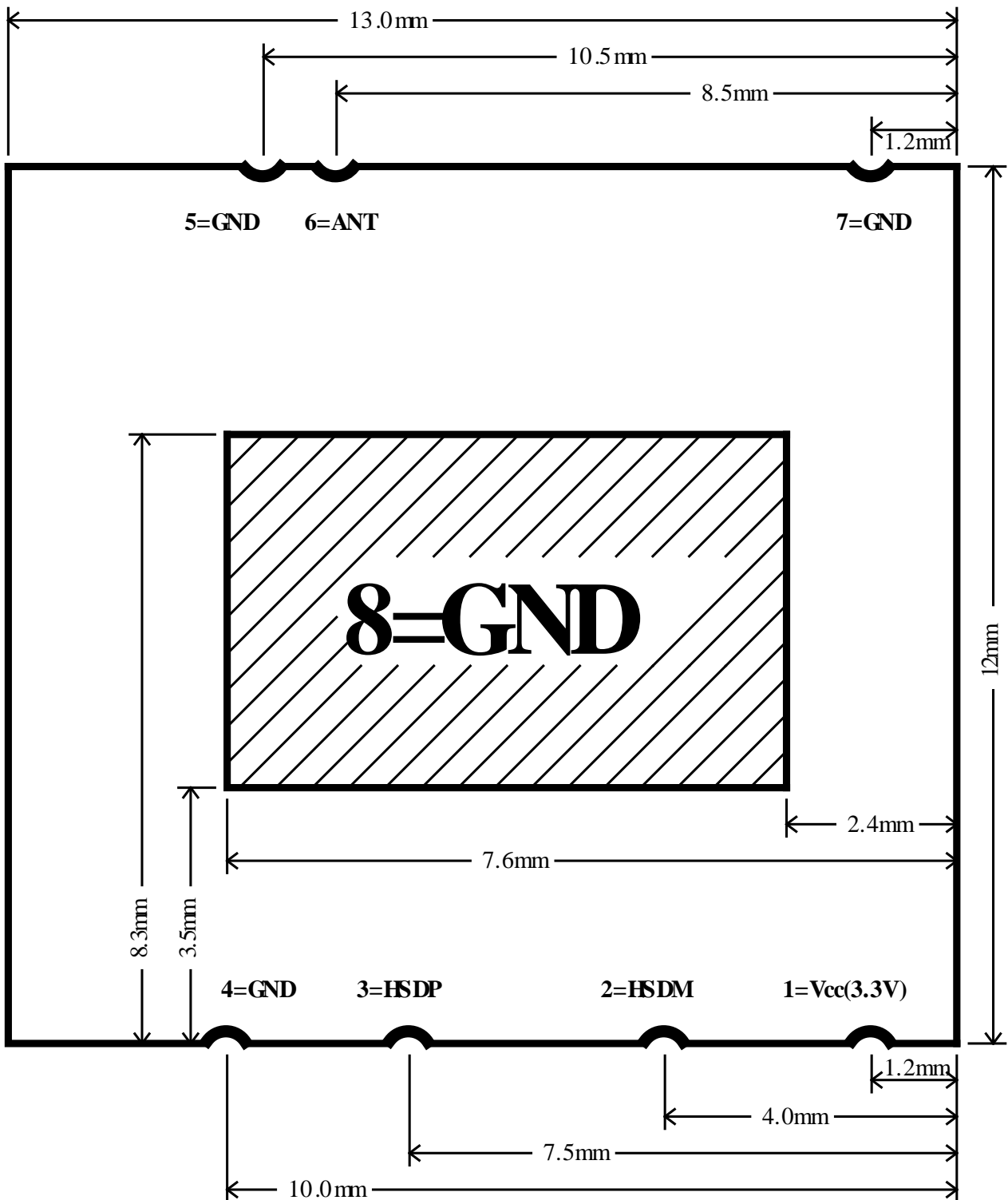
Driver	Windows XP/ WinCE/ Vista,/ Win7, Linux, MAC
Security	64/128-bits WEP, WPA, WPA2

4.4 Mechanical Dimensions

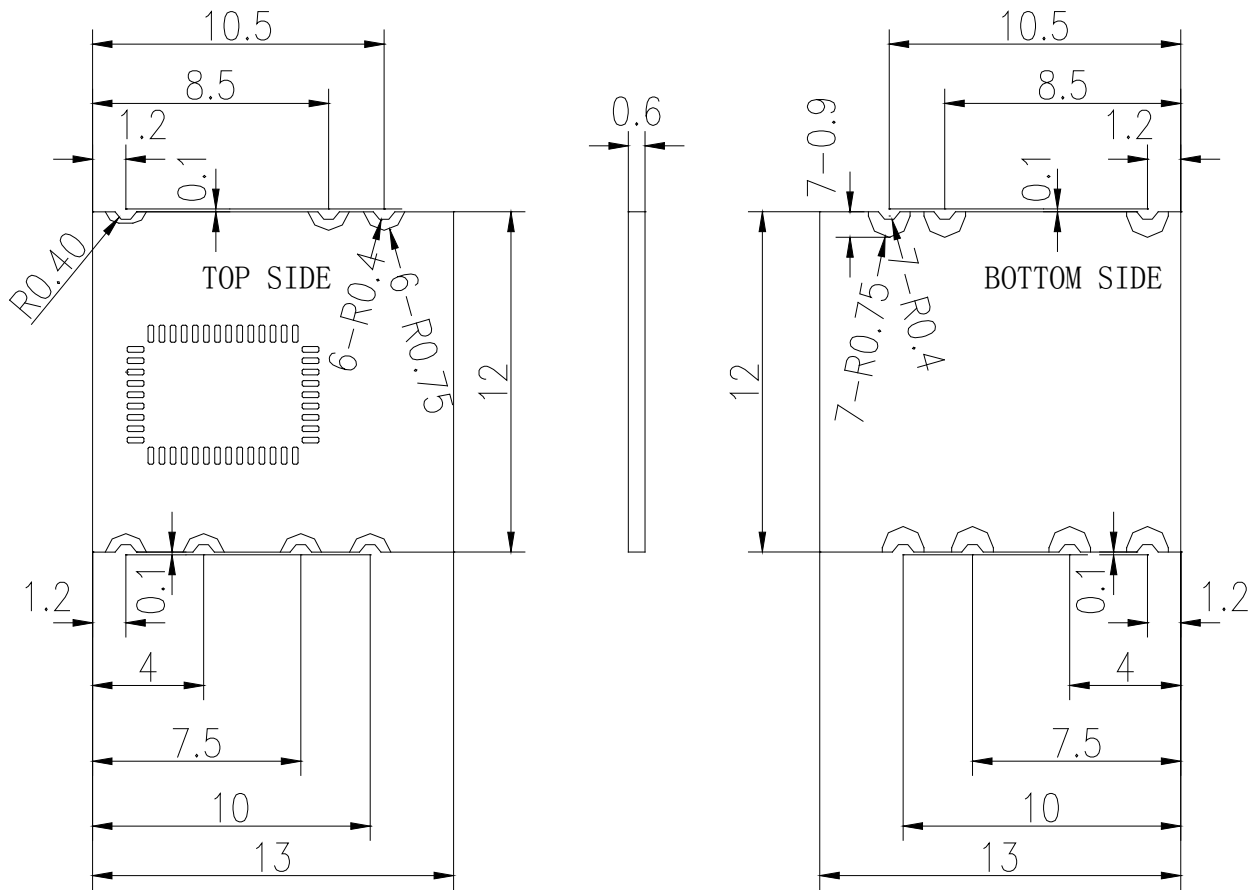
TOP:



BOTTOM:



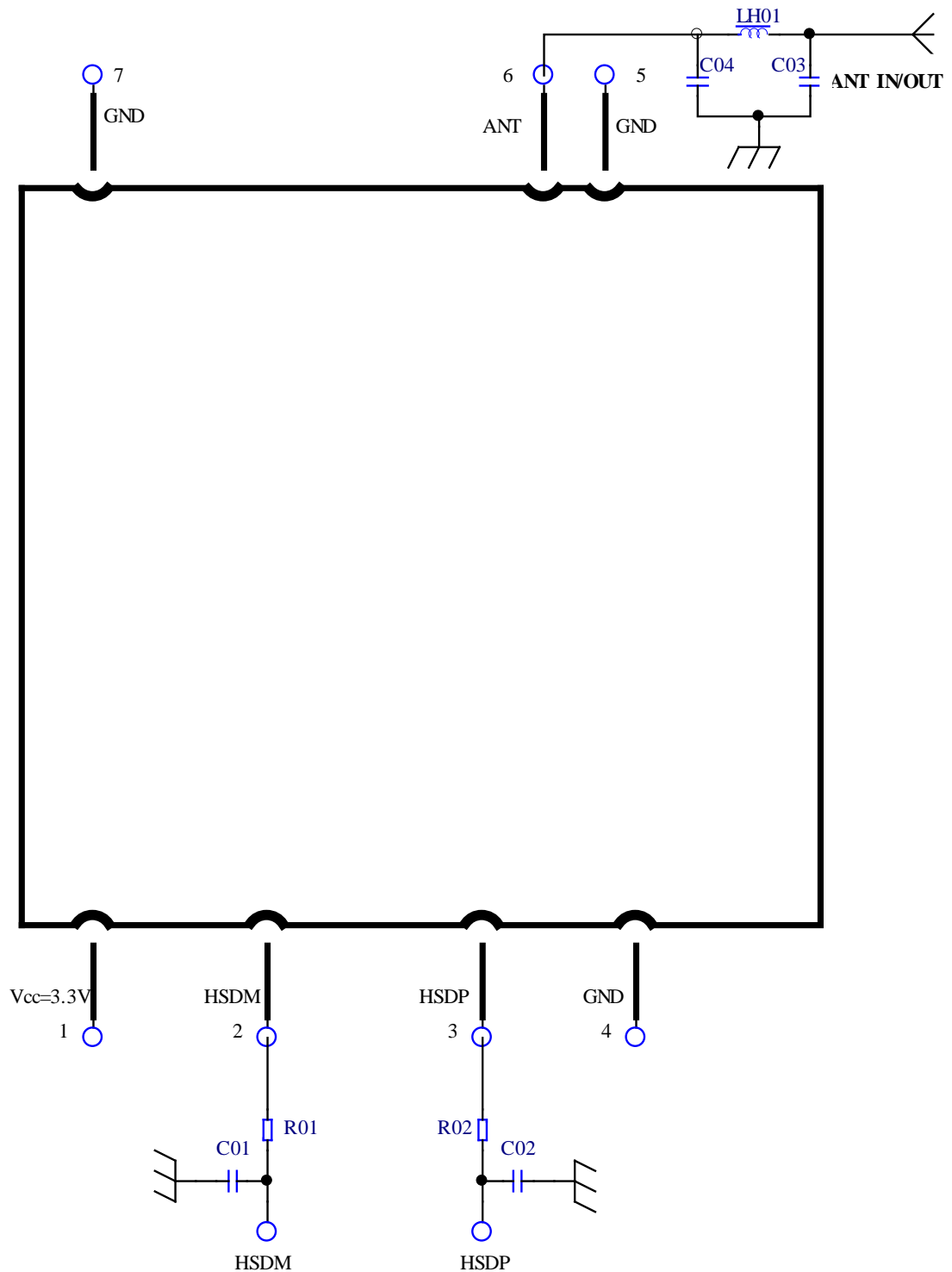
ALL Mechanical Dimensions:



4.5 Connector Pin Definition

Pin Number	Pin Name	Pin voltage	notes
1	Vcc	+3.3V	DC Power supply input
2	HSDM		USB Data D-
3	HSDP		USB Data D+
4	GND	GND	
5	GND	GND	
6	ANT		ANT IN/OUT
7	GND	GND	
8	GND	GND	GND or OPEN

4.6 Description of external reference design:



注：1. C01、C02、C03、C04、R01、R02 和 LH01 均是为了匹配整机而预留位置，具体使用应根据整机与 WIFI 模块的匹配情况而定。

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