DBM01-S

2.4-GHz Low Energy Bluetooth 4.0 Module V1.02

Features:

- Frequency Range: 2402~2480MHz
- UART Data Interface
- Sensitivity: -93dBm
- Output Power: ≥3dBm
- AES-128 Encryption and Decryption
- Self-adaptable frequency hopping
- Supply voltage: 2.0~3.6V

Applications

- 2.4GHz Bluetooth low energy system
- Mobile phone accessories
- Sports and leisure equipment
- Consumer Electronics
- Human interface devices
- USB dongles
- Health care and medical

DESCRIPTION

DBM01-S is a type of low energy data transmission Bluetooth module based on CC2540 from Texas Instruments. Combining the advantages of compact size, extra low power consumption, strong anti-interference and long communication distance, it is very suitable for short range wireless communication in Things of Internet. The module integrates PCB antenna on board. Because the RF circuits of DBM01-S are well matched and optimized, users are free from time-consuming RF design and only need to focus on the slight work on UART communication.

DBM01-S can be used to communicate with other Bluetooth devices running Android or iPhone system directly without address matching mechanism. However DBM01-S is a type of peripheral device so communication can't be realized between two DBM01-S modules. The module keeps nearly all of the features of cc2540 so users can use as it a hardware platform only and overlap the codes to customize their own applications.

PIN FUNCTIONS

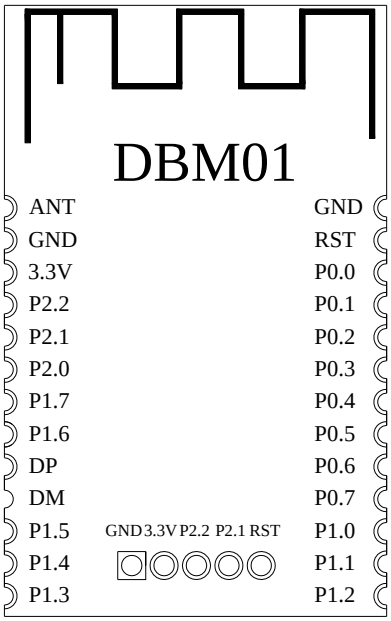

Figure 1: DBM01-S Pin Layout

PIN	Name	Function	Description
1	ANT	ANT port	Optional; DBM01-S has antenna on board so it should be floated
2	GND	Ground	Ground (0V)
3	VCC	Power	+2.0~3.6V
4~6	P2.2~P2.0	Digital I/O	Digital Input/Output pin
7	RX/P1.7	UART port	UART interface; RX pin
8	TX/P1.6	UART port	UART interface; TX pin
9	DP	USB port	USB positive +
10	DM	USB port	USB positive -
11~13	P1.5~P1.3	Digital I/O	Digital Input/Output pin
14~16	P1.2~P1.0	Digital I/O	Digital Input/Output pin
17~24	P0.7~P0.0	Digital I/O	Digital Input/Output pin
25	RST	Input	Reset pin; Low effective
26	GND	Ground	Ground (0V)

Table 1: DBM01-S Pin Functions

ELECTRICAL SPECIFICATIONS

Symbol	Parameter (condition)	Min.	Typ.	Max.	Units
VCC	Supply Voltage	2.0	3.3	3.6	V
Temp	Operating temperature range	-10	25	**60**	°C
Freq	Frequency range	2.402		2.48	GHz
I_{DD_R}	Current in receive mode		22.1		mA
I_{DD_T}	Current in transmit mode		31.6		mA
I_{DD_S}	Current in sleep mode.			0.4	uA
Pout	Max. output power		3		dBm
Sen.	Receiver sensitivity			-93	dBm

Table 2: DBM01-S Electrical Specifications

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min.	Max.	Units
VCC	Supply Voltage	-0.3	3.6	V
VI	Input voltage	-0.3	VCC+0.3	V
VO	Output voltage	-0.3	VCC+0.3	V
T_{ST}	Storage temperature	-55	125	°C

Table 3: DBM01-S Maximum Ratings

DEFAULT DATA FORMAT

Baud rate	Data bit	Stop bit	Parity check	Flow control
38.4 kbps	8 bits	1 bit	No	No

Table 4: DBM01-S UART Data Format

APPLICATION

DBM01-S module can be used for Android/Iphone system operated applications such as LED control, parking system, etc. In these cases the Android/Iphone device act as concentrator and collect data from each Bluetooth device with DBM01-S module. DBM01-S module in this version of datasheet is a slave device so two DBM01-S modules can't talk to each other. DORJI will release central module in the near future, which the DBM01-C central module can communicate with DBM01-S slave device for transparent data transmission.

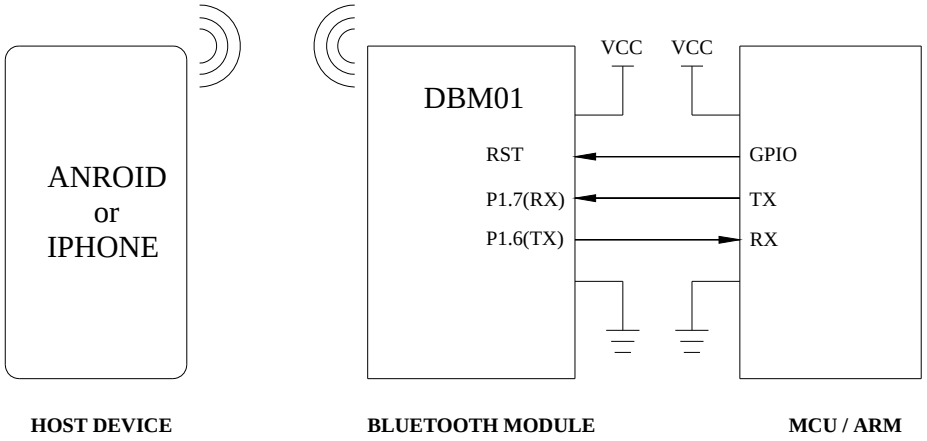

Figure 2: DBM01 Connection Diagram

For IPHONE application development, the length of data package sent by module should be less than 22 bytes. The buffer size of DBM01 module is 120 bytes and it uses the data rate of 38.4k pbs to communicate with the MCU/ARM.

Service UUID	ReadOnly Character	WriteOnly Character
0XFFF0	0XFFF4	0xFFF1

Table 5: DBM01-S Communicating with IPHONE system.

MECHANICAL DATA

Unit:mm

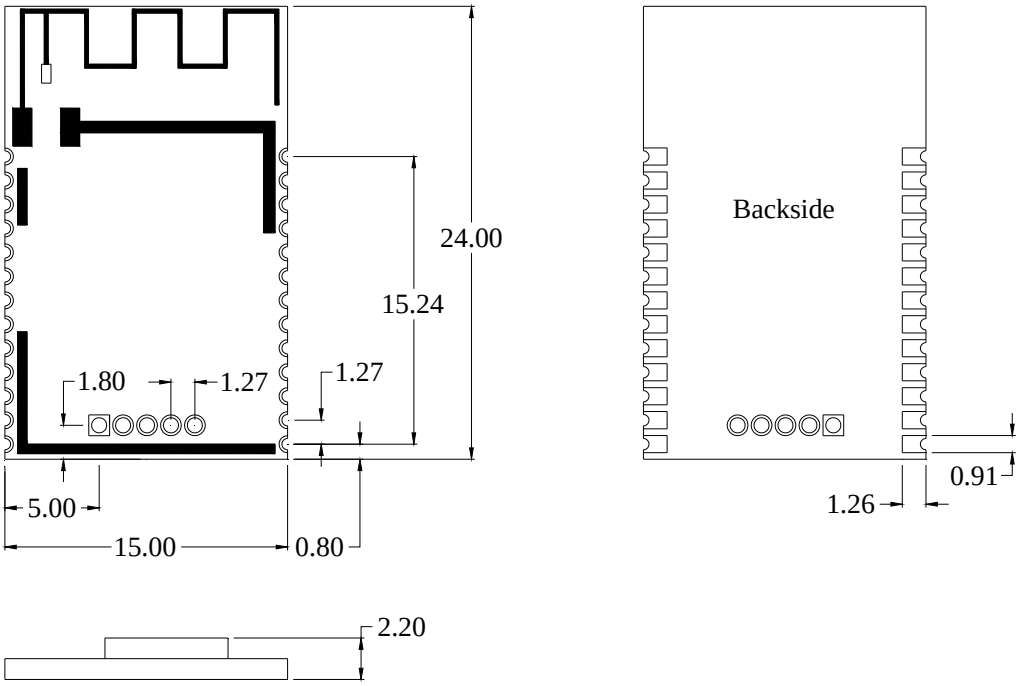

Figure 3: DBM01 Mechanical Dimension

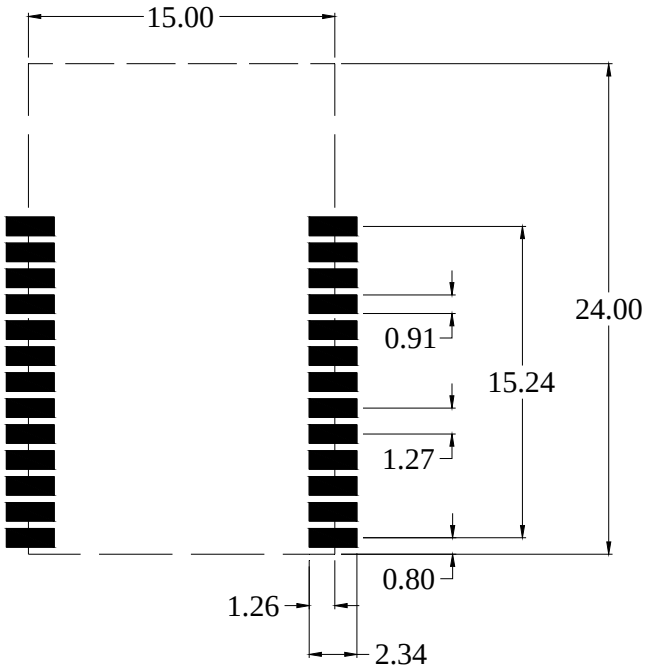

Figure 4: Soldering Pattern Reference

ORDERING INFORMATION

D BM 01 — S
①② ③ ④

Num	Symbol	Meaning
①	D	DORJI DEVICE
②	BM	Bluetooth Module
③	01	Module Number
④	S	Slave/Central device: S-→ Slave (peripheral module) C-→ Central module **The module in this datasheet only refers to slave module**.

Table 6: DBM01-S Nomenclature

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