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HJ-580CY

Very low power module for Bluetooth® low energy v4.2

Datasheet - production data

Application

Smart home wireless remote control, data transmission;

Wireless related applications;

industrial control;

Toys associated with IPHONE or Android;

Other wireless, low power applications;

Characteristic

Bluetooth v4.2 criterion
- Supports master-slave mode
- Support a variety of BLE mode coexistence

Built-in complete BLE protocol specification
- GAP, GATT, SM, L2CAP, LL, RFPHY

Bluetooth wireless features:
- TX POWER: + 0 dBm.Max
- RX sensitivity: - 92 dBm
- TX Peak：3.5mA
- RX Peak：3.9mA

External interface
- UART,GPIO, and RESET

AES encryption processor

PCB ANT

Supply Power: 2.6V to 5.5 V

Operating temperature: -40 °C to 85 °C

Description

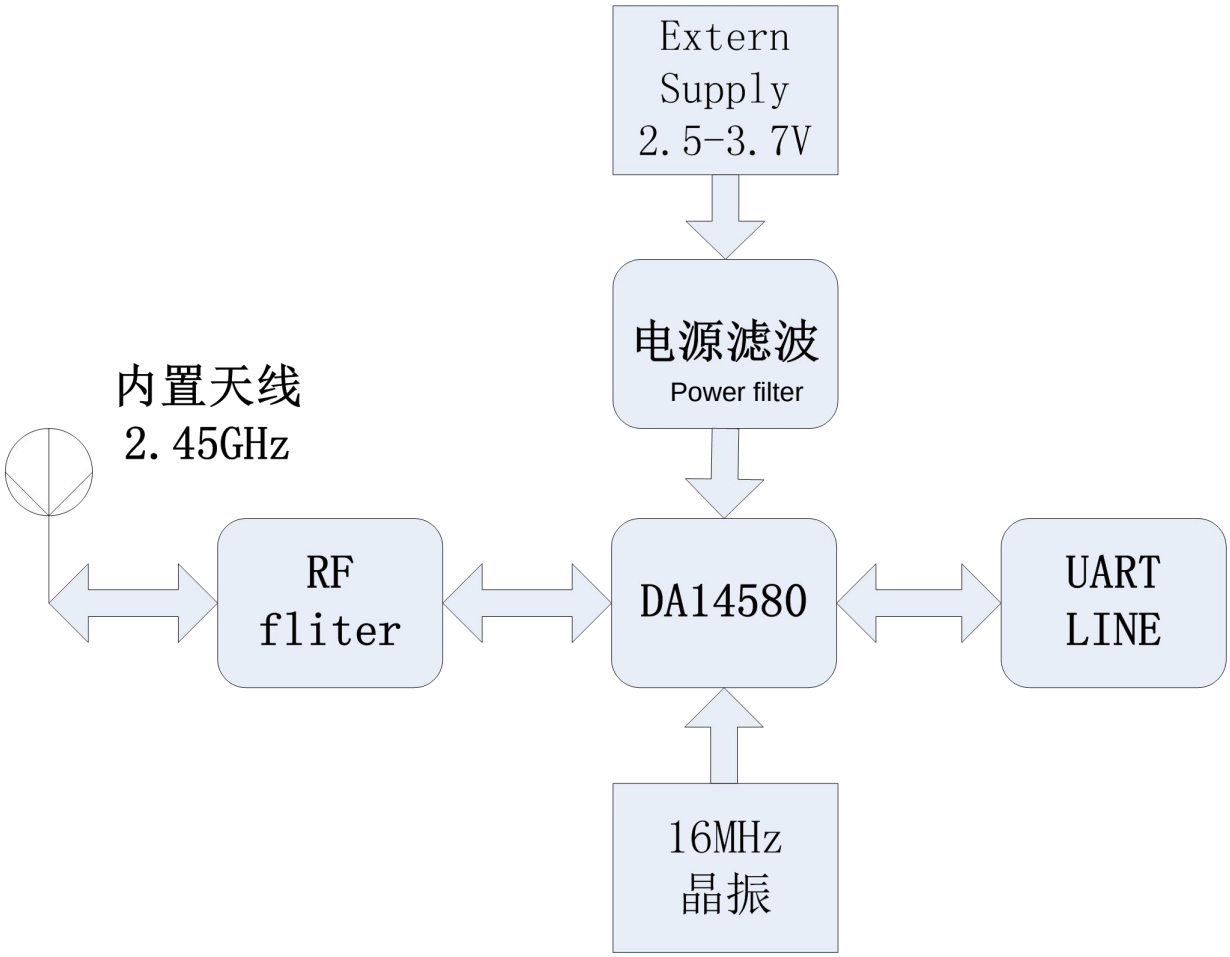
HJ-580CY is a standard UART interface, very convenient to use, built-in complete BLE4.2 protocol, support 19200bps baud rate unlimited data transceiver, with the industry's lowest power consumption and the highest performance, widely used in various requirements Power consumption in the field, has been in the smart lock and consumer industry in large quantities.

HJ-580CY can be used at least one button battery power supply, and we accept customer customization, the minimum can use zinc empty battery and an AA battery for power supply.

Features

- Support ISM 2.4GHZ free frequency band, no need to apply to use
- maximum transmit power +0 dbm (very low power performance, 1S a broadcast only 10uA)
- Onboard high-performance PCB antenna, superior performance
- Single power supply Wide voltage supply 2.6V-5.5V
- wake the average current 500uA, the average current under sleep <2uA, 1S broadcast current 9.6uA, 2S broadcast average current of 5.6uA or so
- ultra-small size: 10mm * 10mm (including onboard PCB antenna)
- provide 0.8mm pitch LGA pad output
- Onboard antenna open distance of 20 meters -30 meters;
- APP and WeChat coexistence version of the module, you can connect WeChat and APP
- stable and reliable performance

Hardware block diagram



Electrical characteristics

Standy working conditions: VIN = 3.3V, temperature 25 ℃

Absolute maximum

Parameter	Min	Max	Uint
Supply VCC	2.5	6.5	V
IO Voltage	0	VCC	V
Operating temperature	-40	+85	℃
Storage temperature	-55	+125	℃

Recommended

Parameter	Min	Typical	Max	Uint
Supply VCC	2.6	3.3	5.5	V
IO Voltage	0	3.3	3.4	V
Sleep mode		<2.0		uA
RF Peak		~4		mA
Operating temperature	-40	+25	+85	℃

Wireless performance

Wireless modulation mode	GFSK	
Frequency Range	2.402 - 2.480Ghz band	Step 1Mhz
RF rate	1Mbps	
TX Power	MAX . +0dbm	
RX sensitivity	TYP.-91dbm,Max.-92dbm	
ANT	Onboard ANT	Onboard high performance antenna

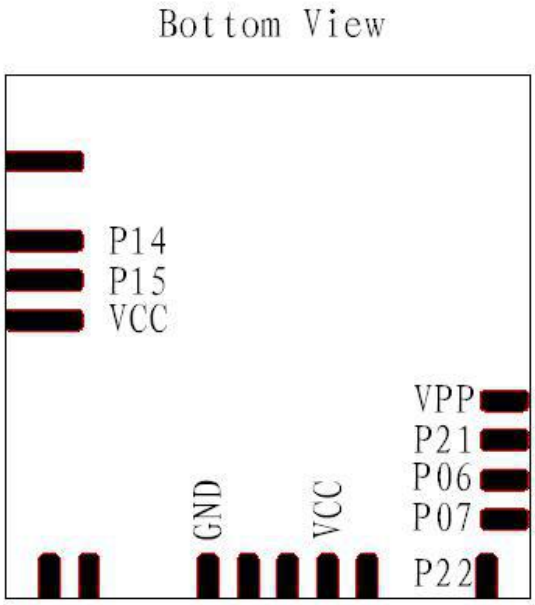
IO features

IO	Drive capability	Min	Max	Uint
Input Low		0	0.4	V
Input High		0.7	VCC	V
Output Low	4mA	0	0.6	V
Output High	4mA	3.3	VCC	V

Interface parameters

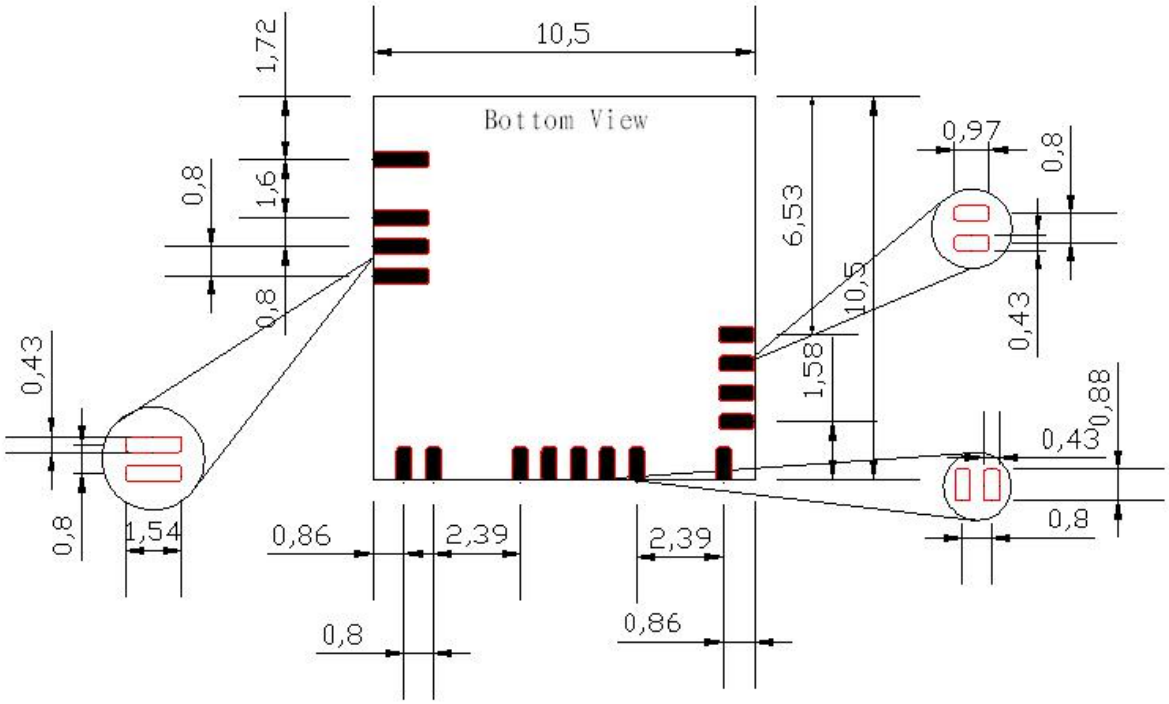
Interface mode	LGA Pad	
Half hole	0.8mm pitch	

Pin Show



Pin	Name	Type	Description	Remarks
1	P14	I/O	no effect	No
2	P15	I/O	no effect	No
3	VCC	Power In	VCC	Range 2.5V - 3.7V
4	GND	Power Ground	GND	No
5	VCC	Power In	VCC	Range 2.5V - 3.7V
6	P22	LED INDICT	Broadcast status indication	When the module is in the unicast state, the LED flashes and the LED goes off after connection.
7	P07	UART	UART RX	Serial transmission data RX input port, please connect to the TX of the MCU to be communicated.
8	P06	UART	UART TX	Serial transmission data TX output port, please connect the MCU to communicate with the RX.
9	P21	LED INDICT	Connect status indication	When not connected, the LED goes off and the LED is on after connecting.
10	VPP	OTP Program Power	please keep them floating	No

Outline（1:1）


10,5
1,72
Bottom View
0,8
1,6
0,8
0,43
0,8
1,54
0,86
2,39
0,8
2,39
0,86
6,53
10,5
1,58
0,97
0,8
0,43
0,88
0,43
0,8

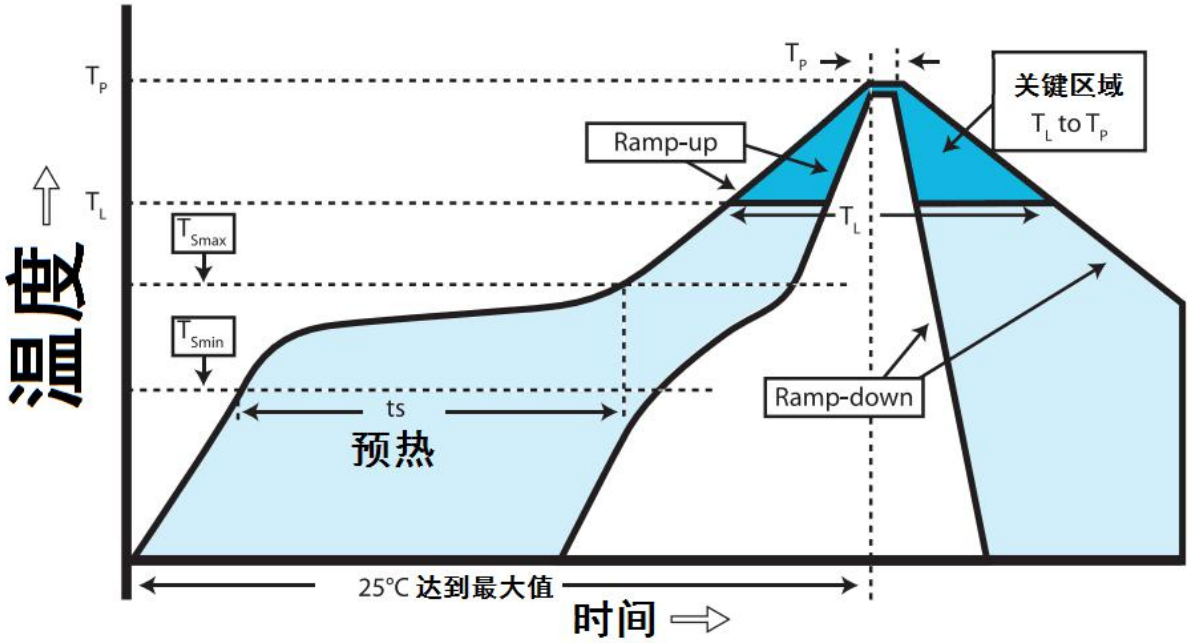
Hardware design considerations

1, the module should not be placed in a metal-made housing, if you must use a metal shell, it must be the antenna leads.
2, the need to install this wireless module products, some metal parts, such as screws, inductors, etc. should be as far away as possible from the wireless module radio frequency antenna part.
3, in the wireless module antenna above, try not to place other components to place the occlusion affect the wireless performance.
4, the wireless module as far as possible on the edge of the motherboard, the antenna part of the board near the edge or angle, the module antenna below the motherboard PCB should be used to keepout layer layer annotation hollowed out, if the request can not be hollowed out, the antenna below is not allowed copper or Trace, otherwise it will affect RF performance.
5, all pins Please note that the pin diagram, connected to the IO Please pay attention to IO mode and status.
6, all the GND must be well grounded.
7, the input power recommended magnetic beads or inductance filter.

Reflow soldering

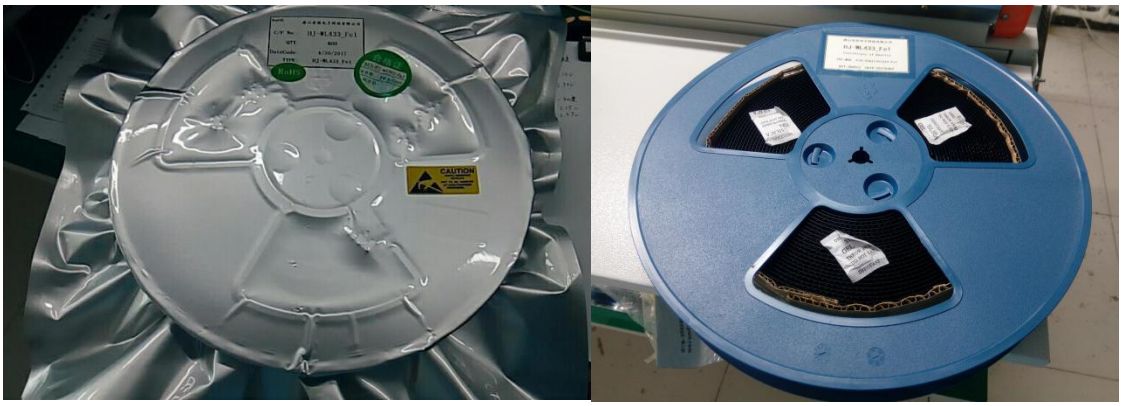
HJ-580CY module plate are high temperature plate, all using lead-free process, the highest test temperature of 265 ℃ for 10 times continuous reflow on the performance and strength without any impact, as follows:

Profile feature	PB-free assembly
Average ramp up rate (T_{SMAX} to T_P)	3℃/S max
Preheat Temperature min (T_S mn) Temperature max (T_S max) Time (t_S min to t_S max) (t_S)	150℃ 200℃ 80-100 sec
Peak temperature (T_P)	250+-5℃
Ramp down rate	6℃/s max
Time from 25 °C to peak temperature	8 minutes max



Packaging rules

1, the use of chip-level anti-static aluminum foil bag sealed and taped with packaging, each bag into the desiccant, industrial vacuum machine to ensure that no leakage, moisture, water and dust (IP65). (As shown below)



2, all packaging will be marked with the label of cargo information, including the provision of ROHS and anti-static signs, the number of production batch information for the 15-bit logo.

Example: P16a I15b S17c001 represents PCB production in January 2016, IC production in February 2015, SMT patch in March 2017 the first batch.

Warning

Please carefully consider the use of ultrasonic welding process, if you must use the ultrasonic welding process, please use 40KHZ high frequency ultrasonic welding technology, the design process, please keep the module away from ultrasonic welding and fixed column to prevent damage to the module!

Specific ultrasonic welding matters, please contact our technical advice.

(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. For 15 B (§15.107 and if applicable §15.107) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in §15.101.

Integrator is reminded to assure that these installation instructions will not be made available to the end user of the final host device.

The final host device, into which this RF Module isintegrated" hasto be labelled with an auxilliary lable stating the FCC IDofthe RF Module, such as "Contains FCC ID: 2AGPMHJ-580CY

"This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
(1)this devicemay not cause harmful interference, and
(2)this devicemust accept any interference received, including interference thatmay 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.

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.

Module statement

The single-modular transmitter is a self-contained, physically delineated, component for which compliance can be demonstrated independent of the host operating conditions, and which complies with all eight requirements of § 15.212(a)(1) as summarized below.

1) The radio elements have the radio frequency circuitry shielded.

2) The module has buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.

3) The module contains power supply regulation on the module.

4) The module contains a permanently attached antenna.

5) The module demonstrates compliance in a stand-alone configuration.

6) The module is labeled with its permanently affixed FCC ID label

7) The module complies with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.

8) The module complies with RF exposure requirements.

This transmitter/module must not be collocated or operating in conjunction with any other antenna or transmitter.