

Bluetooth Module Datasheet

Model: FW3506

Version: V1.2

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www.free-wings.cn

FreeWings Technologies Co., Ltd.

Tel: (86755)86116587

E-mail: support@free-wings.cn

Add: 4F, Building2, Sangtai Industry Park,

Xili, Nanshan, Shenzhen

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1 Introduction

FreeWings Technologies introduces the pioneer of the Bluetooth 2.1 class 2+EDR modules FW3506 which is a high performance, cost effective, low power and compact solution and also can be extended to Class 1 operation with external RF PA and LNA. The Bluetooth class 2 module provides a complete 2.4GHz Bluetooth system based on CSR Bluecore5-Multimedia External chipset which is a single chip radio and baseband IC for Bluetooth 2.4GHz systems. This module is fully compliant to Bluetooth v2.1 for data and audio communications.

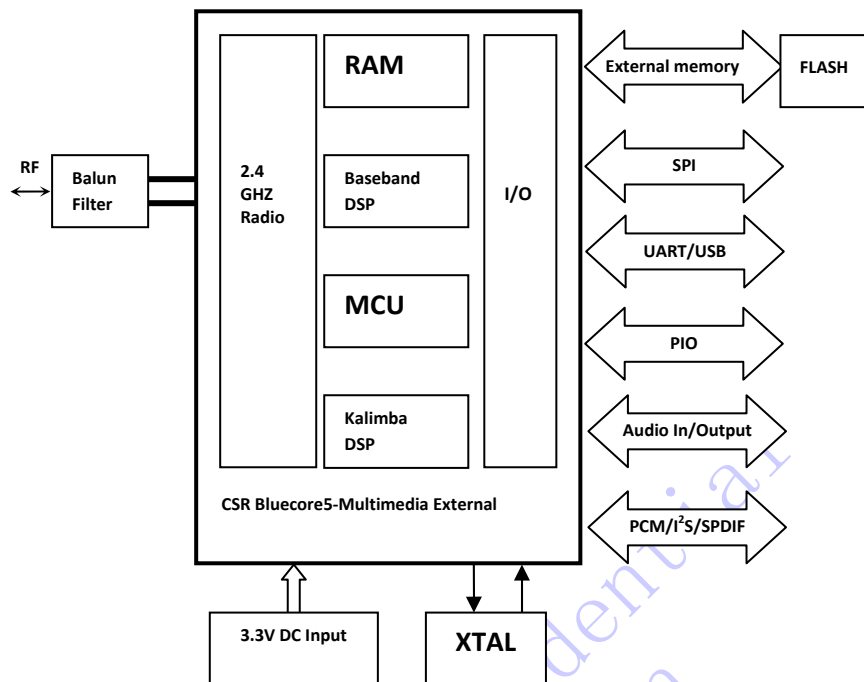
2 Key Features

- Fully Qualified Bluetooth v2.1 System.
- Bluetooth Class2 operation (up to 10 meters range).
- Bluetooth Class 1 operation with external RF PA and LNA.
- Full-speed Bluetooth Operation with Full Piconet Support.
- Scatternet Support.
- Park, Sniff, Hold and Sleep ultra low power consumption modes.
- Excellent compatibility with Cellular Telephones.
- Minimum External Components Required.
- Integrated 1.8V Linear Regulator
- Electrical compliant to USB1.1 and 2.0
- SPI interface can upgrade firmware.
- Slim module with 20mm x 13mm x 2.0mm
- RoHS Compliant

3 Applications

- Stereo Headphones
- Automotive Hands-Free Kits
- Echo Cancellation
- High Performance Telephony Headsets
- Enhanced Audio Applications
- A/V Profile Support
- Consumer electronic devices that require low power consumption.

4 Block Diagram



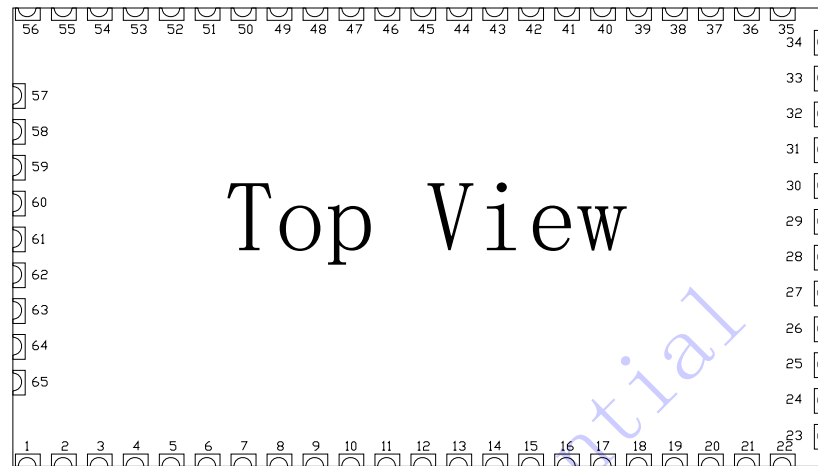
5 General specifications

Model Name	FW3506
Product Description	Bluetooth 2.1+EDR Class2 Module
Bluetooth Standard	Bluetooth v2.1 Standard
Chipset	CSR Bluecore5-Multimedia External
Dimension	23mmx13mmx3.0mm
Operating Conditions	
Voltage	3.3V
Temperature	-20~+70℃
Storage Temperature	-40~+85℃
Electrical Specifications	
Frequency Range	2402~2480MHz
Modulation	FSK
Maximum RF Transmit Power	4dBm
RF power control range	24dB
Receive Sensitivity	-85dBm

6 Module Package Information

6.1 Pinout Diagram

Orientation from top of module



6.2 Module Pin descriptions

Pin No.	Pin Name	Pin Type	Description
1	GND	VSS	Ground
2	PIO0/RXEN	Bi-directional with programmable strength internal pull-up/down	PIO line or Control output for external Tx/Rx switch(if fitted)
3	PIO1/TXEN	Bi-directional with programmable strength internal pull-up/down	PIO line or Control output for external PA(if fitted)
4	PIO3/USB_WAKE_UP	Bi-directional with programmable strength internal pull-up/down	PIO or output goes high to wake up PC when in USB mode
5	AIO0	Bi-directional	Programmable input/output line
6	PIO2	Bi-directional with programmable strength internal pull-up/down	PIO line
7	GND	VSS	Ground
8	PIO15	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line

9	VREG_H	Input	Take high to enable high voltage linear regulator and switch mode regulator
10	PIO12	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
11	PIO7	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
12	PIO4	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
13	3.3V	Power supply	+3.3V power supply input
14	1.5V	Power supply	+1.5V power supply output
15	1.5V_A	Power supply	+1.5V Audio power supply
16	AIO1	Bi-directional	Programmable input/output line
17	PIO14	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
18	CHG	Input	Charging Input
19	PIO6	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
20	UART_RTS	CMOS output, tri-state, with weak internal pull-up	UART request to send active low
21	VBAT	Power supply	Battery charger output and input to switch mode regulator
22	GND	VSS	Ground
23	GND	VSS	Ground
24	USB_DN	Bi-directional	USB data minus

25	USB_DP	Bi-directional	USB data plus with selectable internal 1.5k Ω pull-up resistor
26	UART_CTS	CMOS input with weak internal pull-down	UART clear to send active low
27	UART_TX	CMOS output, tri-state, with weak internal pull-up	UART data output
28	UART_RX	CMOS input with weak internal pull-down	UART data input
29	PIO9	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
30	PIO10	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
31	PIO11	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
32	PIO13	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
33	PIO8	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
34	PIO5	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
35	GND	VSS	Ground
36	PCM_SYNC	Bi-directional with weak internal pull-down	Synchronous data sync
37	SPI_CLK	CMOS input with weak internal pull-down	Serial peripheral interface clock
38	LED0	Output	LED Driver
39	LED1	Output	LED Driver

40	SPI_CSB	CMOS input with weak internal pull-up	Chip select for synchronous serial interface active low
41	SPI_MISO	CMOS input with weak internal pull-down	Serial peripheral interface data input
42	SPI_MOSI	CMOS input with weak internal pull-down	Serial peripheral interface data input
43	1V8	Output	1V8 switch mode regulator output
44	1V8_L	output	1V8 linear regulator
45	PCM_IN	CMOS input, with weak internal pull-down	Synchronous data input
46	PCM_OUT	CMOS output, tri-state, with weak internal pull-down	Synchronous data output
47	PCM_CLK	Bi-directional with weak internal pull-down	Synchronous data clock
48	MIC_Bias	Output	Microphone Bias
49	MIC_RP	Analog	Microphone input positive(right side)
50	MIC_RN	Analog	Microphone input negative(right side)
51	MIC_LP	Analog	Microphone input positive(left side)
52	MIC_LN	Analog	Microphone input negative(left side)
53	SPK_RN	Analog	Speaker output negative(right side)
54	SPK_LN	Analog	Speaker output negative(left side)
55	SPK_RP	Analog	Speaker output positive(right side)
56	SPK_LP	Analog	Speaker output positive(left side)

57~59	GND	VSS	Ground
60	RF_PORT	Analog	Single ended Tx/Rx port
61~65	GND	VSS	Ground

7 Electrical Characteristics

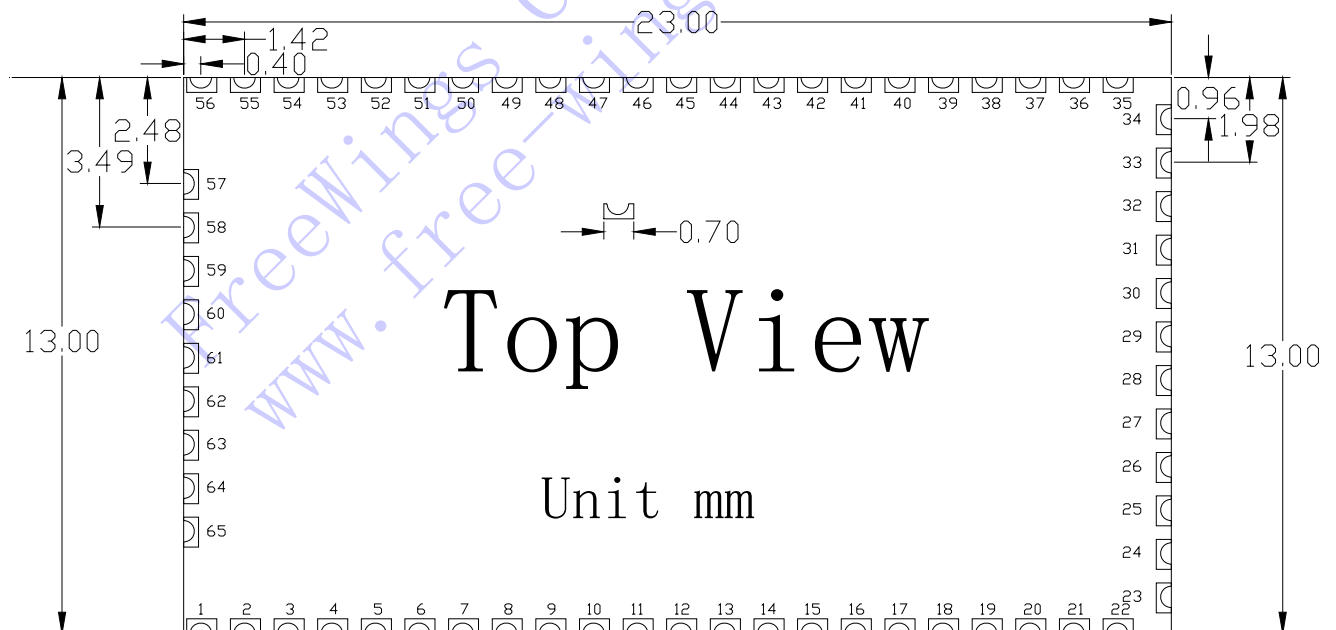
7.1 Absolute Maximum Ratings

Rating	Minimum	Maximum
Storage temperature	-40℃	+85℃
Supply Voltage:3.3V	-0.4V	3.7V

7.2 Recommended Operating Conditions

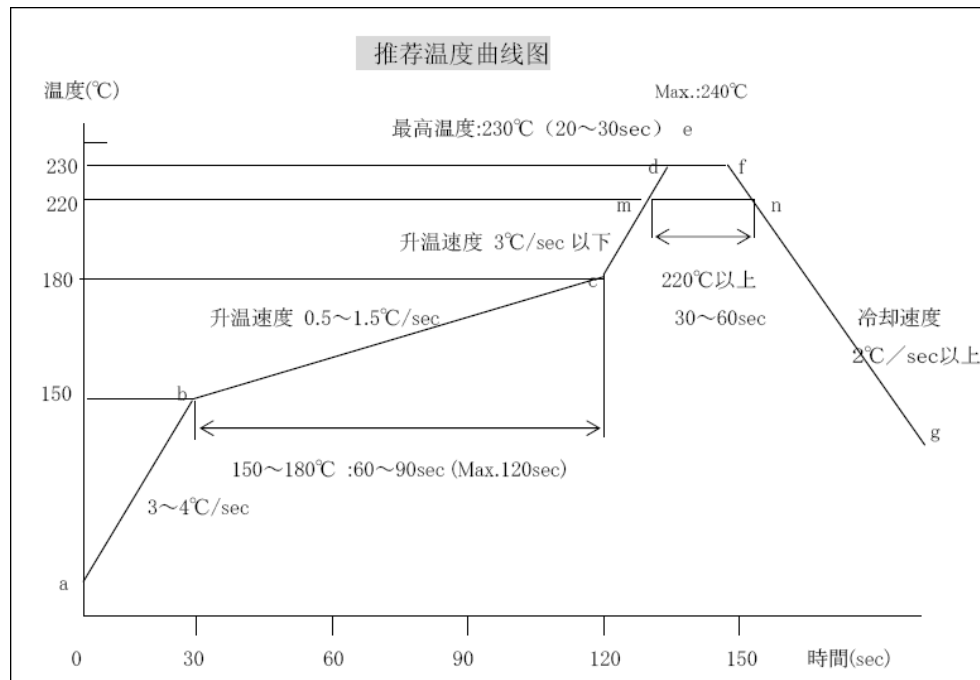
Operating Condition	Minimum	Maximum
Operating temperature range	-20℃	+70℃
Supply voltage: 3.3V	+3.0V	+3.6V

8 Package Dimensions



Package Dimensions

9 Recommended reflow temperature profile





CAUTION

This bag contains
MOISTURE-SENSITIVE DEVICES

LEVEL

3

If Blank, see adjacent bar code label

- Calculated shelf life in sealed bag: 12 months at < 40 °C and < 90% relative humidity (RH)
- Peak package body temperature: 260 °C
If Blank, see adjacent bar code label
- After bag is opened, devices that will be subjected to reflow solder or other high temperature process must
 - Mounted within: 168 hours of factory
If Blank, see adjacent bar code label

conditions ≤ 30 °C / 60 %

- stored at < 10%RH

- Devices require bake, before mounting, if :
 - Humidity Indicator Card is > 10 % when read at 23 ± 5 °C
 - 3a or 3b not met.
- If baking is required, devices may be baked for 48 hours at 125 ± 5 °C
Note: If device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC /JEDEC J-STQ-033 for bake procedure

Bag Seal Date: _____
If Blank, see adjacent bar code label

Note: Level and body temperature defined by IPC /JEDEC J-STQ-020

The module Must go through 125°C baking for at least 9 hours before SMT AND IR reflow process!

若拆封后未立即上线，翼动通讯建议让下次上线前务必以 125°C 烘烤 9 小时以上！

Record of Changes

Data	Revision	
2009-12-15	V1.0	Preliminary Version.
2010-08-14	V1.1	Correction of writing error, Bluecore3 to Bluecore5 on page 4.
2010-12-20	V1.2	Add recommended temperature profile

IMPORTANT NOTICE

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深圳地址：深圳市南山区西丽桑泰科技园 2 栋 4 楼

Tel: (86755)86116587

Fax :(86755) 28094122

E-mail: support@free-wings.cn