



GP-02-Kit Specifications

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Document development/revision/revocation resume

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1. Product Overview

GP-02-Kit is a highly integrated SOC development board with ceramic antenna and high performance BDS/GNSS multi-mode satellite navigation receiver. The main chip is AT6558R satellite positioning chip. Integrated radio frequency front end, digital baseband processor, 32-bit RISC CPU, power management and active antenna detection and protection functions. Support a variety of satellite navigation systems, including China's BeiDou Navigation Satellite System (BDS), the United States' GPS, and Russia's GLONASS, which can realize multi-system joint positioning.

GP-02-Kit follows the NMEA protocol and sends instructions through serial communication to control the work content of the development board.

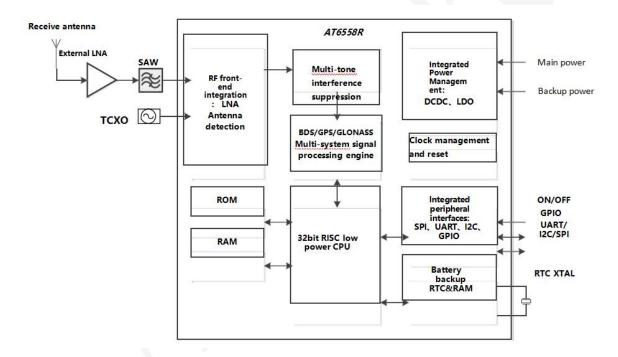


Figure 1 Architecture diagram of the chip



1.1. main parameters

Table 1 main parameters instruction

Model	GP-02-Kit		
Size	20.3*18.0*3.1(±0.2)MM		
Operating temperature	-40 °C ~ 85 °C		
Storage environment	-40 °C ~ 125 °C , < 90%RH		
Power supply	5V		
UART rate	Maximum support 256000bps		
Certification	RoHS		

2. Electrical parameters

2.1. Performance indicators

Table 2 Electrical parameter description

Technical parameter	Test items	Value	Unit
	Cold Start	≤32	S
TTFF	Hot Start	≤1	S
	Recapture	≤1	S
	Cold Start	-148	dBm
Sensitivity	Hot Start	-156	dBm



	Recapture	-160	dBm
	Tracking mode	-162	dBm
	Positioning accuracy	<5	m (1σ)
	Timing accuracy	<30	ns (1σ)
Accuracy	Speed measurement accuracy	<0.1	m/s (1σ)
	Positioning update rate	1	Hz(max.5Hz)
Davisa	BDS/GPS dual-mode continuous operation	23	mA
Power consumption	Sleep mode	5	mA
	Standby	8	uA



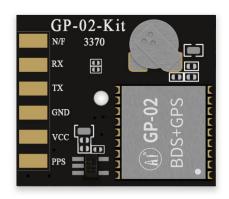
2.2. Simulation characteristics

Table 3 Description of analog characteristics

		2 Description of anale	Parameter index			Unit
No.	parameter	condition				
			Minimum	Typical	Maximum	
			value	value	value	
1	Reset voltage	@VDD_IO	2.35	2.45	2.6	V
2	Reset time	Crystal frequency		160		ms
_	Neget time	26.000MHz				5
3	TCXO			26.000000		MHz
	Crystal frequency					
4	TCXO Amplitude		0.5	1.5		Vpp
5	Active antenna		2.5			mA
	Detection current					
6	Active antenna		45	50	60	mA
	Short circuit		1,5	30		''''
	protection current					
7	Antenna detection	enter 3.3V, 50mA load			0.3	V
	circuit voltage					
	drop			7		
8	Working current	@3.3V BDS+GPS		23		mA
9	Battery backup			8		uA
10	Sleep mode current	ON_OFF=0		5		mA
11	RTC Crystal frequency			32.768		kHz
12	RTC Crystal				80	ΚΩ
	Equivalent					
	Series resistance					
	Rs					
13	RTC Crystal			8		pF
	Series capacitance					



3. Appearance



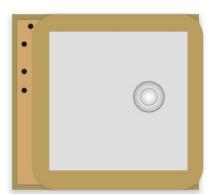


Figure 2 Appearance(for reference only)

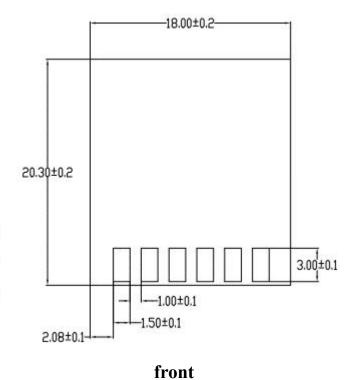


Figure 3 Dimensions



4. Pin definition

The GP-02 module has a total of 6 interfaces. As shown in the pin diagram, the pin function definition table is the interface definition.

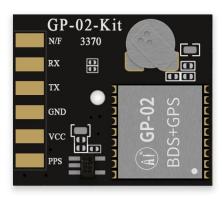


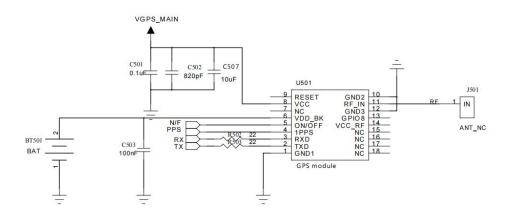
Figure 4 Pin diagram

Table 4 Pin function definition

No.	Name	Function Description
1	N/F	Shutdown control, keep high level during normal operation; internal pull-up
2	RX0	General GPIO, the default is RXD of UART0
3	TX0	General GPIO, the default is TXD of UART0
4	GND	Grounded
5	VCC	5V power supply
6	PPS	Time pulse signal



5. Schematic diagram



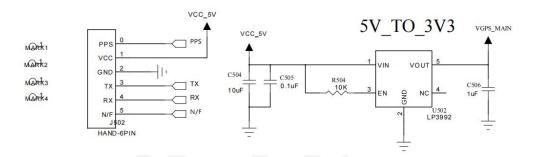


Figure 5 Schematic diagram of the development board

6. Design guidance

6.1. power supply

The recommended voltage is 5V.

6.2. Use of GPIO

The development board is connected to the RX communication interface to access the 22Ω of the TX, and it has continued to rush.



7. Reflow soldering curve

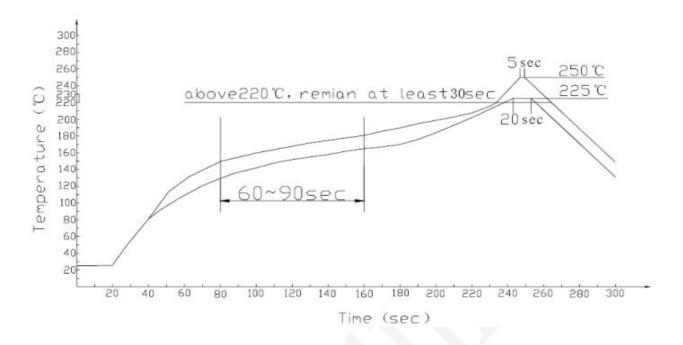


Figure 6 Reflow soldering curve

Notice

Adjust the balance time to ensure the rationalization of the gas when the solder paste melts. If there are too many gaps on the PCB, the equilibration time can be increased.

Considering that the product is placed in the welding area for a long time (the temperature is above 180°C), in order to prevent damage to the components and the bottom plate, the placement time should be shortened as much as possible.

Important characteristics of the curve:

Rising speed= $1 \sim 4$ °C /sec, 25°C to 150°C

Average preheating temperature=140°C to 150°C, 60sec~90sec

Temperature fluctuation=225°C to 250°C, about 30sec

Descent speed= $2\sim6$ °C/sec, to 183°C, about 15sec

Total time = about 300sec



8. Packaging Information

The packaging of the GP-02-Kit is to insert the pearl cotton electrostatic bag packaging

9. Related models

Table 5 Related models

Model	Power supply	Package	Size	Default	
				communication	
				interface	
GP-01 module	3.3V	SMD-24	16.2*12.2*2.4(±0.2)MM	UART	
GP-02 module	3.3V	SMD-18	10.3*9.9*2.4(±0.2)MM	UART	
GP-01-Kit	5V	SMD-8	26*24.1(±0.2)MM	UART	
development					
board					
GP-02-Kit	5V	SMD-6	18*20.3(±0.2)MM	UART	
development					
board					
Product related information: https://docs.ai-thinker.com/gps					



10. Contact us

Official website: https://www.ai-thinker.com

Development DOCS: https://docs.ai-thinker.com

Official Forum: http://bbs.ai-thinker.com

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