



BG01-T Specification

Version V1.0

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Change History of Revision

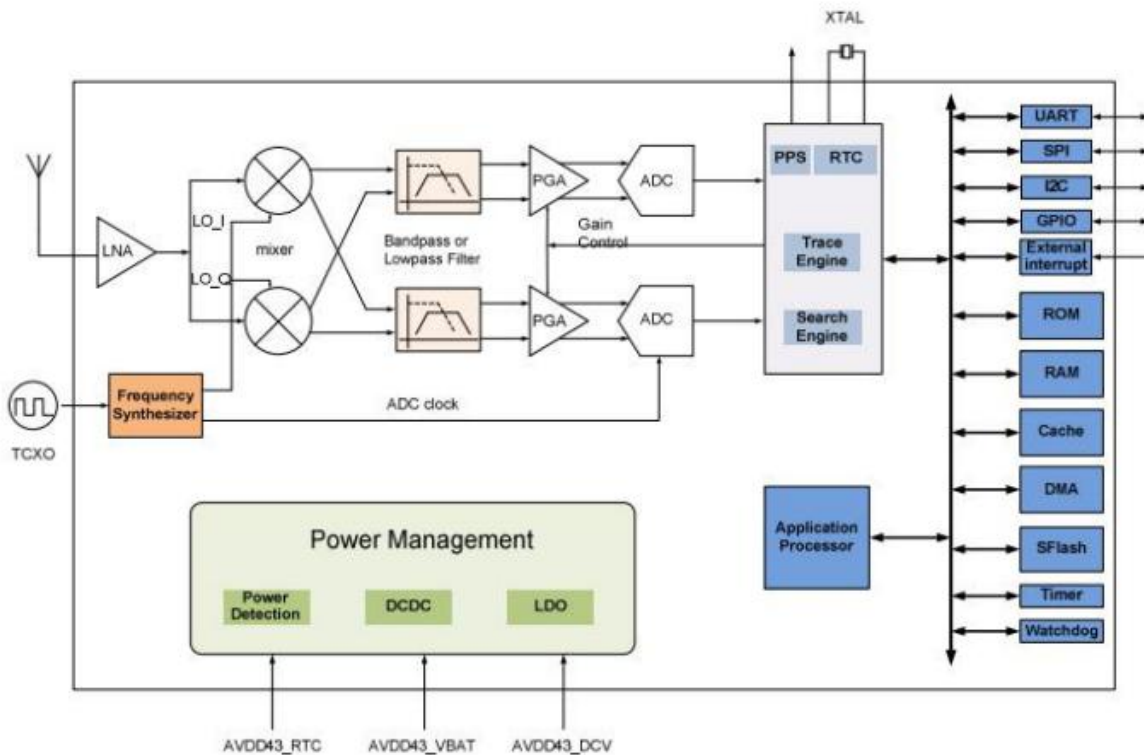
Version	Date	Contents of Revision Change	Compilation	Verify
V1.0	2019.11.13	Initial release	Xie Yiji	

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1. Product overview

BG01-T is a highly integrated GNSS SoC module with ceramic antenna, The main chip is GK9501. It highly integrated with Multi-GNSS SoC, support for low power consumption BDS / GPS / GLONASS / GALILEO / QZSS / SBAS. It integrates DC / DC, LDO, LNA, RF receiver, base band, 32Bit RISC CPU, RAM, flash, RTC and PMU, and offers UART, I2C, SPI and GPIO interface, etc. BG01-T support crystals and TCXO input. It also provides a standby battery memory and a real-time clock to speed up the acquisition speed and reduce TTFF (first time of positioning)



BG01-T submodels description

BG01-T flash different firmware and can support GPS/BDS/GLONASS and other positioning systems flexibly. Products that support different positioning systems are distinguished according to product submodels. Refer to the table below for details

Function	BG01-T (G1H11S100)	BG01-T (G2H11S100)	BG01-T (GBH11S100)
GPS	YES	YES	YES
BDS	NO	NO	YES
GLONASS	NO	YES	NO
UART	YES	YES	YES
Antenna	Ceramic	Ceramic	Ceramic
Power Supply	Typ 5.0V	Typ 5.0V	Typ 5.0V
Size	26.1x24.0x8.0mm	26.1x24.0x8.0mm	26.1x24.0x8.0mm

Parameters

Figure 1 Main Parameter

Model	BG01-T
Size	26.1x24.0x8.0(±0.2)MM(仅模块，天线尺寸如下)
Operating temperature	-40 °C ~ 85 °C
Storage Environment	-40 °C ~ 125 °C , < 90%RH
Power supply	Voltage supply 4.75V ~ 5.25V, Typ5V
Certification	RoHS

2.Electrical parameter

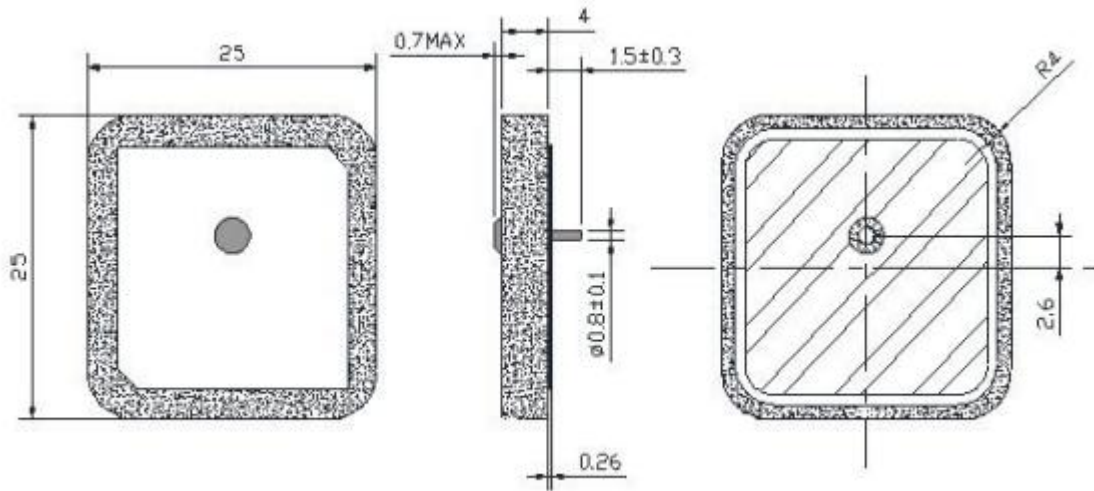
Condition	Test item	Value	Unit
TTF (condition 1)	Cold boot	27.5	s
	Warm boot	<1	s
	Reboot	<1	s
	A-GNSS	<10	s
Sensitivity (condition 2)	Cold boot	-148	dBm
	Warm boot	-162	dBm

	Reboot	-164	dBm
	Track mode	-166	dBm
Accuracy (condition 3)	Horizontal position	2.5	m
	Altitude position	3.5	m
	Speed	0.1	m/s
	Time pulse signal	30	ns
Power (condition 4)	Receive current 3.3V	30	mA
	Track current 3.3V	20	mA
Operating temperature		-40 °C ~ 85 °C	°C
Storage Environment		-40 °C ~ 125 °C	°C
Humidity		< 90%	

Electrical character

- Above test results based on GPS / BDS mode
- [condition 1]: received the number of satellites is more than six, and all of these satellites have signals of -130 dBm. Test 10 times to obtain the average value, and the positioning accuracy was less than 10 meters.
- [condition 2]: the noise coefficient of external LNA is 0.8, and received the number of satellites is more than 6. If the signal strength received in a five-minute continuous locking is the test value
- [condition 3]: broad and non-blocking environment, and test for 24 hours, the CEP is 50%
- [condition 4] : received the number of satellites is more than six and the signal is -130dBm for all of these satellites.

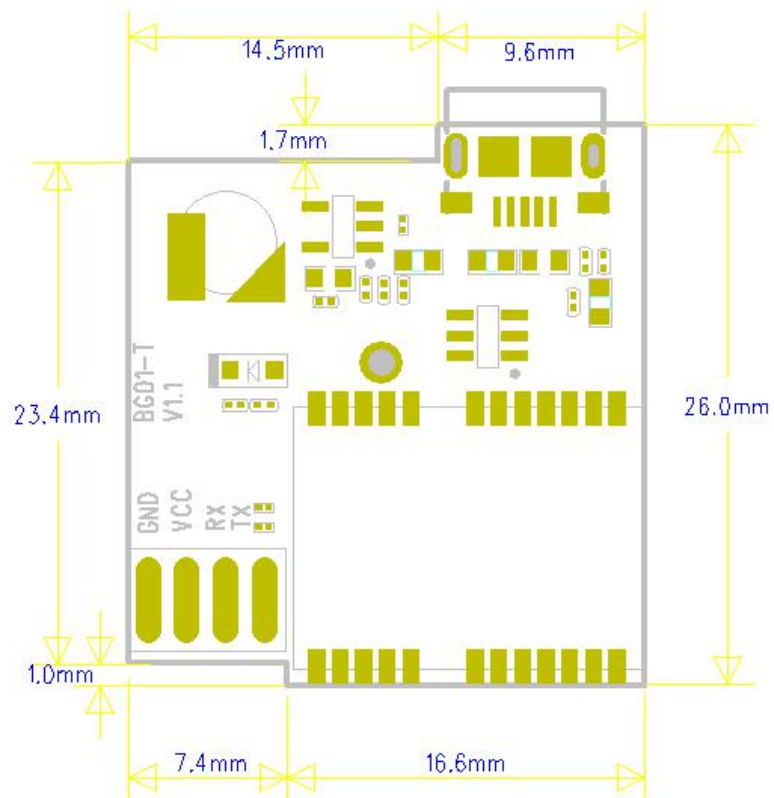
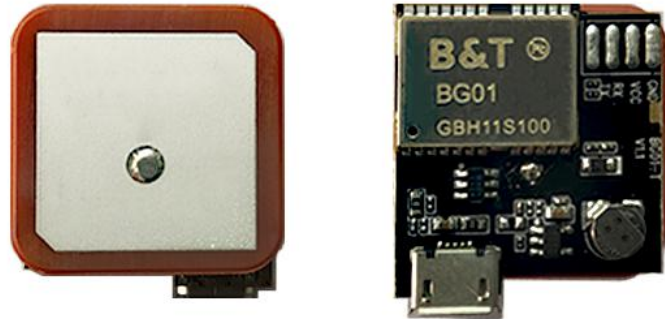
Antenna Size



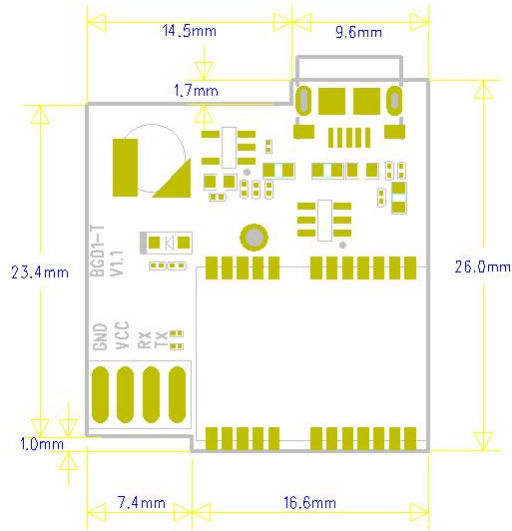
Antenna electrical specification

Name	Specification	Value
Receive frequency range/MHz	GPS: 1575.42 BDS: 1561.098 GLONASS: 1602	± 2.5
Center frequency (MHz) (use YBAT02 GND)	1590	± 2.0
Frequency range (MHz) (return loss ≤ -10 dB)	≥ 5	
V. S. W. R (center frequency)	≤ 1.5	
Gain (Zenith) (dBi typ)	2 dB typical	
Axial ratio	5 dB max	
Polarize	Right-Handed Circular	
Resistan (Ω)	50	
Temperature coefficient of frequency (ppm / $^{\circ}$ C)	0 ± 10	

3.Appearance size



4.Pin definition

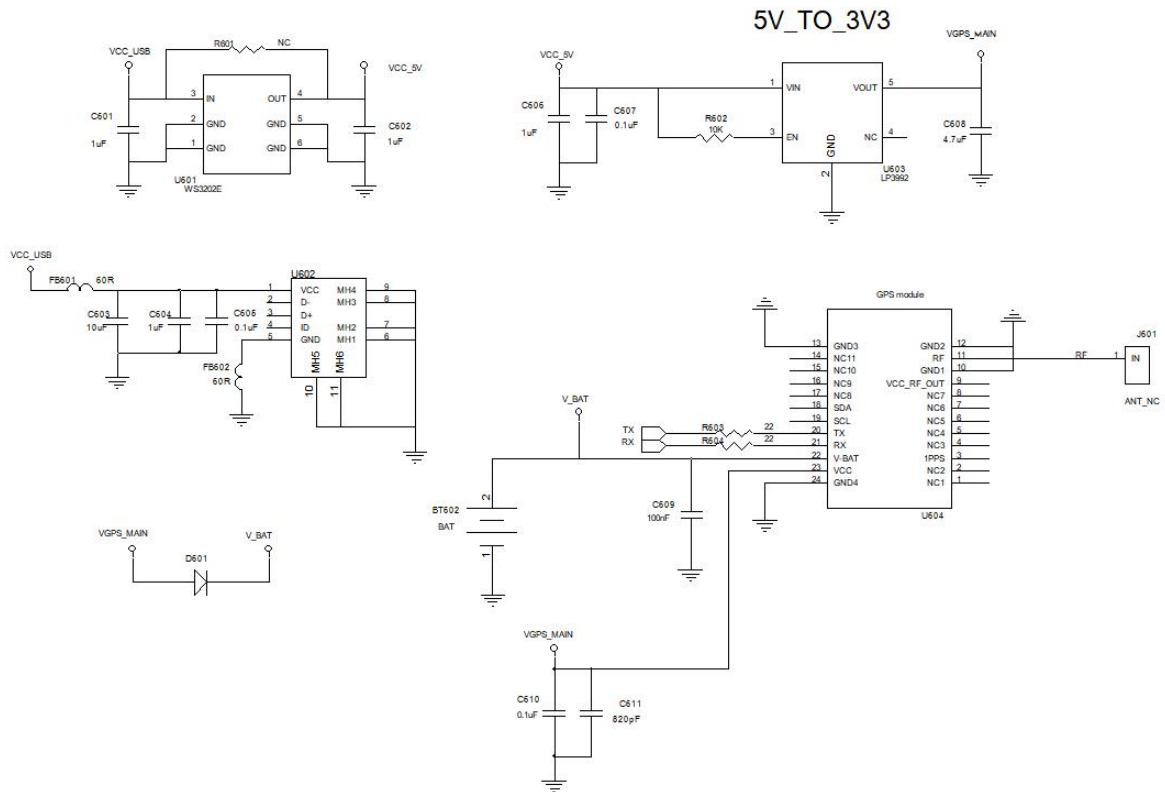


BG01-T testing board Pin diagram

table 2.2 is definition of interfaces.

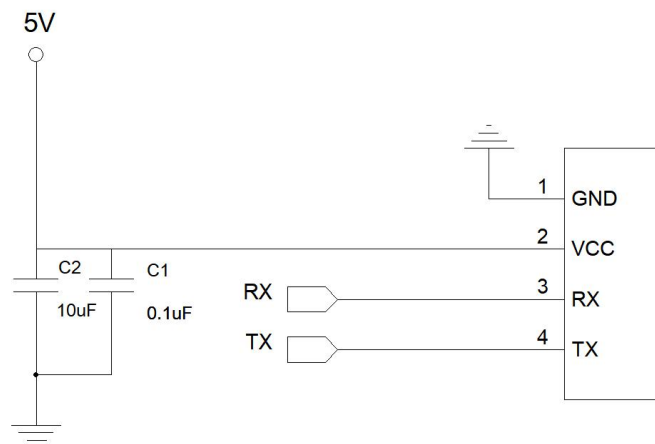
No.	Name	Function
1	GND	Ground
2	VCC	4.75-5.25V
3	RXD	Serial port input
4	TXD	Serial port output

5. Schematics



6. Design Guidance

1. Application Circuit

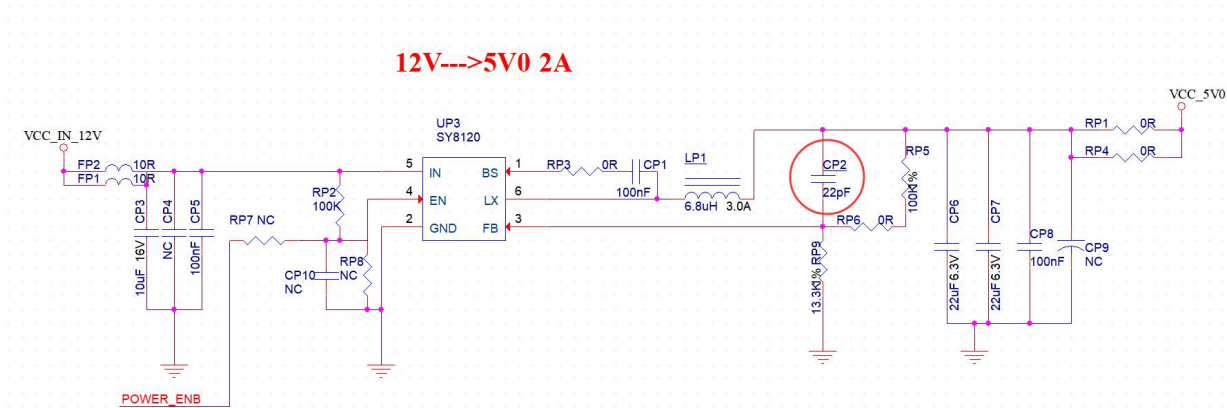


2. Antenna layout requirements

- (1) 、Module with the ceramics antenna
- (2) 、In order to meet the performance of the on-board antenna, metal parts are prohibited from being placed around the antenna, away from high frequency devices.

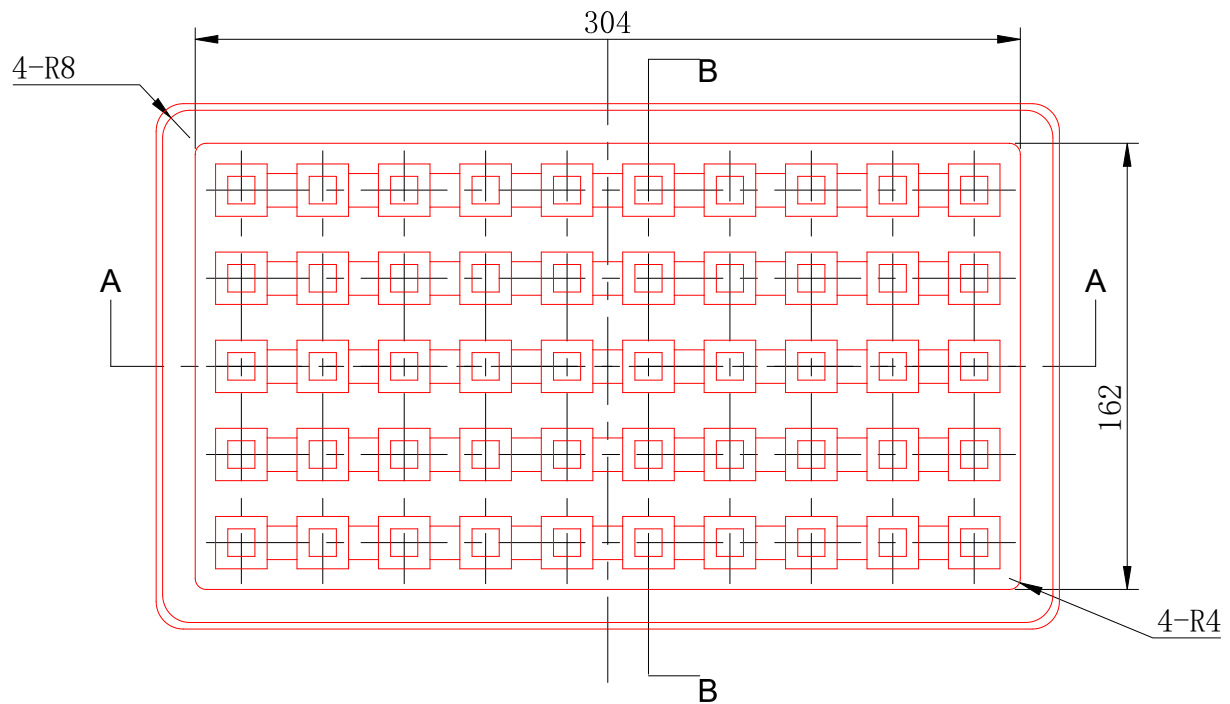
3、Power Supply

- (1)、Recommended voltage 5V, Peak:Current over 800mA .
- (2)、It is recommended to use the LDO power supply; If DC-DC is used, the ripple is controlled within 30 mV.
- (3)、DC-DC power supply circuit is recommended to reserve the position of the dynamic response capacitor, and the output ripple can be optimized when the load change is large.
- (4)、Proposed addition of ESD Devices to 5V Power supply Interface.



7.Package Information

As shown below, the packing of BG01-T is a tray.



8.Contacts

Company website: <https://www.ai-thinker.com>

Developer DOCS: <https://docs.ai-thinker.com>

Company forum: <http://bbs.ai-thinker.com>

Sampling purchasing: <https://anxinke.taobao.com>

Business cooperation: sales@aithinker.com

Technology support: support@aithinker.com



Company address: Seventh floor, Building B, xixiang street Baoan District, Shenzhen, China

Contacts: 0755-29162996