

Project No: /
Date: 2018.05.15
Rev: 1.1

Product Specification

Customer name: _____

Model: _____ BG01-T _____

B&T P/N: _____

Spec.: _____ GNSS SOC Module _____

Sealed by corporation:

| | | |
|-------------|-------------|----------|
| Compilation | Verify | Approval |
| Guanning | Yangxiaofei | Sky-xu |

Sealed by customer:

| | | |
|-------|--------|----------|
| Check | Verify | Approval |
| | | |

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SPECIFICATION

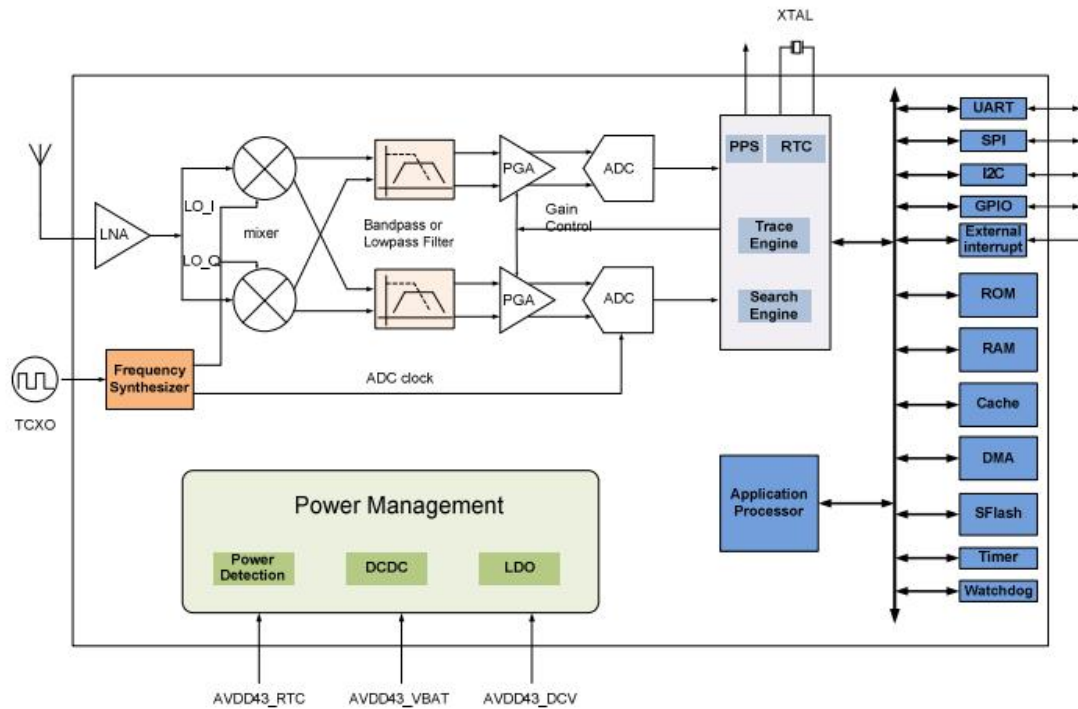
BG01-T Series Module



1. General Description

The BG01-T is a highly integrated GNSS SOC module with ceramic antenna, Main chip is GK9501. It is a high-integration Multi-GNSS SOC that supports BDS/GPS/GLONASS/GALILEO/QZSS/SBAS with low power consumption. It integrates DC/DC, LDO, LNA, RF receiver, Base Band, 32-bit RISC CPU, RAM, Flash, RTC and PMU, and provides kinds of interfaces like UART, I2C, SPI and GPIO. The BG01 supports crystal and TCXO input. It also provides battery backed-up memory and a real-time clock to accelerate acquisition and reduce the TTFF (Time to First Fix).

2. Block Diagram



3. Functional description

| Function | BG01 (G1H10S100) | BG01 (G2H10S100) | BG01 (GBH10S100) |
|--------------|---------------------|---------------------|---------------------|
| GPS | YES | YES | YES |
| BDS | NO | NO | YES |
| GLONASS | NO | YES | NO |
| UART | YES | YES | YES |
| VCCRF | YES | YES | YES |
| PPS | YES | YES | YES |
| Antenna | External | External | External |
| Power Supply | Typ 5V | Typ 5V | Typ 5V |
| Size | 16.2x12.2mm | 16.2x12.2mm | 16.2x12.2mm |

4. Electrical Specifications

| Category | Test Item | Typical | Unit |
|------------------------------|-------------------------------|-------------|------|
| TTFF [Condition 1] | Cold Start | 27.5 | s |
| | Warm Start | <1 | s |
| | Re-Acquisition | <1 | s |
| | A-GNSS | <10 | s |
| Sensitivity [Condition 2] | Cold Start | -148 | dBm |
| | Warm Start | -162 | dBm |
| | Re-Acquisition | -164 | dBm |
| | Tracking | -166 | dBm |
| Accuracy [Condition 3] | Horizontal position accuracy | 2.5 | m |
| | Altitude position accuracy | 3.5 | m |
| | Velocity accuracy | 0.1 | m/s |
| | Accuracy of Time pulse signal | 30 | ns |
| Power [Condition 4] | Acquisition Current@3.3v | 30 | mA |
| | Tracking Current@3.3v | 20 | mA |
| Operating Temperature | | -40°C-85°C | °C |
| Storage Temperature | | -65°C-150°C | °C |

| | | | |
|----------|--|--------|--|
| re | | | |
| Humidity | | 5%-95% | |

Note: Above test result based on GPS/BEIDO mode

[Condition 1]: The number of received satellite is more than six and signal of all those satellites is -130dBm. Test 10 times to take the average value and positioning accuracy is less than 10 meters

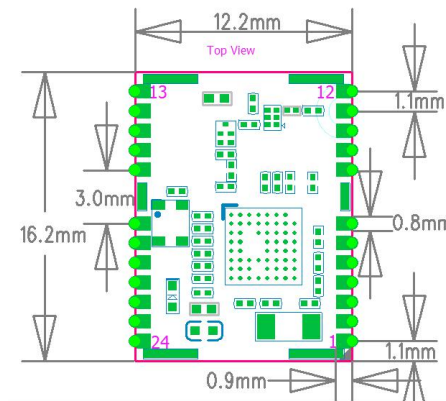
[Condition 2]: External LNA noise figure 0.8 and the number of received satellite is more than six. If in five minutes continuous lock the received signal strength is the test value

[Condition 3]: Wide and no blocking environment, continuous 24 hours test, 50%CEP

[Condition 4]: The number of received satellite is more than six and signal of all those satellites is -130dBm.

5. Package Dimensions & Pin definition

5.1 Package Dimensions



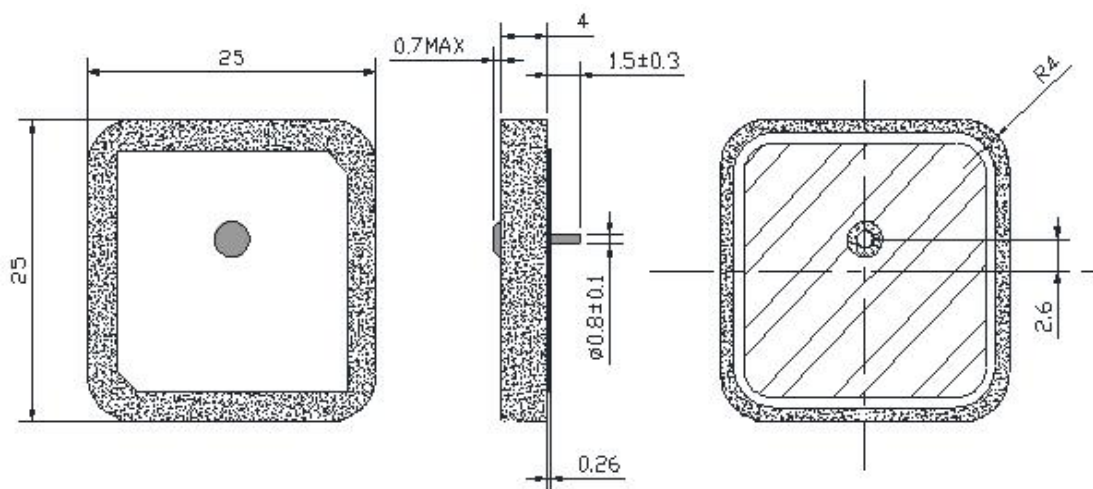
5.2 Pin Definition

| Pin No. | Definition | Description | BG01 (G1H10S100) | BG01 (G2H10S100) | BG01 (GBH10S100) |
|---------|------------|-------------------|------------------|------------------|------------------|
| 1 | NC | No connect | NC | NC | NC |
| 2 | NC | No connect | NC | NC | NC |
| 3 | 1PPS | Time pulse signal | YES | YES | YES |
| 4 | NC | No connect | NC | NC | NC |
| 5 | NC | No connect | NC | NC | NC |
| 6 | NC | No connect | NC | NC | NC |
| 7 | NC | No connect | NC | NC | NC |
| 8 | NC | No connect | NC | NC | NC |

| | | | | | |
|----|-------|--------------------------------------|-----|-----|-----|
| 9 | VCCRF | Output power for RF | YES | YES | YES |
| 10 | GND | Ground | YES | YES | YES |
| 11 | RF_IN | GNSS signal input | YES | YES | YES |
| 12 | GND | Ground | YES | YES | YES |
| 13 | GND | Ground | YES | YES | YES |
| 14 | NC | No connect | NC | NC | NC |
| 15 | NC | No connect | NC | NC | NC |
| 16 | NC | No connect | NC | NC | NC |
| 17 | NC | No connect | NC | NC | NC |
| 18 | NC | No connect | NC | NC | NC |
| 19 | NC | No connect | NC | NC | NC |
| 20 | TXD | UART serial data output | YES | YES | YES |
| 21 | RXD | UART serial data input | YES | YES | YES |
| 22 | VBKP | Backup power supply for internal RTC | YES | YES | YES |
| 23 | VCC | 3.3V input | YES | YES | YES |
| 24 | GND | Ground | YES | YES | YES |

6. Antenna Package Dimensions & Electrical Specifications

6.1 Antenna Dimensions

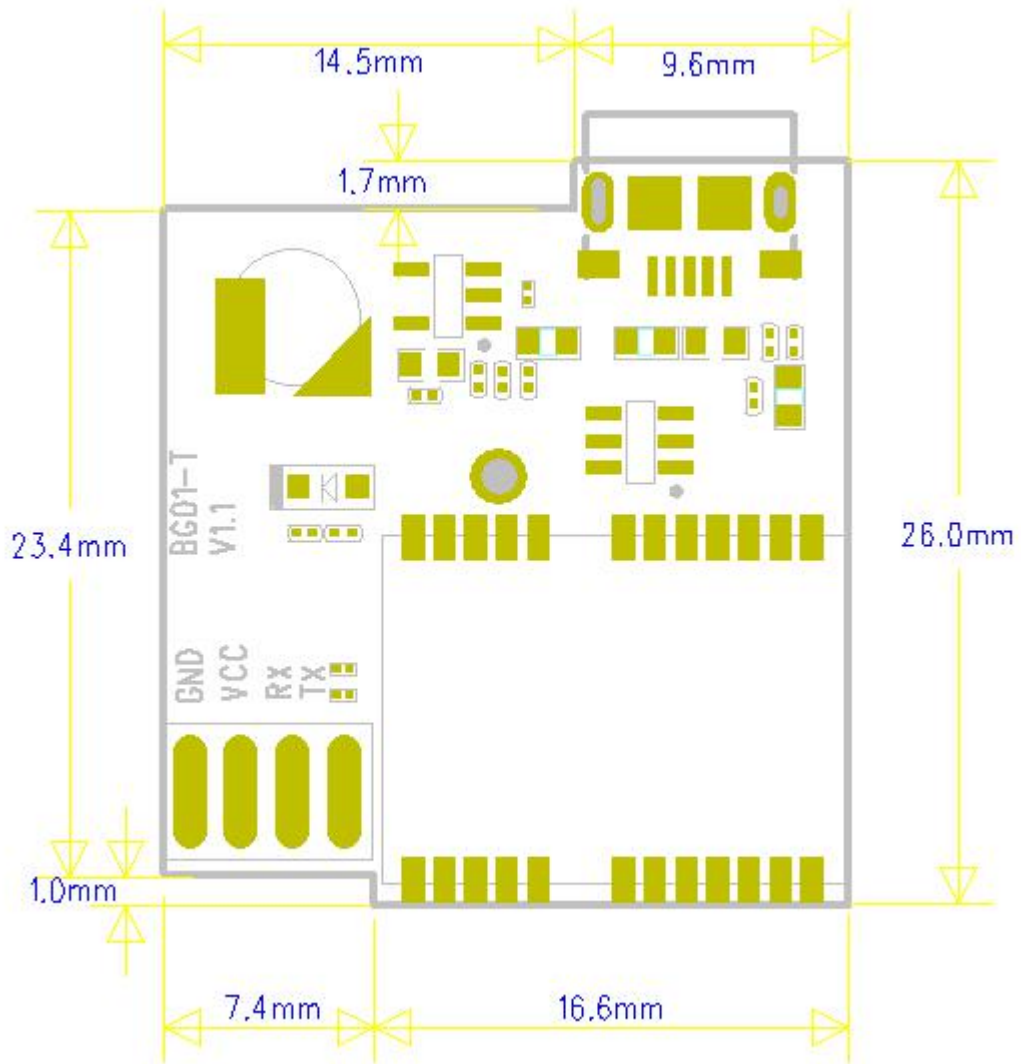


6.2 Antenna Electrical Specifications

| Item | Specifications | Post Environmental Tolerance |
|---|-----------------------|------------------------------|
| Range of Receiving Frequency | GPS:1575.42 | ±2.5 |
| Center Frequency (MHz) (with YBAT02 GND Plane) | 1590 | ±2.0 |
| Band With (MHz) (Return loss ≤-10dB) | ≥5 | --- |
| V.S.W.R.(in Center Frequency) | ≤1.5 | --- |
| Gain(Zenith) (dBi typ) | 2 dB typical | --- |
| Axial Ratio | 5 dB max | --- |
| Polarization | Right-Handed Circular | --- |
| Impedance (Ω) | 50 | --- |
| Frequency Temperature Coefficient (ppm/°C) | 0±10 | --- |

7. Test board Package Dimensions & pin Definition

7.1 Test board Package Dimensions



7.2 Test board pin Definition

| Pin No. | Definition | Description |
|---------|------------|-------------------------|
| 1 | GND | Ground |
| 1 | VCC | DC 3.6-5.5V |
| 2 | RXD | UART serial data input |
| 3 | TXD | UART serial data output |