BZ251

PRODUCT SPECIFICATION

Data Sheet

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Change History of Revision

Revision	Date	Contents of Revision Change	Remark
V1.0	2022-10-08	First release	CWW

1 Functional description

1.1 Overview

The BZ251 uses multi mode solution, low power consumption, low cost, the BZ251 are multi GNSS (BDSGPS,,GLONASS,Galileo,QZSS and SBAS) positioning module developed to meet the requirements of an extensive range of applications and end-products. Based on the high performance SOC position engine, these receivers provide exceptional sensitivity and acquisition times and interference suppression measures enable reliable positioning even in difficult signal conditions.

1.2 Product Features

- SOC high performance GNSS Chips
- Over 2 million effective correlators
- 72 acquisition-channel / 32 tracking
- Cold start acquisition sensitivity of -148dBm and -166dBm tracking sensitivity
- Up to 10 Hz navigation update rate
- Supports BDS,GPS, QZSS, SBAS,GLONASS ,Galileo
- Supports AGPS
- Integrated TCXO, LNA, SAW, RTC
- Compact size (25mmx25mm6.8mm±0.3mm) suitable for space-sensitive application
- Support standard NMEA 0183, version 4.0 and 4.1, UBX

1.3 Performance

Parameter	Specification	
Receiver type*	■GPS/QZSS L1C/A ■SBAS EGNOS, GAGAN, MSAS and WAAS ■GLONASS L1OF ■BDS B1I ■Galileo E1B/C	
Sensitivity	Tracking & Navigation	-166dBm
	Reacquisition	-160dBm
	Cold Start	-148dBm
Time-To-First-Fix[1]	Cold Start	29 s
	Hot Start	1 s
Horizontal Position accuracy[2]	Autonomous	2.0 m CEP
Accuracy of time pulse signal	RMS	30 ns
	99%	60 ns
Velocity accuracy[3]		0.05 m/s
Operational limits[4]	Dynamics	≤ 4 g
	Altitude	80000 m
	Velocity	500 m/s
Frequency of time pulse signal	1Hz	
Baud Rate	9,600 -- 460800 bps （Default 38400 bps）	
Max navigation update rate	10 Hz （Default 1Hz, configurable）	

*Default GPS+Galileo+QZSS+SBAS, and BDS and GLONASS are not supported at the same time

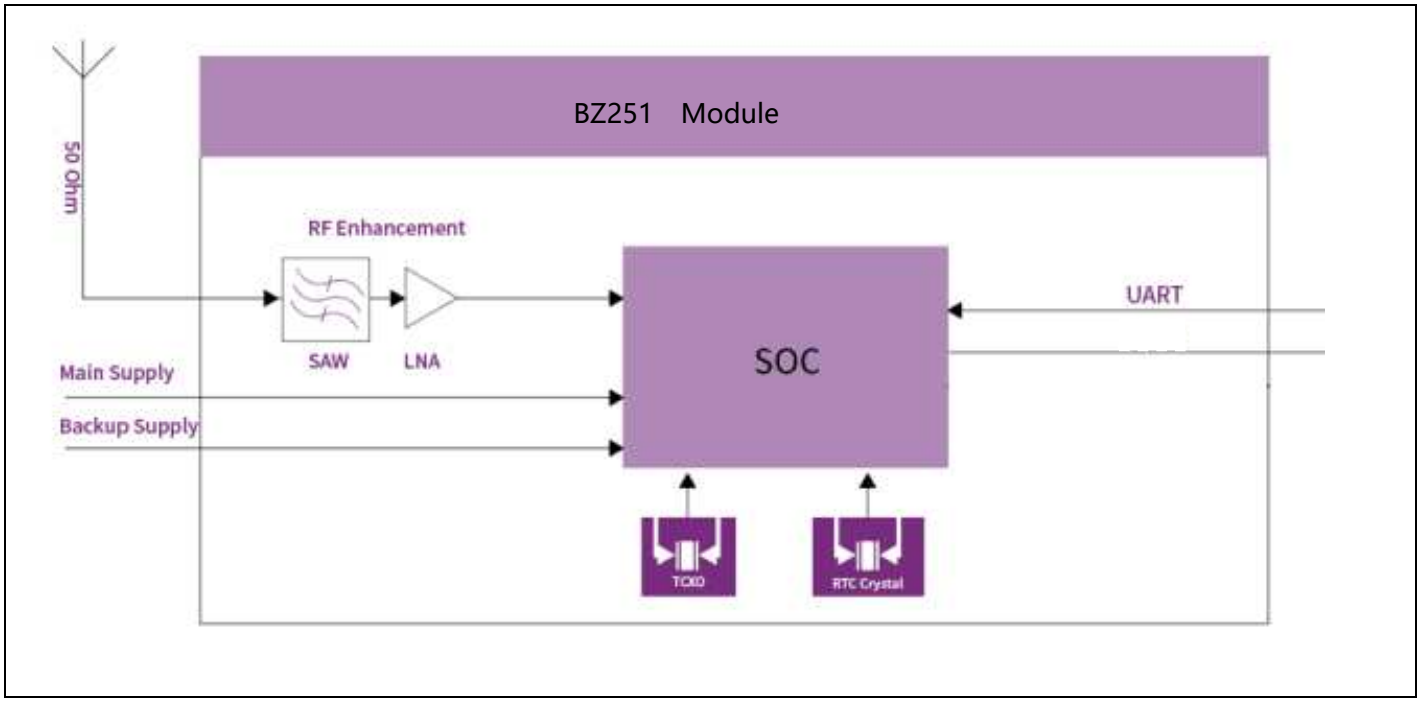
[1] All satellites at ≥-130dBm

[2] CEP 50%, 24 hours static, ≥-130dBm, > 6SVs

[3] 50% at 30 m/s for dynamic operation

[4] Assuming Airborne < 4g platform

1.4 Block Diagram



1.5 Protocols

Protocol	Type
NMEA 0183 v4.0 and 4.1	Input/output, ASCII
UBX	Input/output, binary, u-blox proprietary

1.6 Antenna

Parameter	Specification
Passive Antenna Type	25.0*25.0*4.0mm

1.7 Product Application

- UAV
- Automotive application
- Marine navigation, fleet management
- Handheld GPS receiver application
- Intelligent logistics scheduling
- Personnel protective
- Car navigation and tracking
- Intelligent robot

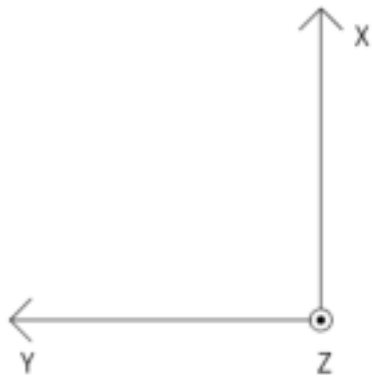
2 Pin definitions

2.1 Definition of Pin Assign

1 2 3 4 5 6

No.	Name	I/O	Description
1	TX	O	TTL Output
2	RX	I	TTL Input
3	GND	G	Ground
4	VCC	P	Main Supply
5	SCL	G	I2C Clock
6	SDA	P	I2C Data

2.2 Description of geomagnetic sensors



Note: QCM5883_MS_ADDRESS 0x0C.

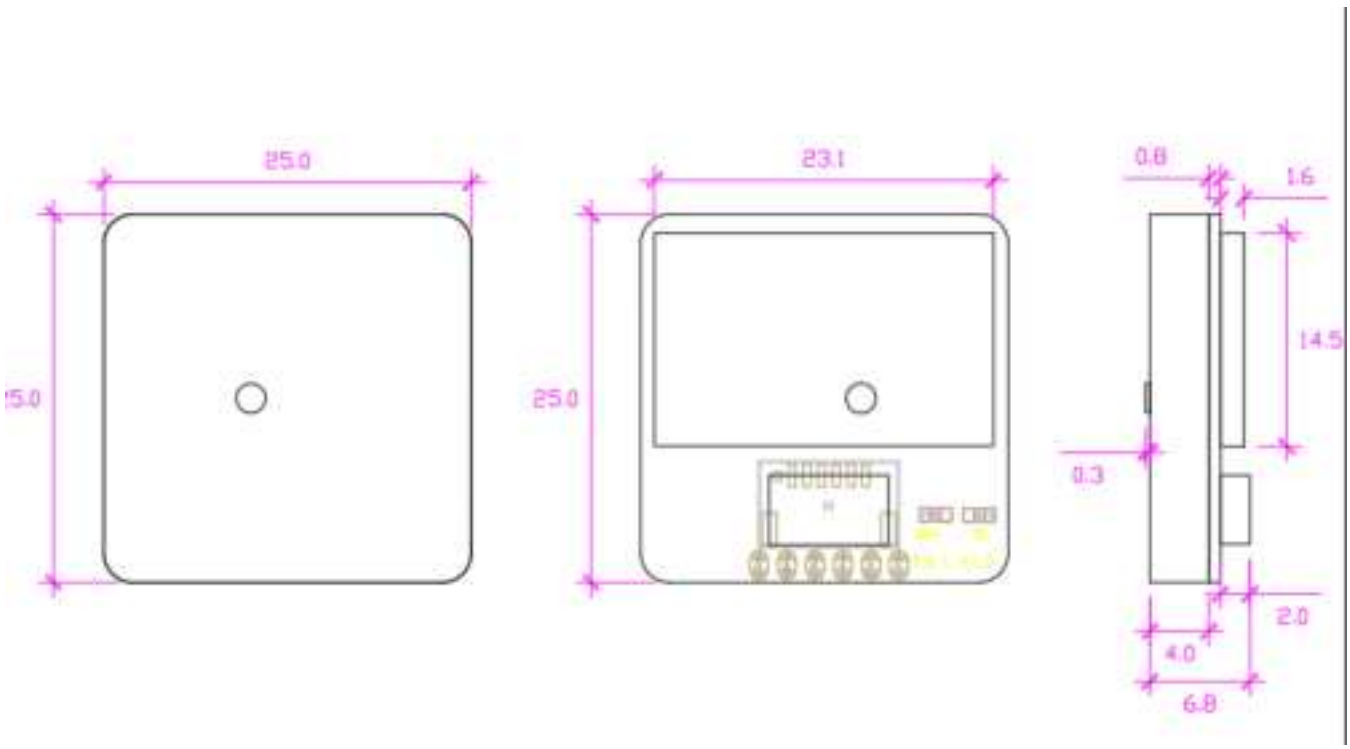
3 Electrical Specifications

Parameter	Symbol	Min	Type	Max	Units
Power supply voltage	VCC	3.0	5.0	5.5	V
Average supply current	Acquisition	27@5.0V	35@5.0V	41@5.0V	mA
	Tracking	27@5.0V	32@5.0V	40@5.0V	mA
Backup battery			0.07		F
Backup battery current	I_BCKP		8@3.3V		uA
Digital IO voltage	Div	3.3		3.3	V
Storage temperature	Tstg	-40		85	°C
Operating temperature[1]	Topr	-40		85	°C
Farah capacitance[2]	Tstg	-25		60	°C
Humidity				95	%

1 The temperature range is the operating temperature range without the Farad capacitor

2 Hot start cannot be carried out when the temperature is below -20℃ or above 60℃

4 Mechanical Specifications



units: mm dimension error:±0.3mm

5 Version of the configuration

/

6 Interface configuration selections

6.1 Interfaces description

The BZ251 GPS module can be selected according to the needs of the corresponding interface output side and additional sensors, Support UART interface output

Application Circuit

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7 ROHS

This product is RoHS compliance

FCC Warnning:

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 againstharmful interference in a residential installation. This equipment generates, uses and can radiateradio frequency energy and, if not installed and used in accordance with the instructions, maycause harmful interference to radio communications. However, there is no guarantee thatinterference will not occur in a particular installation. If this equipment does cause harmfulinterference to radio or television reception, which can be determined by turning the equipmentoff and on, the user is encouraged to try to correct the interference by one or more of thefollowing 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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1)This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.