

Project No: /
Date: 2018.12.25
Rev: 1.0

Product Specification

Customer name: _____

Model: _____ N92 _____

B&T P/N: _____

Spec.: _____ NB-IoT & GNSS SoC Module _____

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SPECIFICATION

N92 Series Module



1、INTRODUCTION

The N92 series is a module developed based on the RDA8908A and GK9501 platforms. The N92 module supports single-band NB-IOT function, dual-band NB-IOT function, NB-IOT + GNSS function, etc., which perfectly matches the product requirements in different application scenarios. The module itself has MCU, RF transceiver unit, baseband, power management and other functions, and is highly suitable for the current IoT technology products in the NB-IoT and GNSS markets. The use of the N92 module can quickly promote the landing of industrial applications and accelerate the scale of the current NB-IoT in rich scenarios such as smart municipalities, smart parks, smart meter reading, public asset tracking, shared product positioning, safe cities, industrial IoT, and smart home Application.

2、SPECIFICATION

2.1 NB-IOT chip RDA8908A

- CPU Main frequency: 12/52/72/96/144/192MHz
- Work mode: support PSM、eDRX mode
- AT commend: 3GPP Rel.13/Rel.14
- FLASH: built-in 32Mb SPI NOR Flash
- SRAM: built-in 32Mb SRAM
- RTC: support
- Network protocol: UDP/TCP/CoAP/LWM2M/MQTT

2.2 GNSS chip GK9501

- support BDS/GPS/GLONASS/GALILEO/QZSS/SBAS Multi-system joint positioning and single system independent positioning,
- Support D-GNSS differential positioning, A-GNSS assisted positioning, ephemeris prediction, DR integrated navigation application, the fastest data update rate is 10Hz
- 32-bit application processor, the highest frequency is 133MHz, supporting dynamic frequency adjustment
- Support PPS output
- Built-in reset controller
- Interface: UART、SPI、I2C、GPIO

3、BASIC FUNCTION

Function	Description	N92 (HS0S100)	N92 (HD0S100)	N92 (HSG0S100)
NB-IOT	Mid-Band (1710 – 1980 MHz)	NA	Support	NA
	Low-Band (814 – 915 MHz)	Support	Support	Support
GNSS	GPS/BDS/GLONASS/GALIL EO	NA	NA	Support
UART	NB-IOT UART	2	2	2
	GNSS UART	NA	NA	1
I2C	NB-IOT I2C	1	1	1
SIM	NB-IOT SIM	1	1	1
ADC	NB-IOT ADC	1	1	1
RESET	NB-IOT reset	Support	Support	Support
PPS	GNSS PPS	NA	NA	1
Antenna interface	NB-IOT	1	1	1
	GNSS	NA	NA	1
Voltage	3.8-4.2V	Typical 4.0V	Typical 4.0V	Typical 4.0V
Packaging		23.6x19.9mm	23.6x19.9mm	23.6x19.9mm

4、Electrical parameters

4.1 Basic specification

1	Working voltage	3.8~4.2V, default 4.0V
2	Working current	200mA
3	Temperature	work: -20°C~+70°C storage: -40°C~+125°C
4	Module size	LxWxH: 19.9mm x 23.6mm x2.1mm
	Module weight	3g

4.2 NB-IOT specification

1	Work frequency range	B3: sending 1710~1785MHz; receiving 1805~1880MHz B5: sending 824~849MHz; receiving 869~894MHz B8: sending 880~915MHz; receiving 925~960MHz
2	Sending power	23dBm
3	Receiving sensitivity	-128dBm
	Transmission bandwidth	200KHz
4	Transmission rate	Upward: 60Kbps Down: 26Kbps

4.3 GNSS specification

Category	Item	Typical	Unit
Positioning time [test condition 1]	Cold start	27.5	s
	Hot Start	<1	s
	Recapture	<1	s
	A-GNSS	<10	s
sensitivity [test condition2]	Cold start	-148	dBm
	Hot Start	-162	dBm
	Recapture	-164	dBm
	Track	-166	dBm
accuracy [test condition3]	Horizontal positioning accuracy	2.5	m
	Altitude positioning accuracy	3.5	m
	Speed accuracy	0.1	m/s
	Timing accuracy	30	ns

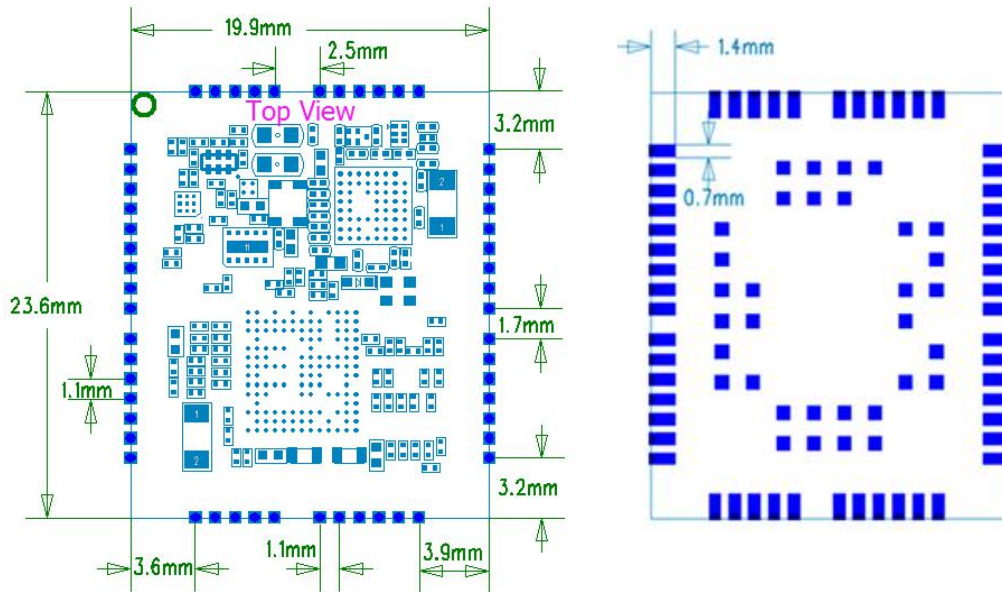
Note: The above results are for GPS / BeiDou dual-mode working mode.

[Test condition 1]: The number of receiving satellites is greater than 6, the signal strength of all satellites is -130 dBm, the average value is 10 times, and the positioning error is less than 10 meters.

[Test condition 2]: The external LNA noise figure is 0.8, the number of receiving satellites is greater than 6, and the received signal strength value is locked or not lost within five minutes.

[Test condition 3]: In open and unobstructed environment, continuous power-on test for 24 hours, 50% CEP.

5、PACKAGING&PIN DEFINITION



PIN NO.	Name	Description	N92 (HS0S100)	N92 (HD0S100)	N92 (HSG0S100)
1	PPS	GNSS Pulse Per Second,	NC	NC	YES
2	GND	GND	YES	YES	YES
3	I2C1_SDA	NB-IOT I2C interface	YES	YES	YES
4	I2C1_SCL		YES	YES	YES
5	GPS-TXD	GNSS UART interface	NC	NC	YES
6	GPS-RXD		NC	NC	YES
7	NC	NOT CONNECT	NC	NC	NC
8	NC	NOT CONNECT	NC	NC	NC
9	NC	NOT CONNECT	NC	NC	NC
10	RTC3.3V	GNSS external battery powered	NC	NC	YES
11	NC	NOT CONNECT	NC	NC	NC
12	NC	NOT CONNECT	NC	NC	NC
13	NC	NOT CONNECT	NC	NC	NC
14	NC	NOT CONNECT	NC	NC	NC
15	RESET	NB-IOT reset, active low	YES	YES	YES
16	NC	NOT CONNECT	NC	NC	NC
17	NC	NOT CONNECT	NC	NC	NC
18	NETLIGHT	NB-IOT indicator light	YES	YES	YES
19	HST_RXD	NB-IOT UART interface	YES	YES	YES

20	HST_TXD		YES	YES	YES
21	ADC_IN_0	NB-IOT ADC input	YES	YES	YES
22	NC	NOT CONNECT	NC	NC	NC
23	NC	NOT CONNECT	NC	NC	NC
24	NC	NOT CONNECT	NC	NC	NC
25	NC	NOT CONNECT	NC	NC	NC
26	VDDIO	Output, power external IO	YES	YES	YES
27	NC	NOT CONNECT	NC	NC	NC
28	NC	NOT CONNECT	NC	NC	NC
29	UART2_RXD	NB-IOT default AT commend port	YES	YES	YES
30	UART2_TXD		YES	YES	YES
31	UART1_RXD	NB-IOT UART interface	YES	YES	YES
32	UART1_TXD		YES	YES	YES
33	NC	NOT CONNECT	NC	NC	NC
34	RI	Reserve, Ring indicator	NC	NC	NC
35	NC	NOT CONNECT	NC	NC	NC
36	NC	NOT CONNECT	NC	NC	NC
37	NC	NOT CONNECT	NC	NC	NC
38	USIM_VDD	SIM interface	YES	YES	YES
39	USIM_RST		YES	YES	YES
40	USIM_DIO		YES	YES	YES
41	USIM_CLK		YES	YES	YES
42	GND	GND	YES	YES	YES
43	GND	GND	YES	YES	YES
44	GNSS_ANT	GNSS antenna interface	NC	NC	YES
45	VBAT	Module power input 3.8-4.2V	YES	YES	YES
46	VBAT		YES	YES	YES
47	GND	GND	YES	YES	YES
48	GND	GND	YES	YES	YES
49	NC	NOT CONNECT	NC	NC	NC
50	NC	NOT CONNECT	NC	NC	NC
51	GND	GND	YES	YES	YES
52	GND	GND	YES	YES	YES
53	NB_ANT	NB-IOT antenna interface	YES	YES	YES
54	GND	GND	YES	YES	YES