AK967-F

Dalang Communication Technology Co., Ltd Product Specification

Product Name:	Circuit Board
Product Model:	AK967-F
Version Number:	V 1.0
Revision Date:	2024.06.03

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1 Product Application Scenarios

Our company's AK967-F (NEO-F10N) module has excellent positioning accuracy. In open environments, its horizontal positioning accuracy can reach sub meter level, usually stable within ± 0.5 meters. This high precision is due to advanced satellite signal processing algorithms, which can accurately solve signals from multiple satellites. In complex urban environments, facing signal obstruction and multipath effects caused by high-rise buildings, this module can still maintain positioning accuracy within a range of 1-2 meters through its built-in anti-interference technology, effectively meeting the high demand for positioning accuracy in application scenarios such as autonomous driving assistance and precision agriculture. See Figure 1 for details

Figure 1 Product Application Scenarios

2 Features

In this chapter, we will delve into and comprehensively elaborate on the functionalities and operating principles of the AK967-F, detailing how it plays a pivotal role in various applications as follows:

1. Precision positioning: The horizontal positioning accuracy in open environments can reach sub meter level, stable within ± 0.5 meters; In complex urban environments, the accuracy is maintained at 1-2 meters, meeting high-precision positioning requirements such as autonomous driving assistance and precision agriculture.

2. Multi constellation signal reception: Supports mainstream satellite navigation systems such as GPS, GLONASS, Galileo, and Beidou, and can track multiple constellation signals simultaneously. It can obtain rich signal resources in any region of the world, greatly improving positioning reliability and availability.

3. High sensitivity: The cold start sensitivity reaches -160dBm, and the hot start sensitivity is as low as -148dBm. It can also capture signals and achieve positioning in weak environments such as indoor windows, underground parking lots, and dense forests.

4. Quick positioning and start-up: The initial positioning time (TTFF) for cold start is usually within 28 seconds, while for hot start it is shortened to within 1 second; After a brief interruption of the signal during movement, the reacquisition time only takes a few seconds to ensure the continuity of positioning.

5. Low power consumption: Advanced low-power technology is adopted, with a typical working current of only a few tens of milliamps, reducing power consumption by about 30% -40% compared to similar modules, significantly extending the battery life of battery powered devices.

6. Strong anti-interference: Equipped with multiple anti-interference mechanisms, it can effectively resist electromagnetic noise from electronic devices and signal interference from mobile communication base stations. It can also stably receive signals and accurately locate in industrial and other strong electromagnetic interference environments.

3 Structural Characteristic

In this section, we will thoroughly present and analyze the design details of the product, depicting its exterior features through comprehensive imagery. This view offers a holistic perspective, facilitating an understanding of the product's architecture. Refer to Figure 2,Table 1,Table 2 .

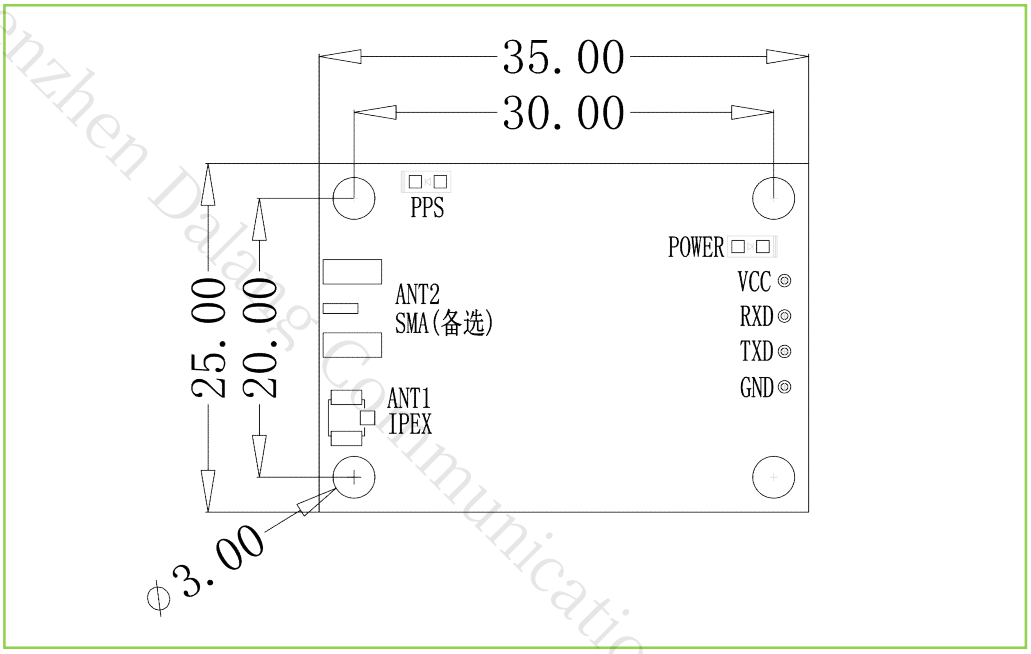

Figure 2 Product structure diagram

Table 1 PIN pin functions

Pin Number		Signal Name	Signal Description
1		VCC	Main Power Input 3.0-5.5V for COM1
2		RXD	Receive Data Pin used to receive data sent from other dev ices
3		TXD	Transmit Data Pin used to send data to other devices
4		GND	Ground Pin used as a common electrical reference point
LED Indicators	1	POWER	POWER - Indicates power supply status
	2	PPS	PPS - Pulse Per Second (PPS) output, flashes when positi oned to indicate second pulse output

Table 2 Interface Characteristics

NO.	Name	Symbol	Minimum value	Typical values	Maximum value	Unit
1	Main power supply	Vcc	2.7	3.3	5.0	V
3	RF port feeding	VRF	3.0	3.1	3.3	V
4	Input high level	VIH	2.0			V
5	Input low level	VIL			0.7	V
6	Output high level	VOH	3.2			V
7	Input low level	VOL			0.1	V
8	Main serial port baud rate	Baud		38400		bps

4 Specifications

In this section, we will provide a detailed list and explanation of the product's chip features, sensitivity, accuracy, operating principles, and other technical details, as detailed in Table 2.

Table 2 Product Specifications

Chip characteristics	chip	UBLOX-NEO-F10N
	working frequency	GPS: L1 C/A(1575.42MHZ) GLONASS: L1OF(1602+0.5625*K MHZ) BeiDou: B1 1/C(1561.098MHZ) Galileo: E1 B/C (1575.42MHZ) QZSS: L1-C/A/S，SBAS L1C/A
	Receiving channel	92 channels
sensitivity	track	-167 dBm
	Re capture	-159 dBm
	cold boot	-148 dBm
	Hot start	-159 dBm
First positioning time TTFF	cold boot	25s
	Hot start	3s
	Re capture	1s
accuracy	Horizontal Accuracy	Position: 2.5 m CEP SBAS: 2.0m CEP
	Speed accuracy	0.5m/s
	Dynamic heading accuracy	0.3 deg
	Second pulse accuracy	30ns
Operation restrictions	Dynamic characteristics	≤ 4 g
	Height measurement	80,000 m
	velocity measurement	500 m/s
output data	Baud rate	38400bps (default)
	Output Protocol	NMEA0183
	update frequency	0.25Hz-10Hz (default 1Hz)
	Carrier phase output	Support, output RAWX statement

	FLASH	built-in
Electrical specifications	working voltage	3.3V-5V DC
	power waste	<100mW
Physical parameters	size	35*25*4mm
	weight	3.8g
	Connector	2.54mm pin socket * 4
	Antenna connector	IPEX
environment	working temperature	-40℃-85℃
	Storage temperature	-40℃-85℃

5 Product Photos

In this chapter, we will showcase real-life images of the product, as shown in Figure 3. These images provide a detailed view of our product from various angles and perspectives. We believe that through authentic representation, we can better convey the value and concept of the product, thereby enhancing your trust and satisfaction.

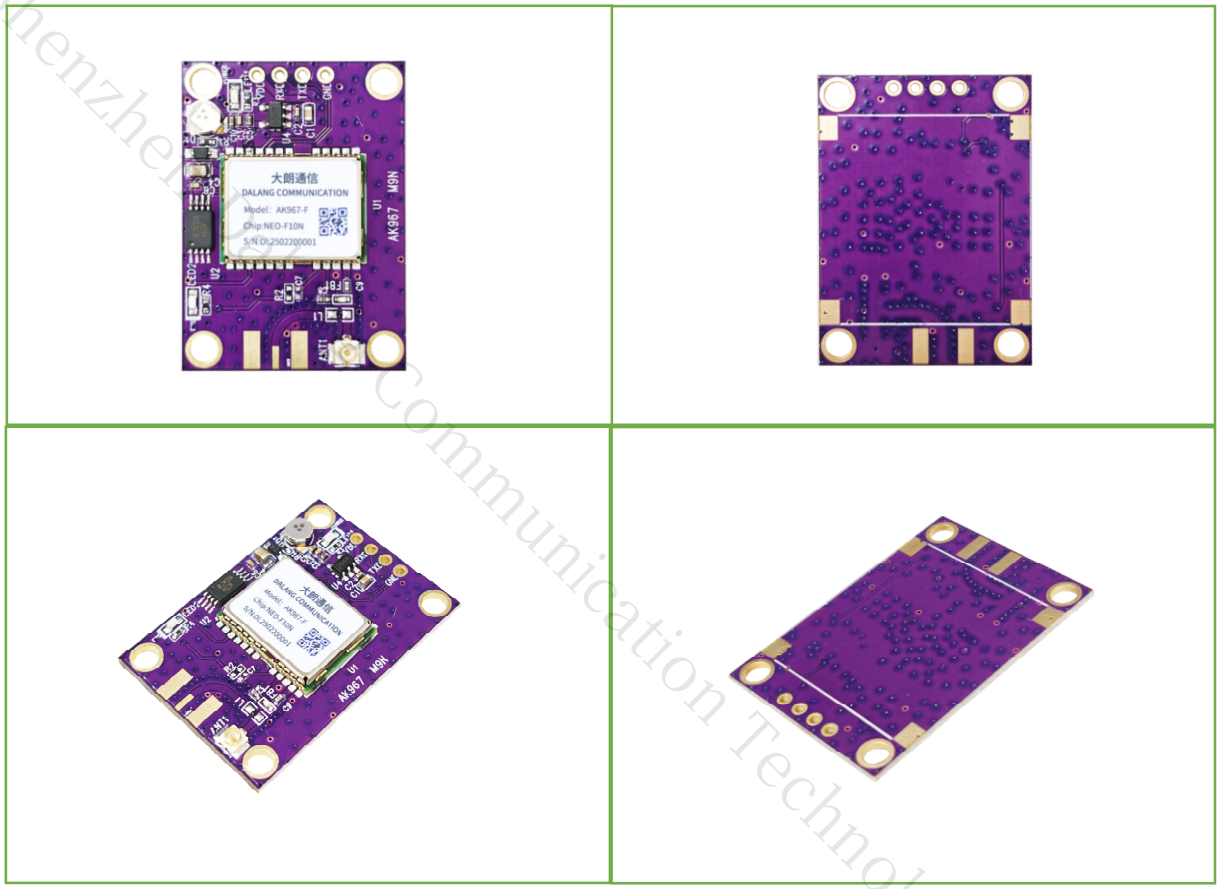

Figure 3 Product Images