AK521

Dalang Communication Technology Co., Ltd Product Specification

Product Name:	GNSS Antenna
Product Model:	AK521
Version Number:	V 1.0
Revision Date:	2024.07.04

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Contents

1 Product Application Scenarios 1
Figure 1 Product Application Scenarios 1
2 Features 2
3 Structural Characteristic 3
Figure 2 Product structure diagram 3
Figure 3 Product correlation chart 3
Figure 4 Process flow diagram 3
4 Specifications 4
Table 1 Product Specifications 4
5 Product Photos 6
Figure 5 Product Images 6

1 Product Application Scenarios

Our company's AK521 laminated ceramic active antenna stack is a revolutionary work in the field of communication, with distinct advantages. Its size is only 25 * 7mm, extremely compact, and can be easily integrated into various small devices, achieving a compact design of the product. In terms of performance, it performs excellently, relying on laminated ceramic materials to efficiently adapt to high-frequency communication, significantly reducing signal transmission loss, while significantly improving gain through active circuits, enhancing signal transmission and reception capabilities, and ensuring stable and efficient communication. Moreover, it has stable mechanical performance and can adapt to complex and harsh working environments, ensuring long-term reliable operation and providing strong support for diverse communication scenarios. It is an ideal choice for various applications such as vehicle navigation, drone positioning, and precision agriculture. Refer to 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 AK521, detailing how it plays a pivotal role in various applications as follows:

1. Dual frequency high-precision positioning: It can meet the application requirements of high-precision GNSS (Global Navigation Satellite System) antenna positioning and provide more accurate location information.

2. Ultra compact design: The specifications of 25 * 7 are relatively small, which makes this active antenna highly advantageous in device integration that requires extremely high space. For example, in wearable devices and micro sensor nodes, it does not take up too much space, which helps to achieve miniaturization and portability of the devices.

3. Stacked antenna design: Two single fed antennas are combined to form a stacked antenna, which can enhance signal reception capability and stability.

4. High gain and wide frequency band: Antennas have high gain and a wide frequency band range, which can effectively improve the reception quality and coverage range of signals.

5. Environmental compliance: Compliant with RoHS (Restriction of Hazardous Substances Directive) requirements, ensuring that the product meets environmental performance standards and is suitable for the global market.

3 Structural Characteristic

In this section, we will conduct an in-depth analysis of the product's design details, presenting its aesthetic features and precise interface specifications through detailed structural diagrams. This perspective aims to provide a comprehensive framework, thereby enhancing the understanding and perception of the product's architecture. Refer to Figure 2,Figure 3, Figure 4.

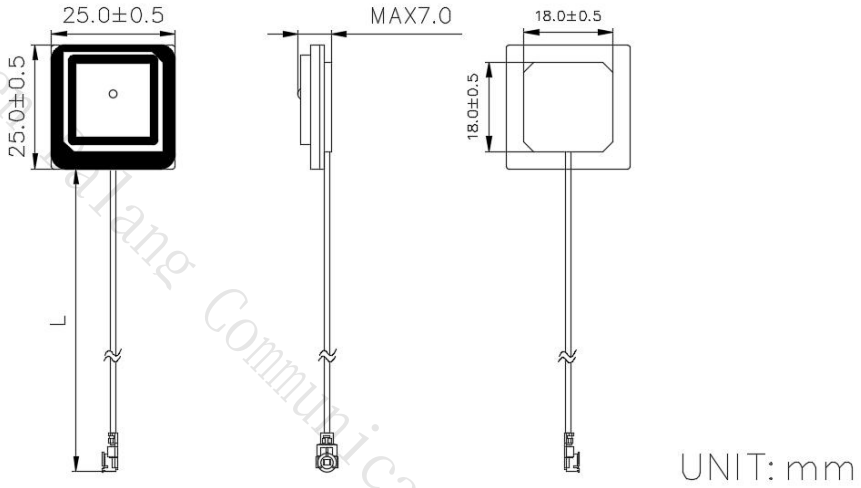

Figure 2 Product structure diagram

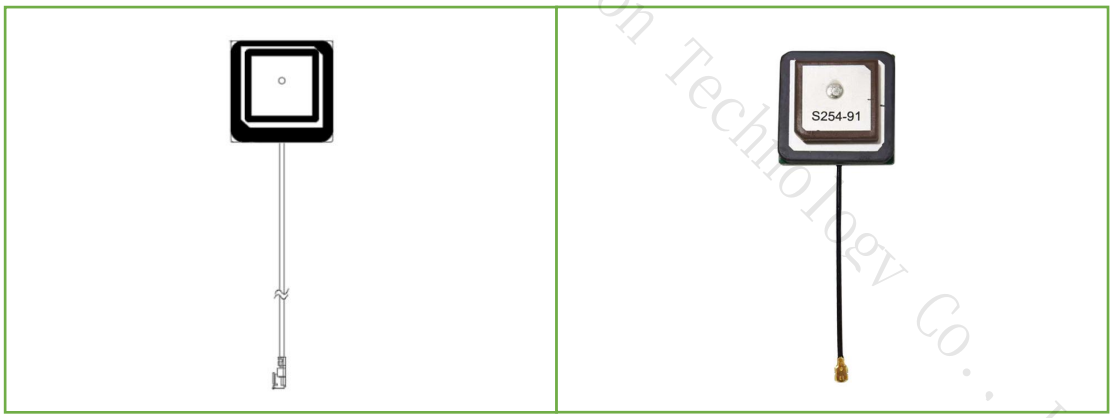

Figure 3 Product correlation chart

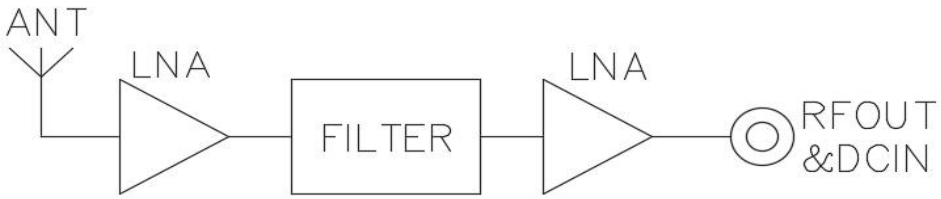

Figure 4 Process flow diagram

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 1.

Table 1 Product Specifications

Specification parameters			
Antenna	1	Antenna model	GNSS Antenna
	2	Ceramics Size (mm)	25*25*2/18*18*2
	3	Nominal frequency	GPS: L1：1575.42±1.023MHz， L5：1176.45±1.023MHz GLONASS: L1:1602+0.5625*K(MHz) BDS: B1 1561±1.023MHz GALILEO: E1: 1575
	5	Gain (Peak gain on70*70mm Ground Plane facing Zenith.)	L1:3±1dBi L5:2±1dBi
	6	V.S.W.R	≤2
	7	-10dB Bandwidth MHz min	10min
	8	impedance	50Ω
	9	Polarization	RHCP
	10	Frequency Temperature Coefficient	20ppm/deg.℃ max
LNA	1	Gain	L1:20±2dBi L5:18±2dBi
	2	Noise coefficient	<1dB
	3	Input V.S.W.R	<2.0
	4	Output V.S.W.R	<2.0
	5	Voltage	DC 3~5V
	6	Current	15~25mA
	7	Impedance	50Ω
Physical parameters	1	Size	25*7mm
	2	weight	10.8g

	3	Line type	RG1.13(Customizable)
	4	Line Length	L=65mm(Customizable)
	5	Linear interface	IPEX(Customizable)
	6	Antenna	ceramics
	7	pcb	FR4
Environmental characteristics	1	Working Temp	-40℃～+85℃, 10%～95% RH
	2	Storage Temp	-55℃～+100℃, 10%～95% RH
	3	Vibration	Sine sweep @1.5mmAM 10~55Hz each Axis

5 Product Photos

In this chapter, we will showcase real-life images of the product, as shown in Figure 5. 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.

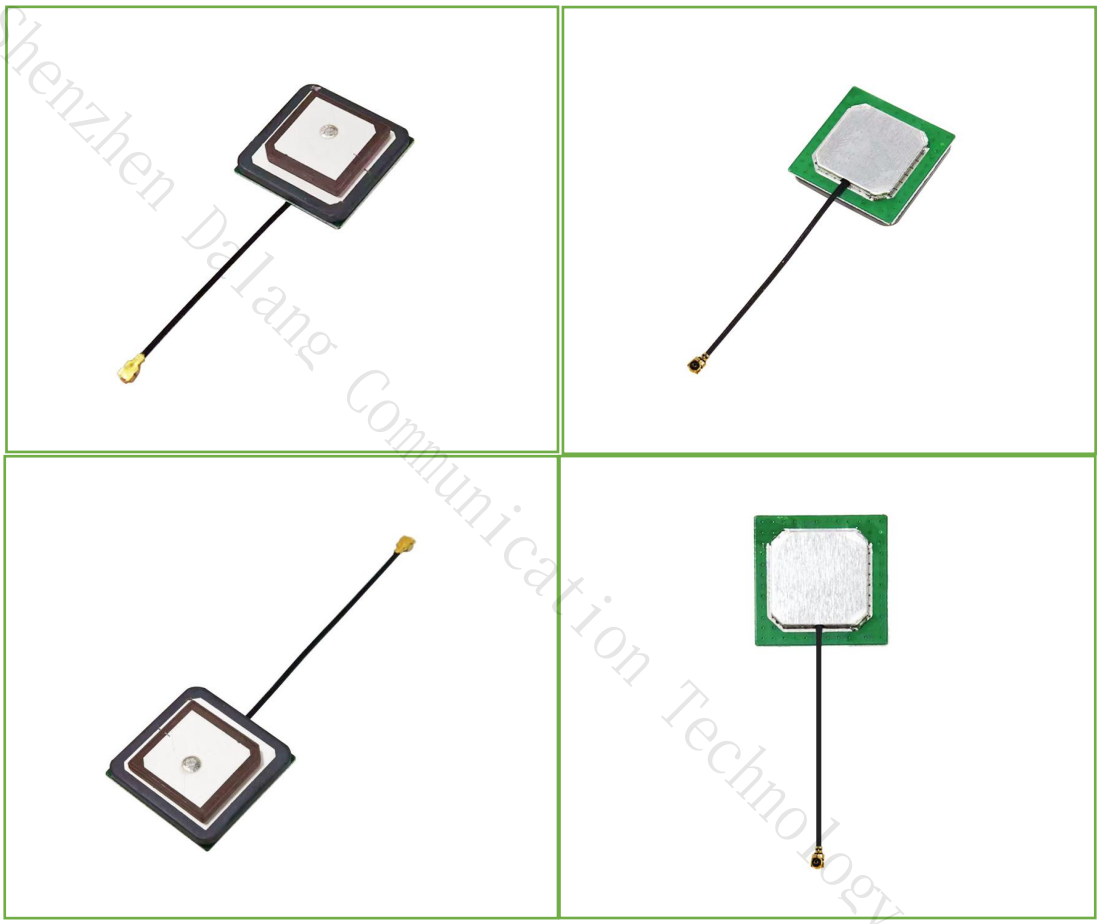

Figure 5 Product Images