

JS-ARK28-3 Dual Band (L1+L5) GNSS Positioning Module DATA SHEET



Table of Contents

Revision History2

1 Product Introduction 3

1.1 Overview 3

1.2 Product Features 3

1.3 Performance Metrics 4

1.4 Protocols 5

1.5 Antenna5

1.6 Product Applications 5

2. Pin Definitions 6

2.1 Pin Assignment 6

2.2 Magnetic Compass Description6

2.3 LED Indicator 7

3. Electrical Characteristics 7

4. Product Dimensions 8

5. Interface Configuration Options 9

5.1 Interface Description 9

5.2 Application Circuit 9

6. ROHS9

Revision History

[illegible]

1 Product Description

1.1 Overview

JS-ARK28-3 is a compact, lightweight, and cost-effective dual-band (L1+L5) GNSS positioning module. Designed with a high-performance, low-power architecture, it enables optimized multi-band signal tracking. Its advanced RF front-end offers anti-multipath and anti-interference capabilities, including up to eight anti-single-tone filters for L1/L5 bands, enhancing accuracy and TTFF in challenging conditions. Built on an advanced SoC, the module delivers ultra-high sensitivity and fast signal acquisition. Innovative dynamic power management ensures low-power continuous operation. Tailored for IoT, automotive navigation, and high-precision terminals, it supports multi-constellation solutions and maintains centimeter-level stability even in urban canyons and indoor-outdoor transitions.

1.2 Product Features

- Based on high-performance GNSS SoC chip
- Navigation update rate up to 20 Hz
- 200 tracking channels and dedicated search engines
- Low-power design
- Intelligent interference detection and suppression
- Supports GPS, BDS, GLONASS, Galileo, QZSS, and IRNSS
- Supports SBAS
- Supports A-GNSS
- Indoor/outdoor multipath detection and compensation
- Integrated TCXO, LNA, SAW, RTC
- Compact dimensions (28.0mm x 28.0mm x 8.0mm±0.3mm), light weight (<12.0g)
- ROHS compliant
- Supports standard NMEA 0183 / RTCM3.X protocols
- The module can be equipped with a magnetic sensor

1.3 Performance Metrics

Parameters	Details	
Supported Constellations &	■GPS L1 L5	■BDS B1I B1C B2I B2B B2A
		■Galileo E1 E5
Frequency bands	■GLONASS G1	■QZSS L1 L5
		■IRNSS L5
Sensitivity	Tracking & Navigation	-165dBm
	Reacquisition	-159dBm
	Hot Start	-159dBm
	Cold Start	-148dBm
Time to First Fix ¹	Cold Start	28s
	AGPS	1.5s
	Hot Start	1s
GNSS Positioning Accuracy ²	Single Point	Horizontal: 1.0 m CEP
		Vertical: 2.0 m CEP
	RTK	Horizontal:1.0 cm+1ppm CEP
		Vertical: 1.5 cm+1ppm CEP
Tracking Channels		200
Velocity Accuracy	PPS	< 20ns RMS
Velocity Accuracy ³		0.1 m/s CEP
Operating Limits ⁴	Dynamic	≤ 4 g
	Altitude	20000 m
	Velocity	500 m/s
Baud Rate	115200-2M bps (default 115200 bps) ⁵	
Maximum Data Update Rate ⁶	20Hz (default 1Hz)	

¹ All satellites at ≥-130dBm

- 2 Open sky, CEP 50%, 24-hour static, $\geq -130\text{dBm}$, $> 6\text{SVs}$
- 3 50%@30m/s dynamic operation
- 4 Assumes airborne platform $\leq 4g$
- 5 Debug log requires support for higher baud rate 2M
- 6 20 Hz requires specific firmware support

1.4 Protocols

Protocol	Type
NMEA 0183	Input/Output, ASCII
RTCM3.X	Input/Output

1.5 Antenna

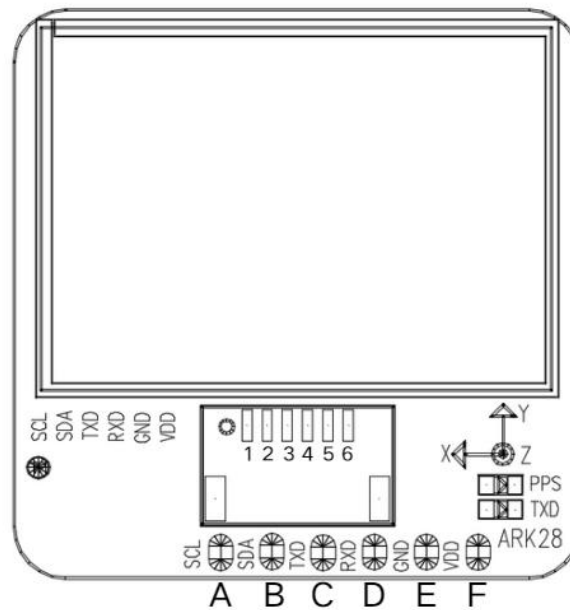
Type	Specifications
Passive Antenna Type	25.0*25.0*2.0mm(L5) stacked on 18.0*18.0*2.0mm(L1)

1.6 Product Applications

- UAV/Drones
- Smart Robots
- Intelligent Logistics Dispatch
- Personal & workforce Safety IoT
- Smart handhelds
- Automotive Navigation and Tracking
- Wearable devices
- Automotive Applications
- AVL and Location-Based Services

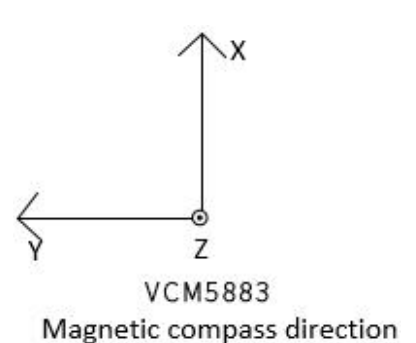
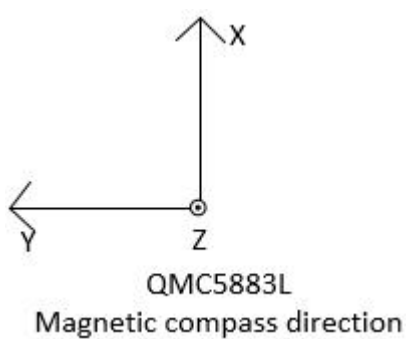
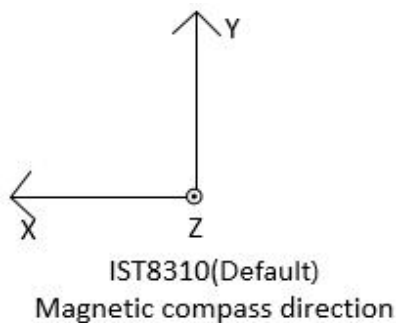
2 Pin Definitions

2.1 Pin Assignment



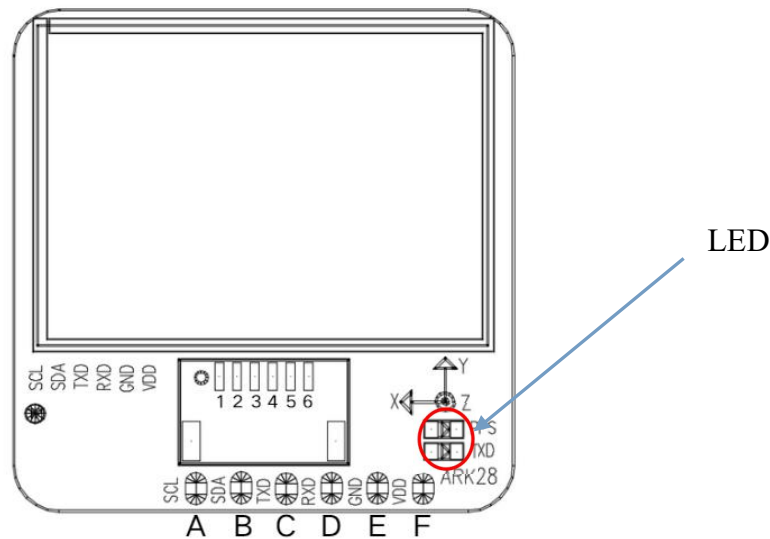
No.	Name	I/O	Description
1、 A	SCL	I/O	I2C Clock (keep open when unused)
2、 B	SDA	I/O	I2C Data (keep open when unused)
3、 C	TXD	O	Serial Port 1 Data Output
4、 D	RXD	I	Serial Port 1 Data Input
5、 E	GND	-	Ground
6、 F	VCC	P	Power Supply Voltage

2.2 Magnetic Compass Description



① Magnetic Compass Models: Default model is IST8310 (IST8310_MS_ADDRESS 0x0F); Optional Model QMC5883L (QMC5883L_MS_ADDRESS 0x0D); Optional Model VCM5883 (VCM5883_MS_ADDRESS 0x0C).

2.3 LED Indicator



LED Indicator (GREEN)	Status
PPS	No positioning Steady ON
	Positioning successful Flashes Once Per Second (3D)
TXD	1HZ Flashes Once Per Second
	5HZ Flashes 5 times Per Second
	*Flash frequency depends on data transmission rate

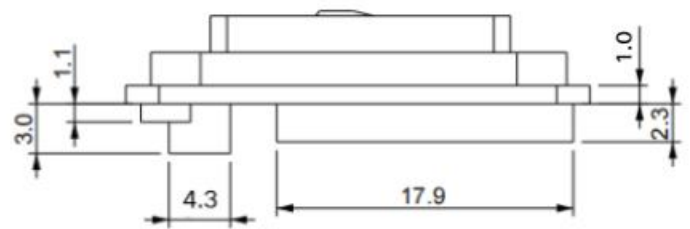
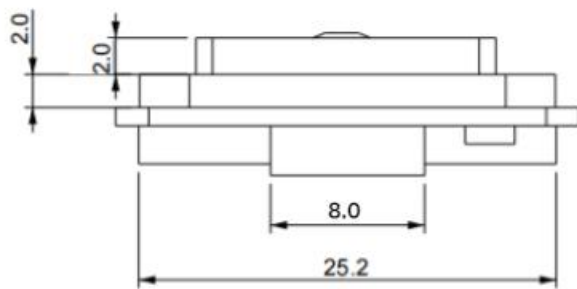
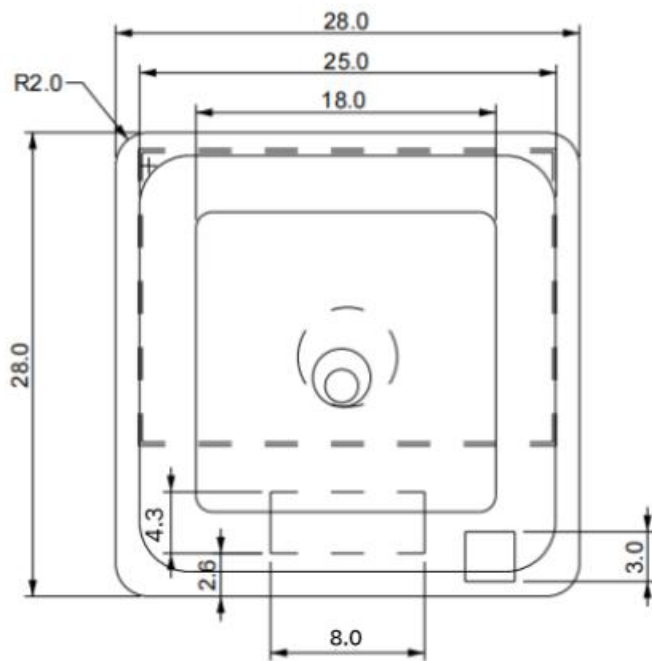
3 Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit
Power Supply Voltage	VCC	3.3	5.0	5.5	V
Average Current	I	32mA@3.3V	37mA@3.3V	42mA@3.3V	mA
Backup Battery Voltage	V_BACK	1.8	3.3	3.6	V
Backup Battery Current	I_BCKP		14uA@3.3V		uA
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 Farah capacitor

² Hot start can not be enabled when the temperature is below -25°C or above 60°C

4 Product Dimensions



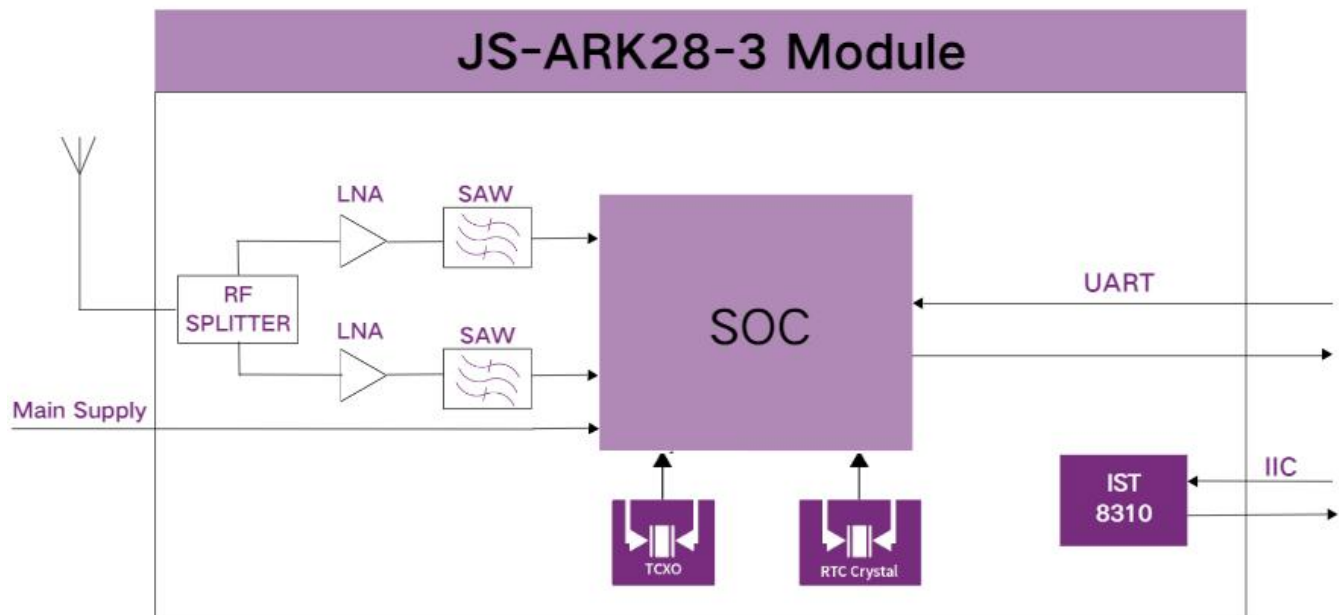
UNIT: mm

Dimension Error: $\pm 0.3\text{mm}$

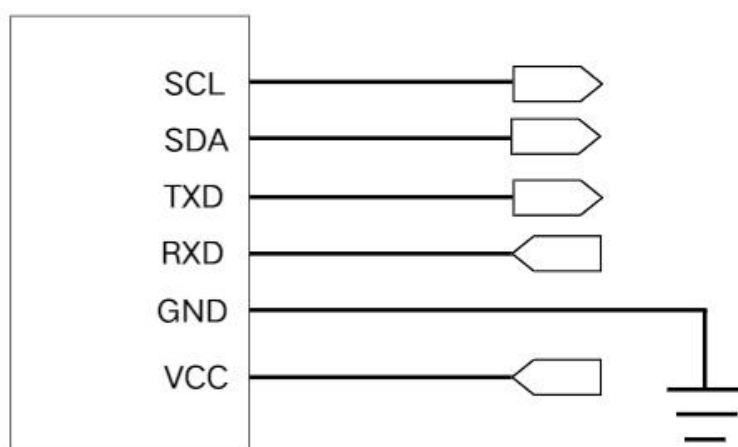
5 Interface Configuration Options

5.1 Interface Description

The JS-ARK28-3 module can be selected based on required interface outputs and additional sensors. It supports UART interface output.



5.2 Application Circuit



6. ROHS

This product is ROHS compliant.