

Product name	Description	Version
RTK-1612	Dual-frequency multi-constellation GNSS RTK module	0.5



## 1 Introduction

The RTK-1612 is a high-performance dual-band GNSS RTK module that designed for applications requiring centimeter level positioning accuracy. It adopts 12 nm process and integrate efficient power management architecture to perform low power and high sensitivity. The module supports concurrent reception of GPS, GLONASS, BeiDou, GALILEO, and QZSS to improve the availability and reliability of RTK solution even in the harsh environment.

## 2 Features

- Dual-frequency and multi-constellation RTK positioning solution
- Support GPS, GLONASS, GALILEO, BEIDOU and QZSS
- Capable of SBAS (WAAS, EGNOS, MSAS, GAGAN)
- Support 135-channel GNSS
- Low power consumption
- Fast TTFF at low signal level
- Up to 10 Hz update rate
- Small form factor 16 x 12.2 x 2.4 mm
- SMD type with stamp holes; RoHS compliant
- IATF 16949 quality control

## 3 Application

- Precision Agriculture
- AGV Robotics
- V2X / ETC / 5G Station
- Structural / Land Monitoring
- Offshore / Marine Application

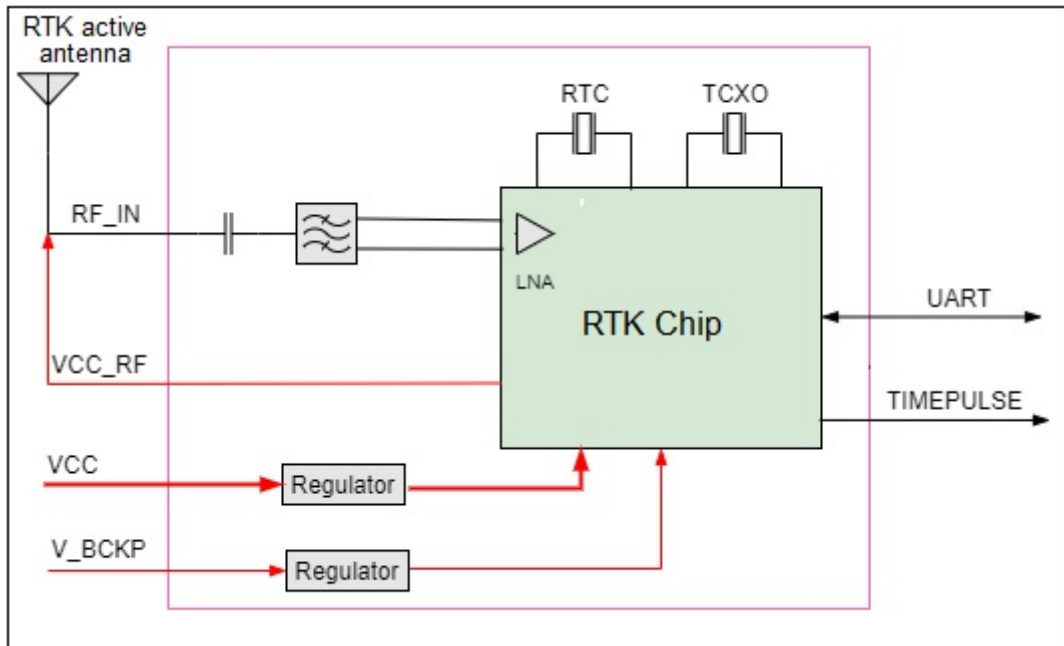


Fig 3-1 System block diagram.

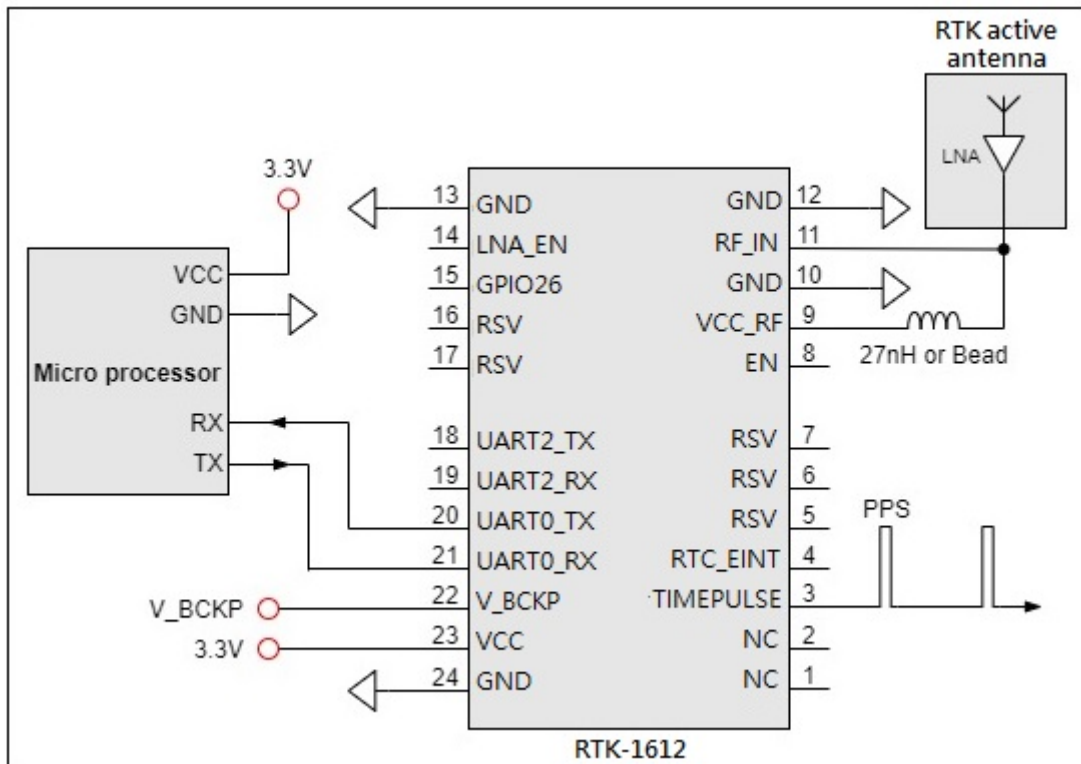
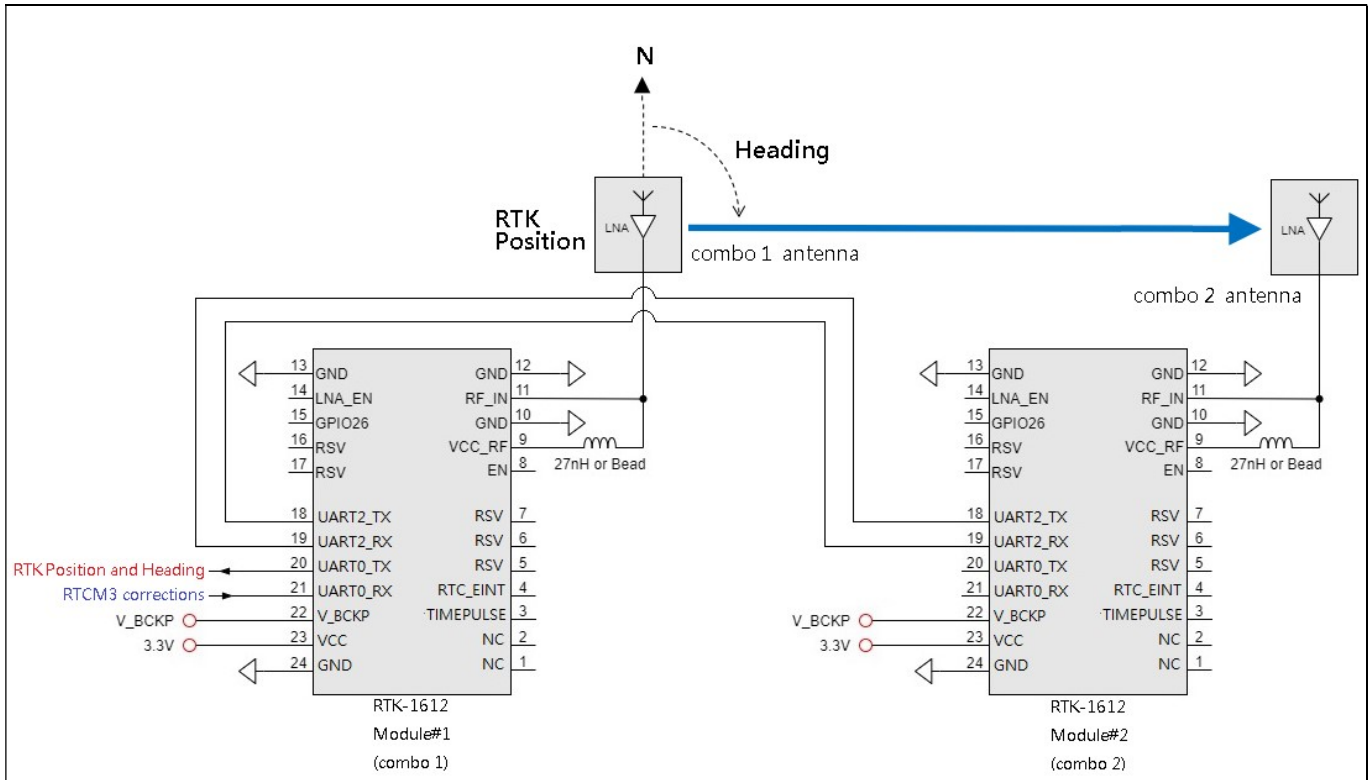


Fig 3-2 Typical application circuit that uses an active antenna



Refer to the application note "Heading application notes for RTK-1612"

Fig 3-3 RTK-1612 (Position & Orientation) Reference Layout Guide

**4 GNSS receiver**

Frequency	GPS/QZSS: L1 C/A, L5C GLONASS: L1OF GALILEO: E1, E5a BEIDOU: B1I, B2a	
Channels	Support 135 channels	
Update rate	1Hz default, up to 10Hz	
Sensitivity	Tracking	-165dBm (with external LNA)
	Cold start	-148dBm (with external LNA)
Acquisition Time	Cold start (open sky)	28s (typical)
	RTK Convergence time	< 10s (typical; after 3D fix)
Position Accuracy <sup>(1)</sup>	Autonomous	< 1.5m CEP
	RTK <sup>(2)</sup>	0.01m + 1ppm (Horizontal)
Max. Altitude	< 18,000 m	
Max. Velocity	< 500 m/s	
Protocol Support	NMEA 0183 ver. 4.1	115200 bps <sup>(3)</sup> , 8 data bits, no parity, 1 stop bits (default) 1Hz : GGA, GLL, RMC 0.2Hz : GSA,GSV
	Raw data	115200 bps, RTCM V3.3, message type 1005, 1074, 1084, 1094, 1114, 1124

Note 1: Open sky, dual band, demonstrated with a good external LNA.

Note 2: CEP, 24hr static.

Note 3: Both baud rate output message rate are configurable to be factory default.