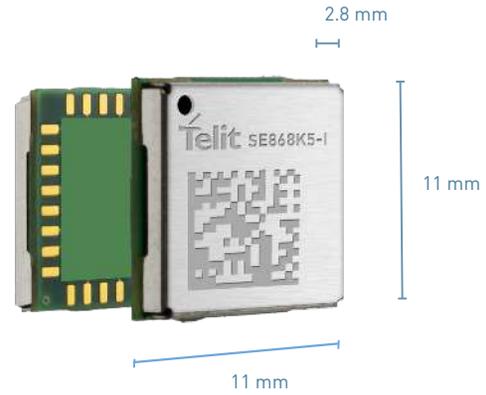# Telit

SE868K5-I

GNSS Embedded

PRELIMINARY

2.8 mm

11 mm

11 mm

Product Description

The SE868K5-I is a new multiconstellation positioning receiver module. It provides improved performance for position reporting and navigation solutions by combining:

- GPS/QZSS
- Galileo
- GLONASS
- BeiDou in the L1 band
- IRNSS in the L5 band

The SE868K5-I footprint is compatible with the SE868SY-D, the JF2 and the SE868 V3. This module can track multiple constellations simultaneously, including:

- GPS
- Galileo
- IRNSS
- GLONASS
- BeiDou
- NavIC L5
- GAGAN L1

The SE868K5-I is encased in an 11 x 11 mm QFN package. It includes a powerful baseband processor, embedded Flash memory and integrated LNA. In addition, the preamplification filtering stage removes the need for external SAW filters. It improves the module's robustness in case of co-location with other technologies (e.g., cellular, Wi-Fi or Bluetooth®).

The SE868K5-I delivers navigation data over a serial interface according to the NMEA protocol standard. The SE868K5-I supports ephemeris file injection (A-GNSS) and satellite-based augmentation systems (SBAS) to increase position accuracy and improve time to first fix (TTFF). Its onboard software engine can predict local short-term ephemerides starting from GPS satellite data the module receives and stores in the internal Flash memory.

Key Benefits

- Footprint compatible with SE868SY-D, JF2 and SE868 V3

- Full GNSS compliance: GPS, GLONASS, Galileo, BeiDou and NavIC

- Easy integration in AIS-140 applications

- SAW filter for optimal coexistence with other radios

- Embedded LNA allows use of passive antennas

- Supports ephemeris file injection (A-GNSS) as well as on-board ephemeris prediction (A-GPS)

- SBAS compliant

Family Concept

Telit's positioning product portfolio is the result of over 22 years of experience in GNSS applications. Our product offering ranges from GPS-only and multiconstellation receivers to the best-in-class multifrequency modules.

The SE868 family offers a broad series of positioning solutions and customizations in a compact 11 x 11 mm form factor. The integrated Telit proprietary commands enable easy transition between variants. These unified command sets reduce development complexity without additional costs.

Typical applications include:

- Fleet management systems
- E-mobility applications
- Road tolling systems
- Cellular base stations
- Automotive telematics systems
- Wearable sports training monitors

**Complete,
Ready-to-Use Access**
to the Internet of Things

IoT Modules   Connectivity Plans   Software & Platforms

SE868K5-I

PRELIMINARY

Product Features

- 32-pad QFN package
- Frequency bands: GPS L1, Galileo E1, GLONASS L1, BeiDou B1 and IRNSS L5
- 75 physical acquisition and tracking channels
- Standards: NMEA
- Jamming rejection
- Low power modes
- A-GNSS: Ephemeris file injection
- Telit proprietary PTWS commands
- EGNOS, WAAS, GAGAN and MSAS capability embedded with correction of positional error correction due to ionospheric and orbital disturbances
- Embedded SAW for optimal coexistence and LNA for improved performance

Environmental

- Dimensions: 11 x 11 x 2.8 mm
- Weight: 1 g
- 32-pad QFN package
- Temperature range
  - Operating temperature: -40 to +85°C
  - Storage temperature: -40 to +85°C

Interfaces

- UART, I²C and SPI interfaces
- A pulse per second (1PPS) output for precise timing

Approvals

- RoHS compliant
- ARAI tests compliant for AIS-140

Electrical & Sensitivity

- Power supply
  - From 1.72 V up to 1.89 V
- Power consumption: L1 + NavIC L5, full power, 1Hz at 1.8 V
  - Acquisition: 80 mW
  - Tracking: 78 mW
  - RTC mode: 70 uW
- Sensitivity: L1 + NAvIC L5
  - Acquisition: -146 dBm
  - Navigation: -161 dBm
  - Tracking: -163 dBm
- Horizontal positional accuracy:
  - CEP50 1 m
- Time to first Fix (90% @ -130 dBm):
  - Hot start: 1 s
  - Cold start: 29 s

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