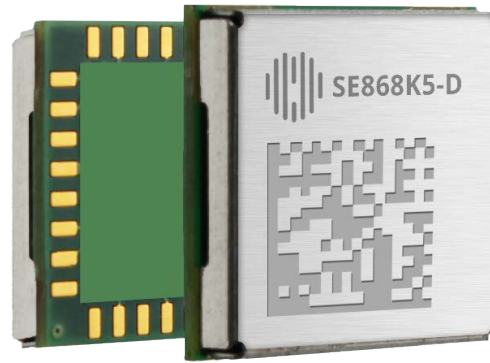


# SE868K5-D

GNSS



## Product Description

The SE868K5-D is a multifrequency and multiconstellation positioning receiver module and a member of the xE868 Telit form factor family. It improves position reporting and navigation solution performance by combining:

- GPS/QZSS and Galileo in the L1/E1 and L5/E5 bands
- GLONASS in the L1 band
- BeiDou in the B1 and B2 bands
- Satellite-based augmentation systems (SBAS)

Using two frequencies (i.e., L1/E1 and L5/E5) enhances location accuracy and reduces multipath effects in urban areas. This module can navigate down to -165 dBm and proved optimal performance in harsh environments.

The SE868K5-D is pin-out compatible with the SE868SY family and legacy products JF2 and SE868 V3. It can provide full multiconstellation and multifrequency navigation benefits by tracking several constellations simultaneously, including:

- GPS/QZSS
- Galileo
- GLONASS
- BeiDou

The SE868K5-D is encased in an 11 x 11 mm QFN-like package. It includes:

- A powerful baseband processor
- Flash memory
- Integrated LNA for optimal performance
- SAW filter for improved coexistence
- Switching regulator for best consumption

Its compact design and optimized positioning engine enable high-quality navigation in challenging outdoor scenarios (e.g., dense urban areas and harsh environments).

The SE868K5-D delivers navigation data over a serial interface (i.e., UART, I2C and SPI\*) according to the NMEA protocol standard. It supports the output of raw measurements for high-precision applications.

The SE868K5-D supports ephemeris file injection (A-GNSS) and local prediction of short-term ephemerides starting from data broadcast by GNSS satellites for faster time to first fix (TTFF). It also supports SBAS or QZSS L1S signals to increase position accuracy.



## Key Benefits

- Footprint compatible with SE868K5 family, with SE868SY family, and with legacy JF2 and SE868V3 variants
- Full GNSS compliance: GPS, GLONASS, Galileo, BeiDou and QZSS
- SAW filter for optimal coexistence with other radios
- Embedded LNA allows optimal performance even with passive antennas
- Supports ephemeris file injection (A-GNSS) as well as on-board ephemeris prediction (A-GPS)
- PVT Logging

## Family Concept

Telit's positioning product portfolio is the result of over 20 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
- Drones

# SE868K5-D

## Product Features

- 32-pad QFN-like package
- Frequency bands: GPS/QZSS L1 + L5, Galileo E1 + E5, GLONASS L1, BeiDou B1 + B2
- 75 (L1-band) / 60 (L5-band) tracking channels
- Standards: NMEA/RTCM
- Jamming rejection
- Low power modes
- A-GNSS: Self-generated prediction and ephemeris file injection
- Up to 10 Hz update rate
- Telit proprietary PTWS commands
- EGNOS, WAAS, GAGAN and MSAS capability embedded with positional error correction for augmented accuracy and integrity
- Embedded SAW for optimal coexistence and LNA for improved performance
- Raw measurements output in RTCM format for high-accuracy applications

## Environmental

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

## Interfaces

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

## Approvals

- RoHS compliant
- RED and UKCA approvals\*

## Electrical & Sensitivity

- Power supply:
  - From 1.72 V up to 1.89 V
- Power consumption\*\*: L1 + L5, full power, 1Hz at 1.8 V
  - Acquisition: 54 mW (G3BQ)
  - Tracking/Navigation: 59 mW (G3BQ)
  - RTC mode: 36 µW (typical)
- Sensitivity: L1 + L5
  - Acquisition: -146 dBm
  - Tracking and Navigation: -165 dBm
- Horizontal positional accuracy:
  - CEP50: <1 m
- Time to first fix (90% @ -130 dBm):
  - Hot start: 1 s
  - Warm start: 18 s
  - Cold start: 28 s

\*: Roadmap

\*\* : Preliminary values on early samples

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