

# SE868SY-SF

GNSS



## Product Description

The SE868SY-SF is the single band variant of the well known SE868SY-D. The GNSS receiver supports GPS, GALILEO, GLONASS and BEIDOU in the L1 band as well as QZSS and SBAS.

The SE868SY-SF can navigate to -161 dBm and track to -165 dBm, providing improved performance in harsh environments. It is pin-out compatible with the SE868 V3 as well as the JF2 and the SE868 V2. It can track GPS, GALILEO, GLONASS or BeiDou constellations simultaneously, providing the host device with high-value benefits from multi-constellation navigation.

The SE868SY-SF is encased in an 11 x 11 mm QFN-like package, includes a powerful baseband processor, embedded Flash memory and integrated LNA. Its ultra-sensitive RF front-end and multi constellation capability enable high-quality navigation in outdoor scenarios and in urban areas. The SE868SY-SF delivers navigation data over a serial interface according to the NMEA protocol standard. Its low power processing core delivers optimized multi-constellation tracking with ultra low power consumption.

The SE868SY-SF supports ephemeris file injection (A-GNSS) as well as Satellite Based Augmentation System (SBAS) to increase position accuracy and improve time-to-first-fix (TTFF). Its onboard software engine can predict local short-term ephemeris starting from ephemeris data broadcast by GNSS satellites received by the module and stored in the internal Flash memory.

## Key Benefits

- Same Form Factor as JF2 and SE868 V3
- Full GNSS compliance: GPS, GLONASS, Galileo, BeiDou
- Up to four constellations for improved performances
- Ultra-low power consumption
- Embedded LNA allows use of passive antennas
- Supports ephemeris file injection (A-GNSS)
- Satellite Based Augmentation System (SBAS) compliant
- DGPS/DGNSS support



## Family Concept

The Telit Cinterion positioning product portfolio is the result of over twenty years of experience in GNSS applications. Our current product offering ranges from GPS-only and multi-constellation receivers, to the best in class multi-frequency module.

The SE868 family offers a broad series positioning solutions and customizations in a compact 11 x 11 mm form factor, and the integrated Telit Cinterion proprietary commands allow for an easy transition between different variants. These unified command-set reduces development complexity without additional costs.

Typical applications include fleet management systems, e-mobility applications, road tolling systems, cellular base stations, automotive telematics systems, and wearables sports training monitors.

# SE868SY-SF

## Product Features

- Frequency Band: GPS L1C/A, Galileo E1, Glonass L1OF, BeiDou B1I, B1C
- 64 tracking channels
- Standards: NMEA/RTCM
- Jamming rejection
- Low Power Modes
- A-GNSS: ephemeris file injection
- Telit Cinterion proprietary PTWS commands
- EGNOS, WAAS, GAGAN and MSAS capability embedded with correction of positional errors due to ionospheric and orbital disturbances
- DGNSS support (RTCM)
- Up to 25Hz (GPS-only) update rate\*\*

## Environmental

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

## Interfaces

- UART, I2C and SPI\*\* interfaces
- 1PPS for precise timing

## Approvals

- RoHS compliant
- RED, UKCA

## Electrical & Sensitivity

- Power Supply:
  - From 1.71 V up to 1.89 V
  - From 0.75 V up to 0.85 (Low Power variant)
- Power Consumption L1 (G3BQ), 1 Hz
  - Acquisition: 55 mW
  - Tracking: 34 mW
  - Deep sleep: 70 uW
- Power consumption L1 (G3BQ), 1 Hz (Low Power variant\*):
  - Acquisition: 36 mW
  - Tracking: 26 mW
  - Deep sleep: 60 uW
- Sensitivity, L1 (G3BQ):
  - Acquisition: -146 dBm
  - Navigation/Tracking: -164 dBm
- Horizontal positional accuracy, L1 (G3BQ):
  - CEP50 < 1 m
- Timing Accuracy (1PPS)
  - Jitter: <10 ns @1-sigma
- Time To First Fix (90% @ -130 dBm), L1 (G3BQ):
  - Hot start: 1 s
  - Cold start: 29 s

\*\*Roadmap

\*Tested on early samples

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