SE868K5-DR

GNSS

Product Description

The SE868K5-DR is a dual-frequency and multiconstellation positioning receiver and a member of the xE868 series. It integrates dead reckoning capabilities by adding an external inertial measurement unit (IMU).

Using two frequencies (i.e., L1/E1 and L5/E5) enhances location accuracy and reduces multipath effects in urban areas. This receiver provides reliable performance and relays continuous positioning information even when the satellite signal is unavailable.

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

- A powerful baseband processor
- Embedded memory and PSRAM
- Integrated PGA 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 most scenarios. The dead reckoning feature provides reliable, continuous positional information for applications in which uninterrupted response is critical.

The SE868K5-DR reports navigation data over a serial interface (i.e., UART, I2C and SPI*) according to the NMEA protocol standard. In addition, it supports the output of raw measurements for high-precision applications (RTCM 3.x).

The SE868K5-DR supports ephemeris file injection (A-GNSS) and local prediction of short-term ephemerides for faster time to first fix (TTFF). It also supports SBAS or QZSS L1S signals for further increasing position accuracy.

Key Benefits

- Untethered dead reckoning (UDR) support with the addition of external sensor
- Footprint compatible with SE868K5 and SE868SY families and egacy variants
- Full GNSS compliance: GPS, GLONASS, Galileo, BeiDou and QZSS
- SAW filter for optimal coexistence with other radios
- Embedded PGA allows optimal performance even with passive antennas
- Supports ephemeris file injection (A-GNSS) and onboard ephemeris prediction (A-GPS)

Family Concept

Telit Cinterion's positioning product portfolio results from over 30 years of experience in GNSS applications. Our offering ranges from GPS-only and multiconstellation receivers to 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. Telit Cinterion's integrated proprietary commands enable easy transition between variants. These unified command sets reduce development complexity without additional costs.

Typical applications include:

- Fleet management systems
- Asset trackers
- Automotive telematics systems

Telit Cinterion

PRELIMINARY

SE868K5-DR

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
- Support for untethered dead reckoning with the addition of an external IMU sensor
- A-GNSS: Self-generated prediction and ephemeris file injection
- Up to 10 Hz update rate
- Telit Cinterion proprietary PTWS commands
- EGNOS, WAAS, GAGAN and MSAS capabilities embedded with positional error correction for augmented accuracy and integrity
- Embedded SAW for optimal coexistence and 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

Electrical & Sensitivity**

- Power supply:
  - From 1.72 V up to 1.89 V
- Power consumption (G3BQ): L1 + L5, full power, 1Hz at 1.8 V
  - Acquisition: ~66mW
  - Tracking and navigation: ~74mW
  - RTC mode: 36 µW (typical)
- Sensitivity (G3BQ): 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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