

## GE-5083/GE-5084, Easy Placement,

## Ultra-High Performance

## Tiny GNSS Engine Board

RoHS  
Compliant



### Overview

GE-5083/GE-5084 is a tiny, ultra-high performance, GNSS engine. It is especially useful for size demanding device. It could be placed at free space in a product housing while reducing the main board size to just a small connector.

In addition, this low power engine supports multiple satellite positioning systems – GPS, GLONASS, Beidou, QZSS and SBAS.

Based on our experienced design, GE-5083/GE-5084 fully exhibits the excellent performance of MT3333 chip. It works in GNSS signal difficult environment, providing fast acquisitions and excellent tracking performance.

### Applications

- Automatic Vehicle Location, Navigation
- Timing (GPS clock, FEMTO cell, traffic lights etc)
- Industrial PC, POS, ITS, Telematics
- Driving recorder, camera detector

### Features

- Multi-satellite positioning systems support
  - GPS/QZSS/GLONASS (GE-5083)
  - GPS/QZSS/Beidou (GE-5084)
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- High performance: -165dBm tracking sensitivity
- Low power: 22 mA at continuous tracking
- Tiny & low profile – including connectors
  - 8 (width) x 20 (length) x 2.7 (height) (mm)

- Built-in RF connector, reduce RF tuning efforts
  - Flexible antenna installation
- Built-in digital connector: flexible module installation
- Screw hole for fixing & performance enhancement
- External active antenna **short circuit protection**
- Backup power for faster position fix.
- 12 multi-tone active interference cancellers
- Indoor/outdoor multi-path detection & compensation
- Up to 10Hz update rate<sup>1</sup>
- High accuracy 1PPS timing (10ns jitter)
- Self-Generated Orbit Prediction (EASY)<sup>1</sup>
- AGPS support
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85°C

### Notes

1. Some features may not coexist and need special firmware or command programmed by customer
2. MOQ-based customization is welcome.

### Technical Specifications

#### Receiver Performance Data\*

Receiver Type	GNSS Chipset: MT3333 GPS/QZSS: L1 1575.42MHz GLONASS (GE-5083): L1OF 1598.0625 ~ 1605.375 MHz BEIDOU (GE-5084): B1 1561.098 MHz Channels: Tracking: 33 /acquisition: 99
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Horizontal Position Accuracy	< 3m (Autonomous) < 2.5m (WAAS) (50% 24hr static, -130dBm)
Velocity Accuracy	<0.1 m/s (speed, autonomous) <0.05 m/s (speed, SBAS) (50% @30m/s)
Timing Accuracy	±10ns jitter (1PPS output)
Time To First Fix	Autonomous Hot start <1sec Warm start <24sec Cold start <28sec (50% -130dBm)
Sensitivity (Autonomous)	-148dBm (acquisition) -165dBm (tracking) (-142dBm 28dB-Hz with 4dB noise figure)
Update Rate	Up to 10Hz, default 1Hz
Max. Altitude	<18,000 m
Max. Velocity	<1,852 km/hr
Datum	WGS-84(default)
Protocol Support	NMEA 0183 V4.1, MTK NMEA 4800/9600(default)/38400/115200 bps N,8,1(No parity, 8 data bits, 1 stop bit); Default: GEA, GSA, RMC, VTG@1Hz, GSV@1/5Hz, GLL, ZDA@0Hz
SBAS Support	WAAS, EGNOS, MSAS, GAGAN
Dynamics	<4g

\* Note. According to IC Spec

**Electrical Data**

Power Supply	3 ~ 4.3 V
Power Consumption	22mA/average tracking
Backup Power (V_BAT)	2~4.3V
TTL I/O	V <sub>IH</sub> : 2.1~3.1V, V <sub>IL</sub> : 0~0.7V V <sub>OH</sub> : ≥2.38V, V <sub>OL</sub> ≤ 0.42V
Protocols	NMEA,

	MTK Proprietary NMEA
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**Environmental Data**

Operating temperature	-40 ~ 85°C
Storage temperature	-40 ~ 85°C
Vibration	5Hz to 500Hz, 5g
Shock	Half sine 30g/11ms

**Mechanical Data – 8 x 20 x 2.7 (mm)**

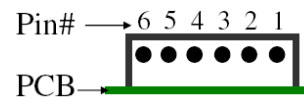


Unit: mm

**Application**

The screw hole could be used for fixing or reducing potential ground noise if it is connected to main board via a shielded ground cable.

**6-pin Interface, pitch 0.8 mm**



Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TXD	TTL level serial data output (from GPS)	Output
4	RXD	TTL level serial data input (to GPS)	Input
5	V_BAT	Backup power,	Input
6	PPS	Pulse Per Second	Output

**Ordering Information**

**GE-5083X, GE-5084X**

X=A	9600bps, GGA, GSA, RMC, VTG@1Hz, GSV@1/5Hz
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\*This document is subject to change without notice.