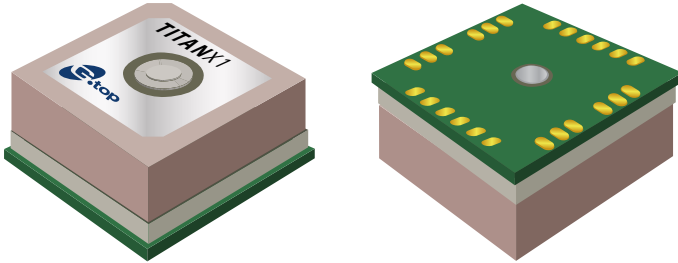


# Titan Series



MULTI-GNSS

ANTENNA



12.5 x 12.5 x 6.8 mm



Multi-GNSS  
GPS/Glonass/QZSS  
Beidou/Galileo



Ultra-Compact Size



Ultra-low Power  
Consumption



Multi-Interfaces  
I2C, SPI, UART, Ex-Ant



High Positioning  
Accuracy



EASY™ Technology  
For Faster TTFF



Anti-Jamming  
Technology



Reliable Quality  
ROHS, CE, FCC

## Titan X1

### GPS/Glonass Module with Patch Antenna

#### Product Description

Titan X1 is a state-of-the-art Multi-GNSS Patch module with an ultra-compact size, especially designed for applications where small foot-print, ease-of-integration and flexible interface options are essential, in addition to robust positioning performance.

With an ultra-compact size of 12.5 x 12.5 mm, Titan X1 is one of the smallest embedded patch antenna GNSS modules based on Mediatek's MT3333 chipset. It features a specially tuned (12 x 12 mm) GPS+Glonass Patch Antenna that offers unparalleled performance for a module this size.

Titan X1 offers a fully integrated design as standard, with a complete set of components including TCXO, RTC Crystal, SMPS, SAW Filter and an additional LNA; all considered vital for optimum performance.

Titan X1 introduces multi-interface support (UART, I2C and SPI), and includes external antenna detection circuit with interface so users don't have to choose between compact size and advanced features.

Titan X1 can support GPS and Glonass constellations simultaneously along with support for performance enhancing features such SBAS, EASY™ (self-generated orbit prediction), AGPS (ephemeris file injection), RTCM, PPS Sync, LOCUS™ (Internal Logger) and GLP™ (GNSS low power).

Titan X1 is produced at GlobalTop's in-house ISO 9001:2008, ISO/TS 16949 certified manufacturing facility, with 100% unit testing and complete quality control.

With an ultra-compact size, outstanding RF sensitivity and performance, and best-in-class feature-set, the Titan X1 is an unbeatable choice for compact IoT applications.

#### Highlights

Ultra-compact size, 12.5 x 12.5 x 6.8 mm

Multi-Interface support, I<sup>2</sup>C, SPI and UART

Ultra-low Tracking Power Consumption, as low as 7 mA (w/GLP)

Ultra-sensitive tracking, -165 dBm

Layout compatible with Firefly X1 (via Mesh Design)

External Antenna interface (with automatic detection and selection)

#### Applications

Wearables

Fleet Management

Automotive Telematics

Timing Synchronization

eCall / ERA-GLONASS Systems

Navigation Devices

Personal, Pet Tracking

Vehicle, Freight Tracking

Industrial PDA

UAV, Drones

Smart Watch, Digital Cameras

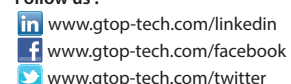
Avionics

#### Ordering Information

|                            |  |
|----------------------------|--|
| Part Number                | GMS-3302   |
| Default Constellation      | GPS / GLONASS  |
| Packaging                  | Tape on Reel, 350 pcs per reel                       |
| Evaluation Kit Part Number | GMS-3302-EVB-KIT                                     |
| Firmware Configurations    | UART + SPI<br>UART + I <sup>2</sup> C<br>UART + RTCM |

Samples available now, mass production to start on 30/03/2017.

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# Titan X1

## GPS/Glonass Module with Antenna

Track with GlobalTop

Quality

Innovation

Customization

Longevity

### Product Features

|                                |   |          |       |       |
|--------------------------------|---|----------|-------|-------|
| Receiver Type                  | MT3333 Engine   |          |       |       |
| Frequency Bands                | GPS L1, GLONASS L1, QZSS L1, BEIDOU B1, GALILEO E1, SBAS L1                         |          |       |       |
| Channels                       | Acquisition   | Tracking | PRN   |       |
|                                | 99  | 33       | 210   |       |
| DGPS (SBAS)                    | USA   | EU       | Japan | India |
|                                | WAAS  | EGNOS    | MSAS  | GAGAN |
| Positioning Accuracy (CEP 50%) | Typical   | <3.0m    |       |       |
|                                | SBAS  | <2.5m    |       |       |
|                                | RTCM  | <2.5m    |       |       |
| Velocity Accuracy              | 0.05 m/s (with SBAS)  |          |       |       |
|                                | 0.10 m/s (without SBAS)   |          |       |       |
| Timing Accuracy (1PPS)         | ±10 ns RMS (100 ms pulse-width)   |          |       |       |
| Maximum Altitude               | 80000 m (Default : 10000 m)   |          |       |       |
| Maximum Velocity               | 515 m/s (1000 Knots)  |          |       |       |
| Maximum Acceleration           | 4G  |          |       |       |
| Anti-Jamming                   | Active CW detection and removal, 12 multi-tone interference canceler                |          |       |       |
| AGPS                           | EPO in flash™, 7 or 14 days ephemeris   |          |       |       |
| EASY™                          | Self-generated orbit prediction   |          |       |       |
| AlwaysLocate™                  | Intelligent periodic mode algorithm   |          |       |       |
| LOCUS™                         | Internal data logger, up to 16 hours at 15s intervals (default setting)             |          |       |       |
| Built-In Components            | TCXO, RTC Crystal, Additional LNA, SMPS, SAW Filter, Embedded Flash, Ex-Ant Circuit |          |       |       |
| Embedded Antenna               | 12 x 12 mm GPS/Glonass Patch  |          |       |       |
| External Antenna               | Active only   |          |       |       |

### Sensitivity

| TTFF (time-to-first-fix) | With EASY™ | Without EASY™ |
|--------------------------|------------|---------------|
| Hot Start                | 1 Second   | 1 Second      |
| Warm Start               | 5 Seconds  | 33 Seconds    |
| Cold Start               | 15 Seconds | 35 Seconds    |

|                |                       |
|----------------|-----------------------|
| Sensitivity    |                       |
| Tracking       | -165 dBm              |
| Acquisition    | -148 dBm (Cold Start) |
| Re-acquisition | -163 dBm (Hot Start)  |

### Interfaces

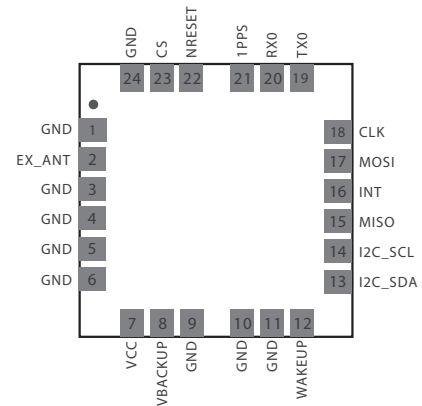
|                   |  |
|-------------------|--|
| Serial Interfaces | UART, SPI, I <sup>2</sup> C, RTCM            |
| Max. Baud Rate    | 115200 bps (Default : 9600 bps)              |
| Max. Update Rate  | 10 Hz (Default : 1 Hz)                       |
| Digital I/O       | 1 PPS  |
| Protocols         | NMEA Standard<br>NMEA Secure (binary, ASCII) |

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### Dimensions

|                    |                      |
|--------------------|----------------------|
| 24-PAD QFN Package | 12.5 x 12.5 x 6.8 mm |
| Weight             | < 4 g                |
| Pinout             |                      |



### Electrical Data

|                         |  |         |        |       |
|-------------------------|--|---------|--------|-------|
| Supply Voltage          | 3.0V to 4.3V (Typical 3.3V)            |         |        |       |
| Backup Supply           | 2.0V to 4.3V (Typical 3.0V)            |         |        |       |
| Power Consumption       | Min                                    | Typical | Max    |       |
|                         | Acquisition                            | 20 mA   | 27 mA  | 30 mA |
|                         | Power Tracking (GLP)Low-Power Tracking | 20 mA   | 25 mA  | 35 mA |
| Power Saving (Periodic) | Min                                    | Typical | Max    |       |
|                         | Backup Mode                            | 1.2 mA  | 1.5 mA |       |
|                         | Standby Mode                           | 1.2 mA  | 1.5 mA |       |

### Environmental Data and Approvals

|  |                            |
|--|----------------------------|
| Operation Temperature  | -40°C to 85°C              |
| Storage Temperature  | -40°C to 85°C              |
| Approvals & Compliance   | CE, FCC, ROHS, REACH, E911 |
| Manufactured at ISO 9001:2008, ISO/TS 16949 certified facility |                            |

### Free Firmware Customization

| Basic Functions           | Advanced Functions          |
|---------------------------|-----------------------------|
| Default Baud-Rate         | NMEA Secure (ASCII, Binary) |
| NMEA Sentence Interval    | Custom NMEA Output          |
| Datum (222 Selections)    | Last Position Retention     |
| DGPS Mode                 | Magnetic Variation          |
| Update Rate               | Geo-fencing                 |
| Data digits after decimal | Distance Calculation        |
| 3D Fix Settings           | Navigation Mode             |
| 1PPS Duration, Output     | Advanced Altitude           |
| Interference Canceler     | Data Logger Customization   |



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