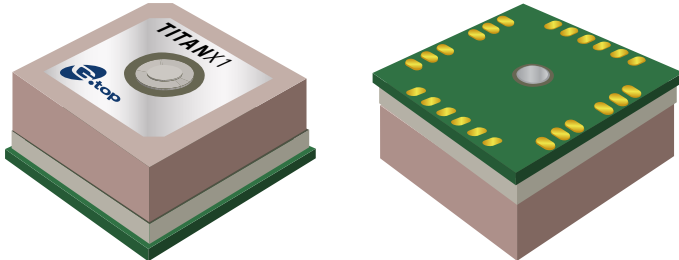# Titan Series

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, I²C, SPI and UART
Ultra-low Tracking Power Consumption, 20 mA
Ultra-sensitive tracking, -165 dBm
Layout compatible with Firefly X1 (via Mesh Design)
External Antenna interface (with automatic detection and selection)

Applications

Wearables	Personal, Pet Tracking
Fleet Management	Vehicle, Freight Tracking
Automotive Telematics	Industrial PDA
Timing Synchronization	UAV, Drones
eCall / ERA-GLONASS Systems	Smart Watch, Digital Cameras
Navigation Devices	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
	UART + I²C
	UART + RTCM

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

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Titan X1
GPS/Glonass Module with Antenna

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	Typical	<3.0m		
	SBAS	<2.5m		
	RTCM	TBA		
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 or14 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

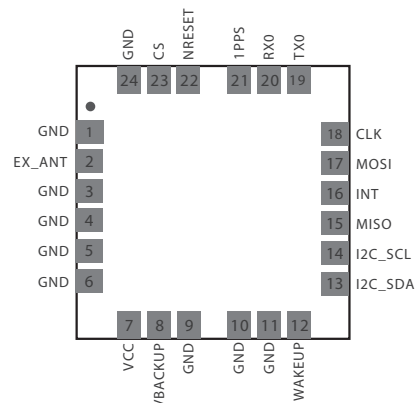| Sensitivity	
Tracking	-165 dBm
Acquisition	-148 dBm (Cold Start)
Re-acquisition	-163 dBm (Hot Start)

Interfaces

Serial Interfaces	UART, SPI, I²C, 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 NMEA Secure (binary, ASCII)

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	20 mA	25 mA	35 mA
(GLP)Low-Power Tracking	TBA	TBA	TBA
Power Saving (Periodic)			
Backup Mode	1.2 mA (Typical)		
Standby Mode	1.5 mA (Typical)		

Environmental Data and Approvals

Operation Temperature	-40ºC to 85ºC
Storage Temperature	-40ºC to 85ºC
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