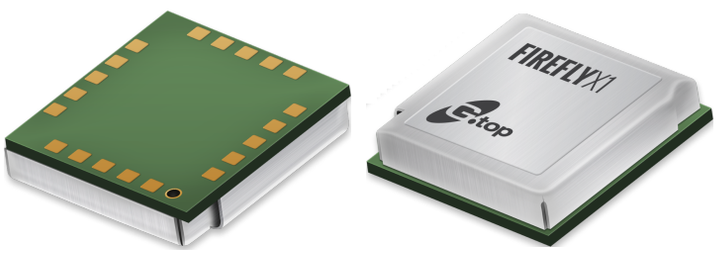
FireFly Series

Multi-GNSS Standalone



9.0 x 9.5 x 2.1 mm

- Multi-GNSS GPS/Glonass/ Beidou/Galileo/QZSS
- Ultra-Compact Smallest MediaTek GNSS Module
- Ultra-low Power Consumption
- Multi-Interfaces I2C, SPI, UART
- High Positioning Accuracy
- EASY™ Technology For Faster TTFF
- Anti-Jamming Technology
- Reliable Quality ROHS, CE, FCC

FireFly X1

Multi-GNSS Module

Product Description

The FireFly X1 is the newest entry in the FireFly Module Series, and the smallest MediaTek based module in the world, with an ultra-compact size of 9.0 x 9.5 x 2.1 mm, in a QFN Package.

The FireFly X1 is designed with sophisticated engineering and an entirely new set of ultra-compact quality components to reach this miniature size, while adding more features and interfaces at the same time. It uses the latest MT3333 engine with full support for GPS, QZSS, Glonass, Beidou and is also Galileo ready.

Tracking of up to two constellations simultaneously, and relying on the latest MediaTek firmware, it can provide superior positioning accuracy of up to 1.0m with RTCM. Enabling EASY™ (self-generated orbit prediction), AGPS (ephemeris file injection), and SBAS further enhances position accuracy significantly.

Unlike other compact GNSS modules, despite it's smaller size FireFly X1 incorporates a complete set of high-quality components, including TCXO, RTC Crystal, SMPS, SAW Filter and an additional LNA to provide the most reliable performance.

The FireFly X1 combines miniature size with flexible multi-interface connectivity options like SPI and I²C, that can simplify a user's design, and is ideal for M2M devices relying on low-cost MCU's that offer limited serial interfaces.

GlobalTop's industry leading free customization service further expands the capability of FireFly X1 with unique features such as custom NMEA output sentence, distance calculation, geofencing, magnetic variation and last-position-retention, etc. Advanced users can also customize the basic parameters of the module ,including baud rate, update rate, internal logger settings, DGPS mode, 3D Fix, 1 PPS timing, and many more.

All modules are produced at GlobalTop's in-house ISO 9001:2008 certified manufacturing facility, with 100% unit testing and complete quality control, allowing for a consistent annual yield rate of 99.98%.

With the smallest size, outstanding RF sensitivity and performance, and best-in-class feature-set, the FireFly X1 is an unbeatable choice for any GNSS positioning application.

Highlights

Smallest MediaTek module, 9.0 x 9.5 x 2.1 mm
Multi-interface support, I²C, SPI and UART
Ultra-low tracking power consumption, 18 mA
Ultra-sensitive tracking, - 165 dBm
Precise positioning accuracy, 1.0m RTCM
GPS/QZSS, GLONASS and BEIDOU support, GALILEO-ready

Applications

Wearables	Personal, pet tracking
Fleet management	Vehicle, freight tracking
Automotive Telematics	Industrial PDA
Timing synchronization	UAV (unmanned air vehicles)
eCall / ERA-GlONASS systems	Smart watch, Digital cameras
Navigation devices	Avionics

Ordering Information

Part number	GMM-3301
Default Constellation	GPS / Glonass
Packaging	Tape on reel, 1500 pcs per reel
Evaluation Kit	GMM-3301-EVB-KIT
Firmware configurations	UART + SPI
	UART + I²C
	UART + RTCM

To order samples and EVAL-Kits, please contact your local distributor.

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FireFly X1

GPS/Glonass Module

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 99 / Tracking 33 / PRN 210
DGPS (SBAS)	USA EU Japan India WAAS EGNOS MSAS GAGAN
Positioning Accuracy	RTCM < 1.0 m Typical < 3.0 m SBAS < 2.5 m
Velocity Accuracy	0.05 m/s (with SBAS) 0.10 m/s (without SBAS)
Timing Accuracy (1 PPS)	±10 ns RMS (100 ms pulse-width)
Maximum Altitude	50000 m (Default : 18000 m)
Maximum Velocity	515 m/s (1000 Knots)
Maximum Acceleration	4G
Anti-Jamming	Active CW detection and removal 12 multi-tone interference canceller
AGPS	EPO in flash™ 7 - 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
Supported Antennas	Active and Passive

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)

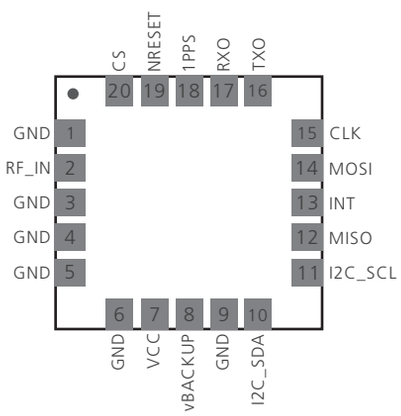
Interfaces

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

20-Pad QFN Package	9.0 x 9.5 x 2.1 mm
Weight	< 0.7 g

Pinout



Electrical Data

Supply Voltage	3.0 V to 4.3 V (Typical 3.3 V)		
Backup Supply	2.0 V to 4.3 V (Typical 3.0 V)		
Power Consumption	Mininum	Typical	Maximum
Acquisition	20 mA	25 mA	32 mA
Power Tracking	18 mA	24 mA	30 mA
(GLP) Low Power Tracking	TBD	TBD	TBD
Power Saving (Periodic)			
Backup Mode	9 µA (Typical)		
Standby Mode	350 µA (Typical)		

Environmental Data and Approvals

Operating Temperature	- 40°C to 85°C
Storage Temperature	- 40°C to 85°C
Approvals and Compliance	CE, FCC, ROHS, REACH, E911

Manufactured at an ISO 9001:2008 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	Geofencing
Data digits after decimal	Distance calculation
3D Fix settings	Navigation mode
1 PPS duration, output	Advanced altitude
Active interference canceller	Data-logger customization

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