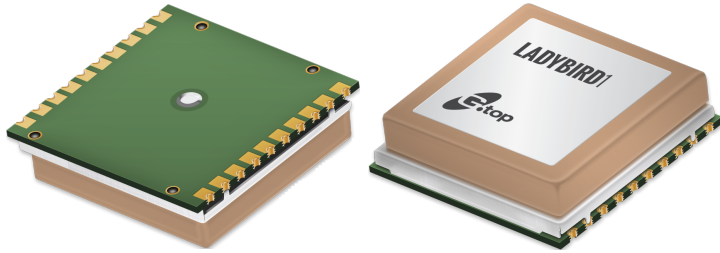


# Ladybird Series



GPS-Only

Antenna



16 x 16 x 4.7 mm



GPS and QZSS



Compact GPS Antenna Module



Ultra-low Power Consumption



Comprehensive FW Customization



High Positioning Accuracy



EASY™ Technology For Faster TTFF



Anti-Jamming Technology



Reliable Quality ROHS, CE, FCC

## Ladybird 1

### GPS-Only Antenna Module

#### Product Description

Ladybird 1 is built based on MT3339 GPS Engine from MediaTek. It is capable of achieving the high level of sensitivity (-165dBm) and instant Time-to-First Fix (TTFF). It is designed for lowest power consumption for precise GPS signal processing while giving precise positioning even under low signal, high velocity conditions.

Ladybird 1 has a well-tuned and optimized built-in Patch Antenna that offers excellent performance, and relieves the developer from Antenna integration. Power management design allows Ivory 3 to be integrated easily into your system without extra voltage regulator. Ladybird 1 also allows direct battery connection without the need for an external LDO and gives customers plenty of choices for their application circuit.

Ladybird 1 includes features such as SBAS, Anti-Jamming, AlwaysLocate™, EASY™, EPO™, and logger function. Ladybird 1's feature set, especially its ultra-low power consumption make it suitable for power sensitive and portable applications.

GlobalTop's industry leading free customization service further expands the capability of Ladybird 1 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%.

#### Highlights

Embedded Patch Antenna, 16 x 16 x 4.7 mm

Free and extensive FW customization

Ultra-low tracking power consumption, 19 mA

Ultra-sensitive tracking, - 165 dBm

Built-in LNA, SAW-Filter, TCXO, RTC Crystal,

AGPS, SBAS for better accuracy

#### Applications

Wearables

Personal, pet tracking

Fleet management

Vehicle, freight tracking

Automotive Telematics

Industrial PDA

Timing synchronization

UAV (unmanned air vehicles)

eCall / ERA-GIONASS systems

Smart watch, Digital cameras

Navigation devices




Avionics

#### Ordering Information

Part number	PA6H
Default Constellation	GPS Only
Packaging	Tape on reel, 1500 pcs per reel
Evaluation Kit	PA6H-EVB-KIT
Firmware configurations	Standard Customized

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

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# Ladybird 1

## GPS-Only Antenna Module

Track with GlobalTop

Quality

Innovation

Customization

Longevity

### Product Features

Receiver Type	MT3339 Engine			
Frequency Bands	GPS L1, QZSS L1, SBAS L1			
Channels	Acquisition	Tracking	PRN	
	66	22	210	
DGPS (SBAS)	USA	EU	Japan	India
	WAAS	EGNOS	MSAS	GAGAN
Positioning Accuracy	Minimum	< 2.0 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 LDO, SAW Filter, Embedded Flash			
External Antenna Interface	Supported, with Antenna Detection			

### Sensitivity

TTF (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, 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 )

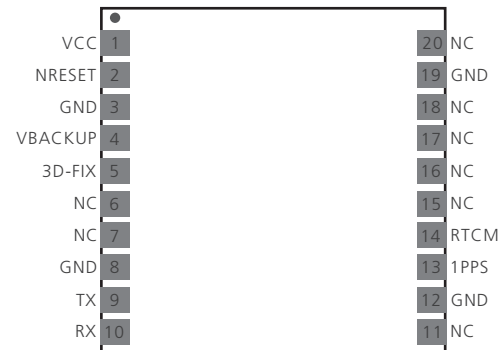
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### Dimensions

20-Pin LCC Package	16 x 16 x 4.7 mm
Weight	3.9 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	Minimum	Typical	Maximum
	Acquisition	22 mA	30 mA
	Power Tracking	19 mA	24 mA
	GLP Low Power Tracking	TBA	
Power Saving ( Periodic )			
	Backup Mode	9 µA ( Typical )	
	Standby Mode	1.6 mA ( 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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