

Quectel L86

Compact GNSS Module Integrating Patch Antenna & MT3333 Solution



Embedded Patch Antenna



EASY™ Technology



Low Power Consumption



Super Tracking Sensitivity -167dBm



Extended Temperature Range -40°C to +85°C



High Accuracy



Anti-Jamming



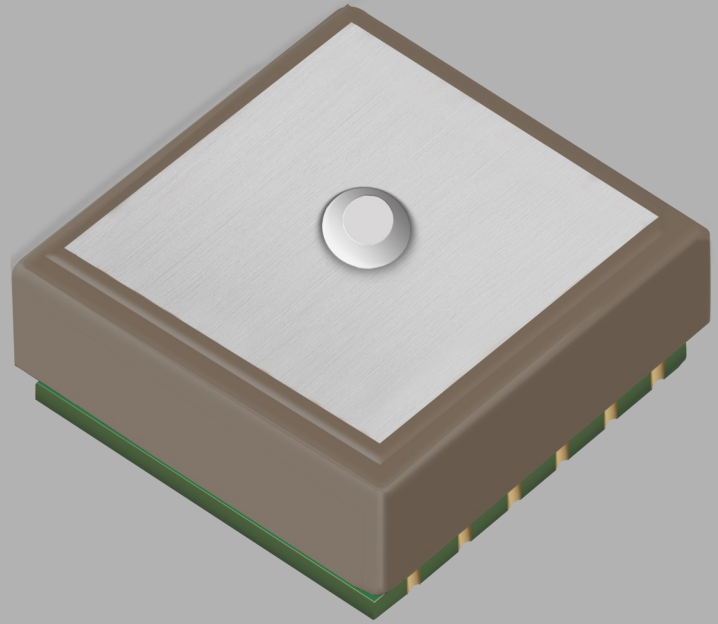
GPS+GLONASS+QZSS



RoHS Compliant

Key Benefits

- Multi-GNSS engine for GPS, GLONASS, and QZSS
- Embedded patch antenna: 18.4 x 18.4 x 4.0mm
- Extremely compact footprint: 16.0 x 16.0 x 6.45mm
- Automatic antenna switching function
- Support short circuit protection and antenna detection
- Built-in LNA for better sensitivity
- EASY™, advanced AGPS technology without external memory
- Ultra low power consumption in tracking mode, 26mA
- AlwaysLocate™, an intelligent controller of periodic mode
- LOCUS, embedded logger function without the need of host and external flash
- High sensitivity: -167dBm@Tracking, -149dBm@Acquisition
- 99 acquisition channels, 33 tracking channels
- Balloon mode, for high altitude up to 80km
- Support DGPS, SBAS (WAAS/EGNOS/MSAS/GAGAN)
- Great anti-jamming performance due to multi-tone active interference canceller
- PPS VS. NMEA can be used in time service
- Support SDK command developed by Quectel



L86 is an ultra-compact GNSS POT (Patch on Top) module with an embedded 18.4 × 18.4 × 4.0mm patch antenna and utilizes the MediaTek new generation GNSS chipset MT3333 that achieves the perfect performance. Designed to be compatible with Quectel GPS L80 module in the compact and unified form factor, it provides a flexible and scalable platform for migrating from GPS to GNSS. This space-saving design makes L86 a perfect module for miniature devices. Adopting LCC package and integrating patch antenna, L86 has exceptional performance both in acquisition and tracking.

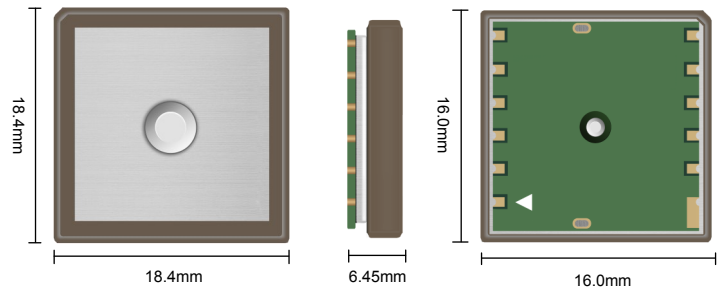
Combining advanced AGPS called EASY™ (Embedded Assist System) and proven AlwaysLocate™ technology, L86 achieves the highest performance and fully meets the industrial standard. EASY™ technology allows L86 to calculate and predict orbits automatically using the ephemeris data (up to 3 days) stored in internal flash memory, so L86 can fix position quickly even at indoor signal levels with low power consumption. With AlwaysLocate™ technology, L86 can adaptively adjust the on/off time to achieve balance between positioning accuracy and power consumption according to the environmental and motion conditions.

L86 supports automatic antenna switching function. It can achieve the switching between internal patch antenna and external active antenna. Moreover, it keeps positioning during the switching process.

Due to its compact design, high precision and sensitivity, L86 is perfectly suitable for a broad range of M2M applications such as portable device, automotive, personal tracking, security and industrial PDA. It is especially suitable for special applications, like GPS mouse and OBD.

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General Specifications

GPS L1 Band Receiver (1575.42MHz)	Channel	33 (Tracking) / 99 (Acquisition)
	GLONASS L1 Band Receiver (1601.71MHz)	C/A Code
	SBAS	WAAS, EGNOS MSAS, GAGAN
Horizontal Position Accuracy	Autonomous	<2.5 m CEP
Velocity Accuracy	Without Aid	<0.1m/s
Acceleration Accuracy	Without Aid	0.1m/s ²
Timing Accuracy	1PPS out	10ns
Reacquisition Time		<1s
TTFF@-130dBm with EASY™	Cold Start	<15s
	Warm Start	<5s
	Hot start	<1s
TTFF@-130dBm without EASY™	Cold Start	<35s
	Warm Start	<30s
	Hot Start	<1s
Sensitivity	Acquisition	-149dBm
	Tracking	-167dBm
	Reacquisition	-161dBm
Environmental Conditions	Operating Temperature	-40 °C to 85 °C
	Storage Temperature	-45 °C to 125 °C
Dynamic Performance	Maximum Altitude	Max.18000m
	Maximum Velocity	Max.515m/s
	Maximum Acceleration	4G
Footprint Dimensions	16.0 x 16.0 x 6.45mm	
Weight	7.6g	

Power Management

Power Supply	3.0V ~ 4.3V
Power Acquisition	30mA@3.3V (GPS+GLONASS)
Power Tracking	26mA@3.3V (GPS+GLONASS)
Power Saving	3.5mA@AlwaysLocate™ (Note 1)
	7uA@Backup Mode
	1mA@Standby Mode
	Periodic Mode

Note 1: Measured in GPS+GLONASS system under outdoor static mode.

Serial Interfaces

Serial Interfaces	UART: Adjustable 4800~115200bps Default: 9600bps
Update Rate	1Hz (Default), up to10Hz
I/O Voltage	2.7V ~ 2.9V
Protocols	NMEA 0183 PMTK