L86 Break Out Board

Datasheet Version 0.9



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. It provides a flexible and scalable platform for migrating from GPS to GNSS. This saving-space design makes L86 the perfect module for the miniature devices. Adopted by LCC package and integrated with 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 ensures L86 can 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. With its tiny 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, especially

suitable for special applications, like GPS mouse and OBD.

Key Benefits/Features

Multi-GNSS engine for GPS, GLONASS, and QZSS Embedded patch antenna: 18.4 x 18.4 x 4.0mm 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, 20mA AlwaysLocate™, an intelligent controller of periodic mode LOCUS, innate logger solution with no need of host and external flash High sensitivity 165dBm@Tracking, -148dBm@Acquisition Support DGPS, SBAS(WAAS/EGNOS/MSAS/GAGAN) Anti-Jamming, Multi-tone Active Interference Canceller

General Specifications

GPS L1 Band Receiver - (1575.42MHz) GLONASS L1 Band Receiver (1601.71MHz) Channel 33 (Tracking)/99 (Acquisition) C/A code SBASWAAS, EGNOS, MSAS, GAGAN **Horizontal Position** Accuracy Autonomous <2.5 m CEP Velocity Accuracy Without aid <0.1m/s Acceleration Accuracy Without aid 0.1m/s² **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 -148dBm Tracking -165dBm Reacquisition -160dBm Environmental Operating Temperature -40°Cto 85°C Maximum Altitude Max.18000m Dynamic Performance Maximum Velocity Max.515m/s Maximum Acceleration 4g **Serial Interfaces** Serial Interfaces UART: Adjustable 4800~115200 bps Default: 9600bps Update rate 1Hz (Default), up to10Hz I/O Voltage 5V tolerant Protocols NMEA 0183, PMTK **Power Management** 3.5V ~ 5.5V Power supply 25mA **Power Acquisition Power Tracking** 22mA **Power Saving** 3mA@AlwaysLocate[™](Note1) 7uA@Backup Mode 1mA@Standby Mode Periodic Mode

For detailed information on GPS L86 module please check L86's datasheet.

Pin description:				
Pin	Pin	I/O	Pin description	Note
number	name			
1	1PPS	0	One pulse per second	Synchronized at rising
				edge, the pulse width
				is 100ms. If unused,
				keep this pin open
2	VIN	I	Main power supply 3.5-5.5 VDC	Supply current at least
				100mA
3	GND		Common ground	
4	RX	I	5V tolerant input for Data receive	9600baud default
5	ТΧ	0	Data transmit	VOLmax=0.42V
				VOHmin=2.4V
				VOHnom=2.8V
6	NC		Not connected (for future use)	No function
7	VBAT	1	Backup power supply, Vmin=1,5V, Vmax=4,3V,	Supply power for RTC
			use CR1220 backup battery or connect it to	domain. The V_BCKP
			3,3V output pin No. 9. Do not connect if battery	pin can be directly
			is installed!	supplied power by
				battery or connect it
				to VCC.
8	EN	I	ENABLE input of internal linear voltage	To switch off the
			regulator	internal voltage
				regulator connect this
				pin to GND, otherwise
				leave open

Package content:

- 1. L86-M33 Break out Board
- 2. CR1220 Lithium 3V battery for RTC/memory backup
- 3. 9-pin pinheader