Leadtek®
We Make Dreams a Reality

GPS LR9805-C/LR9805-T Module

Features

- SiRFstarIIeLP technology
- SiRF GSW2.X software
- Fully automated assembly
- Compact SMD
- Easy integration
- High Sensitivity
- Low power consumption
- NMEA or SiRF protocols
- Supports Active antenna
- WAAS enabled at default
- 1PPS enabled at default

Overview

The Leadtek LR9805 module is a high sensitivity, low power, SMD type 12-channel GPS receiver designed for a broad spectrum of OEM applications. It is based on the GPS signal search capabilities of the SiRFstarIIeLP chipset, providing excellent navigation performance in the most challenging urban environments. Offered in two configurations, the LR9805-C comes with a regular crystal and is hardware compatible with the SiRF standard GSW2.X GPS software. It is also WAAS and 1PPS enabled for both position and time accuracy The LR9805-T is a versatile design with a TCXO crystal for higher performance and is compatible to SiRFXtrac high sensitivity software.

The LR9805 provides excellent sensitivity and high configurability in a small package. The module ensures flexible and easy integration with its user-configurable serial I/O ports, which support both NMEA and SiRF-proprietary binary protocols.

High Sensitivity

The LR9805 allows you to acquire and continue tracking GPS signals at far lower signal levels than is currently possible with other autonomous GPS solutions. This means that GPS can now be used in environments previously deemed impossible such as severe urban canyons, dense foliage, deep inside parking garages, and in many cases indoors.

Compact SMD

The compact module size of the LR9805 is just right for easy integration into any small space. The module is enclosed within a protective metal shield for easy handling. This allows for fully automatic assembly processing with standard pick-and-place equipment and is reflow solder assembly ready.

Reference Design

The LR9805 offers a reference design detailing how to implement the SMD module into your system. You can follow the reference design to make applications such as Smart antennas, on-board GPS devices, Location Base devices, and PDAs.

Active Antenna

The LR9805 supports signal detection using an external active antenna. For optimum performance, Leadtek recommends using a 3.3V external active antenna with a built-in filter inside.

Evaluation Kit

The LR9500 EVK-III evaluation kit is used to validate the design implementation of the LR9805. This kit provides the system integrator with everything needed to quickly integrate the LR9805 into their system and obtain fast time to market. The evaluation kit can be used to evaluate the module performance, update new firmware to the LR9805, and can also be used as a development platform.

Leadtek Value

With Leadtek products you know you are getting value and service. Among the benefits you get, are minimum time to market, dedicated FAE services, In-house hardware and software design engineering support, and a 1-year product warranty.

GPS LR9805-C/LR9805-T Specifications

Performance

General	12 channel, L1 (1575.42 MHz) C/A code, autonomous GPS receiver

Acquisition Time

- Hot Start — 8 second typical TTFF
- Warm Start — 38 seconds typical TTFF
- Cold Start — 45 seconds typical TTFF

Reacquisition Time	0.1 seconds average
Position Accuracy	10 meters, 2D RMS

- Altitude — <+/35 m vertical in term of 95%
- Velocity — 0.1 m/s
- Time — 1 us synchronized to GPS time
- DGPS (Optional) — <5m (50%)

Acquisition Sensitivity

- Hot — 23 dB-Hz
- Warm — 28 dB-Hz
- Cold — 32 dB-Hz

Tracking Sensitivity	LR9805-C	-145dBm
	LR9805-T	-154dBm

Dynamic

- Velocity — 515 m/s (1,000 knots) Max
- Acceleration — 4g Max
- Altitude — 18,000 m (60,000 ft) Max
- Jerk — 20 m/s

Electrical

Main power input	3.3±5%V DC input
Power consumption	65 mA @ 3.3V = 215 mW
Backup Power	1.8±10%V DC input

Physical

Dimensions	0.94 in (L) x 0.79 in (W) x 0.11 in (H) 24 mm (L) x 20 mm (W) x 2.8 mm (H)
Weight	2.5 g

Environmental

Operating Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +100 °C
Relative Humidity	5% to 95%, non-condensing

Interface

Interface Connectors I/O	28 Pin SMD micro package
Input/Output Protocol	NMEA/SiRF Binary
Baud Rate	4800 bps default (user configurable from 4,800 to 38,400 bps)
Update Rate	Programmable update rate (1 Hertz default)
Datum	WGS 84 default (User configurable)
Protocol Message	GGA(1sec), GSA(5sec), GSV(5sec), RMC (1sec), VTG(1sec)
TTL (LR9805-C)	TTL level serial port for GPS communications interface

Support Products and Options

Evaluation Kit	GPS 9500 EVK-III
Antenna	3.3V Active Antenna Passive antenna with LR9710 LNA module
Software Options (Customized order with minimum order quantity only)	• Trickle Power Mode • Push-to-Fix Mode • Dead Reckoning • SiRFLoc A-GPS Client Software

Evaluation Kit

3.3V antenna

Ordering Information

Packaging	Taping Reel
Quantity per Reel	1000 Pieces
P/N	LR9805-C/LR9805-T

The LR9805-C and LR9805-T module is pin-to-pin compatible with the LR9805-III.

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