LEADTEK GPS MODULE

GPS LR9122
Specifications Sheet

Features:

- *SiRF StarII/LP single power chipset*
- *Compact module size for easy integration : 36 x 24 x 5.2 mm*
- *MMCX Antenna onnectot type*
- *RoHS compliance (lead-free)*

LEADTEK

Introduction

Leadtek GPS 9122 is a high performance, low power consumption, small size, integrated easily GPS module board designed for a broad spectrum of OEM system applications. This product is based on SiRFstarII/LP single chipset solution. **Leadtek GPS 9122 module board is very fit to the customers who devote themselves to AVL system integration and location-based service.**

The GPS 9122 design utilizes the latest surface mount technology and high level circuit integration to achieve superior performance while minimizing space and power requirements. This hardware capability combined with software intelligence makes the board easy to be integrated and used in all kinds of navigation applications or products. The application system may communicate with the module board set via two RS232 compatible bi-directional communication channels with CMOS/TTL voltage level.

Features

Hardware and Software

- Based on the high performance features of the SiRFstarII/LP single chipset
- Compact module size for easy integration: 36x24x5.2mm *(1.417"x0.945"x0.2")*
- 12 channels "All-in-View" tracking
- Hardware compatible with SiRF XTrac software
- RoHS compliance

Physical Characteristics

- Length 36 mm (1.417 in)
- Width 24 mm (0.945 in)
- Height 5.2 mm (0.2 in)
- Weight 7g
- Antenna connector MMCX type
- Interface connector 20-pin straight header, 0.8mm pitch board-to-board

Performance

- Cold/Warm/Hot Start Time: 45/38/4 sec. at open sky and stationary environments.
- Reacquisition Time: 0.1 second
- RF Metal Shield for best performance in noisy environments
- Multi-path Mitigation Hardware

Interface

- TTL level serial port for GPS communications interface
- Protocol: NMEA-0183/SiRF Binary (default NMEA)
- Baud Rate: 4800, 9600, 19200, 38400 or 57600 bps (default 4800)

Applications

- Car Navigation
- Marine Navigation
- Fleet Management
- AVL and Location-Based Services
- Hand-Held Device for Personal Positioning and Navigation
- Ideal for PDA, Pocket PC and Other Computing Devices at GPS Application

Specifications

Technical Specifications

Feature	Item	Description
Chipset	GSC3f	SiRFstarII single chipset
General	Frequency	L1, 1575.42 MHz
	C/A code	1.023 MHz chip rate
	Channels	12
Accuracy	Position	10 meters, 2D RMS 5 meters 2D RMS, WAAS corrected <5meters(50%)
	Velocity	0.1 meters/second
	Time	1 microsecond synchronized to GPS time
Datum	Default	WGS-84
	Other	selectable for other Datum
Time to First Fix (TTFF) (Open Sky & Stationary Requirements)	Reacquisition	0.1 sec., average
	Snap start	1 sec., average
	Hot start	4 sec., average typical TTFF
	Warm start	38 sec., average typical TTFF
	Cold start	45 sec., average typical TTFF
Dynamic Conditions	Altitude	18,000 meters (60,000 feet) max.
	Velocity	515 meters/second (1000 knots) max.
	Acceleration	4g, max.
	Jerk	20 meters/second^3, max.
Power	Main power input	3.3 ~ 5.0 VDC input
	Power consumption	≈175 mW (continuous mode)
	Supply Current	≈35 mA
	Backup Power	1.65 ~ 5.0 VDC input.
Serial Port	Electrical interface	Two full duplex serial TTL interface.
	Protocol messages	NMEA-0183@4800 bps (Default)
Time-1PPS Pulse	Level	TTL
	Pulse duration	The 1PPS pulse width is 1 μs, this 1PPS is NOT suited to steer various oscillators (timing receivers, telecommunications system, etc).
	Time reference	At the pulse positive edge.
	Measurement	Aligned to GPS second, ±1 microsecond

Environmental Characteristics

Items	Description
Operating temperature range	-40 deg. C to +85 deg. C
Storage temperature range	-55 deg. C to +100 deg. C

Physical Characteristics

Items	Description
Length	36 mm ± 0.1mm (1.417in)
Width	24 mm ± 0.1mm (0.945 in)
Height	5.2 mm ± 0.1mm (0.2 in)
Weight	7g

Interface Specifications

Items	Description
I/O	20 pin SMD micro package

Software

The Leadtek LR9122 module includes SiRFXTrac high sensitivity software solution.

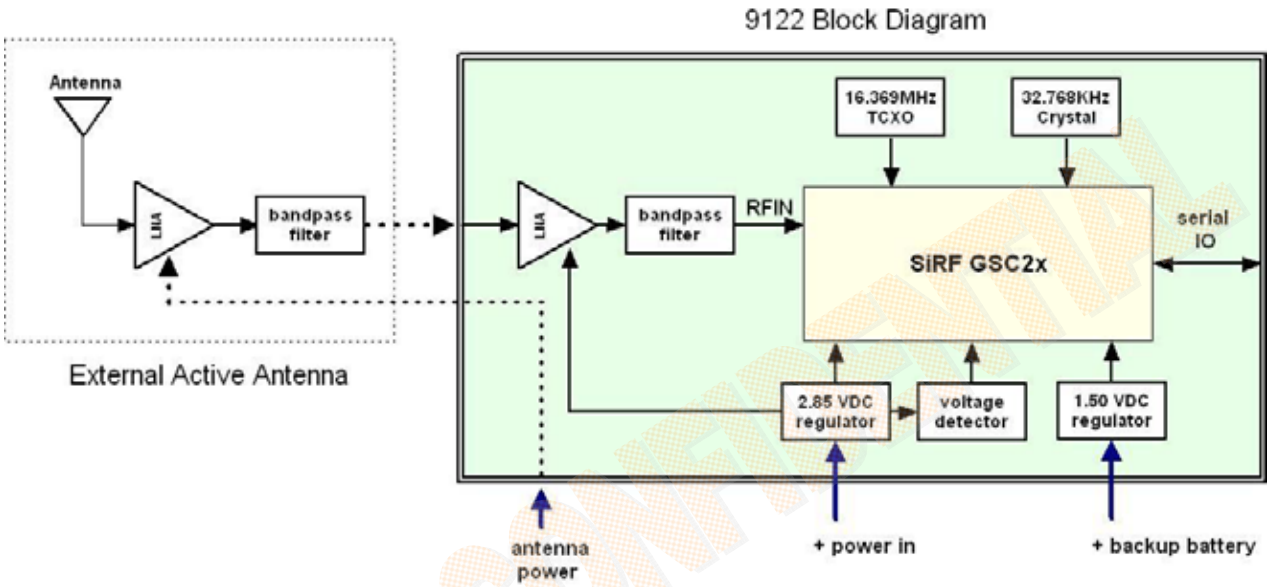
- Features include:
- High tracking sensitivity (-154 dBm)
- High configurability
- 1 Hz position update rate
- Real-time Operating System (RTOS) friendly
- Capable of outputting both NMEA and SiRF-proprietary binary protocols
- Designed to accept custom user tasks executed on the integrated ARM7TDM1 processor
- Runs in full power operation or optional power saving modes

SiRFXTrac default configuration is as follows:

Item	Description
Core of firmware	SiRFXTrac
Baud rate	4800, 9600, 19200, 38400 or 57600 bps (default 4800)
Code type	NMEA-0183 ASCII
Datum	WGS-84
Protocol message	GGA(1sec), GSA(5sec), GSV(5sec), RMC(1sec),VTG(1sec)
Output frequency	1 Hz

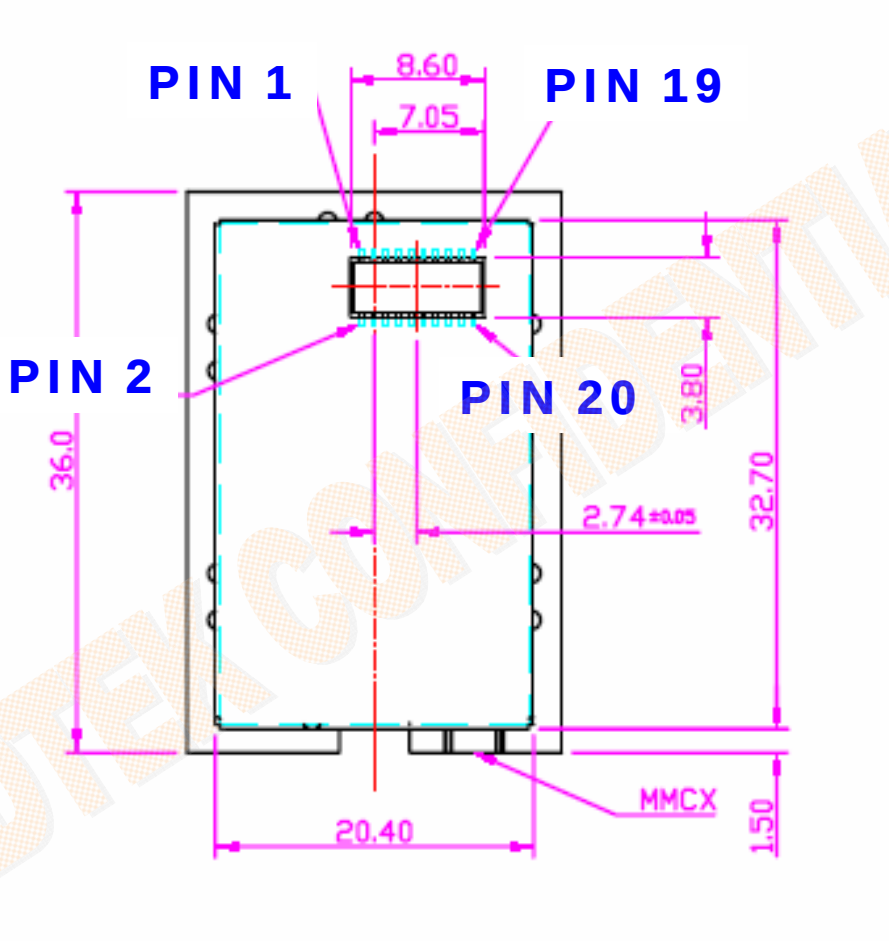
Electrical Specifications

Block Diagram



Interface Specification

Pin Positions



Pin Settings

Pin Number	*Name*	*Type*	*Description*
1	ANT_PWR	PWR	Antenna DC Voltage
2	VCC_5V	PWR	+5 DC Power Input**(note1)**
3	BAT	PWR	Backup Battery**(note2)**
4	VCC_3V	PWR	+3.3V DC Power Input**(note3)**
5	RESETB	I	System reset, active low (if it's not used, keep floating)
6	N/C	I/O	Keep Floating
7	N/C	I/O	Keep Floating
8	N/C	I/O	Keep Floating
9	N/C	I/O	Keep Floating
10	N/C	I/O	Keep Floating
11	TXA	O	Serial Data Output A
12	RXA	I	Serial Data Input A
13	N/C	I/O	Keep Floating
14	TXB	O	Serial Data Output B
15	RXB	I	Serial Data Input B
16	N/C	I/O	Keep Floating
17	BOOTSEL	I	Booting Mode Select **(note4)**
18	GND	PWR	Ground
19	TIMEMARK	I/O	1PPS Time Mark Output
20	N/C	I/O	Keep Floating

Note:

1) If the module is 3.3V type, the pin is no used.

2) Maximum voltage is 5.0 VDC

3) If the module is 5V type, the pin in no used.

4) The pin is active high and float when not use

Mechanical Dimensions

Outline Drawing

Tolerance:

Length	36.0 ± 0.3 mm
Width	24.0 ± 0.3 mm
Height	10.05 ± 0.3 mm