

LEADTEK GPS MODULE

GPS 9548SLP Specifications Sheet



Features:

- *SiRF StarIII low power chipset*
- *Compact module size for easy integration : 24 x 20 x 2.9 mm*
- *Multiple I/O pins reserved for customizing special user applications*
- *RoHS compliance (lead-free)*



ALL INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF LEADTEK RESEARCH AND CANNOT BE DISSEMINATED WITHOUT THE EXPRESS WRITTEN CONSENT OF LEADTEK RESEARCH.

Introduction

The Leadtek LR9548SLP GPS module is a high sensitivity, low power, Surface Mount Device (SMD). This 20-channel global positioning system (GPS) receiver is designed for a wide range of OEM applications and is based on the GPS signal search capabilities of the SiRFstarIII™ low power single chipset, SiRF's newest chipset technology. The LR9548SLP is also pin-to-pin compatible with the LR9805-III (LR9548) for easier and faster transition.

The LR9548SLP is designed to allow quick and easy integration into GPS-related applications such as:

- PDA, Pocket PC, and other computing devices
- Car and Marine Navigation
- Fleet Management /Asset Tracking
- AVL and Location-Based Services
- Hand-Held Device for Personal Positioning and Navigation

Features

Hardware and Software

- Based on the high performance features of the SiRFstarIII low power single chipset
- Compact module size for easy integration: 24x20x2.9 mm (0.94x0.79x0.11 in)
- Fully automatic assembly: reflow solder assembly ready
- Hardware compatible with SiRF GSW3 v3.2.2 software
- Multiple I/O pins reserved for customizing special user applications
- RoHS compliance

Performance

- Cold/Warm/Hot Start Time: 42/38/1 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)

Advantages

- Ideal for high volume mass production(Taping reel package)
- Cost saving through elimination of RF and board to board digital connectors
- Flexible and cost effective hardware design for different application needs
- Secure SMD PCB mounting method

Leadtek
Preliminary

Specifications

Technical Specifications

Feature	Item	Description
Chipset	GSC3f	SiRFstarIII low power single chipset
General	Frequency	L1, 1575.42 MHz
	C/A code	1.023 MHz chip rate
	Channels	20
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	1 sec., average typical TTFF
	Warm start	38 sec., average typical TTFF
Dynamic Conditions	Cold start	42 sec., average typical TTFF
	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	≈165 mW (continuous mode)
	Supply Current	≈49 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 Measurement	At the pulse positive edge. 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	24 mm \pm 0.1mm (0.94in)
Width	20 mm \pm 0.1mm (0.79 in)
Height	2.9 mm \pm 0.1mm (0.11 in)
Weight	2.5g

Interface Specifications

Items	Description
I/O	28 pin SMD micro package

Software

The Leadtek LR9548SLP module includes GSW3.2.2, the SiRF standard GPS software for SiRFstarIII low power single chipset receivers. Features include:

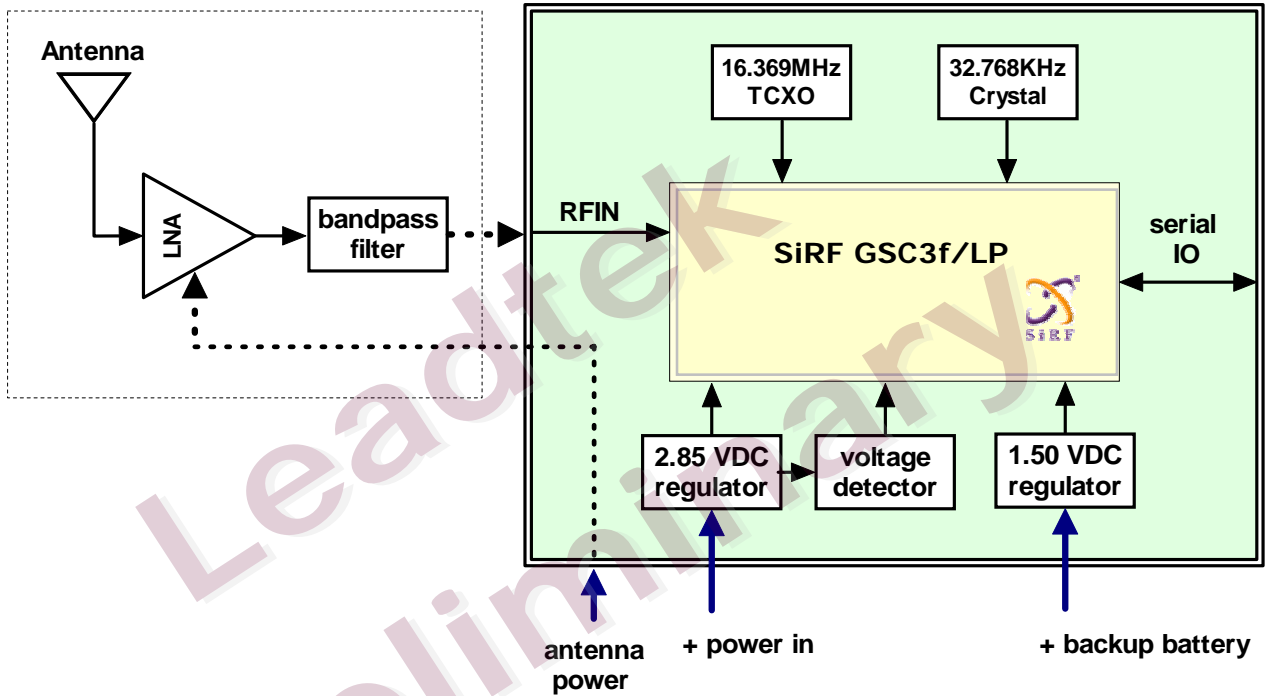
- Excellent sensitivity
- High configurability
- 1 Hz position update rate
- Supports use of satellite-based augmentation systems like the US WAAS or European EGNOS system (**Option**)
- Real-time Operating System (RTOS) friendly
- Capable of outputting either NMEA(default) or SiRF proprietary binary protocols
- Designed to accept custom user tasks executed on the integrated ARM7TDM1 processor(**Option**)
- Runs in full power operation (default) or optional power saving modes
- Default configuration is as follows:

Item	Description
Core of firmware	SiRF GSW3.2.2
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

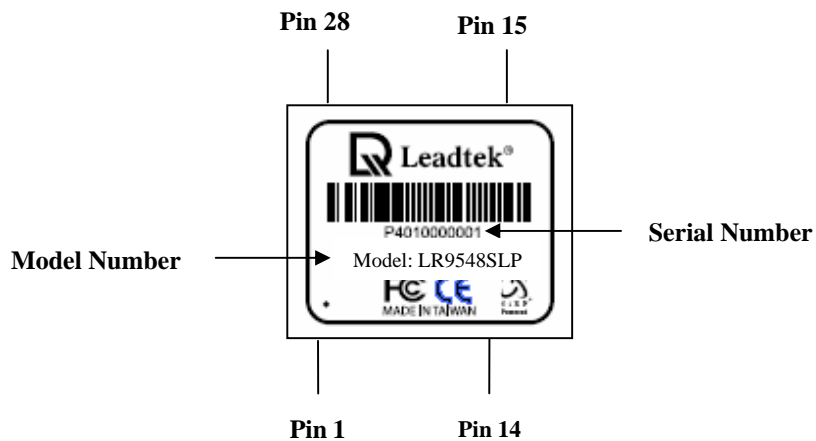
Block Diagram

9548SLP Block Diagram



Interface Specification

Photos and Pin Positions



Pin Settings

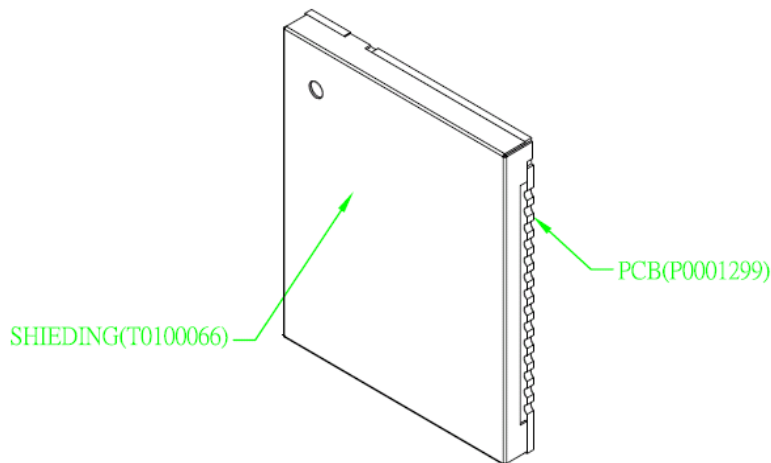
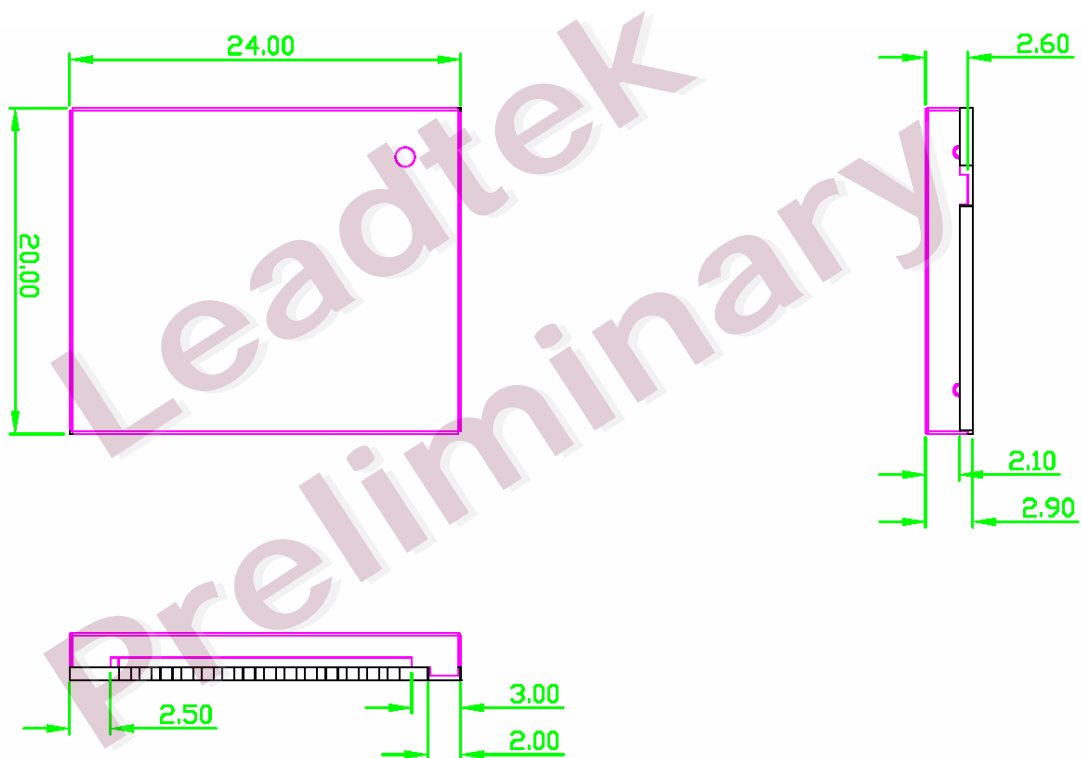
PIN	Name	Type	Description
1	NC	I	Not connected, keep floating
2	NC	I/O	Not connected, keep floating
3	NC	I/O	Not connected, keep floating
4	RXDB	I	TTL UART Port B input. If not used, keep floating
5	RXDA	I	TTL UART Port A input
6	TXDA	O	TTL UART Port A output
7	GPIO5	I/O	Reserved, keep floating
8	TIMEMARK	I/O	1 PPS timemark output
9	NC	I/O	Not connected
10	GPIO13	I/O	Reserved, keep floating
11	GPIO0	I/O	Reserved, keep floating
12	GPIO1	I/O	Reserved, keep floating
13	GPIO14	I/O	Reserved, keep floating
14	GND	PWR	Ground
15	VCC_IN	PWR	3.2~5.0V DC supply input
16	VSTBY	PWR	Apply 1.65~5.0V DC for backup RTC & SRAM.
17	BOOTSEL	I	Pull high for programming mode. If not used, keep floating
18	RESETN	I	Reset pin, active low, If not used, keep floating
19	GPIO15	I/O	Reserved, keep floating
20	GND	PWR	Ground
21	NC	I/O	Not connected
22	NC	I/O	Not connected
23	TXDB	O	TTL UART Port B output. If not used, keep floating
24	NC	O	Not connected
25	ANTPWR	PWR	Antenna power input
26	GND	PWR	Ground
27	RFIN	I	RF Signal input
28	GND	PWR	Ground

Mechanical Dimensions

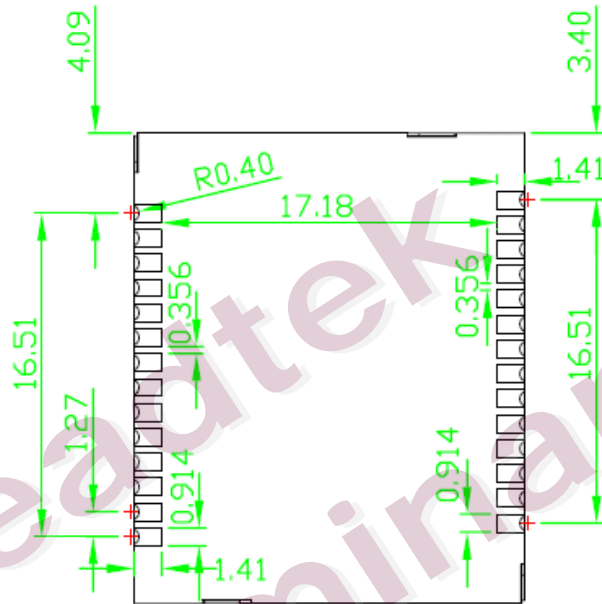
Outline Drawing

Tolerance:

Length	24.0 ± 0.4 mm
Width	20.0 ± 0.1 mm
Height	2.90 ± 0.1 mm



(Bottom view)



PCB PAD

Leadtek Preliminary

Recommended Footprint

(Unit : mm)

