

# LEADTEK SMD GPS MODULE

## LR9552 Specifications Sheet



- SiRF StarIII/LP single chipset
- Compact module size for easy integration : 25 x 25 x 8.9 mm  
**(Optional)** 25 x 25 x 6.9 mm
- RS232 or TTL **(optional)** level serial port for GPS communications interface
- RoHS compliance

Revision History:			
Revision	Release Date	Issuer	Change Description
0.6	2008/04/28	M. Huang	Modify the operating and storage temperature range.



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## Introduction

The Leadtek LR9952 module is a high sensitivity and very compact smart antenna module, with built in GPS receiver circuit. This 20-channel global positioning system (GPS) receiver is designed for a wide range of OEM applications and is based on the fast and deep GPS signal search capabilities of SiRFStarIII™ architecture. Leadtek LR9552 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 SiRFStar III/LP single chip
- ▶ Compact module size for easy integration: 25x25x8.9 mm (with 4 mm patch antenna)  
25x25x6.9 mm (with 2 mm patch antenna) **[option]**
- ▶ Fully automatic assembly: reflow solder assembly ready
- ▶ Hardware compatible with SiRF GSW3.2 serial software

### Performance

- ▶ Cold/Warm/Hot Start Time: 1/38/45 sec.
- ▶ Reacquisition Time: 0.1 second.
- ▶ RF Metal Shield for best performance in noisy environments.

### Interface

- ▶ RS232 or TTL **(option)** level serial port for GPS communications interface
- ▶ Protocol: NMEA-0183/SiRF Binary (default NMEA)
- ▶ Baud Rate: 4800, 19200, or 57600 baud (default 4800)

# Specifications

## Technical Specifications

Feature	Item	Description
<b>Chipset</b>	GSC3f	SiRFStarIII/LP single chip
<b>General</b>	Frequency	L1, 1575.42 MHz
	C/A code	1.023 MHz chip rate
	Channels	20
<b>Accuracy</b>	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
<b>Datum</b>	Default	WGS-84
	Other	selectable for other Datum
<b>Time to First Fix (TTFF) (Open Sky &amp; Stationary Requirements)</b>	Reacquisition	0.1 sec., average
	Hot start	1 sec., average typical TTFF
	Warm start	38 sec., average typical TTFF
	Cold start	45 sec., average typical TTFF
<b>Dynamic Conditions</b>	Altitude	18,000 meters (60,000 feet) max.
	Velocity	515 meters/second (1000 knots) max.
	Acceleration	4g, max.
	Jerk	20 meters/second <sup>3</sup> , max.
<b>Power</b>	Main power input	3.3 ~ 5.0 V DC input.
	Power consumption	≈250mW (continuous mode)
	Supply Current	≈55 mA (at 5V)
	Backup Power	1.65 ~ 5.0 V DC input.
<b>Serial Port</b>	Electrical interface	Two full duplex serial TTL interface.
	Protocol messages	NMEA-0183@4800 bps (Default)
<b>Time-1PPS Pulse</b>	Level	RS232 or <b>TTL (option)</b>
	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 (Note)	-20 deg. C to +60deg. C
Storage temperature range	-40 deg. C to +60 deg. C

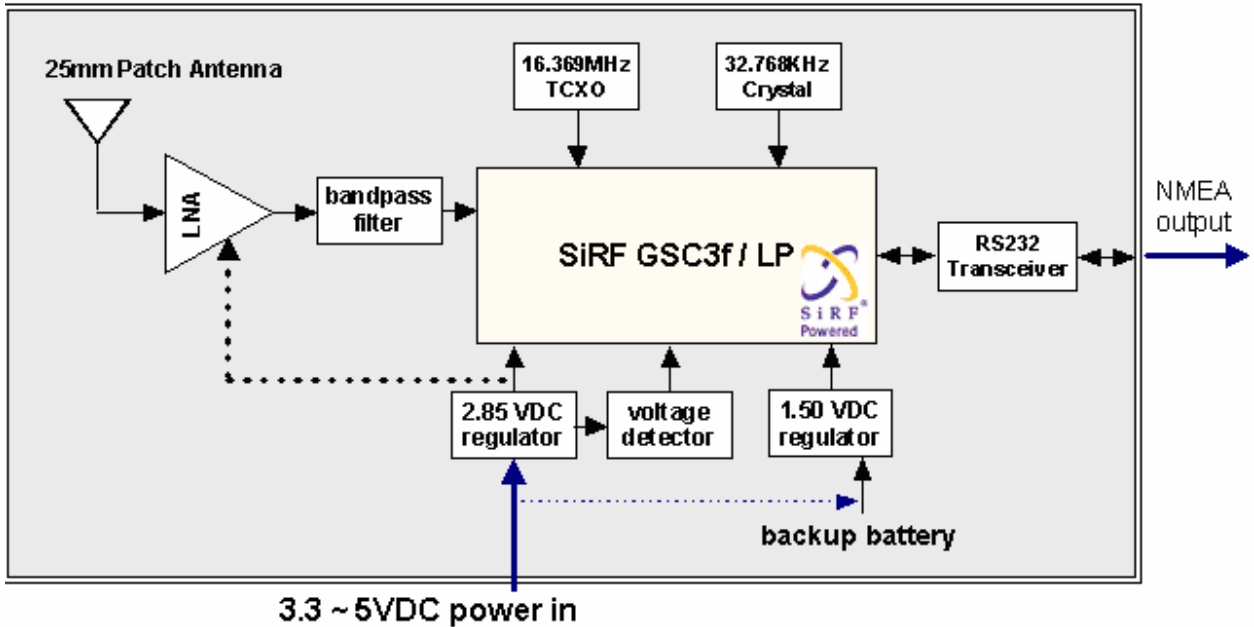
*Note: The module can be operated between -30~+85degC, but higher temperature may cause internal Li backup battery deterioration that will influence the performance of GPS hot start.*

## Physical Characteristics

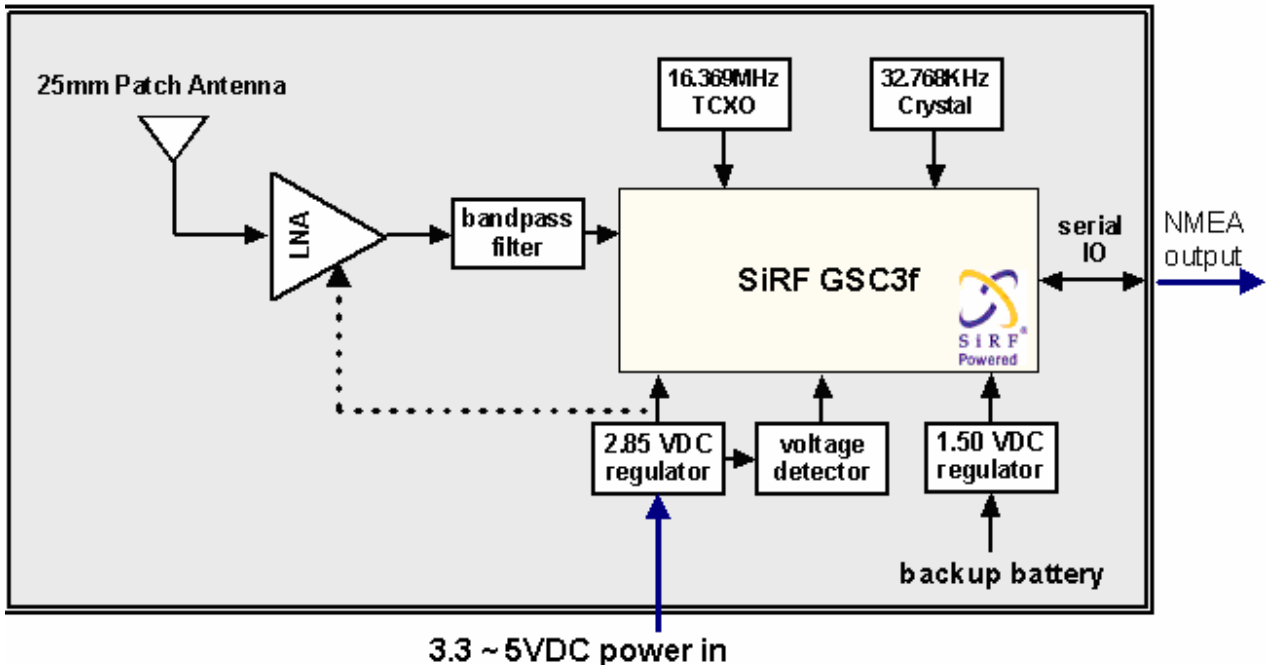
Items	Description
Length	25.0 ± 0.3 mm
Width	25.0 ± 0.3 mm
Height	8.90 ± 0.3 mm 6.90 ± 0.3 mm
Weight	13.0g (w/ 4mm patch antenna) 8.0g (w/ 2mm patch antenna)

**Module architecture**

**9552LP ( RS232 ) Block Diagram**



**9552 ( TTL ) Block Diagram**



## Software

The Leadtek LR9552 module includes GSW3 high sensitivity software solution.

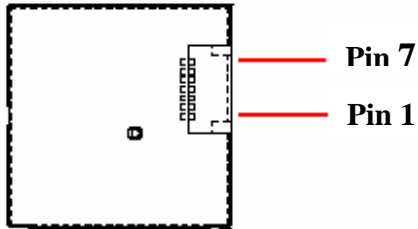
Features include:

- ▶ High tracking sensitivity
- ▶ 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

GSW3 default configuration is as follows:

Item	Description
<b>Core of firmware</b>	GSW3
<b>Baud rate</b>	4800, 9600, 19200, 38400 or 57600 bps (default 4800)
<b>Code type</b>	NMEA-0183 ASCII
<b>Datum</b>	WGS-84
<b>Protocol message</b>	GGA(1sec), GSA(5sec), GSV(5sec), RMC(1sec), VTG(1sec)
<b>Output frequency</b>	1 Hz

## Pin Assignment

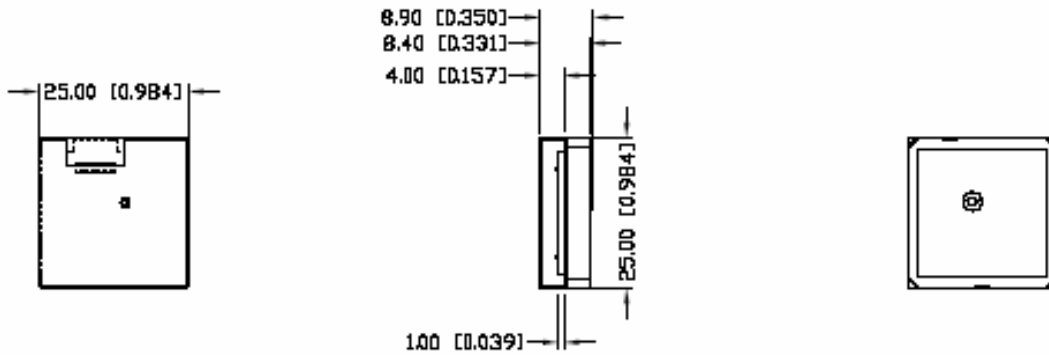


Pin No.	Define	Pin No.	Define
1	GND	5	RXDB
2	TXDA	6	TIMEMARK
3	RXDA	7	VCC_3.3V~5V
4	TXDB		

## Outline Dimension

Items	Description
Length	25.0 ± 0.3 mm
Width	24.0 ± 0.3 mm
Height	8.90 ± 0.3 mm
	6.90 ± 0.3 mm

(4mm patch antenna)



(2mm patch antenna)

