



## 1.0 Introduction

LW125M-P is a highly integrated GPS RF Antenna Module designed for GPS application with low power, low cost and ultra-small size. The device consists of SiRFstarIV GPS chip and Lexiwave's highly efficient antenna for best GPS reception sensitivity and antenna pattern.

Its integrated SAW 2.4GHz notch filter coupled with DSP based jammer removal gives superior interference rejection on, Cellular phone, Bluetooth and WiFi signals. It is particularly suitable for smart phone, tablet PC applications in which multiple RF signals may co-exist.

LW125M-P operates on a 3V positive power supply with 1.8V CMOS compatible UART 9600bps host processor interface. The module can enter a micro-power mode while maintaining Hot Start TTFF condition while consuming only 50 $\mu$ A.

## 2.0 Features

- Complete system from antenna to navigation data output
- Ultra small size of 16mm x 16mm
- Low operating voltage: 1.8 ~ 3.6V
- High-sensitivity navigation engine (PVT) tracks as low as -163dBm
- Micro-power mode of 50 to 500 $\mu$ A to maintain hot start capability
- Excellent receiver selectivity and blocking performance

### 3.0 Applications

- Tracking devices
- GPS watches
- GPS clocks
- Smart phones
- Tablet PCs
- Navigation devices
- Portable Handheld devices

### 4.0 Pin Description



Pin Name	Description
ON/OFF	Input signal turning GPS ON or OFF (Active high pulse)
RX	RX pin for UART (1.8V)
TX	TX pin for UART (1.8V)
VDD	Power Supply (2 to 5V)
GND	Ground

## 5.0 Electrical Characteristics

### 5.1 Maximum ratings

Rating	Value	Units
Power Supply	-0.3 to 5.5	V
Operating temperature	-40 to +85	°C

### 5.2 Operating Conditions

Parameter	Min	Max	Unit
Operating temperature	-40	85	°C
Operating supply voltage	2.0	5	V

### 5.3 DC Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
I <sub>DD</sub> (peak)	Supply current, peak acq.		47	90	mA
I <sub>DD</sub> (ave)	Supply current average, tracking, LDO mode		37		mA
I <sub>DD</sub> (ave)	Supply current average, tracking, Switcher mode		30		mA
I <sub>DD</sub> (Hib)	Supply current, hibernate state		20		µA

## 5.4 System Performance

<b>Parameter</b>	<b>Performance</b>
Receiver	GPS L1 C/A-code
Channels	48
Tracking sensitivity	-163 dBm
Navigation sensitivity	-160 dBm
Acquisition sensitivity	-147 dBm
Total Antenna efficiency	60%
RHCP Antenna Efficiency	55%
Time to First Fix, Hot Start	<1 s typ. (note 1)
Time to First Fix, Warm Start	<33 s typ.
Time to First Fix, Cold Start	<33 s typ.
Host port Interface	UART 9600 baud rate
Serial port protocol	NMEA-0183 rev. 3.0 (configurable to SiRF binary OSP)
Serial data format (UART)	8 bits, no parity, 1 stop bit

## **6. IMPORTANT NOTICE**

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