

1.0 Introduction

LW125MA-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, Lexiwave's highly efficient antenna and a Low Noise Amplifier 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.

LW123MA-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 μ A.

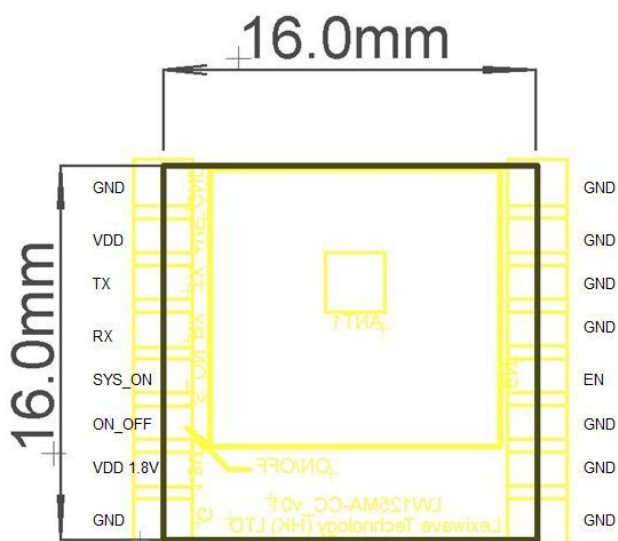
2.0 Features

- Complete system from antenna to navigation data output
- Ultra small size of 16mm x 16mm
- Low operating voltage: 1.8 ~ 3.6V
- Low Noise Amplifier of 20 dB gain and 0.8 dB noise figure
- High-sensitivity navigation engine (PVT) tracks as low as -163dBm
- Micro-power mode of 50 to 500uA to maintain hot start capability
- Excellent receiver selectivity and blocking performance
- Regulated 1.8V power supply for external use

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
GND	Ground
VDD	Power Supply (2 to 5V)
RX	RX pin for UART (1.8V)
TX	TX pin for UART (1.8V)
SYS_ON	Module ready for reception indicator, active HIGH
VDD 1.8V	Regulated 1.8V for external use
ON_OFF	Input signal turning GPS ON or OFF (Active high pulse)
EN	Module Enable, active HIGH

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 _{DD} (peak)	Supply current, peak acq.		52	95	mA
I _{DD} (ave)	Supply current average, tracking, LDO mode		42		mA
I _{DD} (ave)	Supply current average, tracking, Switcher mode		35		mA
I _{DD} (Hib)	Supply current, hibernate state		20		μA

5.4 System Performance

Parameter	Performance
Receiver	GPS L1 C/A-code
Channels	48
Low Noise Amplifier	20 dB gain, 0.8 dB noise figure
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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