

SSF1919P-S

SSF1919P-D

Ultra High Sensitivity SiRF StarIII 7989
GPS Module with Slim Path Antenna

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Documentation History

Revision	Description	Date	Remark
V0.1	SSF1919P release	Mar 2009	
V1.0	Update dimension	Jun 2009	

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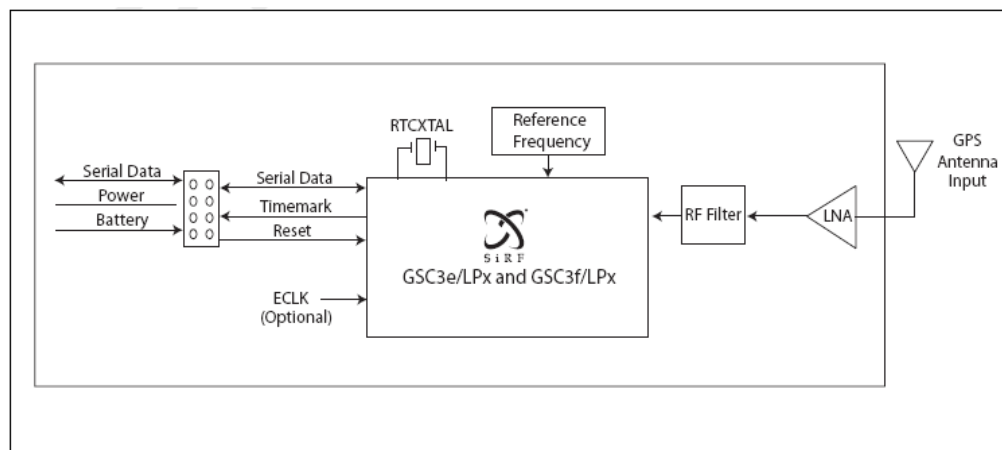
SSF1919P-S

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Features

- ✓ 20 channel SiRF StarIII7989 positioning engine
- ✓ Ultra high sensitivity to -158 dBm
- ✓ SBAS (WAAS, MSAS, and EGNOS) support
- ✓ Supports Power saving modes
- ✓ 15 μ A backup current
- ✓ Support 1 UART ports
- ✓ Ultra low power consumption 60mW
- ✓ Ultra miniature 19 x 19 mm dimension with SMT pad package
- ✓ Operating temperature range: -30 to 85°C
- ✓ RoHS compliant (lead-free)

Block diagram



SSF1919P GPS module

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Technical Specifications

1. Electrical Characteristics

1. Electrical Characteristics

1.1 Chipset	SiRF StarIIIGSC3eLP	
1.2 General	Frequency	L1, 1575.42MHz
	Channels, C/A code	20, 1.023 MHz chip rate, 8192 time/frequency search windows
1.3 Accuracy	Position	5 meters CEP
	Time	50 nanosecond rms (1 PPS)
1.4 DGPS Accuracy	Position	2.0 meters CEP
1.5 Acquisition Rate	Reacquisition	< 1 sec, typical
	Cold start	35 sec, typical
	Warm start	35 sec, typical
	Hot start	1 sec, typical
1.6 Sensitivity	Tracking	-159dBm
	Acquisition/Reacquisition	-155dBm
	Cold start	-144dBm
1.7 Dynamic Condition	Altitude	18,000 meters (60,000 Feet) max.
	Velocity	515 meters /sec (1000 Knots) max.
1.8 Power	Main Power	3.3 VDC typical
	Supply current	30 mA
	Backup power	1.4 ~ 5V
	Backup current	15µA typical
1.9 Serial Port	Electrical interface	UART,
	Protocols	NMEA0183 v3.0

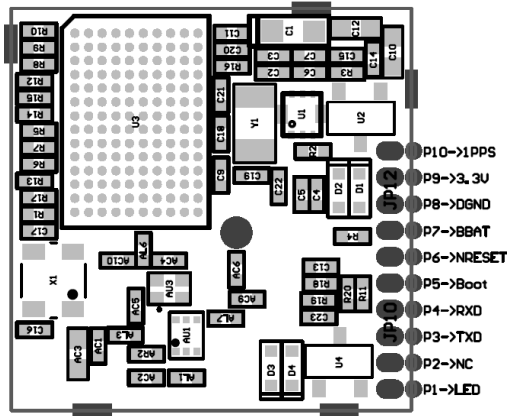
2. Environmental Characteristics

2.1 Temperature	Operating range	- 30 °C to + 85 °C
2.3 Interface	I/O connector	10 pin SMD micro package (SSF1919P-S) 10 pin patch 1.27mm (SSF1919P-D)

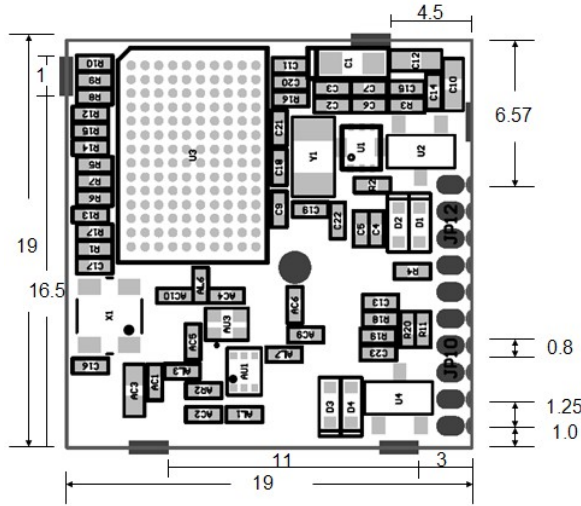
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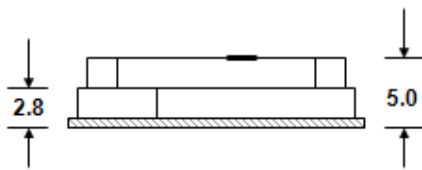
PIN assignment



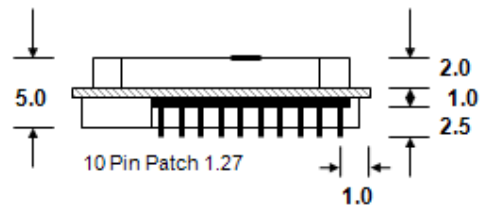
Dimension



Top View



SSF1919P-S



SSF1919P-D

Side View

Unit: mm

Pin Definition

Pin#	Name	Type	Description
1	LED	I/O	GPIO1
2	NC	NC	Not Connected, keep floating
3	TXD	Output	UART TXD output
4	RXD	Input	UART RXD input
5	Boot	Input	High Boot from Flash, Low Boot from serial port
6	NReset	Input	Baseband RESET input. '0' = reset and '1' = normal operation
7	Vbat	PWR	Linear regulator battery input voltage: 2 - 3.6V.
8	DGND	PWR	Ground
9	Vcc	PWR	Input power. Range 3.3 – 5 V
10	1PPS	Output	Time plus

Output NMEA Messages

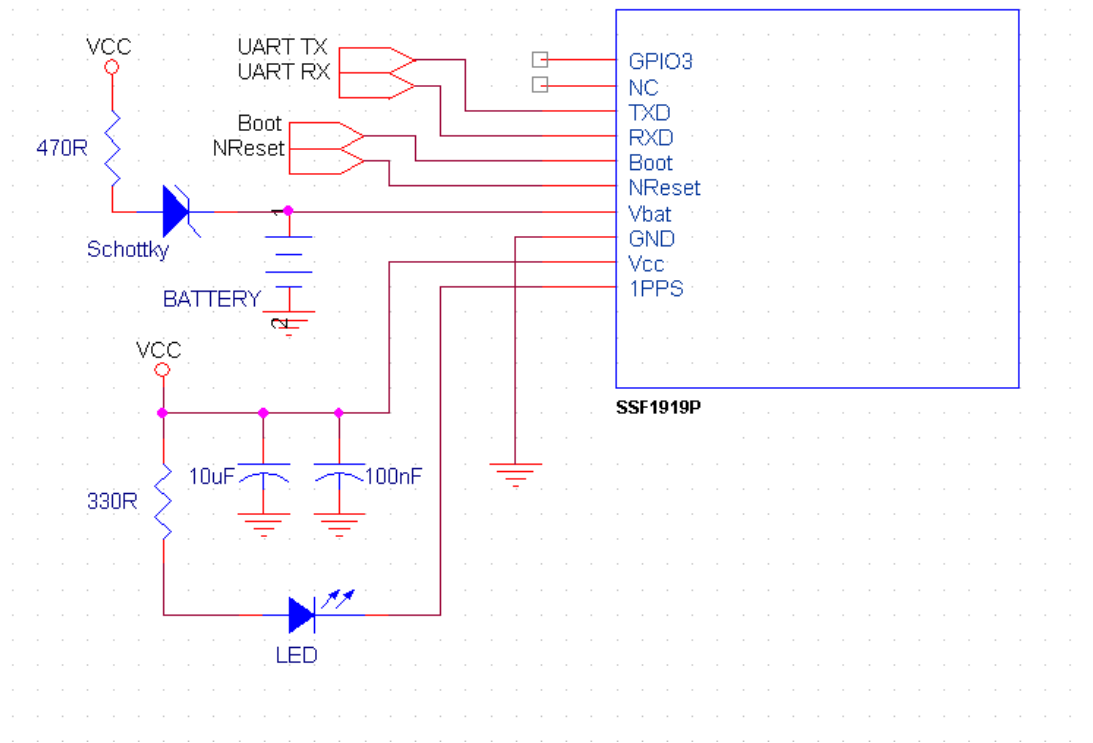
Table 3 NMEA-0183 Output Messages

NMEA Sentence	Description
GGA (default)	Global Positioning System Fixed Data
GLL	Geographic Position - Latitude/Longitude
GSA (default)	GNSS DOP and Active Satellites
GSV (default)	GNSS Satellites in View
RMC (default)	Recommended Minimum Specific GNSS data
VTG	Course Over Ground and Ground Speed
ZDA	Time and Date

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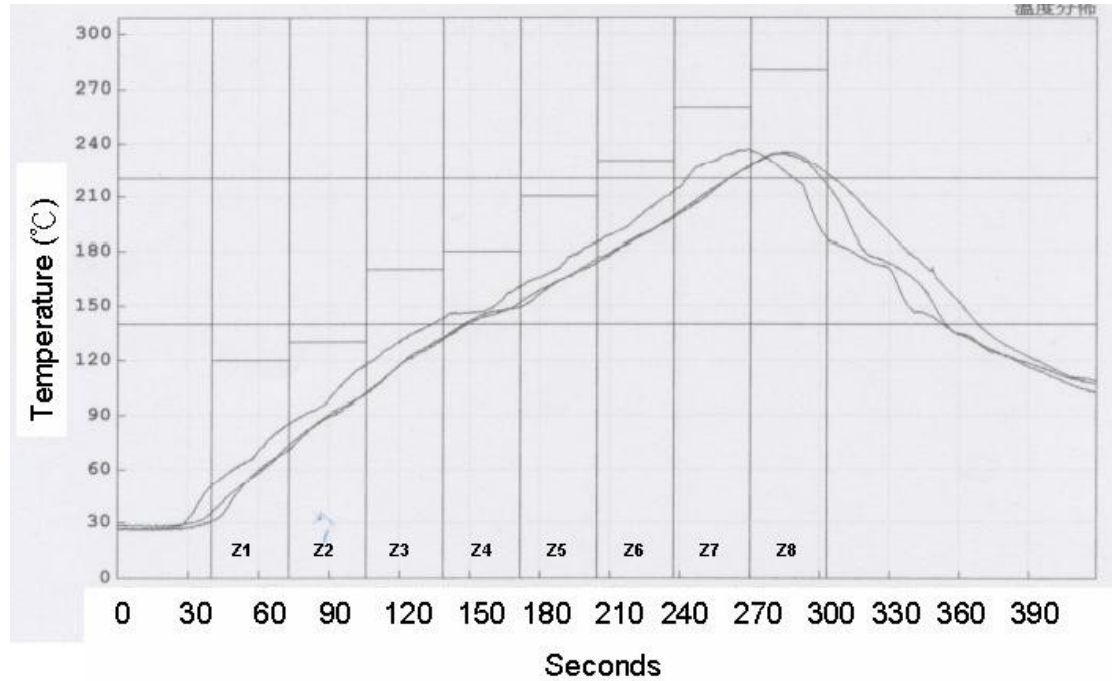
Application Circuit



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Reflow Profile



Setpoints (°C)

Zone	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8
Top	120	130	170	180	210	230	260	280
Bottom	120	130	170	180	210	230	260	280

Conveyer Speed (cm/min): 73